








**SAV** → FRANCE

# DEMAGNETIZATION

STANDARD AND SPECIFIC SOLUTIONS



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## DEGAUSSING SPECIALIST SAV FRANCE



SAV FRANCE develop and produce high tech industrial demagnetizing equipment. The diversity of our product range as well as our knowledge in the field of demagnetization allow us to offer as well standard and complete tailor-made solutions ready to start.

Thanks to tests with real parts carried out by our specialists, we find the best solution for any application. This approach offers maximum reliability in every application. SAV FRANCE is a reliable partner to provide:

- **The optimal solution for your demagnetization applications**
- **Simple - Over-powered - Low frequency versions**
- **Very high quality with unique technology**
- **All technologies from a single source**
- **Partnership service - Demagnetization on site**

### Reasons of magnetization

The reasons for magnetization of workpieces are various.

#### Magnetization through manufacturing processes:

- Parts have been magnetized during machining / forming due to magnetic tools
- Forming of steel may result in magnetization



#### Magnetization through handling of parts:

- Lifting magnets magnetize steel parts
- Transfer of parts by magnetic gripper



#### Magnetization by electrical processes:

- Welding of pieces or machining on EDWC machine
- Electroplating and PVD processes
- Magnetoscopy without demagnetization



#### Magnetization by storage and transport:

- Mechanical vibrations during transport
- Storage of large quantities of steel

### Effects of magnetization

- Metal chips stick to the workpiece : scratched surfaces and tools wear off faster
- Edges breaking off on EDWC machine : down time
- Adherence of stamping residues : damage of produced parts
- Unstable welding and coating processes : electron beam welding is impossible
- Attraction of ferromagnetic parts : cleaning process is not achieve, malfunctioning of parts
- Magnetic field sensors are falsely activated : inaccurate readings of Hall or inductive sensors
- Measurement errors on sensitive measuring instruments
- Effects in eddy current processes
- Parts sticking together : down time for robots and automatic feeding systems, problems of assembly

Field strength	Chip adhesion size	Gauss	Tesla	A/m	A/cm
2 - 6 Gauss	200 - 1000µm	1mG	0,1µT	0,08A/m	0,0008A/cm
6 - 12 Gauss	1000 - 3000µm	1G	0,1mT	80A/m	0,8A/cm
12 - 25 Gauss	> 3000µm	3G	0,3mT	240A/m	2,4A/cm
> 25 Gauss	paper clip	5G	0,5mT	400A/m	4A/cm

SAV demagnetization tunnels are used to demagnetize ferromagnetic parts. Depending on the nature of the parts, they can retain a certain level of magnetic remanence, the more the part is made of alloy steel the greater the magnetic remanence. SAV demagnetization tunnels eliminate this magnetic remanence, but the effectiveness of the result depends largely on:

- the nature of workpieces
- shapes and dimensions of workpieces
- material of workpieces
- position of workpieces in demagnetization situation



## Demagnetization: technologies and methods

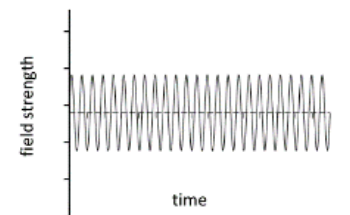
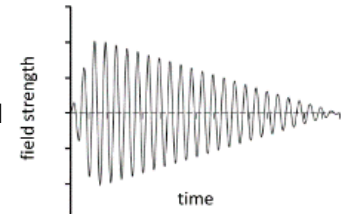
The coil is energizing with an alternating current and creates an alternative magnetic field with positive and negative impulse of current.

