



FLOYD

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THE TOOLING SPECIALISTS FOR PRECISION COMPONENT MACHINING

Thread Rolling Attachments



WAGNER[®]
WERKZEUGSYSTEME
MÜLLER GMBH

Keeping an Eye On The Profit

We claim:

- Only WAGNER® offers you all processes of producing **external threads**:
- Only the best is good enough for us!
Top quality has its origin in Pliezhausen:
- With our thread rolling attachments you **save** both time and money:
- Many **types of threads** can be rolled with the thread rolling attachment:
- A big range of **materials** can be rolled with the thread rolling attachment:.

We prove:

Rolling - cutting - reducing diametres

Complying with our consequent quality system, only first class materials are processed to high quality tools.

You need one rolling head only, which may remain on the machine even when the tasks change.

Regular type threads, fine threads, right- and left-handed threads, cylindrical or conical threads, trapezoid and knuckle threads as well as plunging operations, even complying with English and American standards.

All materials that are suitable for cold forming can be rolled by the WAGNER® thread rolling attachment.



Thread Cutting Head



Multi-Cutter Turning Head



Thread Rolling Head

Dear reader,

we are a company specialised on the machining of external thread tools. With our **thread cutting heads** one does cut threads on different materials in various sizes and to an enormous good price all over the world for more than 100 years.

And our **Multi-Cutter Turning Heads** and **Thread Rolling Heads** are used in firms dealing with metal-machining for thread cutting, where besides speed and good value an enormous load bearing capacity of the threads is necessary.

For rolling threads with a very short run-out or behind a collar, for instance, we have developed our **Thread Rolling Attachments**. Due to its tangential position, it rolls threads fast and neatly.

On the following pages you will find more information about its wide range of application.

Yours sincerely,





The Thread Rolling Attachment with adaptor for single- and multi spindle lathes



The Thread Rolling Attachment B 18-W in short build for CNC lathes with star revolver

The Thread Rolling Attachments

the straddle type are predominantly used on single-spindle and multiple-spindle automatic screw machines, lathes and special machines.

WAGNER® thread rolling attachments are the preferred tools wherever

- threads have to be rolled behind
- shoulders on the work,
- short threads and
- threads with a short runout have to be rolled adjacent to a shoulder,
- but also where the axial thread production methods cannot be used for reasons of space.

WAGNER® thread rolling attachments are available in seven standard sizes designed to permit an extremely wide range of diameters to be rolled with each size attachment.

Adaptors

Adaptors for receiving WAGNER® thread rolling attachments at various machine tools are available.

These adaptors are of standard design for the majority of single and multiple spindle



Thread close to a collar



Thread behind a collar

The Method

The thread is produced by cold forming. Proceeding from a mean diameter, the root of the thread is impressed and the displaced material is forced outward to form the crest.

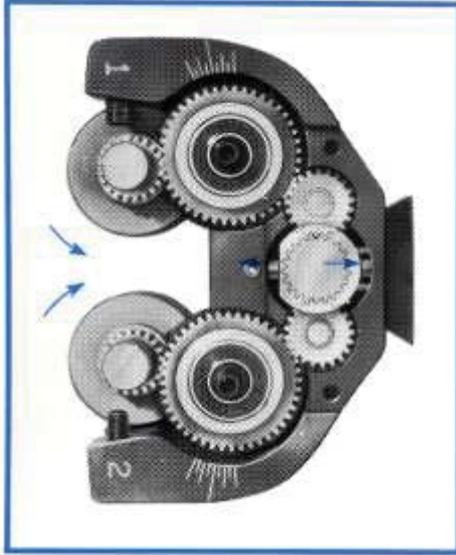
The thread rolling attachment is mounted to the toolholder of the machine, the cross-slide, for instance, by means of the adapter. It is moved against the rotating work at a constant feed rate. The thread rolls, which are synchronized by means of a gear train, are set rotating as they contact the work, forming the thread as the toolholder continues to advance. As soon as the thread rolls are on the centerline of the work, the rapid return motion is initiated and the work is released.

Only few revolutions of the work are needed for rolling the thread. The exact number of work revolutions depends on the thread pitch, the material and size of the tool. The flow of the fibers within the thread profile is not interrupted so that the notch effect is minimized.

The surface of the thread is compacted and the thread flanks become burnished. Threads produced by the thread rolling process are characterized by high fatigue strength, wear resistance and corrosion resistance.

The following characteristics are also typical of rolled threads:

- Rolling times are shorter and thus production rates are higher than with other thread-making methods, and the threading time does not determine the cycle time.
- The feed rate of the thread rolling attachment is in a definite relation to the spindle speed so that the attachment may be operated at the same speed as the other operations.
- The type and size of thread are determined by the use of appropriate thread rolls.



