A technical line drawing of a thread rolling head, showing a circular arrangement of rollers. The rollers are represented by concentric circles. Several rollers are highlighted with thick orange lines, indicating their specific function or position within the head. The drawing is a top-down view of the tool.

# Thread Rolling Heads

**WAGNER**<sup>®</sup>  
TOOLING SYSTEMS



**Thread Cutting Heads**



**Multi-Cutter Turning Heads**



**Thread Rolling Attachments**

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.

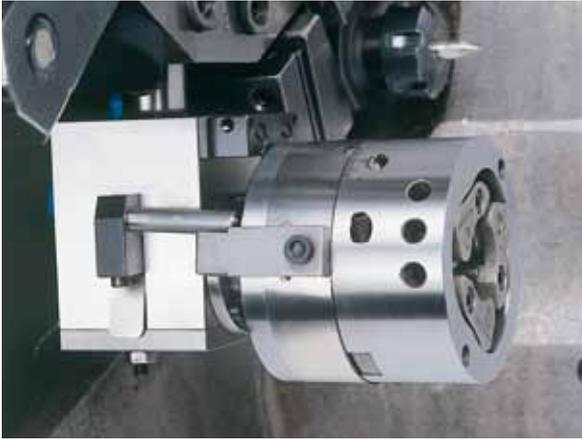
The multi-cutter turning head was developed for cutting precise diameters, and our thread rolling attachment is used in firms dealing with metal-machining for thread cutting, where besides speed and good value an enormous load bearing capacity of the threads is necessary.

Apart from the tangential method, WAGNER® also offers thread rolling heads for the axial rolling of cold-moulded workpieces.

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

Yours sincerely,

WAGNER® Tooling Systems



**Stationary RS16 rolling head  
with locking device**



**Thread rolling head RS 60-5 with 5 rolls**

## The Flexible Tool System

The axially working WAGNER® thread rolling head rolls the superior finish threads in an unrivalled large working area.

**The large working area** of the various rolling head models is made possible by the fast and easy exchange capabilities of the roll holders. They differ in the size of the working areas and the holder angles. This ensures that the threads with different profile shapes can be machined with left-hand or right-hand threads using the same head. Other shaping work such as beading, knurling, rolling-in and smoothing can also be carried out. The heads are suitable for rotating or stationary use.

The axial head is closed by radially turning the locking lever or locking roll or by an automatic locking device. The head's opening mechanism will be activated when the feeding stops and the rolls will release the workpiece.

**Maximum productivity** can be realised by the use of high precision thread rolls, which are held in place by the roll holders. These can be optimised to match the required pitch, diameter and shape of the rolling thread. The thread roll is the ultimate shaping tool in which the profile that has to be rolled is machined as a parallel circumferential groove.

The **high flexibility** that ensures that the head can be fitted in different machines is realised by the numerous shaft versions available to you. The shaft does not include any rolling head mechanical controls and it can easily be exchanged using the screw connections.

### Application areas:

WAGNER® Tooling Systems offers a great number of thread rolls for cylindrical and conical threads. The production of left-hand and right-hand threads is also possible as well as regular-pitch and fine-pitch threads, tube, trapeze and special threads.

Profile thread rolls are also available for special applications such as the rolling of lubricating, knurled or smooth grooves.

### Your benefits:

- Large working areas realised through modular design
- Rotating and stationary models for use on lathes, machining centres, rotary indexing machines and special machines
- Machining of long threads
- Auto-opening for touch-free retraction



**Stationary RS16 rolling head fitted on the turret of a CNC lathe**



**Rotary RR 22-2 rolling head mounted on a slide unit spindle**

## The Method

### The Thread Rolls

The rolling thread is the actual moulding tool. The rolling profile is worked in as a parallel peripheral chamfer.

Thus having the same flank lead, various thread diameters either left-hand or right-hand threads can be rolled with the same assembling.

Needle bearings or carbide nuts bear the threads. To tackle the numerous tasks, various types and qualities of rolls are at your disposal.

### The Roll Holders

They support the thread rolls and fit at the inside of the cam ring. They differ according to the range of diameters and the worked in lead angles of the thread to roll.

Few roll holder sets cover the whole work range of a thread rolling head.

It is very easy to replace the roll holders for

- regular- and fine threads
- trapezoid- and special threads
- right-hand and left-hand threads

### The Thread Rolling Head

It supports the roll holders, opens up after the thread rolling and can be positioned precisely according to the rolling diameter.

