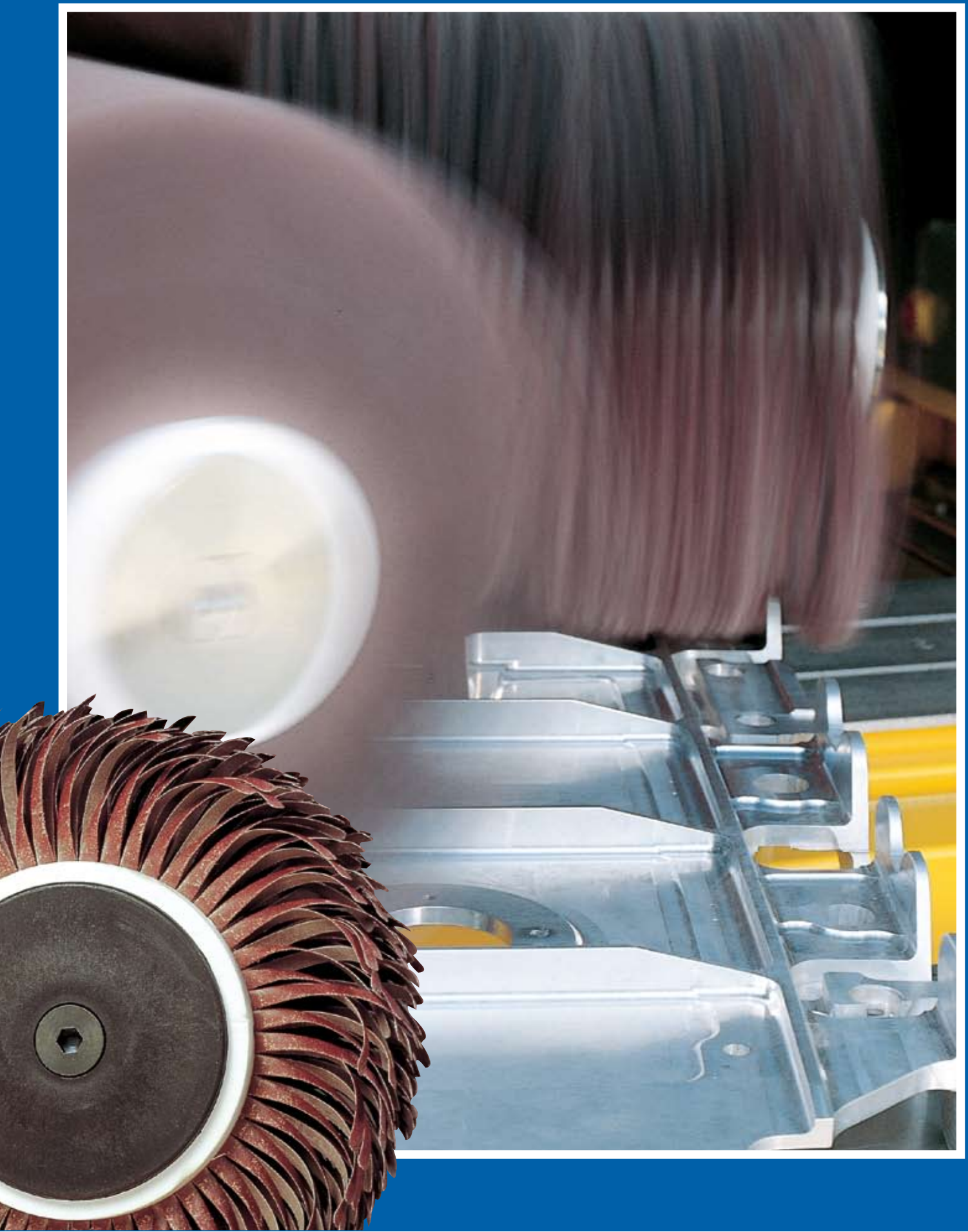
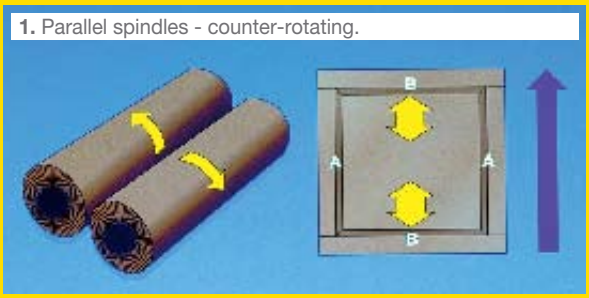
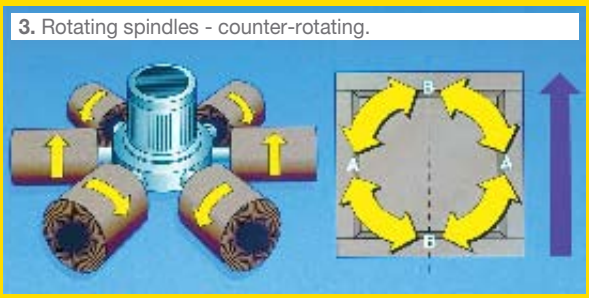
Fladder®