Characteristics of Design

Advance Compensation

As the thread is being rolled, one roll rotates counter to the direction of attachment advance. The roll „wind-up" thus caused is automatically compensated for to assure perfect synchronization of the thread rolls even when not both of the rolls contact the work at the same time.

Self-Aligning Arrangement of Attachment within the Adapter

This design feature assures uniform distribution of the thread rolling pressures upon the thread rolls and minimizes tool wear. The Floating arrangement of the attachment in the adapter provides automatic alignment of the thread rolling head with the center line of the work.

Depending on the machine type several adapters are applied: On the top illustration for automatic turning machines with Cross carriage, on the bottom illustration: for automatic CNC-turning machines with shaft support DIN 69880.

Side-Floating Compensation

The side pressures acting upon the thread rolls are absorbed by thrust ball-bearings. This is a great advantage not only when rolling straight threads but in particular when producing taper threads.

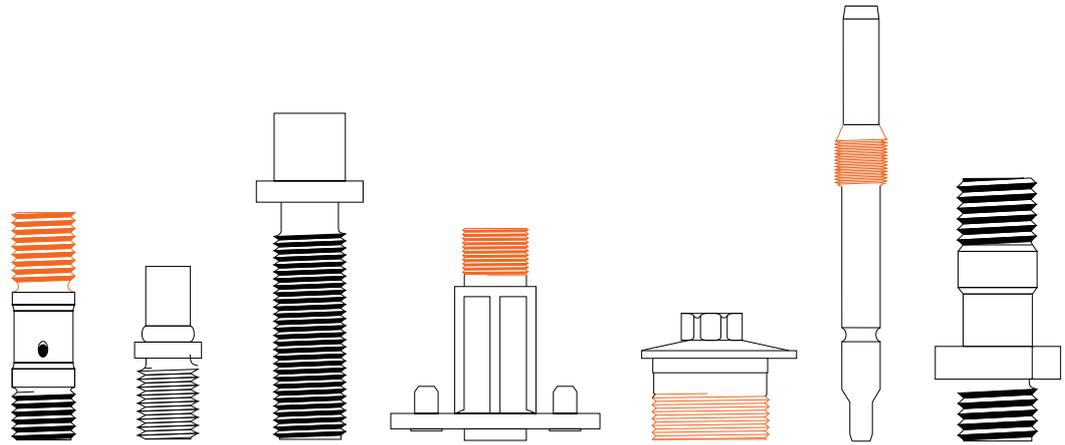
Quick-Change Clamping Arrangement

The dovetail design of the connection between the rolling head and the adapter makes it possible to easily remove the head from the machine for changing rolls. An adjustable and positive locating stop assures that the head will always be reassembled in the same relative Position to the work.

Maintenance Unit

WAGNER® thread rolling attachments are designed to require a minimum of maintenance.

Moreover, an oil mist lubrication unit assuring perfect lubrication and preventing the Penetration of dirt and chips into thread rolling attachment is available.



Set-up and Operation

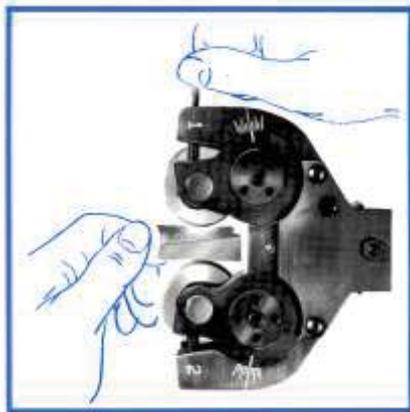
The adapter is easily and quickly attached to the machine slide. Before putting into Operation,

set-up of the thread rolling attachment then occurs in five basic steps:



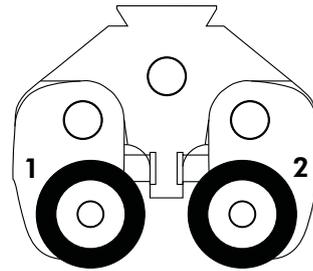
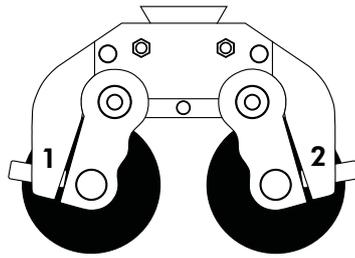
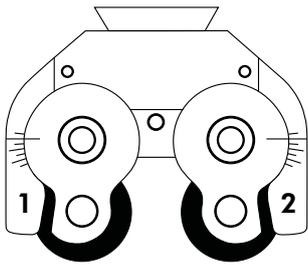
1. Assembling the Rolls in the Head

The thread rolls are assembled in the head by simply removing the roll spindles, inserting the rolls, and securing the roll spindles by means of two screws. Rolls for straight and taper threads are readily interchangeable without the necessity of using additional equipment.