Constructing of the head is dedicatedly easy. It facilitates controlling of the energies of cold moulding.

The size accuracy and permanent operation of the rolled threads even with workpieces up to maximally 1700 N/mm<sup>2</sup> of tensile strength is therefore guaranteed.

### The Shank

As connecting element to the machine, the shank isn't fitted with operational elements of the rolling head mechanism. Thus, it can be replaced very easily by thread connections. Various kinds of shanks for almost every tool fitting of the different kinds of machines are available.

Additionally, the shank serves as a die of a stop should it be needed.



**WAGNER® thread rolling head RS16  
stationary type**



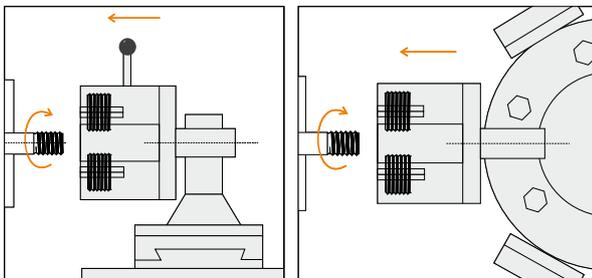
**WAGNER® thread rolling head RAR10-2  
rotating type**

## Two Designs To Choose From

### Stationary type:

The WAGNER®- thread rolling head of the type stationary is manufactured for operating with rotary workpieces. This type is for instance used on a revolver of an automatic lathe or a turning lathe. The opening at the end of the thread may be done via stop of the infeed of the machine or via limitation of the infeed via inner stop.

The closing process may be carried out either manually by the control or automatically by starting of a catch or a cam. Additionally, we supply you with the suitable locking devices for an automatic closing for regular CNC- turning lathes. The closing impulse takes place before rolling during a regular turning- or drilling job. Thus, cooling water is taken from a steep tool holder during its working cycle in order to supply the closing attachment with it. Due to changeable shanks, the rolling head is adaptable for all machine tool fittings.



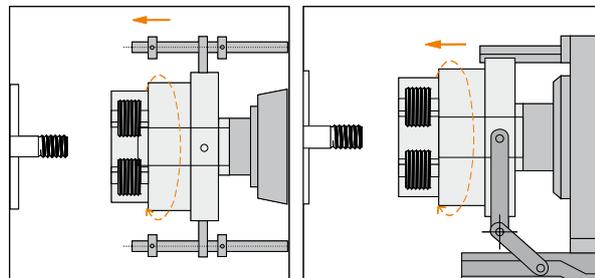
### Rotating type:

The WAGNER®- thread rolling head of the type rotary is designed for stationary workpieces. It is used on a sleeve of a machining device or on a mandrel of a sliding carriage. Concerning operation, one does distinguish between RAR- and RR-types.

The opening of the thread end of the RAR- types is done by stopping the steering ring with the help of stops.

The rolling head is closed by moving the steering ring towards the front of the rolling head.

The RR-types will be opened via infeed stop of the head. They are closed by moving the steering ring towards the back of the rolling head. Afterwards, the head will be moved back into the operating position.



On machining centres, the type stationary can be used even rotary. Please do not hesitate to ask us, should you have any special needs.



**Stationary thread rolling head RS60-5**



**WAGNER® thread and profile rolls**

## Technical Data

### Materials

With WAGNER®-thread rolling heads all cold-moulded workpieces owing to the non-cutting moulding can be rolled. Easy to process for long-chipping workpieces.

### Preparation of the workpiece:

The initial diameter has to be prepared in tight measurements. The processing diameter approximately complies with the effective diameter. A chamfer with a chamfer angle of 12-30° is required.

### Stationary model

Type	Fine-pitch thread Nominal Ø	Regular-pitch thread Nominal Ø	Main size		Weight [kg]	Thread length	
			Head Ø	Head length		Ø up to	max. length
RS 10	2.5 - 10	2.5 - 10	66	55	1.2	10	unlimited
RS 16	3 - 24	3 - 16	88	72	2.7	16	unlimited
						22	27
						27	19
RS 16-VB	6 - 23	6 - 12	88	73	3.0	16	unlimited
						22	33
						23	26
RS 22-2	5 - 36	5 - 24	125	120	10.5	27	unlimited
						32	50
						36	26
RS 27/56	8 - 56	5 - 27	150	109	11.0	52	unlimited
						56	31
RS 42	8 - 45	8 - 42	190 - 200	154.5 - 162.5	28.0	42	unlimited
RS 42/75	45 - 75	-	190 - 200	154.5 - 162.5	29.5	45	unlimited
						62	86
						75	49
RS 45	12 - 54	12 - 45				48	unlimited
						54	119
RS 60-5	32 - 60	-	192	131	28.0	60	unlimited

