MIRKA

Mirka® AutoChanger

Quick Start Guide

The Mirka® AutoChanger is a revolutionary modular solution designed for the automated replacement of abrasive discs in various industrial sanding applications.

mirka.com

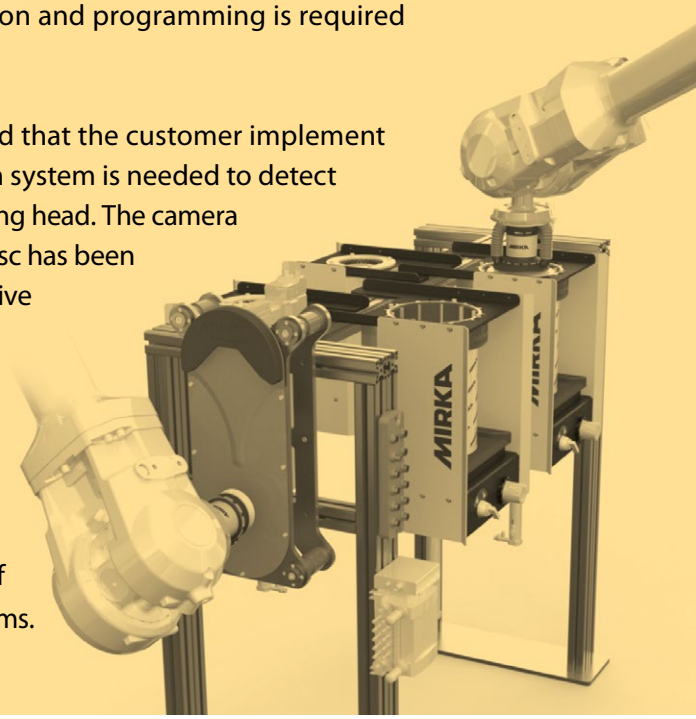
Please read the full manual

Mirka® AutoChanger

To install the AutoChanger system, the end customer should seek assistance from a qualified and experienced integrator. An understanding of automation and programming is required to setup the AutoChanger system safely and correctly.

In addition to the AutoChanger modules, it is recommended that the customer implement its own camera identification system. A camera identification system is needed to detect whether or not an abrasive disc has been attached to the sanding head. The camera system should also be able to identify whether the abrasive disc has been located correctly onto the interface or pad. Whether the abrasive disc has folded or is offset on the pad for example.

It is a responsibility of the integrator to carry out all installation and programming in accordance with the instructions in the user manual, as well as the instructions of the relevant component manufacturer. Mirka cannot provide additional support regarding installation and programming because of the differences in the final build of the various customers' systems.



Technical Data

Abrasive disc size	77 mm & 150 mm
Abrasive disc capacity (per cassette)	~150 pcs (depending on abrasive type and grit size)
Abrasive change time	≤10 s

Pneumatics

Fluid	Compressed Air, quality class [7:4:4] (ISO 8573-1)
Compressed air supply connection (regulator not included)	0.2 - 0.25 MPa
Recommended Magazine pressure (regulator included)	0.2 MPa
Min. required air flow capacity	115 L/min(ANR) @20°C
Total air consumption/cycle*	5.5 L(ANR) @20°C
Supply air hose	10 mm (Push-in connector)
Additional air hose	4 mm (Push-in connector)