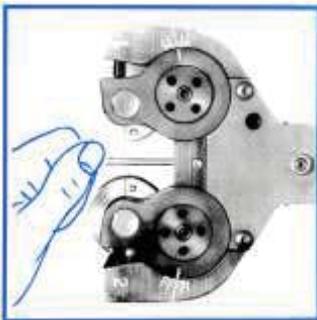


2. Adjusting the Roll Spacing for the Minor Diameter of the Work

Using the adjusting screws, adjust the arms until both rolls contact the work or a suitable gauge. Graduations on the attachment permit uniform adjustment of the upper and lower arms.



Set-up and Operation



3. Matching the Thread Rolls

The rolls are moved to their defined position by turning the micrometer matching screw until the matching lines on the rolls are vertically in line. This simple adjustment can easily be made on the machine without removing the thread rolling attachment.



4. Positioning the Attachment on the Machine

A micrometer positioning gauge supplied with the attachment permits fast and accurate positioning of the thread rolling attachment on the machine to the Center line of the work. Only one gauge is needed for each size attachment.



5. Attaching the Rolling Head to the Adapter

The dovetail clamping arrangement as the connection between the head and the adapter enables the head to be quickly removed and attached without the head changing its relative position to the work.



Machining Examples

Workpiece: Shaft
Thread: M 6
Material: 45 S 20 k - DIN 1851
Attachment size: B 10-W
Type of roll: C 1



Workpiece: Regulator screw
Thread: M8 x 3.75
Material: 3-start
 9 S Mn 28 k
Attachment size: B 10-W
Type of roll: C 1



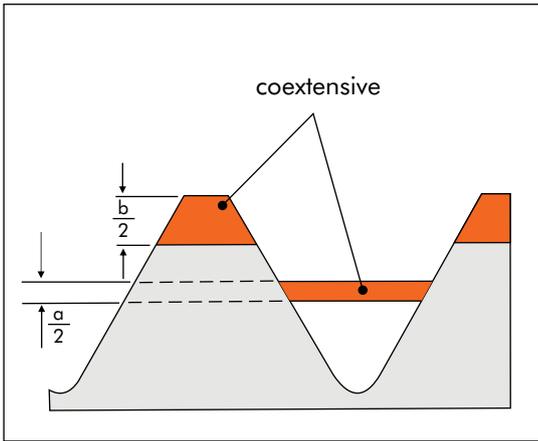
Workpiece: Pulley
Thread: special profile
 without pitch
Material: 9 S Mn 28 k
Attachment size: B 18-W
Type of roll: C 1



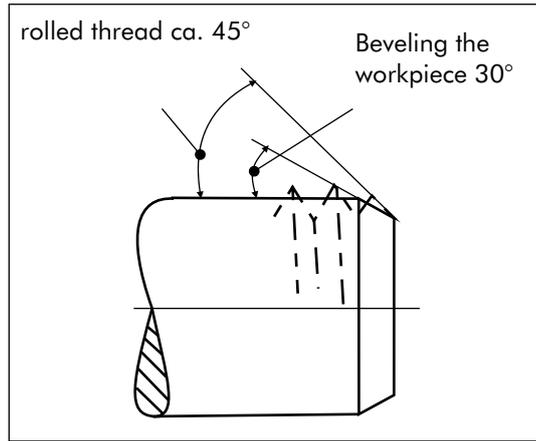
Workpiece: Stud
Thread: M 10
Material: St 50 k
Attachment size: B 8-W
Type of roll: C 2



Workpiece: Threaded bushing
Thread: M 12 x 1.5
Material: 9 S Mn 28 k
Attachment size: B 13-W
Type of roll: C2



Profile displacement by thread rolling operation. The difference $a/2$ of the initial diameter equals $b/2$ of the major diameter.



Beveling for thread rolling

Preparation for Thread Rolling

What material can be rolled?

The material must permit cold forming. In case of V-threads the elongation ϵ_{65} should not be less than 7% and in case of Acme standard screw threads not less than 12%. It is also possible to roll high-strength materials for which cutting methods of thread production can no longer be used. The rolling speed should be at least 30 m/min.

