



DEBURRING & MARKING TECHNOLOGIES



Deburring Tools for CNC Machines

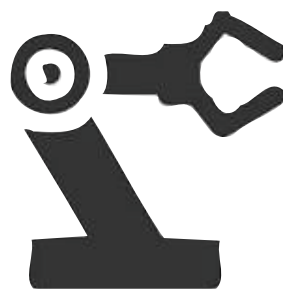
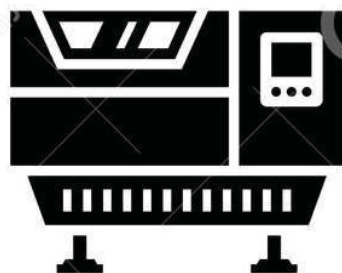
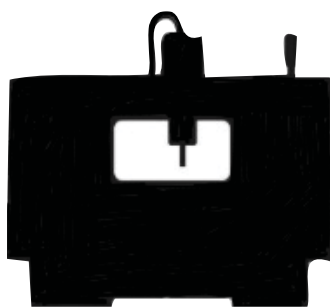
Spindle activated tools
suitable for machining centers.



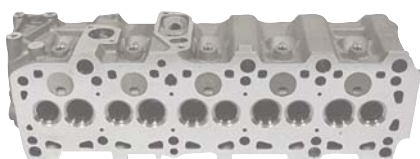
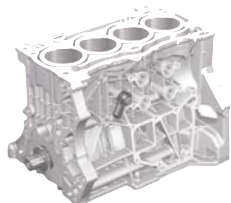
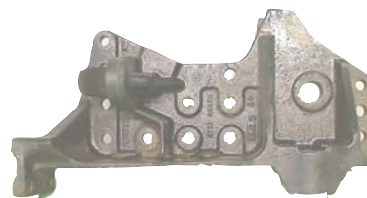
Deburring Tools For Robotic Applications

Deburring tools with
integrated pneumatic spindles

AKS TEKNIK Flexible Deburring Tool



Deburring tools for CNC machining and for Robotic Applications. They are designed to automatically deburr workpieces with undefined edges. The differences between programmed and actual workpiece contours are compensated automatically.



Flexible Deburring Tool

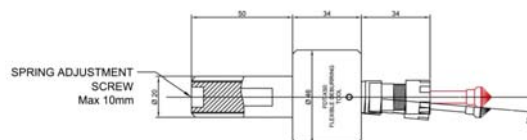
CNC Deburring System FDT - SX0 - Radial



FDT SX0 is a flexible deburring tool small economic solution to remove burs generated in machining processes. With the help of its flexible mechanism FDT-SX0 follows the undefined edges on the workpiece. It can compensate 5-10 mm edge deviations. Standard industrial carbide burs and profiles can be used for deburring needs. Maximum deflection 10 mm. Article no. 20.420.00

Working Parameters :

Activation: Via machine spindle
Speed: 3.000 – 8.000 rpm
Feed: 2000-4000 mm/min
Maximum deflection: 5 mm (10 mm with 100 mm long burr)
Deflection: Lateral – 5 degree
With ER-11 collet burs range from Ø 0.5 mm to 7 mm can be used.
Standard execution with 20 mm weldon shank.
(HSK.SK or special shanks are available upon request)
All types of materials can be deburred successfully.



Advantages :

Maintenance Free.
No deviations of chamfer widths due to air pressure variations.
High feeds and speeds. (3.000-10.000 rpm – 2-5 m/min.)
Uniform deburring quality on all workpieces.
Eliminates tool brakes
Small compact design suitable for all types of machines. (Suitable for smallest machines)
Long reach simply changing the cutting tool. Perfect deburring of the hard to reach places.
Comes with 3 different springs for different materials. (Light – Medium – Heavy)

Using flexible deburring tool on CNC machines :

FDT-SX0 is designed to automatically deburr workpieces with undefined edges. The differences between programmed and actual workpiece contours are compensated automatically.