### Pulse method:

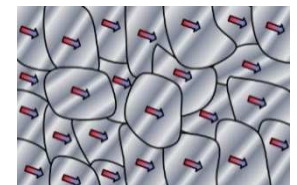
- The alternating magnetic field is briefly increased in the coil to a high amplitude and then reduced to zero
- Frequency, current, pulse shape and pulse duration are controlled by a power modul
- The pulse parameters are optimally set for the application
- This technology provides best results

### Continuous method:

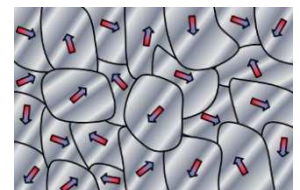
- The alternating magnetic field remains constant in the coil
- The field reduction required for demagnetization is achieved by increasing the distance between the part and coil by pulling the part out of the coil
- This method operates at lower field strength compared to pulse demagnetization
- Coil current is either generated by a power module or, in simple applications, provided directly by main power



Very small magnetic fields, called magnetic dipoles, are contained in ferromagnetic parts (inside the Weiss area). Under the influence of an external magnetic field (lifting magnet, magnetic chuck, friction or molecular change during machining ...), these magnetic dipoles are oriented in the same way, which after stopping the influence of external magnetic field will remain more or less according to the moving of the BLOCH WALLS. The piece is magnetized!



To demagnetize a ferromagnetic part, this one must be exposed to an H decreasing alternative magnetic field of high intensity. The alternative magnetic field of the demagnetization unit must recreated the initial state unordered of the magnetic dipole. All this demagnetization tunnels work under alternative current and thus changes the polarity at a defined frequency regarding the application. The decay of the amplitude of the magnetic field is created by a power module or by moving the piece through the demagnetization tunnel slowly and uniformly outside the magnetic field. The piece is no longer magnetized.



In order to achieve low residual magnetism, the following parameters need to be optimized:

1. Position of workpiece according to its shape. The workpiece must remain as long as possible in the magnetic field lines so it is absolutely necessary to place the workpiece lengthwise relative opening of coil. For complicated shapes, it is necessary to repeat the demagnetization in different directions or to use a rotating magnetic field!
2. Simple or assembly workpiece. The best way is disassembled parts.
3. Unitary workpiece, sorted workpieces or bulked workpieces. Bulked parts is frequently hard to demagnetize.
4. Frequency of degaussing field. The penetration of the magnetic field into the workpiece depends on the speed of the polarity change, therefore the frequency used. Thicker the part is, more the frequency must decrease to go to the heart of the material. If the frequency used is not good regarding the workpiece, magnetism can return into the workpiece after a few days! To demagnetize large workpieces, frequency of down to 1 Hz is necessary.
5. Magnetic field intensity. More the workpiece is hard and alloy, more the demagnetization is difficult. To achieve a good result with difficult workpieces, a power module is needed.

## Measuring a magnetic field

The measurement with a tesla meter remains very simple but it is necessary to use an accurate and quality device as our model 878.05. You have to be in DC mode and HOLD function to measure the residual magnetism in different area. Now you need to know what goal you want to achieve!

**SAV FRANCE offer a complete range of solution from manually demagnetizer to complex automatic systems based on our knowledge.**

# DEMAGNETIZER TUNNEL



SAV 890.42

To demagnetize all type of pieces

**Use :**

After some operations, the parts can have some magnetic persistence, which is not ideal in some cases.

For some applications, these parts must be demagnetized.

In the generality of cases, demagnetizer tunnel fill perfectly this function.

**Characteristics :**

The degaussing coil is cast in a special resin. Provided with mounting through holes in black paint.

**Option :**

Frequency generator  
Power module

Protection : IP54

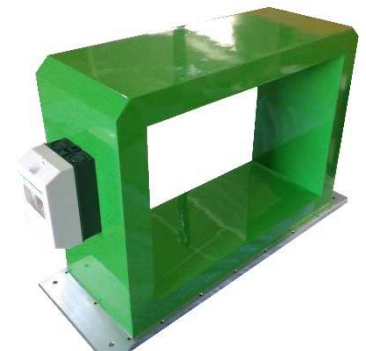
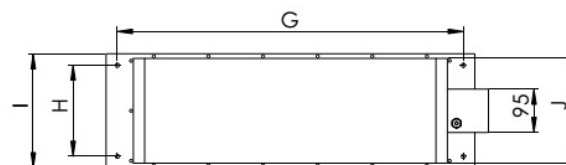
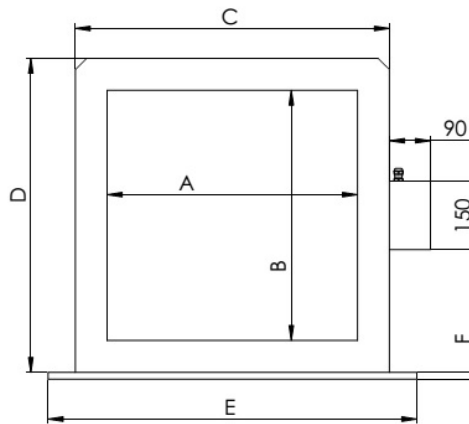
Voltage : 230Vac/400Vac

