

Tools for Sanding and Polishing

# About Mirka

MIRKA LTD is a family-owned Finnish company and a world leader in abrasives technology innovation. We are offering a complete range of technically superior, high quality abrasives, innovatively designed tools, complete sanding systems and supplementary products. This total innovative solution delivers real benefits to customers in terms of speed, first-class efficiency, surface finish quality and cost effectiveness, even when tackling the most demanding applications.

Mirka is the first company in its sector to obtain the three most important quality standards. The production process guarantees reliable quality by following the ISO 9001 quality assurance system. The OHSAS 18001 occupational health and safety management system ensures a high level of work safety. The ISO 14001 environmental management system proves that we consider the environment in all our activities.

95 percent of our products are exported and sold across the globe through our subsidiaries and importers.



Read more: www.mirka.com



# Corporate Responsibility

#### CONTINUOUS IMPROVEMENT TOWARDS SUSTAINABILITY.

Changing conditions inspire us to improve and grow our business. We see that our customers are as interested in sustainability as we are. This is why our product development is focused on innovating the best sustainable products and systems, while continually improving our own environmental performance.

Our business is focused on providing the best surface finishing preparation tools and systems to customers. To be the most sustainable finishing systems provider, we are digging deep down to the core of our company to figure out what it really means to be sustainable. We have accomplished a great deal already and have many more initiatives we will take on in the future.

For people working at Mirka, it has always been clear to not waste financial or material resources – of our own or those of our customers. We find it is equally clear to preserve the planet's resources. Sustainability is a natural extension of this approach. It means taking the economy, the earth, and people into consideration when we make business decisions – now and for future generations.

We are continuously looking for opportunities to reduce our environmental footprint – this aligns with our company values and also cuts costs. We have worked hard to conserve energy and raw materials, reduce waste, increase recycling, and decrease the use of persistent chemicals. We are developing healthier, safer, and more efficient products

and processes so that our customers and employees will benefit. For example, our dust-free sanding systems help protect the lungs of workers while giving a cleaner and better surface finish.



# CONTENT

Mirka Power Tools	4
Mirka® DEROS Design Awards	5
2 + 1 Year Warranty	6
After Sales and Service	7
SANDING	8
ELECTRIC SANDERS	9
Mirka® DEROS Mirka® DEROS Technical Features	10
Mirka® DEROS 125 mm (5") and 150 mm (6")	11 12
Accessories for Mirka® DEROS	13
Mirka® CEROS	14
Mirka® CEROS 32 mm (1 1/4"), 77 m (3"), 125 mm (5") and 150 mm (6")	15
Accessories for Mirka® CEROS	16
CORDLESS SANDERS Mirka® AROS-B/AOS-B 32 mm	17 18
Accessories for Mirka Cordless Sanders	18
PNEUMATIC SANDERS	19
MIRKA® PROS	20
Mirka® PROS 125 mm (5") and Mirka® PROS150 mm (6")	21
Mirka® ROS 77 mm (3")	22
Mirka® ROS 125 mm (5") Mirka® ROS 150 mm (6")	23 24
Mirka® ROS 150 mm (6") and 32 mm (1 1/4")	25
Pneumatic Two-handed Sanders	26
Mirka® ROS2 125 mm (5") and Mirka® ROS2 150 mm (6") and 200 mm (8")	27
Pneumatic Orbital Sanders	28
Mirka® OS 75 x 100 mm (3 x 4") and Mirka® OS 81 x 133 mm (3 x 5")	29
Mirka® OS 70 x 198 mm (3 x 8") and Mirka® AOS 32 mm (1 1/4") Accessories for Pneumatic Sanders	30 31
BACKING PADS, INTERFACES AND PAD SAVERS	32
Backing Pads, Grip	32
Backing Pads for Net Sanding, Grip	33
Backing Pads, PSA	34
Backing Pads for OS Sanders	34
Interface for OS Sanders Pad Saver Strips for OS Sanders	35 35
Pad Saver Discs	36
Pad Saver Strips	37
Vacuum Block Discs	37
Interface for Net Sanding	38
Interface for Sanding Blocks	38
WALL SANDERS Miro 955°	39 40
Miro 955° and Miro 955°-S 225 mm	41
Accessories for Miro 955° and Miro 955°-S	42
Decosander®	43
Decosander® Package Content	44
Accessories for Decosander® <b>DUST EXTRACTORS</b>	44
Mirka® Dust Extractor 1230	45 46
Mirka® Dust Extractor 915 and 1025	47
Accessories for Dust Extractors	48
HAND SANDING	49
Sanding Blocks, Grip	49
Curved Pads for Sanding Blocks Accessories for Sanding Blocks	50 50
Sanding Pads	51
Sanding Blocks	51
POLISHING	52
ELECTRIC POLISHERS	52 53
Mirka® PS 1437 150 mm (6") and Mirka® PS 1524 180 mm (7")	54
Backing Pads for Electric Polishers, Grip	55
PNEUMATIC POLISHERS	56
Mirka® ROP" 77 mm (3"), 125 mm (5")	57
Mirka® RP 77 mm (3")  Racking Pads for Pheumatic Polishers Grin	58 58

#### **MIRKA POWER TOOLS**

Mirka has expanded from a leading abrasive maker into a developer and manufacturer of complete sanding systems. As an integral part of that, Mirka's Power Tools unit is focused on manufacturing, designing, developing and marketing advanced tools for professional sanding and polishing, providing outstanding benefits to the users.

Ergonomic features together with an outstanding design and user-friendliness are putting Mirka's high quality professional tools as a state-of-the-art on the market. The optimized ergonomics enable a comfortable grip, while the low profile design gives a high maneuverability and helps deliver precise and efficient sanding performance.

Because of the excellent ergonomic design, the machines can be used for long periods without fatigue. For example, gripping the machine is more controlled and relaxed thanks to extra space for the ring and little finger. The unique symmetrical design makes it just as comfortable whether it's being used in the left hand or the right hand and the longer body provides the option of a two-hand grip.

Mirka's tool range consists of electric and pneumatic sanding machines, polishing machines, hand blocks and industrial dust extractors, along with equipment for the sanding of walls and ceilings. Together with a complete range of spare parts, backing pads and other accessories, Mirka is offering you total sanding and polishing solutions.



# MIRKA® DEROS DESIGN AWARDS

The innovative electric random orbital sander Mirka DEROS, designed in collaboration with the Swedish design company Veryday, is the winner of the Red Dot Industrial Design Award 2014 with the jury statement "This electric sander impresses with its compact size and pronounced ergonomic qualities, which together enable extremely safe operation of the device."

Mirka DEROS also received the IF Product Design Award 2014 for its outstanding performance, innovative design, powerful performance and intelligent features.

Mirka DEROS is developed and made in Finland.









#### 2+1 YEAR WARRANTY

# for all Mirka Sanders, Polishers and Dust Extractors

The new 2+1 warranty, starting from the date of purchase, applies for all Mirka sanders, polishers and dust extractors. The new warranty terms are affected as of 01.01.2015, including Mirka sander and polisher purchased on or after 01.10.2012 and Mirka dust extractor (915-series and 1025) purchased on or after 01.01.2015.

The prerequisite for this +1 year warranty extension is that the tool has to be registered on a Mirka website within 30 days from purchase. Warranty certificates are machine and customer dependent; each tool must be registered separately. Registration and additional warranty cannot be transferred to another person or company. If a problem occurs with a Mirka tool caused by a manufacturing defect material or by workmanship; Mirka will repair your tool free of charge in accordance with the warranty terms.