Spindle Speeds:

FDT SX0 is not completely rigid. We recommend starting spindle speed 5000 rpm.
Observe maximum permitted spindle speed specified by the machine supplier!
Maximum Speed: 8000rpm

Feed Rates:

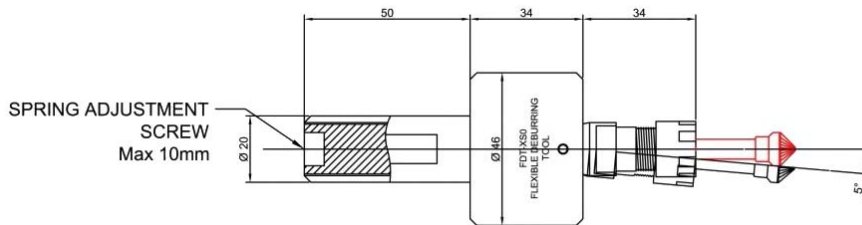
We recommend starting feed rate of F= 3000 mm/min
The feed rate should be the same when changing direction, if not, deburring can be uneven. The contour program should be as close as possible to eliminate extra rounding of the corners.

Flexible Deburring Tool

CNC Deburring System FDT - SX0

Lateral Contact Pressure:

For the first deburring process we recommend setting the lateral milling cutter pressure contact pressure is set to approx. 5mm. If the milling cutter does not run smoothly, i.e. if it jumps or does not run true, the contact pressure is too low and must be increased. The amount of contact pressure also directly affects the deburring thickness: usually the higher the contact pressure, the wider the deburred edge.

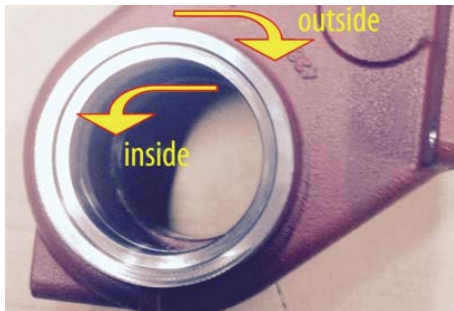


Use of the tool

FDT-SX0 is a flexible deburring tool. Activated via machine spindle. It can deflect approximately 5 mm in radial direction. (With Standard deburring cutter 20 mm. Front of the collet) Using FDT- SX0 is similar to contour programming. It should follow the contour to be deburred and the milling cutter should always be pretensioned 1-3 mm.

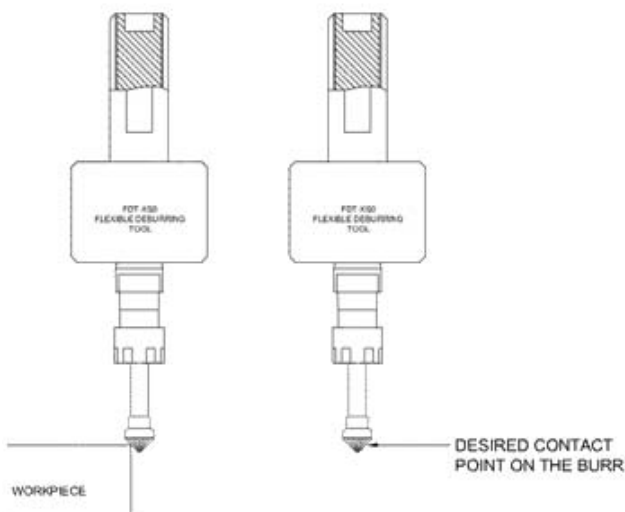
Cutting Direction:

FDT deburring tools, the cutter rotation should be clockwise when viewed from above. Climb milling would therefore involve clockwise motion around the part being deburred.



Contact Point On The Burr:

Usually conical deburring cutter are used. Depending on the contour of the deburring edge, the milling cutter can either be used on its tip or further back. If the shape of the workpiece and the clamping device is suitable, then it is recommended to use burrs at the rear as possible. This allows shorter machining times and better results.



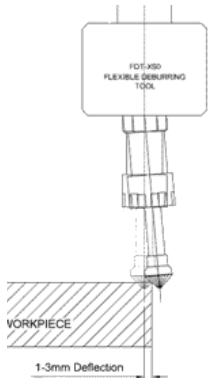
Flexible Deburring Tool

CNC Deburring System FDT - SX0

Lateral Deflection Of The Burr:

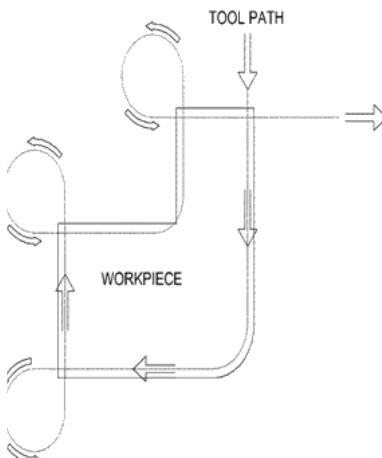
Ensures that the milling cutter is always pre-tensioned.

