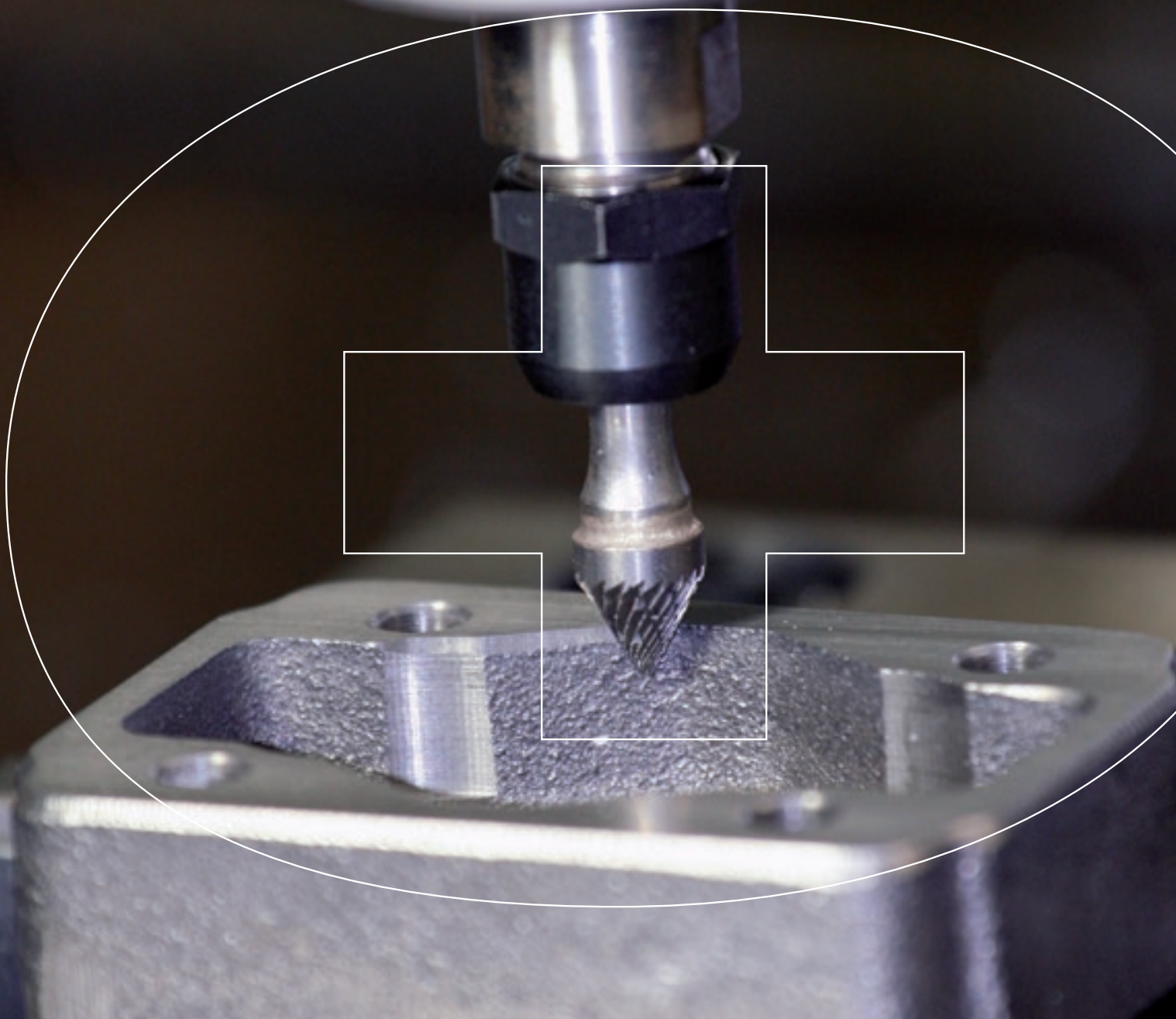


**engraflexx**

## Automatic deburring of undefined edges



**engraflexx**

# Automatic deburring of undefined edges

The **engraflexx** deburring tools are used to automatically deburr parts without clearly defined edges. Use takes place predominantly on a machining centre or CNC lathe or robot.

As a special feature, the tools are equipped with a pre-tensioned, flexibly deflecting spindle. Thus deviations of target and actual positions during deburring are automatically compensated. The lateral milling contact pressure can be infinitely adjusted at the tool for the adjustment of the desired deburring thickness.

## Benefits:

### + Time saving

- No necessity for additional manual deburring
- Additional part handling is no longer necessary

### + Quality improvement

- Repetition accuracy for all parts
- Evenly deburred edges
- No edges missed

### + Process simplification

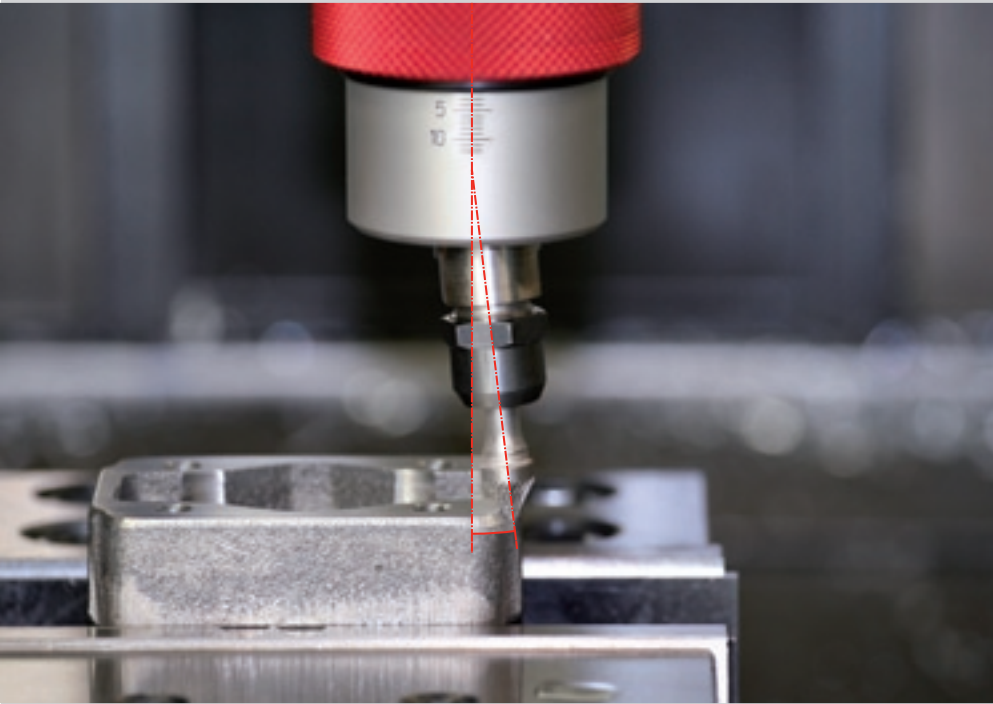
- Reduction of the number of work processes (manual deburring is no longer necessary)
- Minimisation of logistic and transport costs

### + Employee workload reduction

- Reduced accident risk as opposed to manual deburring
- Reduction of dirt and dust development
- Reduction of noise exposure



- 1 Even deburring of a cast housing  
Automatic compensation of dimensional inaccuracy
- 2 Countersinking of cast-in holes  
Radial compensation of position differences
- 3 Deburring of interior holes  
Extension of the milling cutter springs at the drilling edge



#### Adjustable milling cutter contact pressure

The scale on the tool enables the adjustment with repeatable accuracy of the lateral milling cutter contact pressure and thus of the desired deburring thickness.

#### Deflection function for optimum contour adaptation

As a result of the flexible spindle bearing, the angularly deflected milling cutter precisely follows the deburring contour of the workpiece. The maximum deflection angle is 5°; whereby dimensional deviations of up to 15 mm are automatically compensated, depending on the type of tool.

### Functional principle:

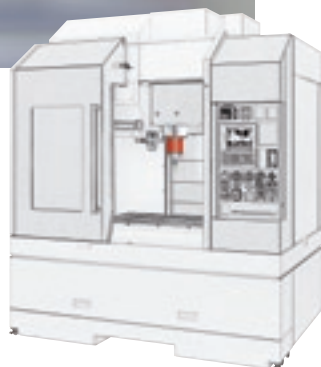
The special feature of the **engraflex** is the flexibly deflecting spindle, which is centred by spring pre-tension. Programming takes place by entry of the theoretical deburring contour with "too large" a radius correction towards the workpiece. When moving along the workpiece, the milling cutter is therefore laterally displaced and the spindle deflected. The pre-tensioned centring of the

spindle causes the milling cutter to always be evenly pressed against the workpiece. Depending on the deviation of the deburring edge from the programmed workpiece contour, the spindle is more or less deflected; i.e. the milling cutter automatically follows the actual edge of the workpiece. This guarantees even deburring irrespectively of the degree of deflection.

### Application options: Optimum use in processing centres, CNC lathes or robots



**engraflex EC** in operation on a processing center, with automatic change via tool changer



**engraflex AP** in operation for workpiece deburring with robot





## Technical information

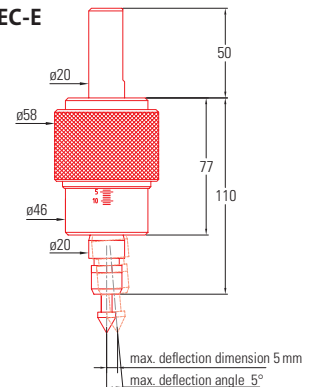
### Type EC / EC-E with direct drive via the machine spindle

The tool types **engraflexx** EC and EC-E can be used as a conventional machining tool in any CNC machine.

Technical data	Type EC	Type EC-E
Deflection	5 mm / 5°	12 mm / 5°
Required speed	2.000 – 12.000 rpm	2.000 – 8.000 rpm
Feed	500 – 8.000 mm/min	500 – 8.000 mm/min
Collet	6 mm*	6 mm*
Shank	Weldon 20	Weldon 20
Weight	0,9 kg	1,1 kg

\* other available upon request

### Type EC / EC-E



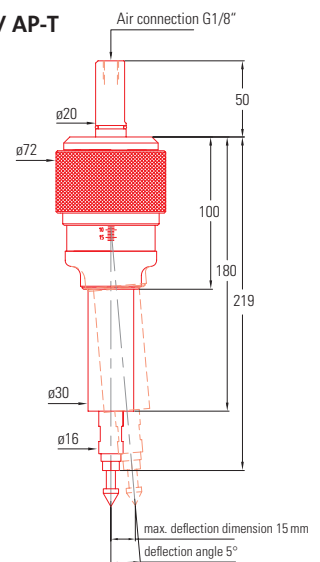
### Type AP / AP-T with spindle drive by means of compressed air

Tool types **engraflexx** AP and AP-T can be used in CNC machines or robot resp. special machines.

Technical data	Type AP	Type AP-T
Drive	integrated lamella spindle	integrated turbine spindle
Required air pressure	6 bar, lubricated	6 bar, <b>unlubricated/maintenance-free</b>
Air supply	by spindle or laterally	by spindle or laterally
Deflection	15 mm / 5°	15 mm / 5°
Speed	30.000 rpm	30.000 rpm
Feed	1.000 – 10.000 mm/min	1.000 – 10.000 mm/min
Output	280 W	150 W
Collet	6 mm*	6 mm*
Shank	Weldon 20*	Weldon 20*
Weight	2 kg	2 kg

\* other available upon request

### Type AP / AP-T



Contact addresses of regional and international dealers can be found at [www.gravostar.com](http://www.gravostar.com)