

# SUSPENDED OVERBAND MAGNETIC SEPARATORS



**SERIOUS  
ABOUT  
SERVICE**



**MALVERN**  

---

**ENGINEERING**

[www.malvern.co.za](http://www.malvern.co.za)

# SUSPENDED ELECTROMAGNETS



Malvern's comprehensive range of Tramp Metal Removal Magnets are of heavy duty construction. The magnets are powered by DC currents and oil cooled, suspended over conveyor belts and head pulleys in the material handling industry. Permanent magnets can also be provided for specific requirements, not recommended for heavy mining applications. The purpose of the magnet is to protect downstream equipment, by the extraction of rogue steel components such as liner plates, picks, roof bolts, hand tools, etc. which can enter the process plant and cause damage to equipment.

These magnets are available in Manual Cleaning and Self Cleaning configurations, and sizes range from small (400kg) to large (25000kg) units.

## APPLICATIONS

- For the removal of tramp metals from moving conveyor belts carrying bulk solids.
- For protecting downstream machinery

## Available Variants & Features

- Manual Cleaning Type
- Self Cleaning Type
- Aluminium Coils as Standard
- Copper Coils on special request
- Forced Cooled Units with External Heat Exchanger

## CLEANING TYPES



Self Cleaning Type



Manual Cleaning Type

# SUSPENDED PERMANENT MAGNETS

## APPLICATION

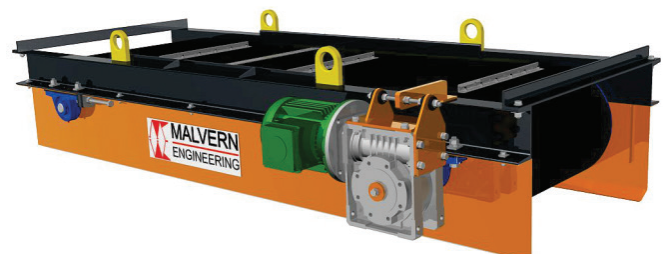
Recommended for light duty applications where material density and burden depths are low, such as textiles, sand, wood chips, recycling, concrete and asphalt. Ideally used for removal of steel shavings, nuts and bolts. Available in both Ferrite and Rare Earth magnets. Operating height not more than 300mm.

## CLEANING TYPES

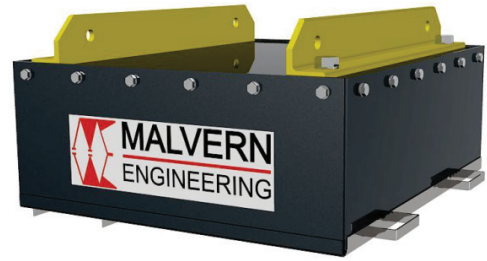
Manual Cleaning Permanent Magnet (MCPM)	Description	<ul style="list-style-type: none"> <li>○ Over a belt or vibrating feeder.</li> <li>○ Optional Stainless Steel Stripper Plate for tramp removal</li> </ul>
	Product Range	<ul style="list-style-type: none"> <li>○ P40</li> <li>○ P60</li> <li>○ P80</li> <li>○ P100</li> <li>○ P125</li> </ul>
Self Cleaning Permanent Magnet (SCPM)	Description	<ul style="list-style-type: none"> <li>○ Automatically cleans off tramp metal</li> <li>○ Rugged design</li> </ul>
	Product Range	<ul style="list-style-type: none"> <li>○ SCPM600 up to SCPM2000</li> </ul>

## AVAILABLE STANDARD MODELS

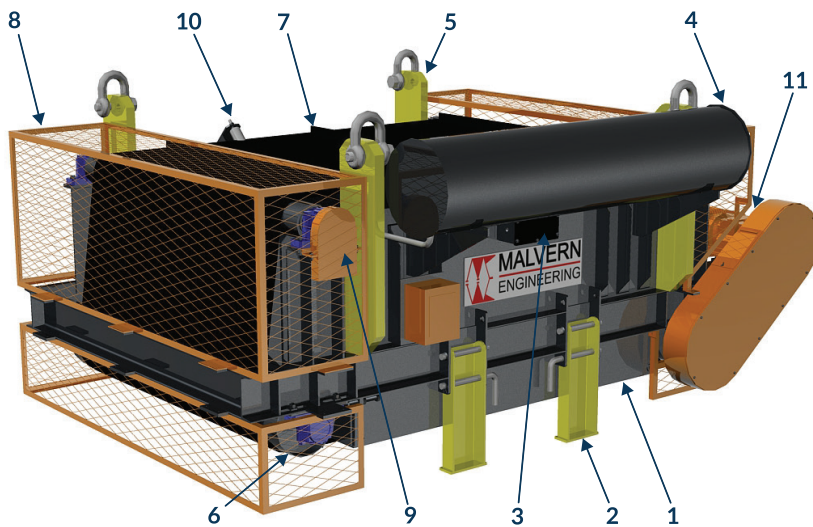
MAGNET MODEL	DIMS LxWxH (m)	WEIGHT IN 'kgs'	MOTOR POWER IN 'KW'
SCPM:600	2.0 x 1.4 x .65	1280	1.5
SCPM:800	2.2 x 1.4 x .65	1495	1.5
SCPM:1000	2.4 x 1.4 x .65	1719	1.5
SCPM:1200	2.6 x 1.4 x .65	1955	2.2
SCPM:1400	2.8 x 1.4 x .65	2210	2.2
SCPM:1500	2.9 x 1.4 x .65	2333	2.2
SCPM:1600	3.0 x 1.4 x .65	2465	3
SCPM:1800	3.2 x 1.4 x .65	2737	3
SCPM:2000	3.4 x 1.4 x .65	3015	3