The lateral deflection of approx. 1-3 mm causes it to press against



Tool Path:

Inside corners represent a complex situation for flexible deburring tools. In general, the cutter must not be allowed to simultaneously contact both perpendicular surfaces of an inside corner. The resulting force imbalance in two planes will cause severe tool chatter. We advise to create a tool path, which will prevent the cutter from simultaneously contacting two perpendicular surfaces. A conical cutter may reach further into such an inside corner if the tool is presented closer to the tip of the tool. (Note: When working near the tip of a tapered cutter, the surface cutting speed is reduced.) direction changes inside the work-piece contour (corners); we recommend that you program a radius instead of a corner? Changes of direction outside the workpiece (corners) we recommend making the change of direction out-side the workpiece.



F.A.Q. :

Excessive Deburring:

Increase feed rate

Decrease lateral contact pressure on the tool (for too weak lateral pressures cutter may jump / stagger resulting damage to workpiece – tool – machine)

Uneven Deburring:

Feed speed is not constant due to changes in direction – reduce feed speed

Feed speed is very slow – increase feed speed

Tool position is not adjusted correctly check 1-3mm lateral deflection

Deburring Thickness Is Small:

Decrease feed rate

Increase lateral contact pressure on the tool

Reduce spindle speed

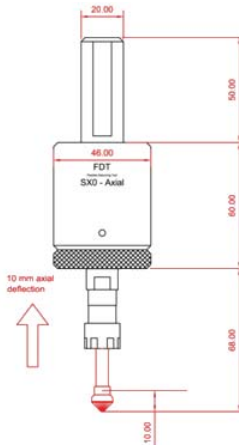
Not Smooth Deburring:

Increase spindle speed

Change deburring cutter

Flexible Deburring Tool

CNC Deburring System FDT - SX0 - AXIAL

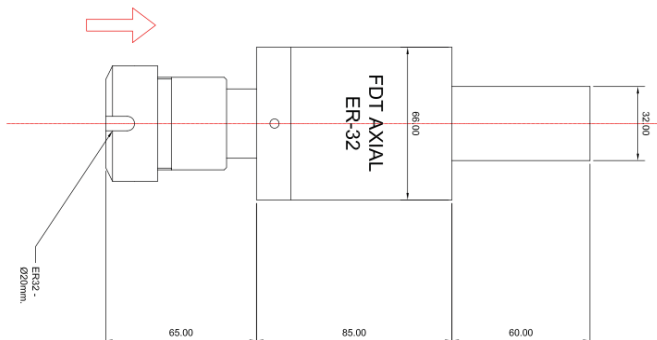


FDT AXIAL PUSH TYPE – FDT AXIAL (F) Article No. 21.420.00
Axially deflecting economic alternative on some applications.

FDT Axial is a simple and economical tool that can be used on NC machines, Robots and CNC. Axial Deflecting Flexible Deburring Tool By constantly pressuring cutting edge FDT Axial can deburr the side of the workpiece. The FDT Axial(F) has a push stroke of 10 mm in axial direction, is used to deburr of profiles with variable height or holes on curved surfaces. Adjust the height Z axis by applying a pressure of 1-2mm from the point farthest from the spindle (with the lowest Z coordinate), the FDT will automatically compensate for changes in altitude.

With 3 types of springs almost all material types can be deburred.
With ER-11 collet milling inserts range from Ø 0.5 mm to 7 mm can be used.
10 mm Axial deflection- pushing against surface contracting.
Compensation capacity: max stroke 10 mm push
Direction of milling: concordant
Clockwise rotation: 6000-8000 rpm / min
Feed Rate : F2000-4000 mm/min

CNC Deburring System FDT - SX0 - AXIAL



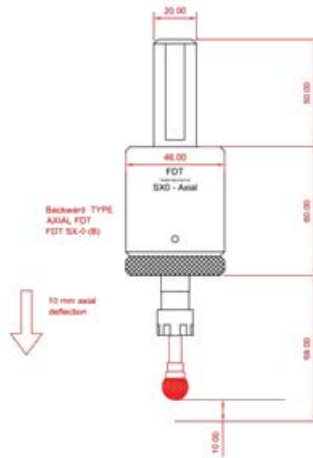
FDT-AXIAL PUSH TYPE F : ER32 Flexible Deburring Tool (On request)
Article No. 23.420.00

ER32 type was designed for specific Brushing application, in the range Ø 100 -150 mm.



Flexible Deburring Tool

CNC Deburring System FDT - SX0 - AXIAL



FDT AXIAL PULL TYPE – FDT AXIAL (B) Article No. 22.420.00

Axially deflecting in pull direction making it possible to deburr underside contours

FDT-SX0 (B) has a expanding stroke of 10 mm in axial direction. By constantly pressuring the cutting edge it can deburr profiles with variable height or intersecting holes. Flexible Deburring Tool for under side contour.

Adjust the height of the Z axis applying pressure of 1-2mm from the point closest to the spindle (with Z value higher), the FDT will automatically compensate for changes in axial direction.

With 3 types of springs almost all material types can be deburred.

With ER-11 collet milling inserts range from Ø 0.5 mm to 7 mm can be used.

10 mm Axial deflection pulling behind surface expanding.

Compensation capacity: max stroke 10mm in expanding.

Direction of milling: concordant

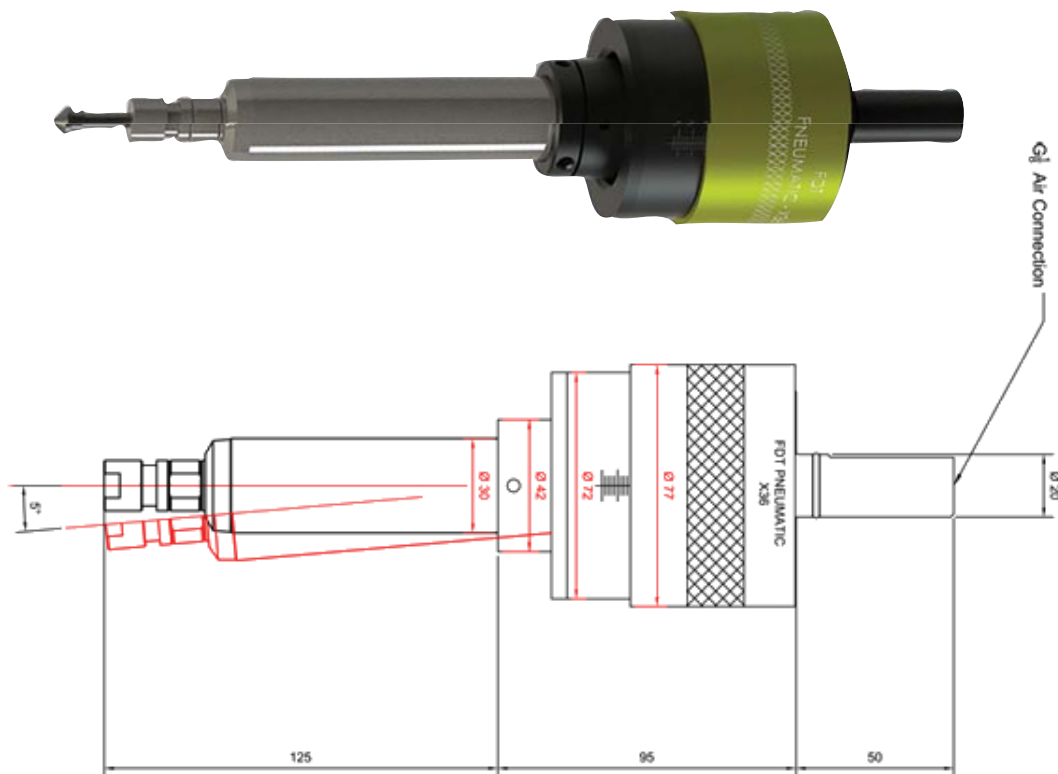
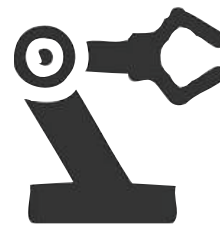
Clockwise rotation: 6000 - 8000 rpm / min

Feed Rate: F1500-3000 mm/min

Flexible Deburring Tool

Roboter Deburring System

FDT - Pneumatic - X36



FDT is an air driven flexible tool that follows the undefined edges on the workpiece. The lateral pressure against the workpiece edge can be adjusted with a built in mechanism. This allows adjustment of the chamfer width. FDT Pneumatic is not affected to air pressure deviations, since its lateral flexion force is created with springs. With this feature you can achieve uniform and even deburring results, with air pressure deviations. FDT Pneumatic has a robust design. You can mount different types of spindles up to 36mm diameter. Please contact us for suitable spindle models. With 20 mm Weldon shank you can mount FDT Pneumatic to a Robot or bench. Standard industrial carbide burs and profiles can be used for deburring needs. Maximum deflection 12 mm

Specifications FDT - Pneumatic - X 36

Article no. 30.420.00

Spindle Speed: 35000 rpm

Power: 300W

Rotation: clockwise

With ER-11 collet burs range from Ø 0.5mm to Ø 7mm can be used.

Air consumption: 8.3 l / sec

Air Supply: hose inside diameter 6mm

Noise level: 78dB

Use with lubricated air.

Air Connection 1/8" Gas – from rear

Some of the spindles can be supplied alternatively :

45.000 rev / min 230W lubricated air

45.000 rev / min 160W turbine dry

55.000 or 80.000 rev / min 100W lubricated air

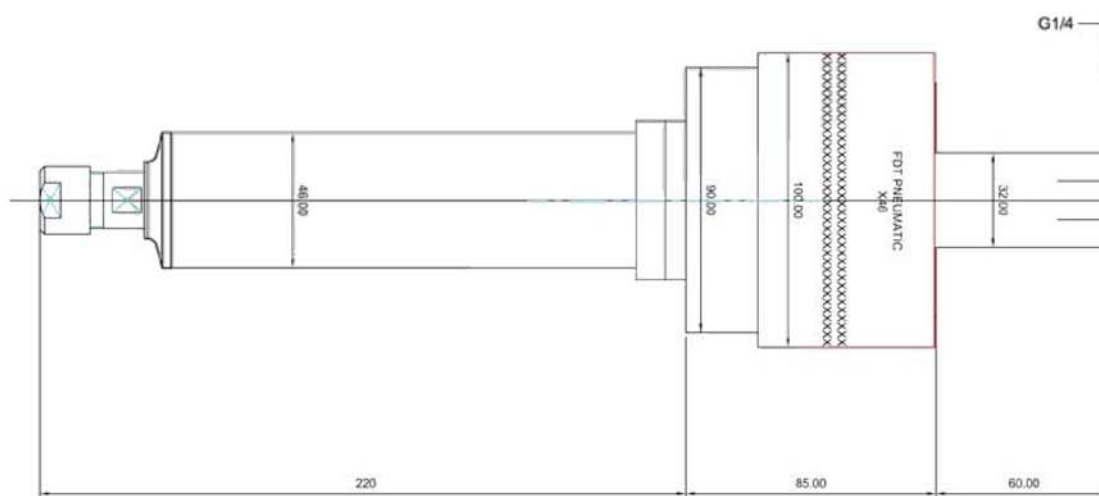
65.000 or 100.000 rev / min 100W turbine



Flexible Deburring Tool

Roboter Deburring System

FDT - Pneumatic - X46



FDT is an air driven flexible tool that follows the undefined edges on the workpiece.

The lateral pressure against the workpiece edge can be adjusted with a built in mechanism.

This allows adjustment of the chamfer width.

FDT Pneumatic is not affected to air pressure deviations, since its lateral flexion force is created with springs.

With this feature you can achieve uniform and even deburring results, with air pressure deviations.

FDT Pneumatic has a robust design. You can mount different types of spindles upto 36mm diameter.

Please contact us for suitable spindle models.

With 32 mm Weldon shank you can mount FDT Pneumatic to a Robot or bench.

Standard industrial carbide burs and profiles can be used for deburring needs.

Maximum deflection 15 mm

Specifications FDT - Pneumatic - X 46

Article no. 31.420.00

Spindle Speed: 35000 rpm

Power: 300W

Rotation: clockwise

With ER-11 collet burs range from Ø 0.5mm to Ø 7mm can be used.

Air consumption: 8.3 l / sec

Air Supply: hose inside diameter 6mm

Noise level: 78dB

Use with lubricated air.

Air Connectio 1/8" Gas – from rear

Some of the spindles can be supplied alternatively :

45.000 rev / min 230W lubricated air

45.000 rev / min 160W turbine dry

55.000 or 80.000 rev / min 100W lubricated air

65.000 or 100.000 rev / min 100W turbine