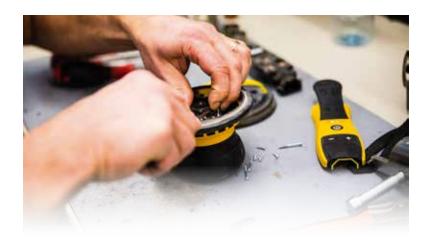
#### AFTER SALES AND SERVICE

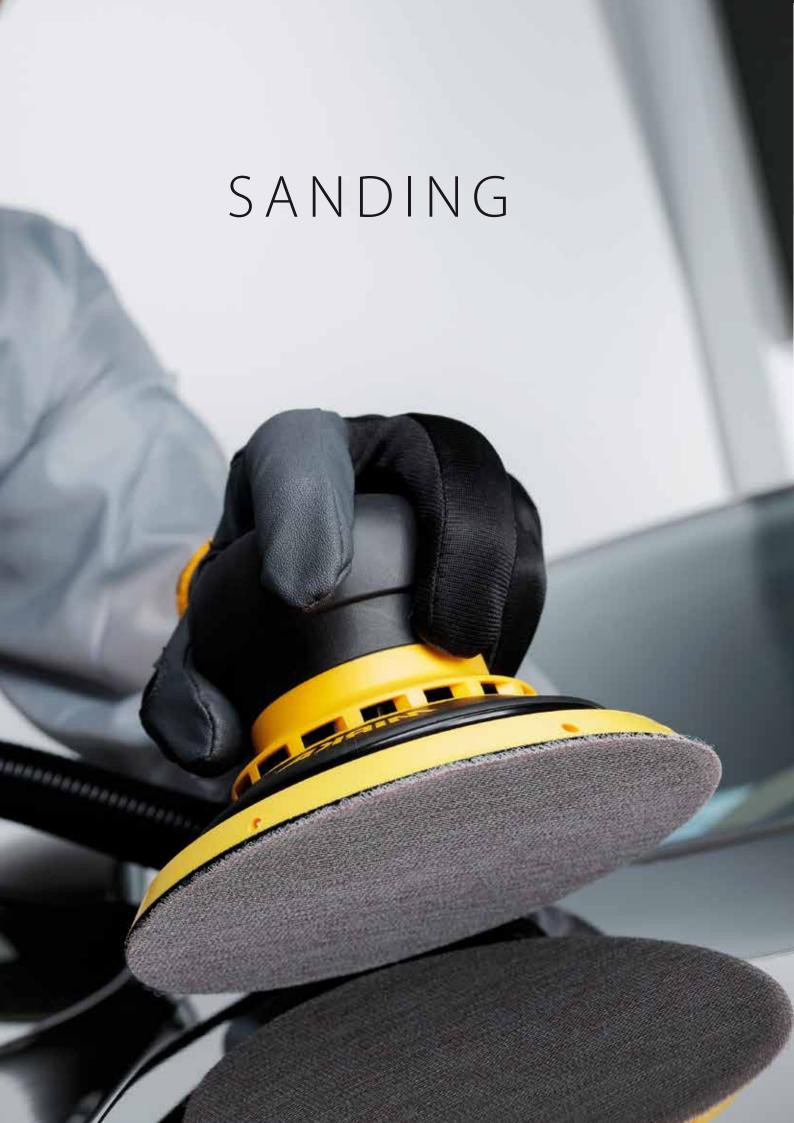
#### **Service Centers**

Mirka is co-operating with professional authorised service centers, locally or regionally. In order to keep the tool warranty valid and ensure optimal tool safety and function, the service on Mirka branded tools must be carried out by a Mirka authorized service centre. To locate your local Mirka authorised service centre, contact Mirka Customer service in your country or region or your Mirka dealer.

Any maintenance or repair work requiring the motor housing to be opened may only be carried out by an authorized service centre.

If a problem occurs with a MIRKA Tool included in these warranty terms and the problem is caused by a manufacturing defect material or by workmanship; MIRKA will repair your tool free of charge in accordance with the warranty terms and conditions stated herein.









#### **ELECTRIC SANDERS**

Mirka electric sanders are unique, lightweight and equipped with a compact design. The optimized ergonomics make it comfortable to grip and easy to use, while the low profile design gives a high manoeuvrability and helps to deliver precise and efficient sanding performance. The innovative

brushless electric motor is powerful enough to maintain a constant speed under load. Mirka's electric sanders are also virtually silent in operation, cheap to run and require minimal maintenance.





#### **Energy savings compared to pneumatic tools**

#### Example

When used 4 hours/day with average energy costs of  $0.15 \in /kWh$  (this price varies from country to country): DEROS cost calculation:(Power 0.4) x (4.0 hrs) x (kWh cost  $0.15 \in ) = 0.24 \in /day$ 

Pneumatic machine calculation:(Power 3.6) x (4.0 hrs) x (kWh cost 0.15) = **2.16 \in/day.** (Compressor with a power of 3,6 kW is needed, because the pneumatic machine is using over 400/liter/min and such power is needed to generate the compressed air)

Cost evaluation after one month (about 20 days)  $0.24 \in x$  20 days = 4.80 €  $2.16 \in x$  20 days = 43.20 €

Possible monthly savings: 38.40 €

Note! Into this calculation, we have not taken into consideration investment and maintenance costs of compressors



#### MIRKA® DEROS - FLECTRIFYING FFFICIENCY

Plugs into an ordinary power outlet to deliver extraordinary performance. The first ever electric sanding machine with a brushless motor and no external power supply, it is also the lightest electric machine on the market.

Thanks to its high efficiency brushless motor, the Mirka DEROS also has plenty of power to get the job done quickly. Indeed, its performance is actually comparable to a conventional 500 W electric machine and that ensures it maintains a constant speed even under heavy load. The innovative design of the brushless motor means there are few wearing components so it is low maintenance, ultra-reliable and has a long lifespan. In contrast to conventional electric machines, the DEROS also features a 'closed construction' which prevents dust from entering the motor where it can cause wear and damage.

Mirka's trademark attention to detail has created a machine packed with groundbreaking features. This includes a soft start function, a built in electronic motor brake and a smooth, easy to operate lever to control motor speed. A pad brake that also acts like a seal minimizes the air leakage between the pad and the shroud. This makes the dust extraction more efficient. In addition, the power cord is removable and interchangeable.

There are plenty more powerful arguments for choosing an electric Mirka DEROS over a pneumatic machine. There is no need for a compressor, it doesn't require oiling and there's no risk of job contamination from a compressed air supply. Indeed, with its industry leading list of features and benefits, the DEROS is now the convenient solution to use anywhere a power source is available.

Mirka® DEROS electric sander, launched in 2013 and already used by thousands of professionals, has been updated with clever features. A vibration sensor has been added to the tool and there is now a possibility to connect the Mirka DEROS sander to a Mirka App via Bluetooth. For more information on the App functionality and availability in your country, please visit www.mirka.com.















# Mirka DEROS

#### TECHNICAL FEATURES



# Mirka® DEROS 125 mm (5") and 150 mm (6")





#### Mirka® DEROS in case offers a 2-in-1 solution

Mirka DEROS delivered in Mirka Case includes both 125 mm and 150 mm pad, which enables the operator to choose the pad size according to surface size.













Technical data	Mirka® DEROS 550CV	Mirka® DEROS 5650CV	Mirka® DEROS 625CV	Mirka® DEROS 650CV	Mirka® DEROS 680CV
Code	MID5502022	MID5650202CA	MID6252022	MID6502022	MID6802022
Size	125 mm (5")	150 mm (6")	150 mm (6")	150 mm (6")	150 mm (6")
Mains frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Power input	350 W	350 W	350 W	350 W	350 W
Voltage mains supply	220 - 240 V~	220 – 240 V~	220 - 240 V~	220 - 240 V~	220 - 240 V~
Speed	4,000 - 10,000 rpm	4,000 - 10,000 rpm	4,000 - 10,000 rpm	4,000 - 10,000 rpm	4,000 - 10,000 rpm
Orbit	5.0 mm	5.0 mm	2.5 mm	5.0 mm	8.0 mm
Weight	1.0 kg	1.0 kg	1.0 kg	1.0 kg	1.1 kg
Height	95 mm	95 mm	95 mm	95 mm	95 mm
Noise level LpA	71 dB(A)	71 dB(A)	71 dB(A)	71 dB(A)	71 dB(A)
Vibration level	3.2 m/s <sup>2</sup>	3.4 m/s <sup>2</sup>	2.4 m/s <sup>2</sup>	3.4 m/s <sup>2</sup>	3.5 m/s <sup>2</sup>
Size of pad	125 mm (5")	150 mm (6"), 125 mm (5")	150 mm (6")	150 mm (6")	150 mm (6")
Packaging	Cardboard box	Mirka case	Cardboard box	Cardboard box	Cardboard box

#### **Accessories** for Mirka® DEROS





<sup>\*</sup> The linking technique of the plastic case allows the case to be linked to other similar cases.





#### **MIRKA® CEROS**

Being electric makes Mirka CEROS conventional and practical to use in any location where a power source is available – even in remote areas or where space is severely restricted.