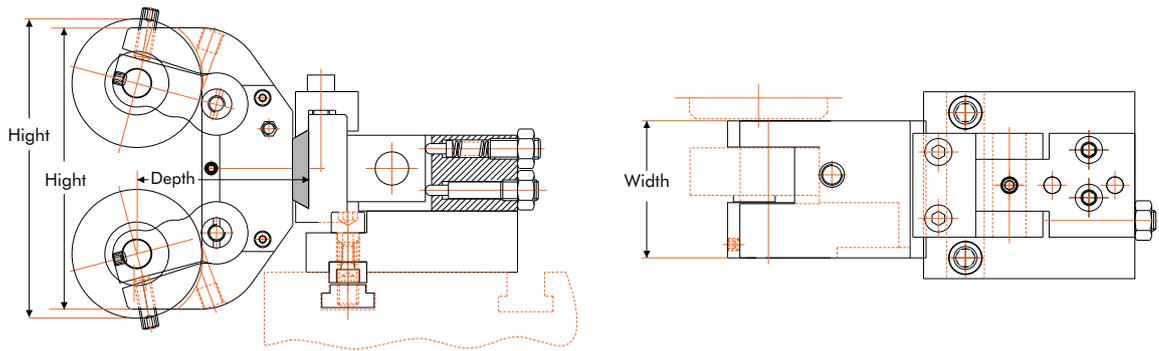
Preparations for Thread rolling

The exact initial diameter or blank for thread rolling must be determined by tests because it is dependent on the yield characteristics of each material. Any change in the initial diameter is multiplied in the major diameter of the thread. In case of oversize blanks, too much material is displaced into the crests of the threads, causing the rolls to be heavily overloaded and their life to be reduced. If undersized blanks are used, on the other hand, the crests of the thread will not fill out. Prior to rolling the threads, the ends of the blanks must be provided with a bevel of 30° from the axis of the blank.

Thread Rolls

WAGNER® has a large number of thread rolls for straight and taper threads available for immediate or early delivery. Thread rolls are also supplied for: Self-sealing taper threads, Acme or worm threads and other special threads. Rolls are also available for special applications like the rolling of lubrication grooves, knurling and serrating or burnishing.





A Thread Rolling Attachment on a cross slide

Technical Data

- Rolls of the WAGNER® Thread Rolling Attachments programme reach long die-life-times as the rolls are big and the large diameter means that a long distance is available for wear and tear.
- Costs are reduced to a minimum as the WAGNER® Thread Rolling Attachment is extremely robust and build for a long life. Every single component fulfils highest requirements regarding stability and stiffness.
- The body of the WAGNER® Thread Rolling Attachment is closed and static. Thus, the forces caused by the shaping process are absorbed directly in the tool's body without straining the rolls.
- WAGNER® Thread Rolling Attachments have a big gap in the tool and thus allow the insertion of thread rolls that fit perfectly in size and diameter.
- WAGNER® Thread Rolling Attachments roll highly precise thread profiles as the synchronisation of the pair of rolls is done via very stable gearwheels. Using an adjusting screw, the rolls can be adjusted very precisely during the work process. with this special development of WAGNER®, an optimum in thread rolling is achieved.

Type	Metric Norm Thread Desired-Ø	Metric Fine Thread Desired-Ø	Thread length max.	Weight kg		Max. Feed force N	Dimensions		
				Tool with rolls	Adaptor		Width	Height	Depth
B 8-W	1.6 - 12	2 - 13	14	1.0	ca. 1.5	1600	36.6	76.2	47.5
B 10-W	2 - 16	3 - 16	19	2.1	ca. 1.7	2490	50	92	65
B 13-W	3 - 22	3 - 30	25.5	3.8	ca. 2.0	4890	66	114	79.5
B 15-W	6 - 22	6 - 45	25.5	4.5	ca. 2.0	5700	66.2	135 to 147	83.4
B 18-W	6 - 27	6 - 42	32	7,0	ca. 3.0	6230	79	156	95.5
B 36	8 - 33	8 - 56	32	11.5	ca. 4.5	9790	90	200	115

Measures in mm



Thread Cutting Head



Large Head



Multi-Cutter Turning Head
MSD



Thread Rolling Head

WAGNER® - Thread Technology for economic production of threads at duplicate pieces

WAGNER® - Thread Cutting Heads are designed for high-speed production of male threads to close tolerances. Many sizes for wide ranges of thread diameters and types are available.

Large Heads are made for cutting male threads of large diameters. Rational application by various types and sizes. Designed especially for cutting heavy threads.

Quick reduction with high accuracy due to the new patented WAGNER® - Multi-Cutter Turning Head. Four inserts, large range of diameters, central setting, raising of cutters during return are just some of the MSD's outstanding characteristics.

Our axial Thread Rolling Heads are designed for high-speed rolling male threads with all advantages of cold working. Many sizes of the stationary and the rotating types are available.



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