Fréquence : 50 – 60 hz

Thermal protection-Indicator light

2 meter cable (without plug)

(Other voltage on request)



Dimensions in mm										Voltage	Power	max. magnetic	Weight
A	B	C	D	E	F	G	H	I	J	VAC	VA	field kA/m	in kg
55	55	150	150	200	10	180	100	120	100	230/400	190/140	40	9
150	100	320	270	408	12	358	110	170	150	230*/400	1400/1200	33	40
170	170	310	310	350	15	330	145	175	175	230/400	1650/1400	25	45
250	250	390	390	520	15	460	150	200	180	230*/400	3000/2800	22	60
250	350	390	490	520	15	460	200	250	230	230/400	3500/3200	18	75
260	130	430	300	520	15	475	115	185	165	230*/400	2600/3200	30	65
300	350	440	490	560	15	510	200	250	230	230/400	5000/4000	18	85
350	300	490	440	610	15	560	200	250	230	230/400	5000/4000	18	85
350	450	490	590	610	15	560	200	250	230	400	8500	17	100
400	200	540	340	660	15	595	150	250	230	230*/400	4500/4500	24	85
400	400	540	540	660	15	580	150	250	230	400	5000	18	110
420	300	560	440	680	15	630	200	250	230	230/400	6000/5600	18	90
500	250	640	390	760	15	700	200	250	230	230/400	5000/4800	18	90
550	550	690	690	810	15	760	200	250	230	400	18000	15	145
560	350	700	490	820	15	770	200	250	230	400	9500	15	110
700	300	840	440	960	15	910	200	250	230	400	10000	15	120
710	350	850	490	970	15	920	200	250	230	400	12000	13	130
710	550	850	690	970	15	920	200	250	230	400	18000	12	162
820	200	960	340	1080	15	1030	200	250	230	400	14000	20	145
900	300	1040	440	1160	15	1110	200	250	300	400	12000	13	155
1000	500	1160	660	1340	15	1292	280	330	290	400	20000	11	252
1000	1075	1160	1235	1260	15	1210	440	510	470	400	25000	9	460
1200	125	1360	285	1460	15	1410	200	250	230	400	10000	13	185
1300	500	1460	660	1640	15	1592	280	330	290	400	25000	9	275

\*stored material

Other dimensions on request

**Example of order:**

Demagnetizer tunnel  
Designation

SAV 890.42 - 150 x 100 - 230V

SAV N° - A x B - Voltage

## POWER MODULE

SAV 876.99-PG

For **POWERFUL & OPTIMAL** demagnetization of all kind of pieces

### Use :

The power modules model PG are used to dramatically improve the performance of tunnel demagnetizers. This degaussing performance can easily be multiplied by 2 or 3 (see more). Demagnetizing powers up to 400 kA/m can be obtained with a specific coil.

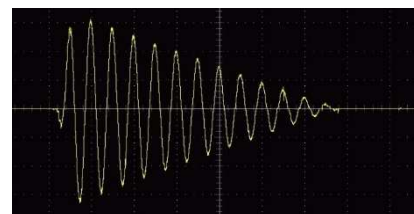
This solution is widely used before cleaning parts or before eddy current testing.

These power modules must be used with an appropriate degaussing tunnel.

The demagnetization of the parts can take place in two modes, the current pulse mode where the part is stationary and the continuous mode where the part moves through the tunnel. In some cases, the pulse method can be used with the moving part.

The degaussing tunnels are available in the same dimensions as the standard tunnels but with a suitable internal winding (for example model SAV 890.42F-250x250x180-P). We can also study all dimensions of demagnetizers.

Demagnetizers are designed to have high efficiency while maintaining a maximum lifetime. We pay great attention to the heating of the system, with a complete encapsulation of the coils and a permanent control of the temperature.