Mirka CEROS is also a very safe tool to work with. The machine is 22 V (low voltage) which is important when e.g. wet sanding gel coat with Abralon. The optimized ergonomics ensure it's comfortable to grip, while the low profile design and very light

weight allow easy manoeuvrability and greater control over the end finish. Moreover, Mirka CEROS has really low vibration values.

It requires no special pads and is compatible with Mirka's regular 125 mm and 150 mm backing pads. The ultra-reliable hermetic brushless motor is powerful enough to maintain a constant speed under load. It is also virtually silent in operation and cheap to run. It has few wearing components so the need for maintenance is minimized and its lifespan is long.







# Mirka® CEROS 32 mm (1 1/4"), 77 m (3"), 125 mm (5") and 150 mm (6")







Technical Data	Mirka® CEROS 150NV	Mirka® CEROS 325CV	Mirka® CEROS 550CV
Code	MIM1501011	MIM3252011 MIM3252011WP	MIM5502011 MIM5502011CA
Size	32 mm (1 ¼")	77 mm (3")	125 mm (5")
Power input	50 W	350 W	350 W
Voltage mains supply	90 – 240 V ~	90 – 240 V ~	90 – 240 V ~
Voltage to sander	22 V <del>===</del>	22 V ===	22 V <del></del>
Mains frequency	50/60 Hz	50/60 Hz	50/60 Hz
Speed	4,000 – 10,000 rpm	4,000 – 10,000 rpm	4,000 – 10,000 rpm
Orbit	5.0 mm	2.5 mm	5.0 mm
Weight	0.59 kg	0.70 kg	0.90 kg
Noise level LpA	58 dB	68 dB	68 dB
Vibration level	1.8 m/s <sup>2</sup>	5.2 m/s <sup>2</sup>	2.7 m/s <sup>2</sup>
Size of pad	32 mm (1 1/4")	77 mm (3")	125 mm (5")
Packaging	Cardboard box	Cardboard box MIM3252011WP No power supply included	MIM5502011 packed in cardboard box MIM5502011CA packed in plastic case





Technical Data	Mirka® CEROS 625CV	Mirka® CEROS 650CV
Code	MIM6252011	MIM6502011 MIM6502011CA MIM6502011WP
Size	150 mm (6")	150 mm (6")
Power input	350 W	350 W
Voltage mains supply	90 – 240 V~	90 – 240 V~
Voltage to sander	22 V <del></del>	22 V <del></del>
Mains frequency	50/60 Hz	50/60 Hz
Speed	4,000 – 10,000 rpm	4,000 – 10,000 rpm
Orbit	2.5 mm	5.0 mm
Weight	0.9 kg	0.9 kg
Noise level LpA	68 dB	68 dB
Vibration level	2.71 m/s <sup>2</sup>	2.82 m/s <sup>2</sup>
Size of pad	150 mm (6")	150 mm (6")
Packaging	Cardboard box	MIM6502011 packed in cardboard box MIM6502011CA packed in plastic case MIM6502011WP No power supply included









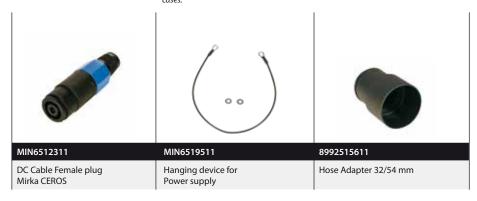
#### **Accessories** for Mirka® CEROS







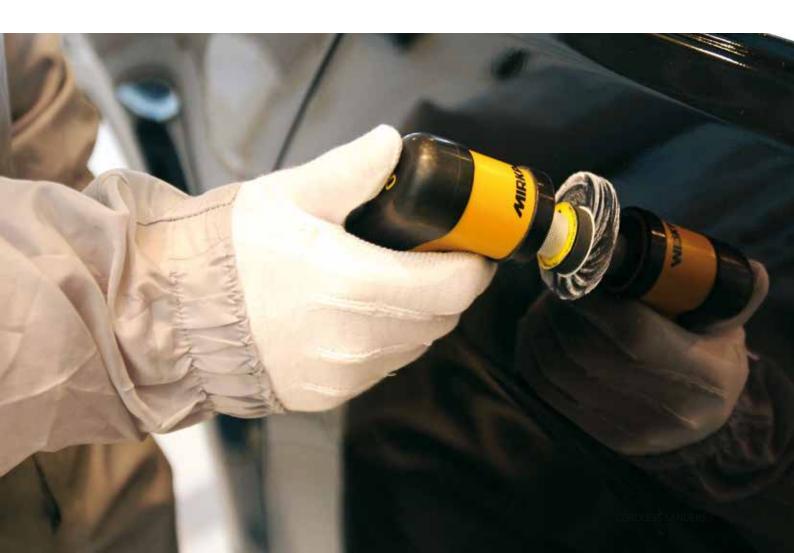
\* The linking technique of the plastic case allows the case to be linked to other similar cases.





small brushless battery driven spot repair sanders.

These ergonomically designed strong cordless sanders enable a long working time as the battery lasts up to 16 hours in industrial use. When using a cordless sander the operator can freely move around the object. The sanders do not require oiling, which removes the risk of contamination from compressed air supply.



#### Mirka® AROS-B / AOS-B 32 mm (1 1/4")



Technical Data	Mirka® AROS-B 150NV	Mirka® AOS-B 130NV
Code	8991150311	8991230311
Voltage	10.8 VDC	10.8 VDC
Speed	4,000 – 8,000 rpm	4,000 – 8,000 rpm
Orbit	5.0 mm ( <sup>3</sup> / <sub>16</sub> ")	3.0 mm ( <sup>1</sup> / <sub>8</sub> ")
Size of backing pad	Ø 32 mm (1 ½")	Ø 32 mm (1 ½")
Degree of protection	III	III

Battery charger	BCA 108
Input	100 – 240 VAC, 50/60 Hz
Charging time	< 40 min (2.0 Ah)
Storage temperature range	-20 °C80 °C
Charging temperature	-0 °C40 °C
Dimension	191 x 102 x 86 mm
Net weight	0.66 kg (1.46 lbs)
Degree of protection	II / 🖸

Battery pack	BPA 10820
Туре	Rechargeable Li-ion 3I(NCM)R19/65
Battery voltage	10.8 VDC
Capacity	2.0 Ah 21.6 Wh

#### **Accessories** for Mirka Cordless Sanders







#### **MIRKA® PROS**

#### - FOR PROFESSIONAL PERFORMANCE

Mirka's Pneumatic Random Orbital Sander – Mirka PROS is developed in-house by the Mirka's industry leading design team. It is packed with clever features and attention to detail which has created an efficient and effective sanding tool that is perfect for professional operators.

Mirka PROS has been specially developed to produce maximum dust extraction, even at low suction power, thanks to a wider dust suction outlet in the machine housing which substantially improves dust suction efficiency. The innovative

features continue with a 'brake seal' designed to deliver a variety of valuable performance benefits. For example, in contrast to conventional pneumatic random orbital sanders, the brake seal on the PROS makes the backing pad oscillate rather than free spin when holding the machine in air. This eliminates the possibility of causing deep marks in the surface when the fast rotating abrasive first touches the job. In addition, as soon as the tool is removed from the work surface the brake seal immediately brakes the 'rotation speed' of the backing pad. The long-life brake seal also contributes to improved dust extraction efficiency by minimising internal suction leakage.

#### WIDER DUST SUCTION INLET

Mirka PROS has been specially developed to produce maximum dust extraction, even at low suction power, thanks to a wider dust suction outlet in the machine housing.





## **Mirka® PROS** 125 mm (5")







Technical data	Mirka® PROS 550CV	Mirka® PROS 550DB
Code	8995550111	8995550211
Size	125 mm (5")	125 mm (5")
Weight	0.89 kg	0.89 kg
Air consumption	485 l/min	485 l/min
Working pressure	6.2 bar	6.2 bar
Noise level	74.1 dBA	81 dBA
Vibration level	2.4 m/s <sup>2</sup>	2.8 m/s <sup>2</sup>
Speed	12,000 rpm	12,000 rpm
Orbit	5.0 mm	5.0 mm
Size of pad	125 mm 28 holes 5/16" med + pad saver	125 mm 28 holes 5/16" med + pad saver
Dust system	Central vacuum ready	Dustbag

#### **Mirka® PROS** 150 mm (6")











Technical data	Mirka® PROS 625CV	Mirka® PROS 650CV	Mirka ® PROS 650DB	Mirka® PROS 680CV
Code	8995625111	8995650111	8995650211	8995680111
Size	150 mm (6")	150 mm (6")	150 mm (6")	150 mm (6")
Weight	0.90 kg	0.93	0.93 kg	0.95
Air consumption	485 l/min	485 l/min	485 l/min	485 l/min
Working pressure	6.2 Bar	6.2 Bar	6.2 Bar	6.2 Bar
Noise level	72.9 dBA	74.8 dBA	78 dBA	75.9 dBA
Vibration level	2.3 m/s <sup>2</sup>	3.2 m/s <sup>2</sup>	3.0 m/s <sup>2</sup>	3.4 m/s <sup>2</sup>
Speed	12,000 rpm	12,000 rpm	12,000 rpm	12,000 rpm
Orbit	2.5 mm	5.0 mm	5.0 mm	8.0 mm
Size of pad	150 mm 48 holes 5/16" med + pad saver	150 mm 48 holes 5/16" med + pad saver	150 mm 48 holes 5/16" med + pad saver	150 mm 48 holes 5/16" med + pad saver
Dust system	Central vacuum ready	Central vacuum ready	Dustbag	Central vacuum ready



# **Mirka® ROS** 77 mm (3")

Technical data	Mirka® ROS 325NV
Code	8993320111
Size	77 mm (3")
Weight	0.51 kg
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	77 dBA
Vibration level	3.04 m/s <sup>2</sup>
Power	209 W
Speed	12,000 rpm
Orbit	2.5 mm
Size of pad	77 mm Grip NH 1/4"
Dust system	Non vacuum



Technical data	Mirka® ROS 325CV
Code	8993325111
Size	77 mm (3")
Weight	0.57 kg (sander) / 0.40 kg (hose)
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	75 dBA
Vibration level	3.2 m/s <sup>2</sup>
Power	209 W
Speed	12,000 rpm
Orbit	2.5 mm
Size of pad	77 mm Grip 6 H 1/4" + Pad Saver
Dust system	Central vacuum ready



Technical data	Mirka® ROS 325DB
Code	8993425111
Size	77 mm (3")
Weight	0.60 kg (sander) / 0.60 kg (hose + dustbag)
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	84 dBA
Vibration level	2.66 m/s <sup>2</sup>
Power	209 W
Speed	12,000 rpm
Orbit	2.5 mm
Size of pad	77 mm Grip 6 H 1/4"+ Pad Saver
Dust system	Dustbag





# **Mirka® ROS** 125 mm (5")

echnical data	Mirka® ROS 550CV
Code	8992700111
Size	125 mm (5")
Weight	0.81 kg
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	76 dBA
Vibration level	2.77 m/s <sup>2</sup>
Power	209 W
Speed	12,000 rpm
Orbit	5.0 mm
Size of pad	125 mm Grip 28 H 5/16" med. + Pad Saver
Dust system	Central vacuum ready

Technical data	Mirka® ROS 525CV
Code	8992725111
Size	125 mm (5")
Weight	0.78 kg
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	78 dBA
Vibration level	2.29 m/s <sup>2</sup>
Power	209 W
Speed	12,000 rpm
Orbit	2.5 mm
Size of pad	125 mm Grip 28 H 5/16" med. + Pad Saver
Dust system	Central vacuum ready

Technical data	Mirka® ROS 550DB
Code	8992800111
Size	125 mm (5")
Weight	0.83 kg (sander) / 0.60 kg (hose+dustbag)
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	83 dBA
Vibration level	2.11 m/s <sup>2</sup>
Power	209 W
Speed	12,000 rpm
Orbit	5.0 mm
Size of pad	125 mm (5") Grip 28 H 5/16" med. + Pad Saver
Dust system	Dustbag



## Mirka® ROS 150 mm (6")

Technical data	Mirka® ROS 650CV
Code	8993000111
Size	150 mm (6")
Weight	0.85 kg
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	78 dBA
Vibration level	2.48 m/s <sup>2</sup>
Power	209 W
Speed	12,000 rpm
Orbit	5.0 mm
Size of pad	150 mm Grip 48 H 5/16" med. + Pad Saver
<b>Dust system</b> Central vacuum ready	



Technical data	Mirka® ROS 625CV
Code	8993025111
Size	150 mm (6")
Weight	0,85 kg
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	79 dBA
Vibration level	2.14 m/s <sup>2</sup>
Power	209 W
Speed	12,000 rpm
Orbit	5.0 mm
Size of pad	150 mm Grip 48 H 5/16" med. + Pad Saver
Dust system Central vacuum ready	







# Mirka® ROS 150 mm (6") and 32 mm (1 1/4")

Technical data	Mirka® ROS 650DB
Code	8993200111
Size	150 mm (6")
Weight	0.90 kg (sander) / 0.60 kg (hose+dustbag)
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	83 dBA
Vibration level	2.0 m/s <sup>2</sup>
Power	209 W
Speed	12,000 rpm
Orbit	5.0 mm
Size of pad	150 mm Grip 48 H 5/16" med. + Pad Saver
Dust system	Dustbag



Technical data	Mirka® ROS 625DB
Code	8993225111
Size	150 mm (6")
Weight	0.90 kg (sander) / 0.60 kg (hose+dustbag)
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	84 dBA
Vibration level	2.11 m/s <sup>2</sup>
Power	209 W
Speed	12,000 rpm
Orbit	2.5 mm
Size of pad	150 mm Grip 48 H 5/16" med. + Pad Saver
Dust system	Dustbag



Technical data	Mirka® ROS 150NV
Code	8992450111
Size	32 mm (1 ¼")
Weight	0.49 kg
Air consumption	425 l/min
Working pressure	6.2 Bar
Noise level	71 dBA
Vibration level	2.33 m/s <sup>2</sup>
Power	112 W
Speed	12,000 rpm
Orbit	5.0 mm
Size of pad	1 pcs 32 mm PSA soft Quick Lock 1 pcs 32 mm Grip soft Quick Lock
Dust system	Non vacuum





## PNEUMATIC TWO-HANDED SANDERS

Mirka's pneumatic two-handed sanders combine heavy duty performance and durability with low profile, light weight, ergonomic styling which makes it easy to handle and results in excellent stability during operation. The optional side handle (included in the kit) provides an extra gripping point to further increase control and reduce effort. This is an excellent machine for fast cutting in more demanding sanding operations.



#### Mirka® ROS2 125 mm (5")



Technical data	Mirka® ROS2-510CV
Code	8994510111
Size	125 mm (5")
Weight	1.2 kg
Air consumption	594 l/min
Working pressure	6.2 Bar
Vibration level	3.5 m/s <sup>2</sup>
Power	343 W
Speed	12,000 rpm
Orbit	10.0 mm
Size of pad	125 mm (5") Grip 28 H 5/16" med. + Pad Saver
Dust system	Central vacuum ready

## Mirka® ROS2 150 mm (6") and 200 mm (8")



Technical data	Mirka® ROS2-650CV	Mirka® ROS2-610CV	Mirka® ROS2-850CV
Code	8994650111	8994610111	8994850111
Size	150 mm (6")	150 mm (6")	200 mm (8")
Weight	1.2 kg	1.3 kg	1.5 kg
Air consumption	594 l/min	594 l/min	651 l/min
Working pressure	6.2 Bar	6.2 Bar	6.2 Bar
Vibration level	3.0 m/s <sup>2</sup>	3.4 m/s <sup>2</sup>	4.87 m/s <sup>2</sup>
Power	343 W	343 W	343 W
Speed	12,000 rpm	12,000 rpm	10,000 rpm
Orbit	5.0 mm	10.0 mm	5.0 mm
Size of pad	150 mm (6") Grip 48 H 5/16" med. + Pad Saver	150 mm (6") Grip 48 H 5/16" med. + Pad Saver	200 mm (8") Grip 89 H + Pad Saver
Dust system	Central vacuum ready	Central vacuum ready	Central vacuum ready