### Rotary model

Type	Fine-pitch thread Nominal Ø	Regular-pitch thread Nominal Ø	Main size		Weight [kg]	Thread length	
			Head Ø	Head length		Ø up to	max. length
RAR 10-2	2.5 - 10	2.5 - 10	66 - 108	109.5	3.4	10	unlimited
RAR 16-2	3 - 24	3 - 16	88 - 130	126.3	5.7	16	unlimited
						22	27
						27	19
RAR 16-VB	6 - 23	6 - 12	88 - 130	127	6.0	16	unlimited
						22	33
						23	26
RR 22-2	5 - 36	5 - 24	125 - 180	180	18.9	27	unlimited
						32	50
						36	26
RR 27/56	8 - 56	5 - 27	150 - 162	175	14.5	52	unlimited
						56	31
RR 42	8 - 45	8 - 42	190 - 238	217.5	45.0	42	unlimited
RR 42/75	45 - 75	-	190 - 238	217.5	46.5	50	unlimited
						62	86
						75	49
RR 45	12 - 54	12 - 45				48	unlimited

■ The maximum thread length can be limited by the shank.

Axial rolling heads with pre-fitted rolls are available on request.  
All sizes are given in mm unless otherwise stated.

# Comparison

## Thread cutting = chip removing

### Strength:

lower, as the fibre motion of the work piece will be interrupted.  
Notch effect in the groove of the thread.

### Manufacturing time:

Cutting time: 3 - 40 m/min.  
Deep thread profiles have to be cut in several steps.  
Higher primary processing times, but shorter set-up time because of tool default.

### Preparation of the moulding blank:

The initial diameter can be of the same size as the external diameter of the thread.  
It may also be bigger since an excessive amount can be removed.  
The moulding blank need not be chamfered.

### Subsequent machining:

A cut thread can be finished off at anytime.

### Finishing quality of the thread flank:

dependant on the work piece and the cutting conditions. The rougher the surface the more likely is it to corrode.

### Tool costs:

very low as the chasers can be reground.

### Material:

Non cold-moulded work pieces such as cast iron, annealed cast iron and gun-metal can be cut.

## Thread rolling = non-cutting

### Strength:

higher, because of strain hardening of the work piece. Fibre motion of the work piece won't be de-stroyed resulting thereof is a higher static and dyna-mic tensile strength.

### Manufacturing time:

Rolling time: 30 - 100 m/min.  
The thread will be rolled in just one step.  
Very short primary processing times, higher set-up times when setting the tools.

### Preparation of the moulding blank:

The initial diameter has to be prepared in tight mea-surements. The processing diameter approximately complies with the effective diameter.  
The exact diameter can be obtained through testing.  
You will need a chamfer with a chamfer angle of 12-30°.

### Subsequent machining:

Subsequent machining is hardly possible owing to the work piece's hardening of rolled threads.

### Finishing quality of the thread flank:

very high since it is burnished.  
Very low falling gradient.

### Tool costs:

high cost-effectiveness with large-volume because of the very high tool service life.

### Material:

All cold-moulded work pieces owing to the non-cutting moulding can be rolled. Easy to process for long-chipping work pieces.



**Thread Cutting Heads**



**Multi-Cutter Turning Heads**



**Thread Rolling Attachments**

## **WAGNER®- Tool Systems Fulfil All Your Wishes When Dealing With Metal-Machining!**

WAGNER®-thread rolling attachments are used for rolling threads behind a collar, short threads. Besides for threads with short outlets which have to be rolled up to a collar. Various installation sizes and adapter allow their running on different machines. The patented WAGNER®- Multi-Cutter Turning Head facilitates thread cutting fast and very exact. Four reversing plates, wide diameter range, central fitting as well as lifting of the cutting edges when reversing are just some of the excellent features of the MSD. Our reliable thread cutting heads cut external threads quickly and with clearance. There is a multitude of installation sizes including graded cutting ranges. High chipping performance and short cutting times guarantee full use of the power of modern machines.

**WAGNER®**  
TOOLING SYSTEMS

Gutenbergstraße 4/1  
D - 72124 Pliezhausen

fon (0 71 27) 97 33 00  
fax (0 71 27) 97 33 90

info@wagner-werkzeug.de  
www.wagner-werkzeug.de