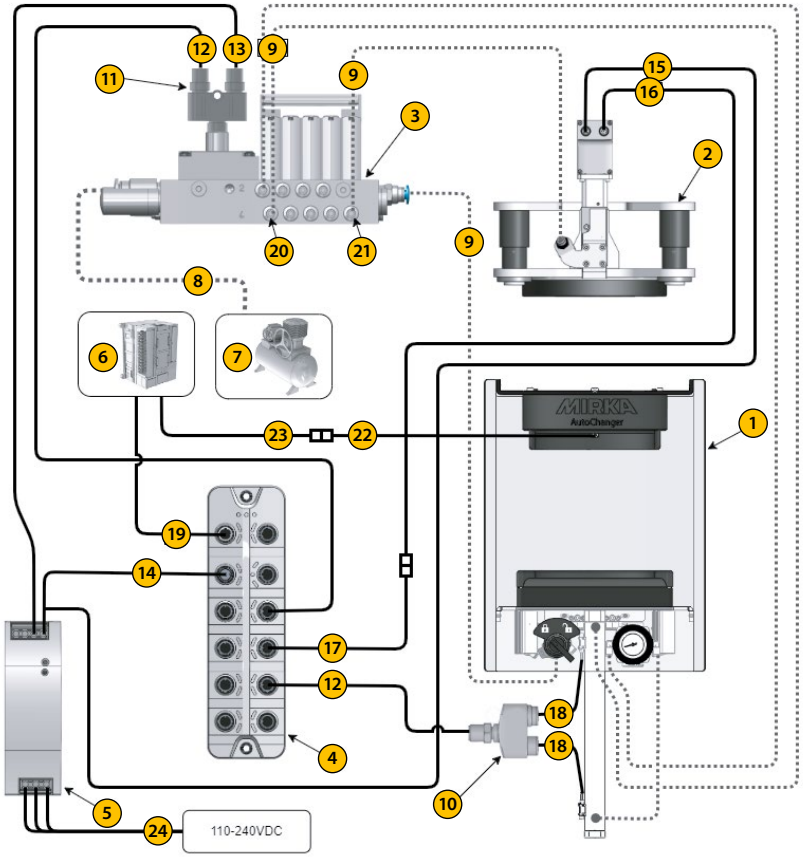
Electrical Connections

Input voltage	100–240 VAC
Power supply	24V DC at 5A
Communication protocol	Ethernet/IP, Modbus TCP, Profinet RT/IRT
Communication interface	IO-Link

Environmental

Ambient & fluid temp.	15 to 40°C
Ambient humidity	20 ~ 90% RH (non-condensing)
Storage temp.	-10 to +60°C

AutoChanger connection chart overview



The simplified connection chart gives the integrator an overview of how the AutoChanger modules are supposed to be connected.

No.	Name	Incl.*
1	Magazine	Yes
2	Remover	Yes
3	Valve Manifold	Yes
4	IO-Link master	Yes
5	Power supply	Yes
6	PLC/Robot	No
7	Air supply	No
8	Pneumatic air hose 10 mm	No
9	Pneumatic air hose 4 mm	No
10	Y-splitter	Yes
11	Y-splitter	Yes
12	M12 Connecting 10 m	Yes

No.	Name	Incl.*
13	M12 Power cable 10 m (open end)	Yes
14	M12 Power cable 10 m (open end)	Yes
15	M12 Power cable 10 m (open end)	Yes
16	M12 Connecting cable	Yes
17	M12 Adapter cable	Yes
18	Position sensor 0.3 m	Yes
19	M12 Ethernet cable 10 m	Yes
20	5/3-Valve	Yes
21	5/2-Valve	Yes
22	Safety switch for Magazine 0,3 m	Yes
23	2 x 0.75 mm^2 cable	No
24	Power cable	No

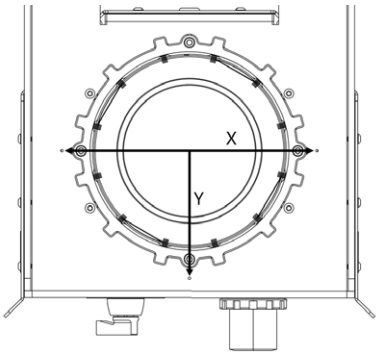
NOTE! *Included in the scope of delivery for a complete order of a minimum of one of each module. If one module is left out of the order this list will not be accurate.

Pneumatic settings

Important! The pressure differences between the inlet pressure and the magazine pressure should not be greater than 0.1MPa. If the pressure differences are > 0.1MPa, the cylinders will not operate properly.

PROGRAMMING INSTRUCTIONS

Programming guidelines

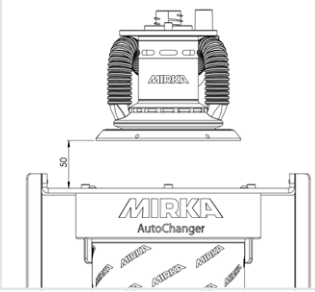


1. Avoid pressing the stack of abrasive discs against the bristles during extended pauses, as it can damage the bristles.

2. Utilize the three holes on the Magazine's top plate as coordinates to locate the center point easily. These instructions provide general guidance.

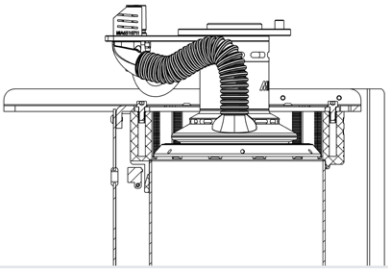
Step 1:

Position AIROS over the magazine opening, with the pad/interface about 50 mm from the top. This is waypoint 1. No pressure in the cylinder.