### Characteristics:

- Supplied in IP65 steel case
- Operation via 24V signals
- (No START/STOP button on the front panel as standard)
- Rotary main power ON/OFF button with LED
- Signaling lights
- Generator manufactured with standard components
- In-house set programming

### Option:

- Push button START/STOP cycle on steel cabinet
- Digital display on front panel
- Cooling fan and network filter
- Several programs available upon request
- Complete automation with conveyor
- Custom colors
- Remote control
- Study of all specific requests



Example of a machine with automatic placement of the parts in the degaussing tunnel for the degaussing cycle and return of the parts to the initial position.

Type	Voltage in Vac	Input frequency in Hz	Electrical protection in A	Dimensions en mm			Weight in kg
				L	H	P	
<b>876.99-PG15-230</b>	200...240	50 / 60	16	400	500	200	15,0
<b>876.99-PG20-230</b>	200...240	50 / 60	16	400	500	200	20,0
<b>876.99-PG25-400</b>	3x380...480	50 / 60	16...32	600	600	400	45,0
<b>876.99-PG40-400</b>	3x380...480	50 / 60	16...32	600	600	400	50,0
<b>876.99-PG50-400</b>	3x380...480	50 / 60	16...32	600	600	400	55,0
<b>876.99-PG70-400</b>	3x380...480	50 / 60	16...32	600	600	400	60,0

### Example of order:

Power module  
Designation

SAV 876.99 - PG15 - 230V  
SAV N° - type - voltage

## DEGAUSSING PLATE

For demagnetization of workpieces

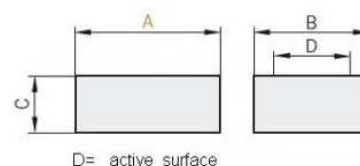
### Use :

For demagnetizing rings, small parts, punches and other tools in clean rooms, workshops and production lines.

### Characteristics:

Voltage : 230 V / 50 Hz  
 Protection : IP 20  
 Service : 100%  
 Max. power : 920 W - Approx. depth of magnetic field 50 mm

Dimensions in mm				Power VA	Weight in kg
A	B	C	D		
250	180	87	150	920	11
280	266	87	220	920	18
400	306	87	260	920	24



### Example of order:

Degaussing plate SAV 890.02 – 250

## MANUAL DEMAGNETIZER

For manual demagnetization

### Use:

For the surface demagnetization of large parts. Mobile use.

### Characteristics:

Lightweight system for easy use. 3 m cable with plug.

Voltage : 230 V / 50 Hz  
 Power : 220 VA  
 Protection : IP 42  
 Service : 30% - Automatic shutdown >50°C

Type	active surface	Power VA	Voltage	Deep magnetic field	Weight in kg
HD 1	105x75 mm	220	230 Vac	20 mm	1,9
HD 2	150x95 mm	220	230 Vac	40 mm	2,2



### Example of order:

Manual demagnetizer SAV 890.70 – HD2

## TOOL DEMAGNETIZER

For demagnetizing rods and tools

### Use:

Pour la démagnétisation de pièces, outils, poinçons, couteaux, fraises etc.

### Characteristics:

Lightweight plastic system with high power

Workshop use

Do not leave the power on all the time

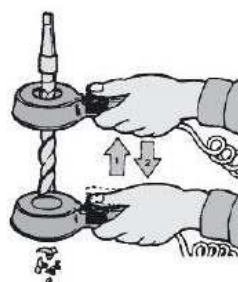
With thermal fuse and LED

Diameter through hole: 40 mm

Voltage: 230V / 50Hz

Service : 10%

Max. time under voltage : 10 sec



### Example of order:

Tool demagnetizer SAV 890.71



SAV 890.71

# DIGITAL PRECISION TESLAMETER

SAV 878.05

With hall sensor for precise measurement

## Use:

For the measurement of both large and small magnetic fields.

- Measurement of residual magnetic field on workpieces
- Measurement of magnetic flux on magnetic tool
- Measurement of magnetic flux on motors
- Measurement of magnetic flux on magnets



## Characteristics :

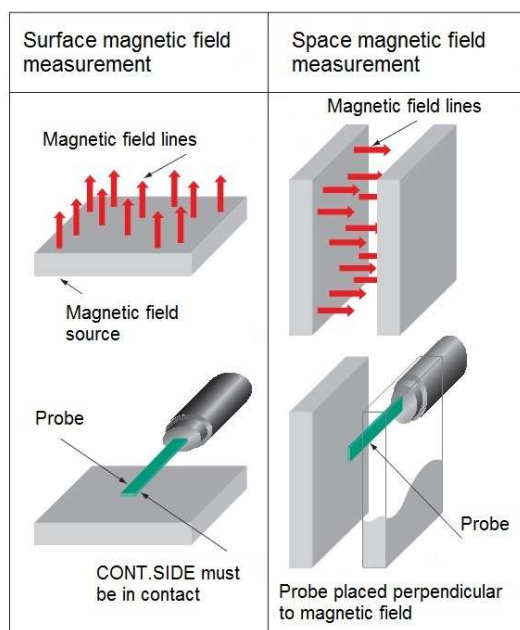
- Automatic measurement from 0 to 3000 mT (DC)
- High accuracy of measurement
- Fast sampling speed
- Measurement of magnetic field DC / AC (40 - 500 Hz)
- Reading in milli-Tesla (mT)
- Polarity indication N / S
- Automatic zero adjustment
- Rationalized use with long-life batteries (160h)
- Digital reading screen
- Waterproof membrane keyboard
- Probe easily changed without calibration (SAV 876.05 - S)
- Compact and lightweight. Protective cover
- Digital output of measurements to PC via USB port



USB connector



AC connector



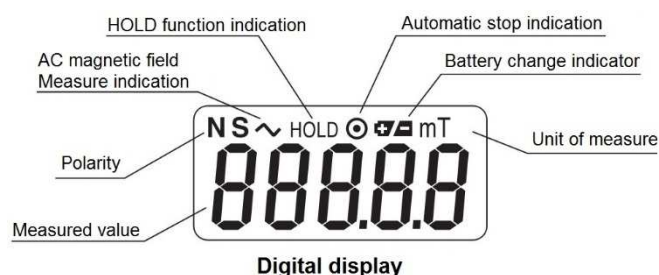
Measurement method



Axial probe 878.05-SA



Standard probe 878.05-S



Digital display

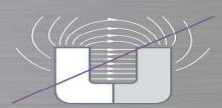
Mesure	DC magnetic field Polarity N - S	AC magnetic field 40 - 500 Hz	Output	Digital output (USB) / Analog output		
Unit	only mT		Indication	Measured value on digital display Polarity N / S		
Range	0 - 3000 mT		Tp°	0 - +40°C		
Mode	Mode	Measuring range*	Resolution	Accuracy	Power supply	Batteries type AA (1,5V) x4 Outdoor power supply 5 - 6 VCC (plug adaptor / USB)
	Range	DC x 1	0 - 200 mT	0,1 mT		
Resolution		DC x 10	200,1 - 3000 mT	1 mT	±(5% + 10)	Dimensions
	Accuracy	AC	0 - 300 mT	0,01 mT	±(3% + 5)	
Function		Reset Zero	Polarity	Options	Axial probe (878.05-SA) Calibration magnets	Accessories
	Hold (max. value)	Automatic standby (selection)	Weight	250 g (with batteries and probe)		

## Exemple de commande:

Digital teslameter

SAV 878.05





## MAGNETIC FIELD INDICATOR



SAV 878.05-99PC

**Use:**

For residual magnetic field and polarity measurement

**Characteristics:**

Detects magnetic field greater than 1 mT (10 Gauss)

Buzzer and LED (red=North - Green=South)

Compact (85x55x6 mm) and lightweight (25g)

Operates with CR2025 battery

**Example of order:**

Magnetic field indicator

SAV 878.05-99PC



Area contact

## MINI NEEDLE GAUSSMETER



SAV 486.04

**Use:**

For residual magnetic field and polarity measurement.

**Characteristics:**

This device is only used to measure a remanent magnetic field.

Measuring range: +/- 50 Gauss or +/- 20 Gauss Diameter: 65 mm

(calibration certificate on request)

Weight: 0.14 kg

**Example of order:**

Mini Gaussmeter

SAV 486.04-50



## POLARITY INDICATOR



SAV 878.05-99IP

**Use:**

To check polarity

**Characteristics:**

LED indication: green=South / red=North

Works with 4 LR44 batteries not included

Dimension: 143x22x19 mm

Weight : 30 gr

**Example of order:**

Polarity indicator

SAV 878.05-99IP



## CALIBRATION MAGNET



SAV 878.05-99SM

**Use:**

For the periodic calibration of gauss meters and tesla meters.

**Characteristics:**

Resistant permanent magnet in steel case.

Do not expose to heat and electromagnetic fields.

Type	Magnetic flux	Probe type	Passage in mm	Dimensions in mm		Weight in kg
				Ø	H	
878.05-99SM003	3 mT	transversal	7 x 2	43	50	0,5
878.05-99SM050	50 mT	transversal		43	40	0,4
878.05-99SM300	300 mT	transversal		43	30	0,3
878.05-99SM1000	1000 mT	transversal		73	74	2,0
878.05-99AM003	3 mT	axial	Ø13	70	60	1,4
878.05-99AM050	50 mT	axial		70	55	1,3
878.05-99AM300	300 mT	axial		70	50	1,2



Modèle SM



Modèle SM



Modèle AM



Modèle AM

**Example of order:**

Calibration magnet

SAV 878.05-99SM003

## MAGNETIC FORCE TESTER



SAV 486.40

**Use**

To measure magnetic force of clamping system

**Application:**

By turning the hexagonal key clockwise, an internal piston is moved which presses against the surface of the magnetic plate. When the device lifts off the magnetic plate, the needle indicates a value in Bar which corresponds to a force in daN/cm<sup>2</sup>.

Measuring range: 0 - 25 Bar so 0 - 25 daN/cm<sup>2</sup>.

Weight: 2.0 kg

Outer diameter: 50 mm

**Example of order:**

Magnetic force tester

SAV 486.40





## SPECIAL SOLUTIONS



**Automatic demagnetizing machine.**  
Demagnetization of large piece in automobile industry with complete protection according to standards.



**Special degaussing tunnel.**  
Special demagnetizer with electric box on upper face.



**Tunnel demagnetizer with conveyor belt.**



**Electric box examples.**  
Possibility to have the push button directly on the electric box or on a remote box. All our electrical boxes are made according to the standards in force and in the rules of art.



**Automatic demagnetization machine.**  
Complete automatic machine for demagnetization with remote control on articulated arm. This machine was made for a manufacturer's tool shop in aeronautics.



**Manual demagnetizer.**  
The tunnel demagnetizer is moving manually on handling rollers to go to the pieces placed on table.



**Demagnetization with cables.**  
Very well suited for demagnetizing parts on site or for large parts.



## REQUIREMENTS



Date .....

Company .....  
 Adress .....

Phone .....

Mobile .....

E-mail .....

Contact .....

### We wish an offer on the following equipment:

- Tunnel demagnetizer     Plate demagnetizer     Complete system with conveyor     Measuring instrument

**Expected offer date:** .....

**Expected delivery date:** .....

### WORKPIECES TO DEMAGNETIZE (send us some pictures and drawing for special parts)

- Single part     Assembly parts  
 Unitary workpieces     Multiple stored workpiece     Multiple bulk workpieces  
 Ring     Tube     Cylinder     Bar     Plate     Cube     Other

Maximum weight: .....kg

Unit of measurement: .....

Magnetism on parts: .....

Residual magnetism required: .....

### TRANSFER OF WORKPIECES

- Conveyor belt     Flexible conveyor chain     Roller conveyor     Robot     Manual transfer     Other  
 Individually transfer     In container     Other

Cycle time: .....

### MANUFACTURING PROCESS

#### Process before demagnetization:

- Handling with magnetic lifter     Work holding with magnetic tool     Magnetoscopic checking  
 Welding     Riveting     Punching     Cutting     Other

#### Process after demagnetization:

- Washing     Measurement     Assembly     Welding     Other

### SEND A LITTLE SKETCH OF APPLICATION



**ADVICE**

**DEVELOPMENT**

**PRODUCTION**

**SALES**

**SERVICE**

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