MAGNET MODEL	DIMS LxWxH (m)	WEIGHT IN "kgs"
40 /40	0.4 x 0.4 x 0.18	130
40 /40	0.6 x 0.6 x 0.24	300
40 /40	0.8 x 0.8 x 0.30	630
40 /40	1.0 x 1.0 x 0.46	1197
40 /40	1.25 x 1.25 x 0.46	2309



## CONSTRUCTION



- 1 Heavy Duty Magnet Casing
- 2 Removable / Foldable Transport Legs
- 3 Terminal Box
- 4 Oil Expansion Tank
- 5 Suspension Lugs / Lifting Lugs
- 6 Pulleys
- 7 Rugged Heavy Duty Conveyor Belt
- 8 Guards . Nip Protection
- 9 Belt Slip Detection
- 10 Belt Guide Roller
- 11 Drive

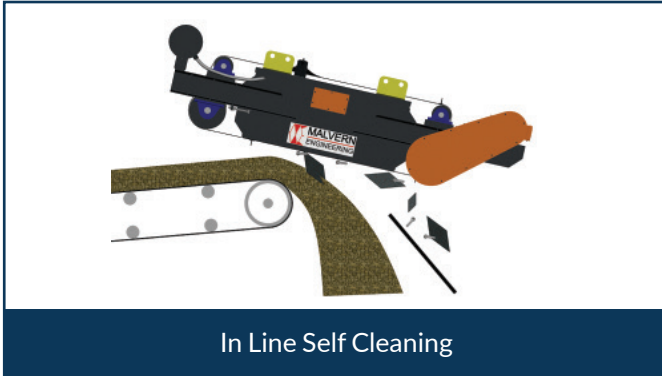
## FEATURES

- Coils - Specially designed from aluminium and copper with a 3 year warranty.
- Oil Expansion tank
- Control Panels - Standard Malvern design, or customised to special requirements.
- Guards - Provided with removable panels for easy access of greasing points.
- Heavy Duty Belt Design - Class 315/3 ply with quick release fastener & HD matting.
- Special Designs For Specific Applications
- Non Flammable Options - Silicon Oils.
- Air Cooled (Wagner)

## Optional Extra's

- Forced Oil Cooling
- Oil Cooled (standard) Air Cooled
- Pulley Nip Angles
- Quick Release Guards for Greasing Bearings
- Drive Options : V-belt / Hollow Shaft / Rubber Coupling
- Belt Slip Detection Device
- PT100 Thermocouple:  
4-20mA Output Signal
- Heavy Duty Adjustable Chain Slings

# MOUNTING POSITIONS



# REQUIRED SIZING DATA

Various factors can affect the size of the magnet required for the effective removal of tramp metal. It is imperative to provide accurate information to avoid selecting a magnet which is incorrectly sized for the application.

## INFORMATION REQUIRED TO DETERMINE THE EFFECTIVE MAGNET SIZE

Item No.	Information Required	Units	Information Input		
1	Burden Depth	mm			
2	Belt Width	mm			
3	MC or SC1 or SC2	Specify	MC	SC1	SC2
4	Tramp Metal	Description: Size / Type			
5	Material	Type			
6	Material	Size (Maximum)			
7	Material Density	Kg/m <sup>3</sup>			
8	Belt Speed	m/s			
9	Conveyor Capacity	TPH			
10	Components Required	Inline Over Head Pulley	Yes/No		
		Cross Belt Over head Pulley	Yes/No		
		Cross Belt Over Trough	Yes/No		

# SUSPENSION ARRANGEMENT

Tramp metal removal magnets are suspended using adjustable chain slings fitted with D-shackles and shortening hooks. The chain slings can be provided to suit customer requirements. Motorised trolleys can be supplied to aid automated moving and positioning of manual cleaning and self cleaning magnets.