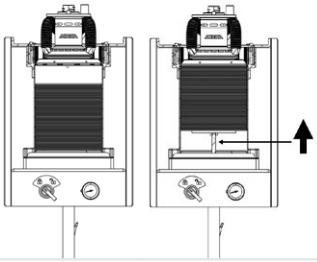
Step 2:

AIROS descends through the bristles until the pad/interface reaches the bottom. This is waypoint 2. Cylinder pressure remains off.



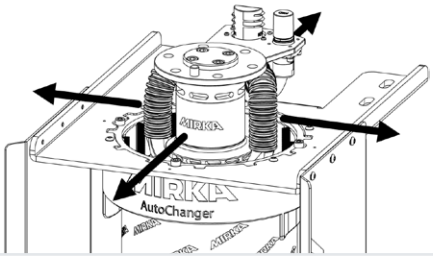
Step 3:

Open the 5/3-valve to pressurize the magazine cylinder and wait at waypoint 2 for the abrasive stack to reach the pad. Wait for 1-2 seconds.



Step 4:

Program an x-motion for AIROS when paper reaches the pad to ensure engagement. There is a 2mm tolerance between the pad and magazine.

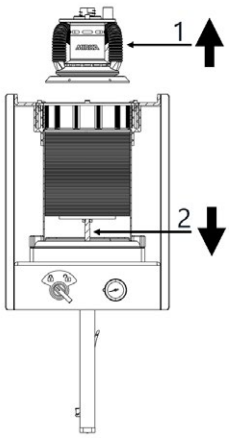


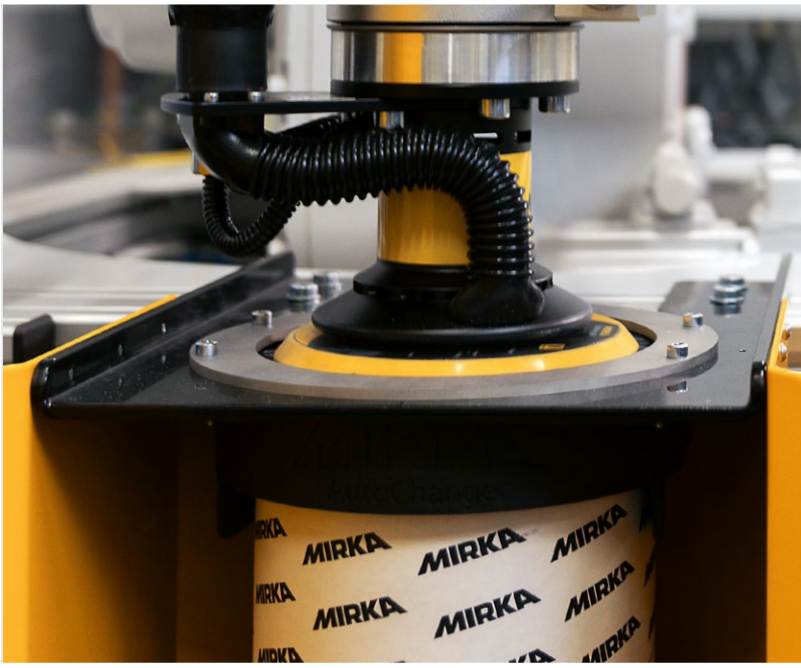
Step 5:

After x-motion, AIROS moves back to waypoint 1 while sending a pulse to reverse the cylinder down for 0.1s.

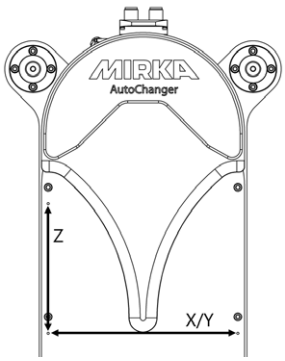
The solenoid valve returns to the closed position to prevent pushing abrasives out.

The AIROS now has an abrasive disc attached. To pick a new disc, start from step 1. Reduce waiting time in step 3 for faster disc changes.





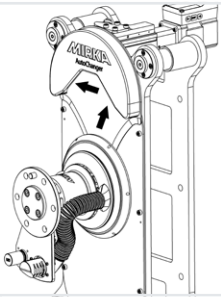
Removing abrasive discs



Important note! To reach knifes closed position, follow Festo's homing command. Before executing the homing command, remove the sliding plate from the Remover. You can reattach it after completing the homing command. Failing to remove the sliding plate during homing will prevent the knife from making contact during operation.

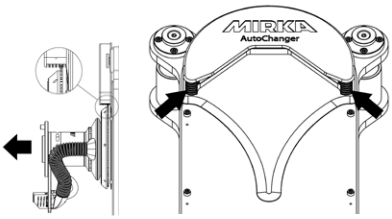
Step 1:

Center the AIROS orbit by pressing the pad against the bumper on the Remover, first on the right and then on the left. Use the profiled edge of the bumper for alignment.