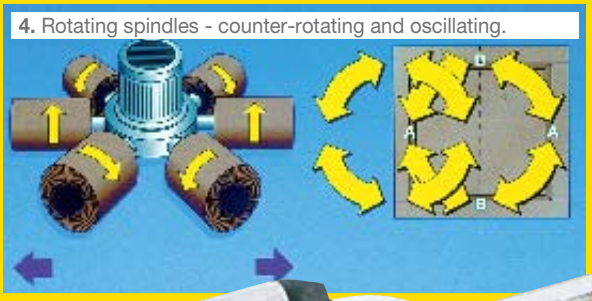
The flexible deburring system



Choose the right deburring method







The FLADDER® deburring system employs an entirely new method based on a principle which is fundamentally different from those of traditional deburring methods.

The abrasive tool in the FLADDER® deburring system is a flexible tool with a number of slats or strips of abrasive material which rub tightly against the part, closely following its contours.

When it comes to choosing the right method there are a number of choices, depending on the desired quality - and of course the allowed budget!

The figures on the left show a simplified illustration of the different principles: Spindles are shown with arrows indicating the rotating direction, a dark-blue arrow marks the infeed direction, and the part is shown with profiles or recesses marked A and B.

Figure 1

Shows a very simple method: two counter-rotating spindles. In many cases a sensible and economical solution, but it is very likely that the edges A and B will not be uniformly deburred, as the deburring is performed along the A edge and across the B edge.
It is, however, possible to improve this method by feeding the part into the machine at an angle. However, the wear on the tools will always be uneven, with a tendency for the spindles to wear down most quickly at the middle.

This principle is, for instance, used in most belt grinders.

Figure 2

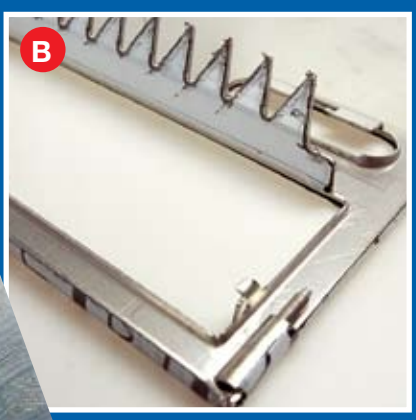
This is a slightly improved method: The part is deburred in an orbital movement by six spindles, all, however, rotating in the same direction, say, counter-clockwise. The result is a more uniform deburring of the A and B edges on the part, and an even wear on the tool.
However, as also appears from the illustration, the left half of the part will be deburred in one direction, and the other half in another direction.
This means that the deburring of the two halves is likely to be uneven.

Figure 3

Shows a more perfect method: The part is deburred in an orbital movement, but this time with six spindles arranged in three pairs of counter-rotating spindles.
The entire surface of the part is now uniformly deburred, and both the A and B edges are uniformly deburred.
This is the principle used in the FLADDER® deburring system which has been successfully introduced in numerous companies throughout the world!

Figure 4

Shows a refined version of the above principle:
The part is now deburred in both an orbital **and an oscillating movement** with six spindles arranged in three pairs of counter-rotating spindles.
As a result of the added oscillating movement it is possible, for instance, to feed the parts through the machine side by side, and still be certain that they will be uniformly deburred.
This would not be the case for the other methods mentioned above.
The oscillating technique is necessary when deburring holes, as in this case the edges are processed from all angles.
This technique is used in several FLADDER® deburring machines.



Fladder® finishing

- the way to a better finish

It is a well-known fact that sharp edges and burrs are created by machining of metal parts, for instance punching, laser-cutting and milling.

Often this problem is solved by manual processing, and - for flat parts - using a belt grinder.

However, this method does have its limitations, as it requires the parts to be 100 per cent plane, as otherwise there will be areas on the parts which are not sufficiently deburred.

In addition, burrs may be merely bent down over the edge in the process rather than being completely removed. It is equally logical that with this method, the edges around holes will be unevenly processed, depending on whether the deburring is performed across, up against or along the edges.

In other words, deburring can be a rather complex task.

A FLADDER® deburring system

The solution is to use the FLADDER® deburring system - a innovative deburring method based on principles which are fundamentally different from those of traditional methods.