# PRODUCT RANGE

Malvern's magnets standard range includes the following sizes. (Malvern Engineering has the capacity to design 'special' magnets to suit customer requirements.)

Size	60/60	75/75	90/90	105/105	120/120	135/135	150/150	165/165	180/180	195/195	210/210
Available Modal	MC / SC1 / SC2										
Dimensions (mm) MC	L=755	L=905	L=1095	L=1245	L=1440	L=1590	L=1740	L=1935	L=2130	L=2280	L=2939
	W=650	W=800	W=950	W=1100	W=1250	W=1400	W=1550	W=1700	W=1850	W=2000	W=2240
	H=450	H=520	H=670	H=716	H=820	H=847	H=900	H=1124	H=1290	H=1395	H=1480
Dimensions (mm) SC1	L=1950	L=2270	L=2700	L=2950	L=3285	L=2815	L=2965	L=3115	L=3335	L=3535	4150
	W=885	W=1035	W=1185	W=1335	W=1485	W=1635	W=1785	W=1935	W=2085	W=2235	W=2515
	H=460	H=520	H=665	H=705	H=815	H=840	H=955	H=1130	H=1280	H=1405	H=1460
Dimensions (mm) SC2	L=1920	L=2230	L=2585	L=2885	L=3175	L=2735	L=2925	L=3075	L=3225	L=3375	L=3900
	W=960	W=1110	W=1280	W=1455	W=1655	W=1825	W=2015	W=2165	W=2315	W=2515	W=2655
	H=460	H=520	H=665	H=705	H=815	H=840	H=955	H=1130	H=1280	H=1405	H=1460
MC Mass (kg)	350	510	895	1510	2250	3000	3930	4765	8455	10355	12135
SC1 / SC2 Mass (kg)	550	800	1415	2130	2990	3815	4835	7075	9565	11595	15890
Motor (kW) SC1	1.1	1.5	2.2	3.0	4.0	5.5	5.5	7.5	11	11	11
Motor (kW) SC2	1.1	1.1	1.5	2.2	3.0	3.0	4.0	5.5	7.5	7.5	7.5
Power (DC Watts) Cold	1270	1850	2746	4458	6276	7792	9847	11845	15986	18550	24196

# CONFIGURATIONS



Malvern Engineering (Pty) Ltd. has signed an agreement with Wagner Magnete GmbH & Co. of Germany to offer their range of products for the Sub-Saharan African market.

*The following products will be made available from the Wagner range and serviced by Malvern Engineering*

Magnetic Overbelt Separators	Used for the separation of medium to large ferrous materials in a continuous conveyor stream. Available in electro and permanent magnet configurations.	
Magnetic Pulleys	Used for driving conveyor belt systems to separate ferrous from bulk materials. Available in permanent magnet configurations, and electro magnetic in special case	
Magnetic Drums	Used for the separation of fine ferrous particles from flowing materials, ideally fed via a vibrating chute. Available in permanent magnet configurations, and electro magnetic in special cases.	
Non-Ferrous Separators	Used for the separation of non-ferrous metals by means of a high frequency magnetic field, created from magnets rotating at high speed generating eddy currents.	
Separator Magnets	Used for the separation of small to medium ferrous metals found in streams with low burden depth. Most efficient when used at working heights less than 350mm.	
Magnet Plates	Used in applications to attract ferrous or easily separated particles. Available in electro and permanent magnet configurations.	
Metal Detectors	Sensitivity adjustable sensor for detecting ferrous and non-ferrous metals for the reliable protection of valuable equipment. Divisible tandem construction allows for simple installation.	
Clamping Devices	Clamping systems for machining, removing and shaping machine tools as well as fastening devices for laser welding.	
Control Electronics	Magnetic control systems with pole reversal equipment together with drive and monitoring units.	
Demagnetising Units	For demagnetising steel components that may not have any residual magnetism.	
Lifting Magnets	For the handling and transport of steel products. For the handling technology of magnetic gripping and robot systems	
Holding Magnets	For handling technologies, the construction of jigs and fixtures and magnetic gripper systems for robot systems	
Magnetic Separators	For separating ferrous parts from bulk and transporting goods in the processing and recycling industries.	
Non-ferrous Separators	For the separation and recuperation of high grade non-ferrous metals such as aluminium and copper	
Metal Detectors	For controlling delivery flows, detecting metallic foreign matters and for the protection of valuable plant components	



# SITE LOCATIONS



**MALVERN**  
**ENGINEERING**

MALVERN ENGINEERING WORKS (Pty) Ltd

Tel +27 11 873 9010  
Fax +27 11 873 9596  
info@malvern.co.za

15 Indianapolis Blvd,  
Raceway Industrial Park  
Germiston, 1400, South Africa

PO Box 75002, Gardenview, 2047

[www.malvern.co.za](http://www.malvern.co.za)