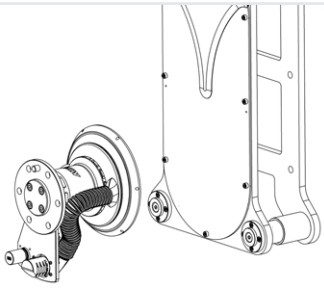
Step 2:

Ensure the edge of the abrasive disc makes contact with the grooves on the bumper to prevent folding.



Step 3:

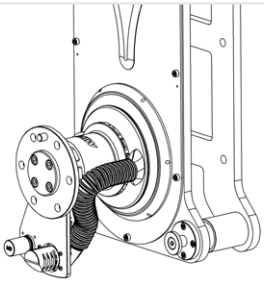
Center the orbit, fold the disc edge down, and position the AIROS pad parallel to the sliding plate. Ensure the knife is at position 1.



Step 4:

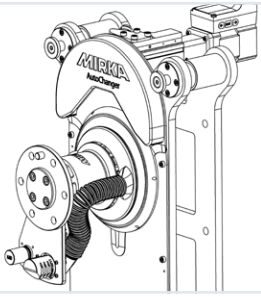
Press AIROS against the sliding plate, causing it to spring back about 10 mm. This is waypoint 2.

Important! When an interface is in use, approach the remover carefully at 20 degree angle.



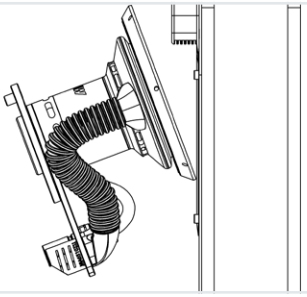
Step 5:

Move AIROS up to the knife; the disc separates from the pad, and the knife position changes to squeeze the disc in place (waypoint 3).



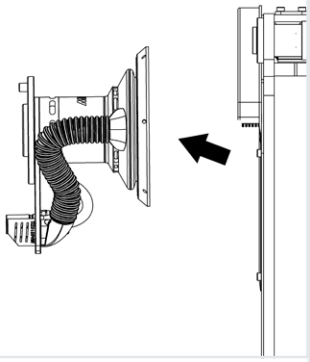
Step 6:

Tilt AIROS backwards 30-40 degrees to release the outer edges of the disc (waypoint 4).



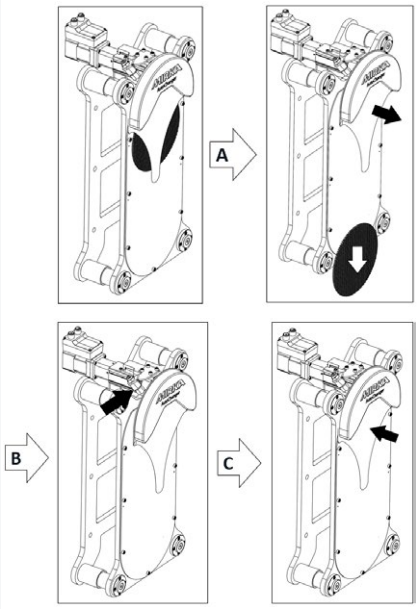
Step 7:

Move AIROS at an angle to release the bottom part of the disc (waypoint 5).



Step 8:

Change the knife position from closed to fully open to release the disc, use an air nozzle to remove any residue, and return the knife to removing position (depending on abrasive thickness).



Step 9:

Re-center the orbit and follow the "Removing abrasive discs" process to pick a new disc.

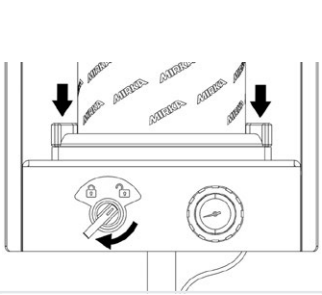
OPERATOR INSTRUCTIONS

It is the responsibility of the customer to train operators in the AutoChanger system and provide them with sufficiently extensive training materials before they are allowed to operate the system.

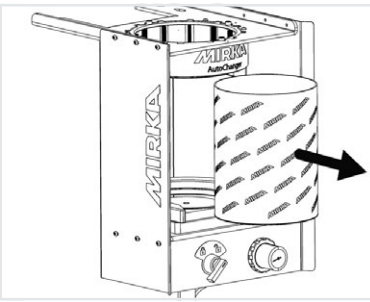
Changing Cartridges:

When the system gives a warning that the Magazine is almost empty it is recommended to change the cartridge.