The tool in the FLADDER® deburring system is a flexible tool designed with a number of slats or strips which rub tightly against the part, closely following its contours during the deburring process.

Finishing is a non-aggressive type of process capable of deburring the part's edges without affecting its surface.

B Deburring parts with contours

Figure B shows a part with different contours.

Normally, this part would require manual finishing, but with the FLADDER® deburring system it is possible to perform the finishing of the entire part automatically.

In future, using the FLADDER® deburring system you will be able to automate even deburring of three-dimensional parts, as it is possible to deburr in different heights simultaneously.

C Sharp edges are rounded slightly

Sharp-edged parts often cause problems for sealing or coating.

The coating layer on sharp edges is very thin, which often results in poor coating adhesion.

Figure C shows a profile with sharp edges.

When the part is deburred using the FLADDER® finishing method, the edges are rounded ever so slightly without causing the part to lose its definition.

This enables the coating to better enclose the edge and thus to obtain improved adhesion.

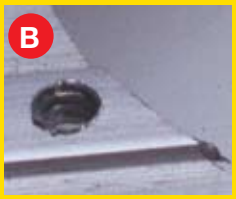
D Deburring parts with protective foil

The FLADDER® deburring system is a non-agressive system, meaning that it will process the edges on a part without damaging the surface.

This is important for those of our customers who manufacture parts with protective foil on the surface. The foil will stay on the part throughout the process. As a result, the part is protected for a longer time during the process than before.

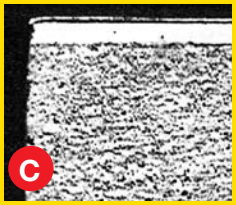
Part with burrs

Same part after FLADDER® finishing.



Before FLADDER® finishing.

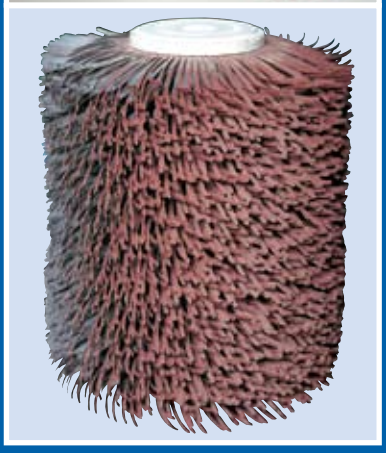
After FLADDER® finishing.



Without FLADDER® finishing.

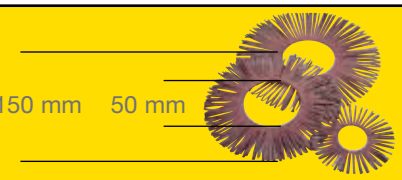
With FLADDER® finishing.

Part with foil after FLADDER® finishing.



The **Fladder**® deburring system is flexible

With just a few components, the system can be tailored to suit a multitude of requirements.

	Example  150 mm 50 mm				
	150/50	250/105	300/105	350/105	400/210
50/9	✔				
105/32/8		✔	✔		
105/50/8		✔	✔		
105/32/11		✔	✔	✔	
105/50/11		✔	✔	✔	

FLADDER® abrasive blades and FLADDER® spacers

The FLADDER® deburring system is a modular system based on our FLADDER® abrasive blades and FLADDER® spacers.

With these few, very simple components, you can set up the tool to fit many different purposes and machines.

The limited number of components also simplifies inventory control for the customers and facilitates ordering of new tools.

The tools are of course optimised for use in the different FLADDER® deburring machines.

The abrasive blade is made in high-quality abrasive material and consists of a number of two-sided abrasive slats or strips arranged in a circular shape.

Several years of development work have gone into the design of the abrasive blade; as a result, it now features the specific fine qualities required for optimum finishing of profiled parts.

The long tool life of the abrasive blades ensures very low sanding costs per part.

The spacers are made in lightweight material. Thus, when the spacers and abrasive blades are combined to form an abrasive cylinder, the result is a very light tool.

Both the abrasive blades and spacers are available in different sizes and may be combined in any required arrangement.

The table above shows the different options available.

FLADDER® abrasive cylinder

Some manufacturers do not wish to spend time putting together abrasive blades and spacers to form a complete tool, but prefer complete, ready-to-use abrasive cylinders.

We are able to accommodate this wish with our FLADDER® abrasive cylinder.

The abrasive cylinder is composed of the same components, but instead, these are glued together and trimmed to constitute an optimised tool.

To the manufacturer this means that production stoppages for tool replacement are reduced to a minimum, and the required handling is simplified.

If you wish to order a complete abrasive cylinder, just state the data for the required abrasive blades and spacers as usual, and then specify either the type of machine or the length of the shaft.

We shall then deliver your customised abrasive cylinder ready for use.

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