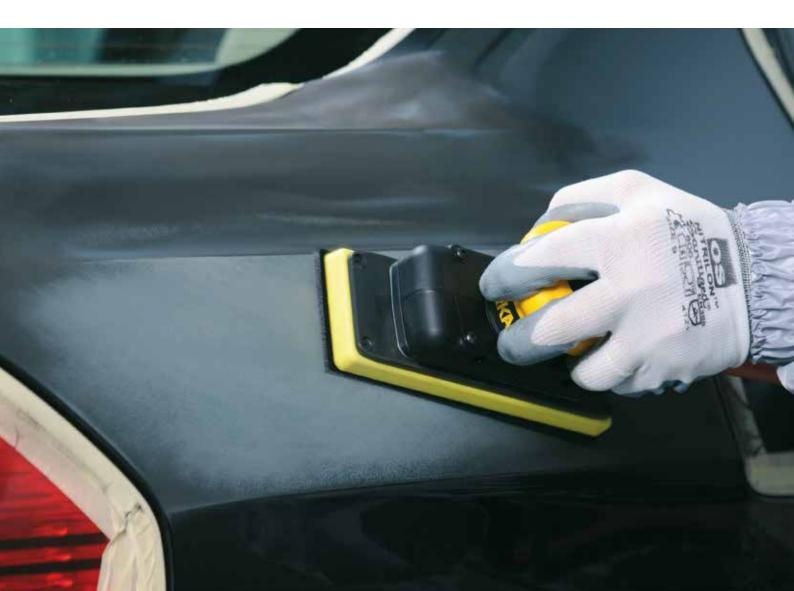




# PNEUMATIC ORBITAL SANDERS

Mirka pneumatic orbital sanders are ergonomically designed for guaranteed user comfort and constructed of lightweight, hi-tech, precision molded composite materials that provide outstanding strength and durability. Mirka pneumatic orbital sanders were developed especially for sanding with Mirka's revolutionary Abranet abrasives.





## **Mirka® OS** 75 x 100 mm (3 x 4")



Technical data	Mirka® OS 343CV	Mirka® OS 343DB
Code	8991600111	8991610111
Size	75 x 100 mm (3 x 4")	75 x 100 mm (3 x 4")
Weight	0.72 kg	0.72 kg (sander) + 0.60 kg (hose + dustbag)
Air consumption	453 l/min	453 l/min
Working pressure	6.2 Bar	6.2 Bar
Noise level	76 dBA	81 dBA
Vibration level	2.6 m/s <sup>2</sup>	3.5 m/s <sup>2</sup>
Power	179 W	179 W
Speed	10,000 opm	10,000 opm
Orbit	3.0 mm	3.0 mm
Size of pad	75 x 100 mm Grip 33 H + Pad Saver	75 x 100 mm Grip 33 H + Pad Saver
Dust system	Central vacuum ready	Dustbag

#### **Mirka® OS** 81 x 133 mm (3 x 5")





Technical data	Mirka® OS 353CV	Mirka® OS 353DB
Code	8991800111	8991810111
Size	81 x 133 mm (3 x 5")	81 x 133 mm (3 x 5")
Weight	0,80 kg	0.85 kg (sander) + 0.60 kg (hose + dustbag)
Air consumption	453 l/min	453 l/min
Working pressure	6.2 Bar	6.2 Bar
Noise level	73 dBA	84 dBA
Vibration level	3.3 m/s <sup>2</sup>	3.7 m/s <sup>2</sup>
Power	179 W	179 W
Speed	10,000 opm	10,000 opm
Orbit	3,0 mm	3,0 mm
Size of pad	81 x 133 mm Grip 54 H + Pad Saver	81 x 133 mm Grip 54 H + Pad Saver
Dust system	Central vacuum ready	Dustbag

#### Mirka® OS 70 x 198 mm (3 x 8")



Technical data	Mirka® OS 383CV	Mirka® OS 383DB
Code	8991500111	8991510111
Size	70 x 198 mm (3 x 8")	70 x 198 mm (3 x 8")
Weight	0.96 kg	0.96 kg + 0.60 kg (hose + dustbag)
Air consumption	453 l/min	453 l/min
Working pressure	6.2 Bar	6.2 Bar
Noise level	75 dBA	85 dBA
Vibration level	3.3 m/s <sup>2</sup>	2.8 m/s <sup>2</sup>
Power	179 W	179 W
Speed	10,000 opm	10,000 opm
Orbit	3.0 mm	3.0 mm
Size of pad	70 x 198 mm Grip 56 H + Pad Saver	70 x 198 mm Grip 56 H + Pad Saver
Dust system	Central vacuum ready	Dustbag

#### Mirka® AOS 32 mm (1 1/4")



This orbital spot repair machine has a 32 mm backing pad. The tool can be used for denibbing in OEM, ART and Wood applications together with Polarstar SR finessing discs. The Mirka AOS 130NV tool with a 3 mm orbit is oscillating which results in a finer finish and an easier polishing process.

Technical data	Mirka® AOS130NV	
Code	8992330111	
Size	32 mm (1 ¼")	22_242.50
Weight	0,60 kg	
Air consumption	509 l/min	· MERIA
Working pressure	6.2 Bar	1
Noise level	75 dBA	
Vibration level	2.22 m/s <sup>2</sup>	
Power	357 W	
Speed	8 500 tr/min	
Orbit	3,0 mm	
Pad	32 mm (1-1/4")	
Pad connection system	Quick lock	

#### **Accessories** for Pneumatic Sanders









# **BACKING PADS, INTERFACES AND PAD SAVERS**

# **Backing Pads,** Grip

Code	Product	Holes		
8294598311	32 mm (1 1/4")	Quick Lock no holes Soft	packed 10 pcs/box	
8294591311	34 mm (1 5/16")	¼" no holes Medium	packed 10 pcs/box	
8294791311	77 mm (3")	¼" no holes Medium		
8294791011	77 mm (3")	5/16" no holes Medium	(only for OS310)	
8295191511	125 mm (5")	5/16" no holes Medium		
8295192111	125 mm (5")	5/16" no holes Medium		
8295297111	150 mm (6")	5/16" no holes Medium		
8295292111	150 mm (6")	5/16" no holes Medium		
8295291511	150 mm (6")	5/16" no holes Medium		
8297292111	150 mm (6")	5/16"6 holes Soft		

# **Backing Pads** for Net Sanding, Grip

8294791211 77			
	7 mm (3")	1⁄4″ 6 holes Medium + pad saver	
8292502011 12	25 mm (5")	5/16" 28 holes 100 g + pad saver	
8292502021 12	25 mm (5")	5/16" 28 holes Hard + pad saver	
8292502031 12	25 mm (5")	5/16" 28 holes Soft + pad saver	
8292502511 12		5/16" 28 holes 130 g black + pad saver Only for use with PROS and DEROS 150 mm (6") machines	
8295592111 12	25 mm (5")	5/16" 44 holes Medium + pad saver	
8292605021 15	50 mm (6")	5/16" 48 holes Hard + pad saver	0
8292605011 15	50 mm (6")	5/16" 48 holes Medium + pad saver	
8292605031 15	50 mm (6")	5/16" 48 holes Soft + pad saver	
8295692111 15	50 mm (6")	5/16″51 holes Medium + pad saver	
8295486111 15	50 mm (6")	5/16" M8 Unipad 57 holes Medium + pad saver	0000
8295494111 15	50 mm (6")	5/16" M8 Unipad 61 holes Medium + pad saver	0000
8295495111 15	50 mm (6")	5/16" M8 Unipad 61 holes Hard + pad saver	0000
8295885111 20	00 mm (8")	89 holes with 8 screw holes Medium + pad saver	

# **Backing Pads**, PSA

Code	Product	Holes	Packed	
8294593311	32 mm (1 ½")	1/4" no holes Soft	5/pack	
8294595311	32 mm (1 1/4")	Quick lock no holes Hard	10/pack	
8294596311	32 mm (1 ¼")	Quick lock no holes Soft	10/pack	
8295291111	150 mm (6")	5/16" no holes Medium		
8295291211	150 mm (6")	5/16" 6 holes Medium		

# **Backing Pads** for OS Sanders

Code	Product	Holes	
8295340111	75 x 100 mm (3 x 4")	33 holes + pad saver	
8295350111	81 x 133 mm (3 x 5")	54 holes + pad saver	
8295380111	70 x 198 mm (3 x 8")	56 holes + pad saver	

## **Interface** for OS Sanders

Code	Product	Thickness	Holes	Packed	
8299101011	75 x 100 mm (3 x 4")	7 mm	33 holes	5/pack	
8299501011	81 x 133 mm (3 x 5")	7 mm	54 holes	5/pack	
8299701011	70 x 198 mm (3 x 8")	10 mm	56 holes	5/pack	

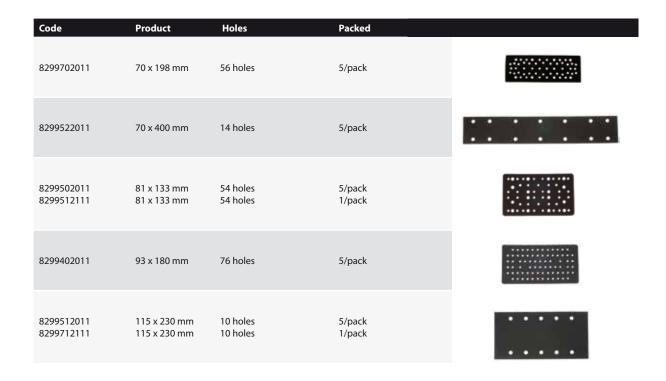
# Pad Saver Strips for OS Sanders

Code	Product	Holes	Packed	
8299102011	75 x 100 mm (3 x 4")	33 holes	5/pack	
8299502011	81 x 133 mm (3 x 5")	54 holes	5/pack	
8299702011	70 x 198 mm (3 x 8")	56 holes	5/pack	

#### Pad Saver Discs

Code	Product			
8294710111	77 mm (3")	6 holes	5/pack	•
8295511011 8295412111	125 mm (5″) 125 mm (5″)	33 holes 33 holes	5/pack 1/pack	
8295510111 8295512111	125 mm (5") 125 mm (5")	44 holes 44 holes	5/pack 1/pack	
8295611111	150 mm (6")	57 holes	5/pack	
8295610111 8295612111	150 mm (6") 150 mm (6")	67 holes 67 holes	5/pack 1/pack	
8296810111 8296812111	200 mm (8") 200 mm (8")	89 holes 89 holes	3/pack 1/pack	
8296712111	225 mm (8,8")	27 holes	1/pack	

# Pad Saver Strips



### Vacuum Block Discs

Code	Product	Holes	Packed	
8294720111	77 mm (3")	no holes	5/pack	
8295520111	125 mm (5")	no holes	5/pack	
8295620111	150 mm (6")	no holes	5/pack	

# **Interface** for Net Sanding

Code	Product	Thickness	Holes	Packed	
8294700111	77 mm (3")	5 mm	6 holes	5/pack	•
8295530111 8295531211	125 mm (5") 125 mm (5")	10 mm 10 mm	33 holes 33 holes	5/pack 1/pack	
8295535111 8295535211	125 mm (5") 125 mm (5")	5 mm 5 mm	33 holes 33 holes	5/pack 1/pack	
8295550111	125 mm (5")	5 mm	44 holes	5/pack	
8295500111	125 mm (5")	10 mm	44 holes	5/pack	
8295650111	150 mm (5")	5 mm	67 holes	5/pack	
8295600111 8295601211	150 mm (6") 150 mm (6")	10 mm 10 mm	67 holes 67 holes	5/pack 1/pack	
8296401211	200 mm (8")	7 mm	89 holes	1/pack	

# **Interface** for Sanding Blocks

1/pack	Product	Thickness	Holes	Packed	
8299601011 8299601211	70 x 125 mm 70 x 125 mm	10 mm 10 mm	13 holes 13 holes	5/pack 1/pack	
8299701011 8299701211	70 x 198 mm 70 x 198 mm	10 mm 10 mm	56 holes 56 holes	5/pack 1/pack	
8299521211	80 x 230 mm	5 mm	55 holes	1/pack	
8299901211	115 x 230 mm	10 mm	32 holes	1/pack	







#### **MIRO 955®**

Miro 955 has been designed with a range of special features, it's easy to use, with a flexible, 225 mm sanding head and a variable speed control which makes it versatile enough to tackle a wide variety of sanding tasks. It can also be configured to minimise dust by attaching it to a vacuum cleaner. The Miro 955 is electrically powered so no compressed air source is required.

**Miro 955® + Abranet® = efficiency.** We recommend that you use Mirka's Abranet 225 mm discs. Thanks to Abranet's unique net construction, clogging is minimized increasing the life expectancy of each disc. Abranet provides the best sanding result, and the most effective dust reduction.



- Mirka's drywall sander range consists of a short and a long version (1.0 and 1.5 m).
- Good balance of tool.
- Sturdy construction of tool in general.
- 550 W motor with soft start.
- Variable speed.
- Exchangeable carbon brushes from the outside, no need to open the motor housing > time saving and less down time.
- The sanding plate base plate and the interface have more open design, optimized for Abranet, Ø 225 mm.





Model	Miro 955°	Miro 955°-S
Code	8394060111	8394200111
Voltage	230 V ~	230 V ~
Mains frequency	50/60 Hz	50/60 Hz
No load speed	650-1800 /min	650-1800 /min
Full load speed	380-950 /min	380-950 /min
Power input	550 W	550 W
Noise level LPA	91 dB	91 dB
Noise level Lwa	108 dB	108 dB
Net weight	4.7 kg	3.7 kg
Disc diameter	225 mm	225 mm
Neck length:	1.5 m	1.0 m

#### Miro 955® package contains:

Miro 955° Drywall Sander 225 mm Hose 4 m Bail handle Hose protection device Sanding plate base 225 mm 16 holes Interface 225 mm x 17 mm 8 + 1 holes Interface 225 mm x 22 mm 8 + 1 holes 1 pcs Abranet disc 225 mm grit 120 Instruction manual

Transport bag + 6 pcs velcro straps

#### Miro 955°-S package contains:

Miro 955°-S Short Drywall Sander 225 mm Hose 4 m Bail handle Hose protection device Sanding plate base 225 mm 16 holes Interface 225 mm x 17 mm 8 + 1 holes Interface 225 mm x 22 mm 8 + 1 holes 1 pcs Abranet disc 225 mm grit 120 Instruction manual



# **Accessories** for Miro 955® and Miro 955®-S











The Decosander telescopic sanding tool makes the sanding of walls and ceilings faster, more effective and dust-free. The package includes the sanding tool and a telescopic tube which extends up to 2.3 meters. The sanding tool is attached to the telescopic tube via a flexible joint which lets it adjust in any direction to sit flat against the sanding surface. The operator only needs to apply light pressure because the sanding tool is drawn towards the surface when sanding. Dust is removed through holes in the sanding tool directly to a dust extractor which makes the job easier and quicker because time isn't spent protecting the surroundings from dust contamination.



# **Decosander®** Package Content

Code	Product	
8393000111	Antistatic Telescopic tube with sanding tool	1 pcs
	Hose 27 mm x 4 m	1 pcs
	Abranet – sanding strips • 70 x 198 mm • P120	3 pcs



# **Accessories** for Decosander®

Code	Product	
MIN6519411	Hose 27 mm x 4 m	S8 mm
8393001211	Antistatic tube	
8393001011	Sanding Tool 70 x 198 mm 113 holes	
8992515411	Soft Connector	
8393001511	Adapter for Dust Extractor 30 - 48 mm	
8393002011	Exhaust Connection for Decosander	







Technical data	Mirka® Dust Extractor 1230 L PC	Mirka® Dust Extractor 1230 L AFC
Code	8999100111	8999200111
Voltage mains supply	220 – 240 V~	220 – 240 V~
Mains frequency	50/60 Hz	50/60 Hz
Power input	1200 W	1200 W
Volume flow air	4500 l/min	4500 l/min
Vacuum	250 mbar	250 mbar
Noise level, LpA	60 dBA	60 dBA
Tank volume	30	301
Dimension W x D x H	385 x 565 x 565 mm	385 x 565 x 565 mm
Weight	14.5 kg	14.5 kg
Filter cleaning system	Push & Clean	Automatic Filter Cleaning



Technical data	Mirka® Dust Extractor 1230 M AFC
Code	8999220111
Voltage mains supply	220 – 240 V~
Mains frequency	50/60 Hz
Power input	1200 W
Volume flow air	4500 l/min
Vacuum	250 mbar
Noise level, LpA	60 dBA
Tank volume	301
Dimension W x D x H	385 x 565 x 565 mm
Weight	14.5 kg
Filter cleaning system	Automatic Filter Cleaning

# Mirka® Dust Extractor 915 and 1025



Technical data	Mirka® Dust Extractor 915 L PC	Mirka® Dust Extractor 915 M PC
Code	8999700111	8999750111
Voltage mains supply	230 V ~	230 V ~
Mains frequency	50/60 Hz	50/60 Hz
Power input	1200 W	1200 W
Volume flow air	3700 l/min	3700 l/min
Vacuum	250 mbar	250 mbar
Noise level	59 dBA	59 dBA
Tank volume	30	30 l
Dimension W x D x H	360 x 450 x 600 mm	360 x 450 x 600 mm
Weight	10.0 kg	10.0 kg



Technical data	Mirka® Dust Extractor 1025 L
Code	8999000111
Voltage mains supply	220-240 V ~
Mains frequency	50/60 Hz
Power input	1000 W
Volume flow air	3600 l/min
Vacuum	210 mbar
Noise level	64 dBA
Tank volume	25
Dimension W x D x H	395 x 375 x 530 mm
Weight	8.0 kg

## **Accessories** for Dust Extractors







8999100211	Dustbag fleece for DE 1230, 5/pack
8999110311	Disposal dustbag for DE 1230, 5/pack
8999100411	Filter for DE 1230
8999101011	Pneumatic box for DE 1230 230V
8999110111	Motor cooling filter for DE 1230
8999110211	Motor cooling filter PET for DE 1230
8999110411	Case fastening accessory for DE 1230

### HAND SANDING

These sanding blocks are especially designed for hand sanding with net products, but can also be used in combination with other velcro products. The hand sanding blocks are connected to a dust extraction system by hose to ensure dust-free sanding.



# Sanding Blocks, Grip

Code	Product	
8391400111	Sanding block • 70 x 125 mm • 13 holes • yellow	
8391402011	Sanding block • 70 x 125 mm • 13 holes • grey	
8391500111	Sanding block • 70 x 198 mm • 22 holes • yellow	
8391502011	Sanding block • 70 x 198 mm • 22 holes • grey	
8391700111	Sanding block • 115 x 230 mm • 32 holes • yellow	•
8391702011	Sanding block • 115 x 230 mm • 32 holes • grey	. 0
8391200111	Mirka® Handy • 80 x 230 mm • 55 holes • yellow	
8391150111	Mirka® File Board 70 x 400 mm 53 holes Flexible • yellow	
8391155111	Mirka® File Board 70 x 400 mm 53 holes Rigid • yellow	-
8391520111	Sanding block Kit • 70 x 198 mm • 40 holes • yellow	91111

# **Curved Pads** for Sanding Blocks

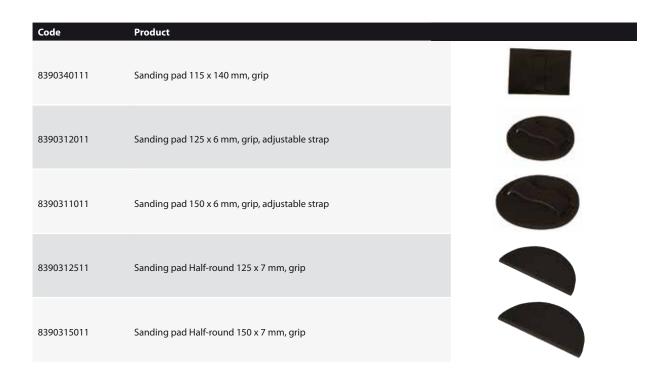
Code	Product	
8391415011	Curved pad for 70 x 125 mm Block 13 holes 22 mm height	13.55
8391515011	Curved pad for 70 x 198 mm Block 22 holes 22 mm height	A STATE OF THE PARTY OF THE PAR

# **Accessories** for Sanding Blocks



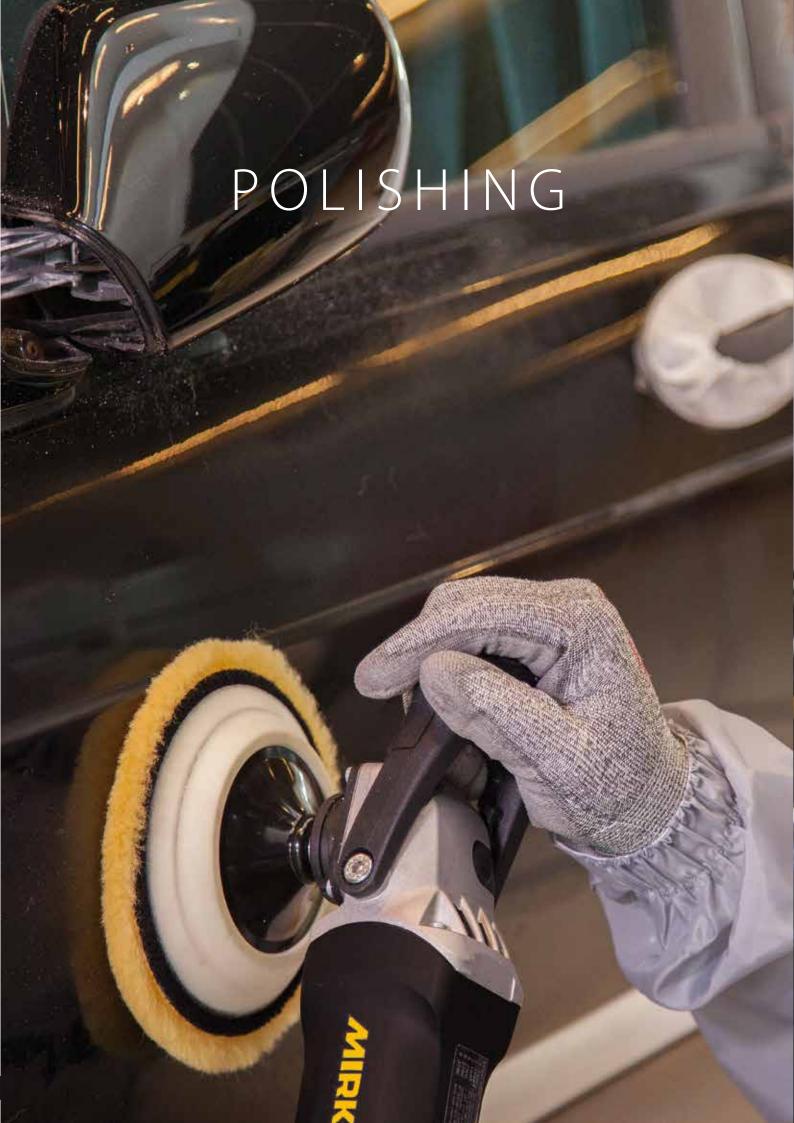


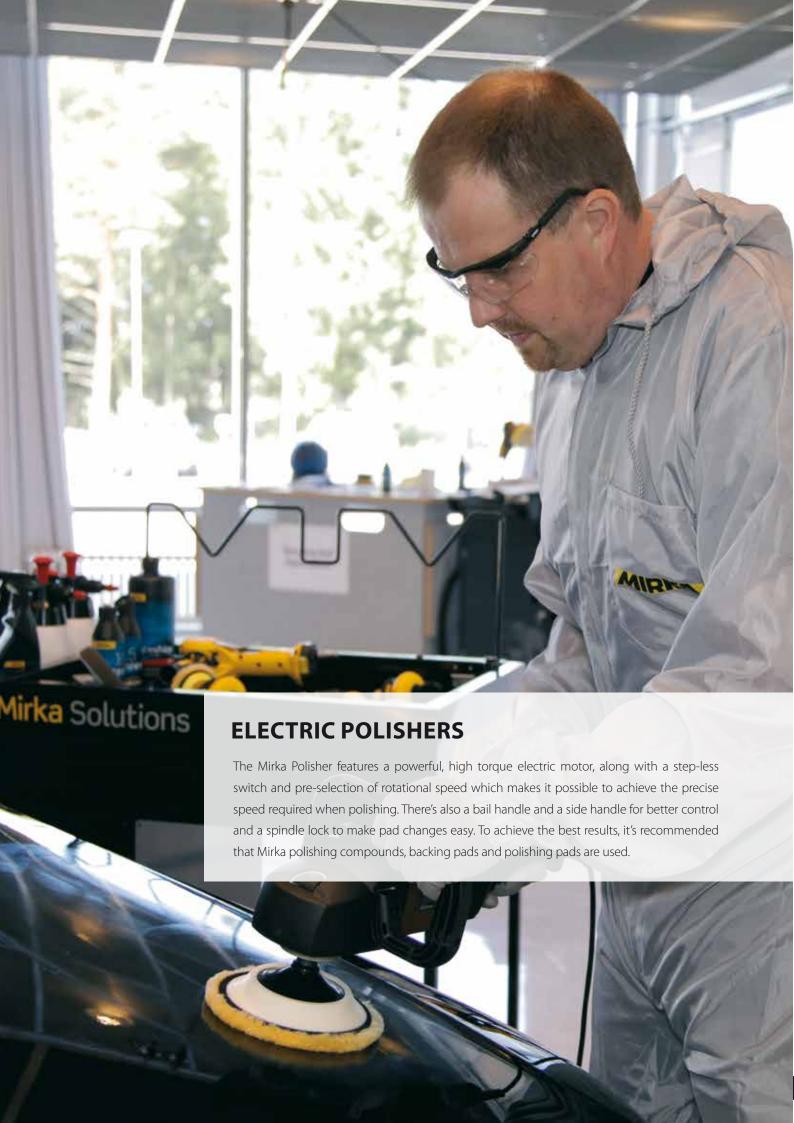
## **Sanding Pads**



# **Sanding Blocks**

Code	Product	
8392202011	Sanding Block Aquastar 125 x 60 x 12 mm 2-sided soft/hard	Aquastar
8392150111	Sanding Block Ergo, 50 mm grip center hole 22 mm soft	
8392102111	Sanding Block Ergo 77 mm grip center hole 22 mm	
8392104111	Sanding Block Ergo 77 mm grip center hole 22 mm soft	
8392102001	Sanding Block Ergo 77 mm grip	
8392105111	Sanding Block 77 mm grip center hole soft	
8390330111	Sanding block 78 x 78 x 148 mm • for 150 mm grip disc	





# Mirka® PS 1437 150 mm (6") and Mirka® PS 1524 180 mm (7")



Technical data	Mirka® PS 1437	Mirka® PS 1524
Code	8991300111	8991400111
Voltage mains supply	230 V ~	230 V~
Power input	1400 W	1500 W
Speed	1,100 – 3,700 rpm	800 – 2,400 rpm
Thread	M14	M14
Noise level	84 dB	83 dB
Weight	1.9 kg	3.2 kg

Pad not included. PS 1437 is delivered in a cardboard box. PS 1524 is delivered in a plastic box. Both models includes a bail handle and a side handle.



# **Backing Pads** for Electric Polishers, Grip

Code	Product		
8297300111	77 mm (3")	M14 Hard	
8297301011	77 mm (3")	M14 Soft	
8297800111	125 mm (5")	M14 Hard	0.
8297801011	125 mm (5")	M14 Soft	
8297902011	135 mm (5,5")	M14 Soft	
8298000111	150 mm (6")	M14 Hard	
8298100111	150 mm (6")	M14 Soft	
8298300111	150 mm (6")	W5/8 Hard	•
8298402011	165 mm (6,5")	M14 Soft	
8298800111	175 mm (7")	M14	



### Mirka® ROP2 77 mm (3"), 125 mm (5")



This machine offers a quick and effective method of polishing. Its random orbital action delivers particularly impressive performance when buffing out sanding scratches.



Technical data	Mirka® ROP2-312NV	Mirka® ROP2-512NV
Code	8994210311	8994220311
Size	77 mm (3")	125 mm (5")
Orbit	12 mm	12 mm
Speed	10 000 rpm	10 000 rpm
Air consumption	594 l/min	594 l/min
Working pressure	6.2 Bar	6.2 Bar
Noise level	80 dBA	81 dBA
Power	343 W	343 W
Weight	1,1 kg	1,2 kg
Size of pad	77 mm (3") Grip ¼"	125 mm (5") Grip 5/16"
Dust system	Non vacuum	Non vacuum



## Mirka® RP 77 mm (3")



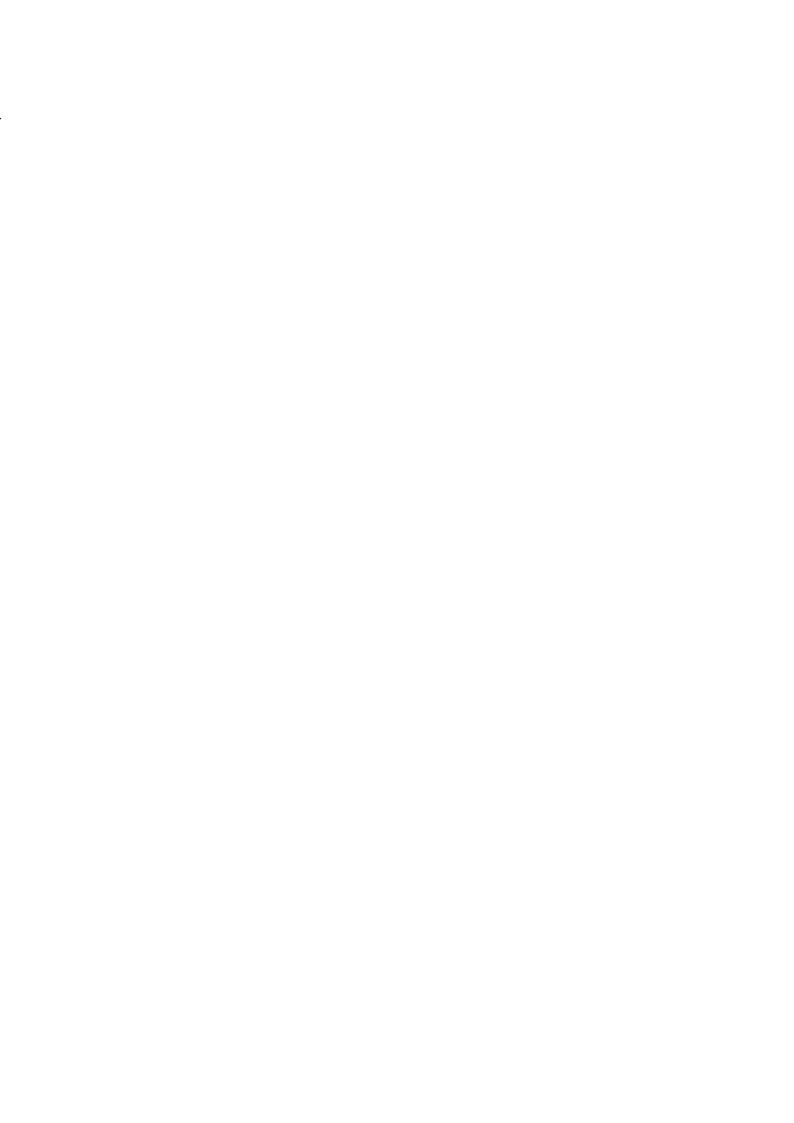
Mirka's pneumatic rotary polisher is a powerful tool providing a fast way to a perfect finish. The shape allows operators to reach small areas and offers a quick and effective polishing process.



Technical data	Mirka® RP 300NV
Code	8993540311
Size	77 mm (3")
Speed	3,000 rpm
Air consumption	481 l/min
Working pressure	6.2 Bar
Noise level	81 dBA
Power	343 W
Weight	0,55 kg
Size of pad	77 mm (3") Grip ¼"
Dust system	Non vacuum

# **Backing Pads** for Pneumatic Polishers, Grip

Code	Product	
8294791311	Size of pad 77 mm (3") ¼ medium	
8295191511	Size of pad 125 mm (5") 5/16 medium	







#### MIRKA LTD Finland

Brazil Mirka Brasil Ltda.

Canada Mirka Canada Inc.

China Mirka Trading Shanghai Co., Ltd

Finland & Baltics Mirka Ltd

France Mirka France Sarl

Germany Mirka Schleifmittel GmbH

India Mirka India Pvt Ltd

Italy Mirka Italia s.r.l.

Mexico KWH Mirka Mexicana, S.A. de C.V.

Russia Mirka Rus LLC

Singapore Mirka Asia Pacific Pte Ltd

Spain KWH Mirka Ibérica S.A.U.

Sweden Mirka Scandinavia AB

Turkey Mirka Turkey Zimpara Ltd Şirketi

United Kingdom Mirka (UK) Ltd

For contact information, please visit **www.mirka.com** 

USA Mirka USA Inc.

© Mirka Ltd 200245 AA112016FM

Quality from start to finish