Step 1:
Switch the manual control on the front of the Magazine to the "unlock" position. This action will automatically lower and unlock the cartridge.

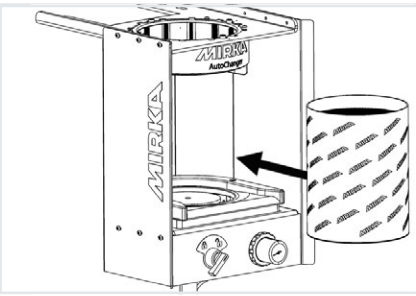


Step 2:
Carefully slide out the old cartridge from the magazine.

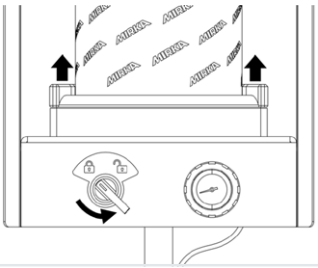


Step 3:
Remove the top lid of the new cartridge.

Step 4:
Insert the new cartridge into the Magazine. (Velour side up)



Step 5:
Rotate the manual switch to the "lock" position. The Magazine base will automatically rise and secure the new cartridge in place.



MAINTENANCE & TROUBLESHOOTING

Maintenance:

During any kind of maintenance to the AutoChanger system it is very important that the whole robot cell is shut off, in order to NOT put any maintenance personnel at risk.

Condition check

At least once a month check the condition of all AutoChanger modules. Ensure that none of the linear bearings are seized or making excessive noise. Check bristles for wear. Ensure that none of the pneumatic hoses are damaged or loose.

Cleaning

Sand and dust should be cleaned from the Magazine and Remover using compressed air at least once a day to prevent the premature wear of moving components. It is also important to remove all dust on the micro switch in the Magazine to prevent it from sticking.

Lubrication

No additional lubrication should be applied to any of the AutoChanger modules.

Troubleshooting

Symptom	Recommended procedures
Sander picking two discs	**Add** additional bristles (150 mm version only). **Change** bristles to the coarser red type to add resistance. **Check** that the Magazine pressure is set according to the manual.
Sander picking no disc	**Remove** a few bristles to reduce resistance (150 mm version only). **Change** bristles to the finer black type to reduce resistance. **Replace** the circular bristle with the supplied shim washer to reduce resistance (150 mm version only). **Check** that a X-pattern is programmed in the picking process. **Check** that the Magazine pressure is set according to the manual.
Disc is still stuck to sander after removal	**Program** the sander to move closer to the bumper before ripping off the used disc **Make sure** that homing of the Remover has been made according to instructions in the manual
The disc is not centered on the sander pad	**Check** that the sander orbit is aligned with the bumper before removal **Check** that the pad is centered over the magazine opening before picking new disc
Discs tilting/dropping in cartridge	**Check** that the pressure difference between system inlet regulator and Magazine regulator is <0.1Mpa **Check** that the program includes a short downward pulse of the cylinder after picking. Cylinder should move downwards 10-20 mm and then stop.
Communication failure	**Check** that all wiring is done according to diagrams in the manual **Check** that att connections are secure and no cables are damaged **Check** respective component manufacturers manuals for further troubleshooting
Airos gets stuck on edge of knife	**Check** that the edge of the disc is being straightened on the edge of the bumper before removal **Make sure** only Mirka backing pads and pad savers are beeing used **If** interface pads are beeing used, the Airos should approach the knife at 20° angle **Check** that the sander orbit is aligned with the bumper before removal

Read the manual for further information!

Press or scan the QR-code to download the manual

https://brandfolder.com/s/44mchc8vbc8swk7mx4s8m7p

Mirka Ltd
Finland

Brazil Mirka Brasil Ltda.
Belgium Mirka Belgium Logistics NV
Canada Mirka Canada Inc.
China Mirka Trading Shanghai Co., Ltd
Finland & Baltics Mirka Ltd
France Mirka France Sarl
Germany Mirka GmbH
India Mirka India Pvt Ltd
Italy Mirka Italia s.r.l., Mirka Superabrasives S.p.A
Mexico Mirka Mexicana S.A. de C.V.
Netherlands Mirka Benelux B.V
Poland Mirka Poland Sp. z o.o
Singapore Mirka Asia Pacific Pte Ltd
Spain KWH Mirka Ibérica S.A.U.
Sweden Mirka Scandinavia AB
Turkey Mirka Turkey Zımpara Ltd Şirketi
United Kingdom Mirka (UK) Ltd
United Arab Emirates Mirka Middle East FZCO
USA Mirka USA Inc.

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

Follow us on: