

multidec[®]-WHIRLING

THE EFFICIENT WAY TO MAKE THREADS



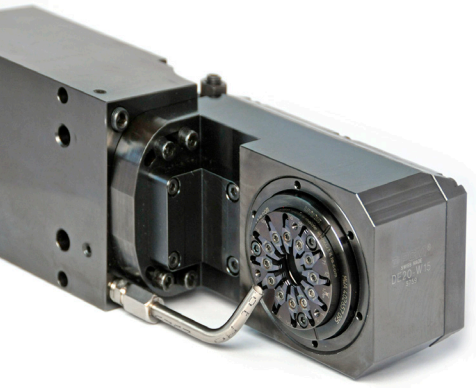
- SIGNIFICANT PRODUCTIVITY GAINS
- UP TO 50% SHORTER MACHINING TIMES
- TOP SURFACE QUALITY IN A SINGLE PASS
- INSTANT TOOL CHANGING
- ALMOST NO LIMIT ON THREAD LENGTHS

multidec®-WHIRLING

multidec®-WHIRLING is the thread whirling tool system with multiple cutting edges; unlike the thread turning method, this enables the thread to be finished without burr in a single pass. Even tough materials can still be machined to the tightest possible tolerances.

The cutting edges which are uniformly located in the whirling ring are positioned on the cutting track and "fly" round the workpiece in an eccentric pattern with rapid material attack at a high cutting speed.

For use on specific machines, UTILIS supplies versions with different cutting tracks.



The driven whirling unit is inclined around the thread pitch angle in relation to the workpiece; the whirling head performs the rotating cut motion while the workpiece effects rotating forward feed.

With the multidec®-WHIRLING system, the workpiece rotates in the same direction as the whirling head with the following benefits (as opposed to rotation in the opposite direction):

- smoother surfaces
- short chips and better chip removal
- lower cutting edge wear

That is why whirling is frequently used to make bone screws in titanium or stainless steel.

INNOVATIVE SYSTEMS



Mono-system

Highly compact single component system. This enables high concentricity of ± 0.005 mm to be achieved.



xModular-System

Flexible, two-part system, which reduces set-up time with the fast change whirling ring (the adapter remains in the whirling device); guaranteed concentricity of ± 0.005 mm.



QuickChange-System

Unlike the xModular-System the whirling ring is removed or inserted by rotation. Here too, the guaranteed concentricity of ± 0.005 mm is maintained.

CUTTING FOR ALL NEEDS

If a special cutting shape is needed with dimensions and coatings that are not available in the standard version, we will be happy to assist as your partner.

We develop the most convenient thread whirling plate in cooperation with you and manufacture it in-house. Using existing blanks, these special versions can be supplied fast and at low cost; you continue to use the existing UTILIS whirling head.



Standard thread form (single start)



Special form (one, two and three starts) with blank



Increased productivity and optimised manufacturing costs

Use of up to 12 cutting edges brings a significant productivity gain with the same feed rate per tooth. This results in faster manufacturing at lower cost.

UP TO 50% SHORTER MACHINING TIMES

Whirling with up to 12 cutting edges enables machining time to be cut by up to 50%. This enables the rate of machine utilization to be increased by up to 100%, while achieving substantially higher capacities. The high surface quality free from burr practically eliminates the need for reworking.

Fast whirling tool change accompanied by short set-up times further increases productivity.

TOP SURFACE QUALITY

The use of up to 12 cutting edges, higher concentricity, special cutting edge geometries and ideal chip removal enable top quality surfaces to be produced without burr in a single manufacturing process. Subsequent finishing operations are also shortened, so saving further costs.

CORNER RADII UP TO 0.03 mm

The possibility of grinding concave radii of up to 0.03 mm enables the most stringent quality and accuracy criteria to be satisfied.

UP TO TWICE THE SERVICE LIFE

The use of 12 cutting edges enables service life to be extended by up to 175%. This minimizes handling and down time costs.

OPTIMUM CHIP REMOVAL

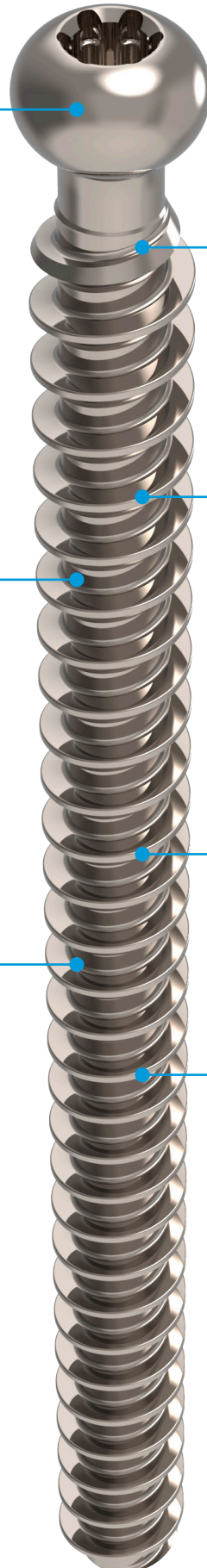
Whirling produces short chips which are easy to remove. This assures significantly higher process security and enables tough materials such as titanium to be machined much more efficiently. This becomes particularly noticeable with regard to the tool life and the surface quality.

SPECIAL THREAD SHAPES

Thread whirling plates (cutting edges) are individually produced fast and at low cost using the existing blanks.

CONCENTRICITY (± 0.005 mm)

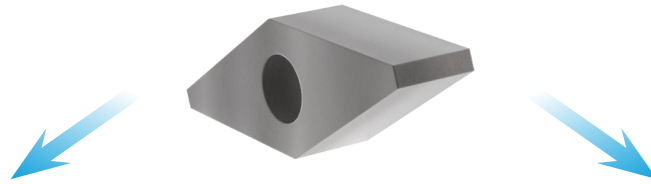
The latest manufacturing technologies with matching system components guarantee continuous concentricity for high-grade surface qualities.



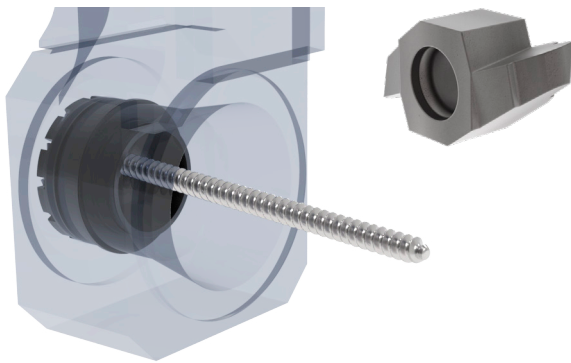
multidec®-WHIRLING VS Single point threading

STARTING SITUATION

Our innovative multidec®-WHIRLING system was developed on the basis of the well-tried multidec®-CUT-1600 system. Thanks to our comprehensive know-how and our experience with our previous systems, special solutions can be quickly and efficiently implemented. The compact space requirements of multidec®-WHIRLING make it possible to use up to 12 inserts, which guarantees maximum precision and productivity when whirling.



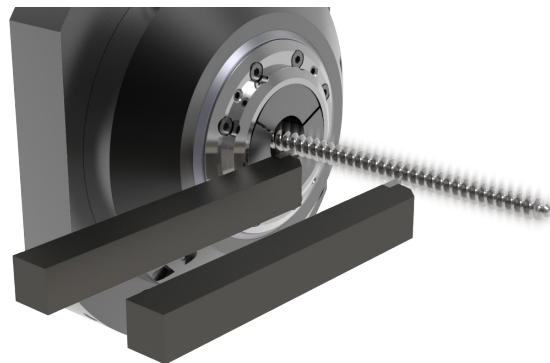
multidec®-WHIRLING



without front turning up to a core diameter of $+a_p \times 2 = \text{bar diameter}$

Burr-free
In a single step
Cutting depth up to $a_p = 4 \text{ mm}$ (default)
Controlled, small chips
Almost unlimited thread length
Reduced vibration
Time saving = added value

SINGLE POINT THREADING

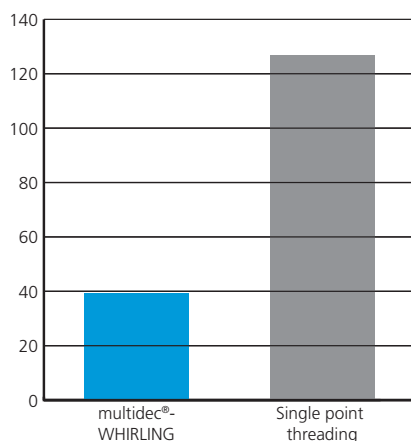


Only possible with preturning

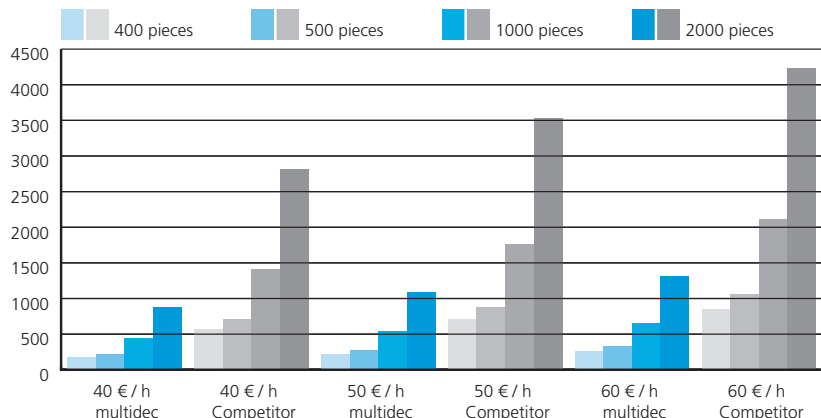
Sharp-edged
Number of cuts min. 5~15
Cutting depth distributed over number of cuts
Continuous chip
Limited thread length max. $5 \times d$
Possibility of vibration
Time-consuming = additional costs

PERFORMANCE COMPARISON

Machining time in [sec]



Cost trend according to batch size in [€]



Examples of machining

1 STANDARD THREAD HA 4.5 IN 1.4441 / 316 LVM / SUS 316

**Mission:**

Substantial saving on machining time and improved service life with no loss of quality.

Outcome:

- machining time halved
- service life improved to 175%
- high surface quality
- smooth running
- identical quality

2 DEEP DOUBLE THREAD IN TITANIUM GRADE 5

**Mission:**

Production of double threads with a high material removal volume. The client requires high accuracy despite the heavy cutting forces.

Outcome:

- high surface quality
- extremely smooth running
- high accuracy

3 WORM THREAD IN 11SMnPb30

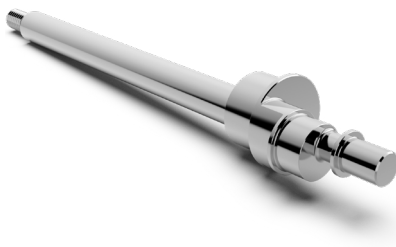
**Mission:**

Replacement of the traditional cumbersome manufacture of two-start worm threads with a view to improving the surface quality, enhancing process security and minimizing the chip problem.

Outcome:

- the shape is perfectly accurate
- very good surfaces
- more than twice as fast as using the traditional process
- high process certainty

4 ECCENTRIC WHIRLING IN 1.4057 / 430 F / SUS 430 F

**Mission:**

Eccentric production on the long lathe replaces expensive traditional techniques. With whirling, the part can be produced very precisely and quickly in a single clamping operation.

Outcome:

- high surface quality
- feasibility without expensive clamping fixtures
- high cutting speed
- utmost precision $\varnothing 10.5 \text{ mm} \pm 4 \mu\text{m}$ or $\varnothing 7 \text{ mm} \pm 3 \mu\text{m}$
- faster than specified process time

5 TURNING/MILLING CENTRE WITH HSK/PSC OR SIMILAR CONNECTION

**Mission:**

Use of thread whirling on lathe milling centers to produce thread lengths of up to $5 \times \varnothing$ and reduce machining time.

Outcome:

- very good surface
- stable clamping
- extremely smooth running

Accessories

WHIRLING BOX



Illustration with whirling head and plates (these have to be ordered separately)

The multidec®-WHIRLING box contains tools for daily use on the machine. The protective foam inlay ensures that the parts are always located at the same place in the case.

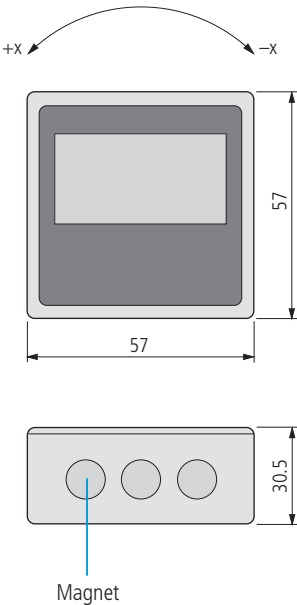
Spaces are provided for the whirling head for specific applications and the matching whirling plates (4 unmounted sets in all). Dummies can be supplied optionally to protect vacant plate positions.

Contents:

- Handle for torque screwdriver 1.2 Nm
- Alternative torque screwdriver blade for Torx screws
- Allen key
- High performance grease
- Spare screws for the whirling adapter and whirling ring
- Spare Torx screws for the indexing plates

Order designation	Art. no.
Starter-Set	146928

DIGITAL INCLINOMETER



The digital inclinometer gives you more flexibility in machine set-up and adjusting the thread pitch angle. The calculation and complicated movement by a certain distance are not required, particularly since the space situation in machines is not always the best.

The UMI DI-490 consists of a compact housing. Three magnets on the underside makes the attachment in the machine compartment easier. The zero point can be calibrated and stored internally, in order to change between relative and absolute measurement at any time.

Technical data:

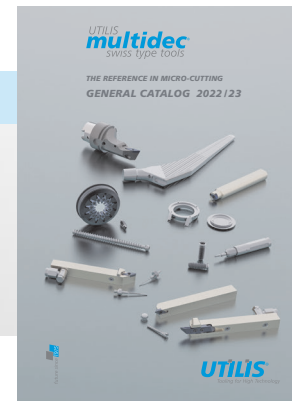
- Measuring accuracy 0.2°
- Measuring range (X) 4×90°
- Display resolution 0.05°
- Temperature range 0 to 40 °C
- Weight 200 g
- Protection class IP54

Order designation	Art. no.
UMI DI-490	219689

More multidec® products from the company UTILIS

multidec® General catalog 2022/23

With the slogan **"The reference in micro machining"**, UTILIS presents the multidec® general catalogue 2022/23. The general catalogue contains a wide product range with efficient tools for your needs.



Article 300362

multidec®-MICRO TOOLS & -MILL – Solid carbide precision tools

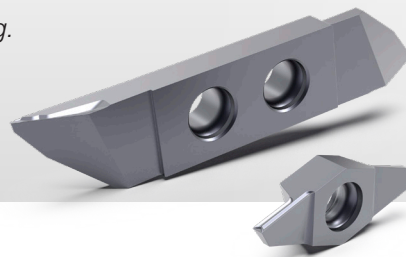
multidec®-MICRO TOOLS contain various solid carbide micro tools for drilling, milling and TORX® milling. You will find a wide range of universal milling tools in the multidec®-MILL product range.



Article 400925

multidec®-CUT – G-LINE inserts

The performance boost in machining. New technology for creation of any three-dimensional chip-breaker shapes.



Article 400870

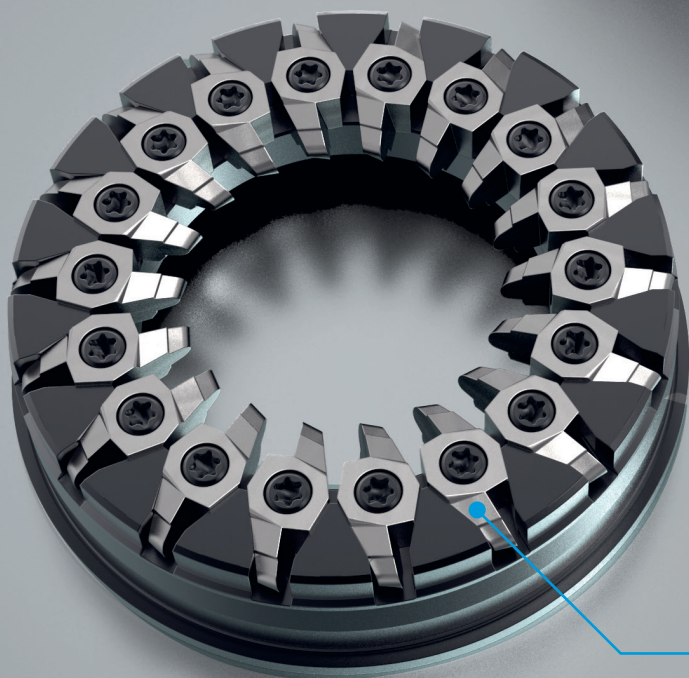
multidec®-CARE – From the idea to the machine

You have an order or an idea, and you want to know how to implement it? Together, we can realise a cost-effective solution for you.



Article 400885

**Special solution for
cutting depths of
greater than 4 mm**



**Up to 18
whirling plates**

UTILIS[®]
Tooling for High Technology

■ **UTILIS AG, Precision Tools**

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