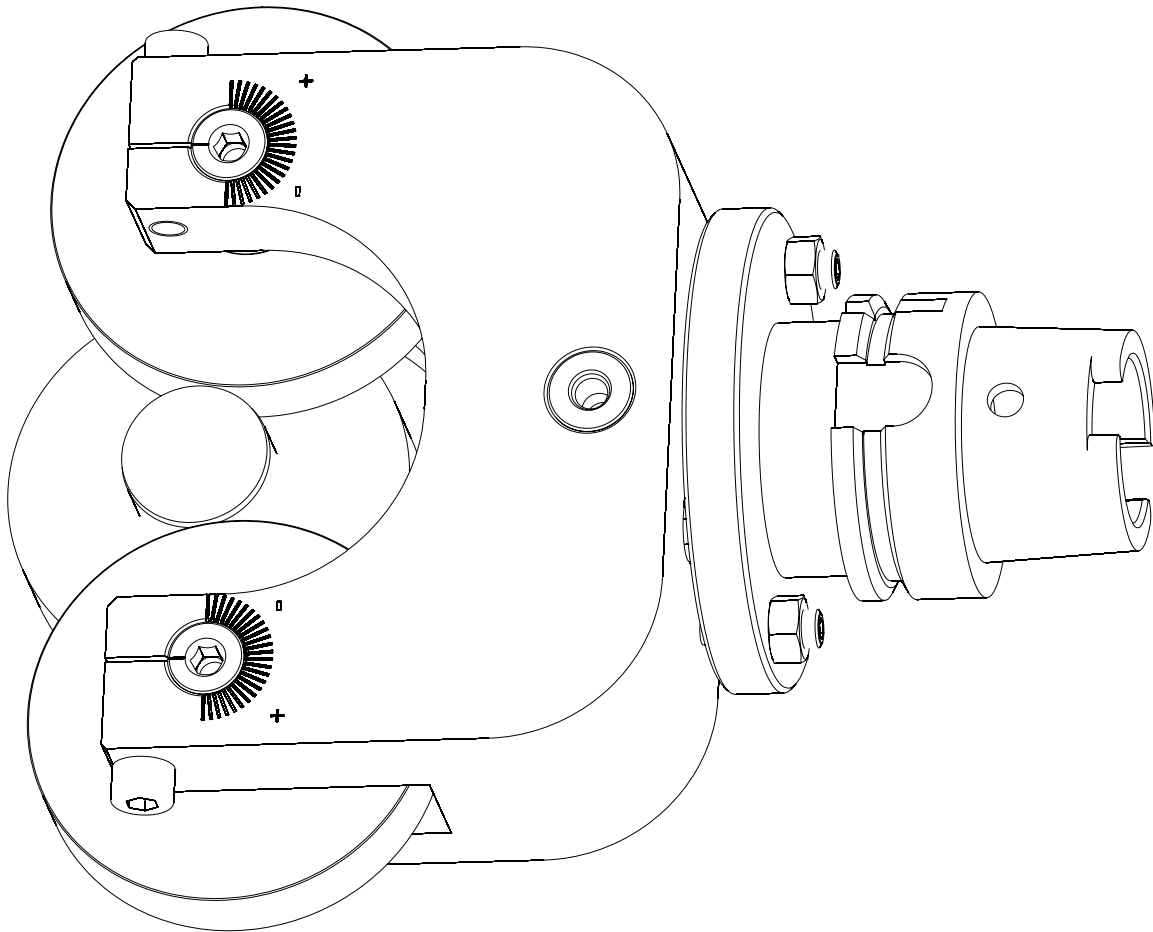


 **FLOYD**

THE TOOLING SPECIALISTS FOR
PRECISION COMPONENT MACHINING



Operating Manual

Product No. 74783000

**Tangential Rolling Head TGW
for smoothing**

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1. Preface

Dear customer,
you bought a high-quality commodity, which facilitates effective and economic operation. Our Thread Rolling Attachments are known for their high quality and long-life cycle. We hope that you are fully satisfied with our products.

This manual is made to help you taking the first steps with your new WAGNER® product, explain the operation and point out possible hazards.

Aftersales Service

If you need further advice, training or ulterior help or if you are not satisfied with your WAGNER® product, please contact us! Our sales team is at your disposal.

The contents of this manual should be read, understood and followed in every aspect by everybody involved. This is especially true for the safety instructions and notes on hazards found throughout this manual (see chapter 2. »Safety instructions«).

Following these instructions will help avoid accidents, mistakes and malfunctioning. This documentation includes all information necessary for using and maintaining your WAGNER® Thread Rolling Attachment. The documents are up-to-date at the time the product was manufactured.

Use only these documents when working with the Thread Rolling Attachment.

WAGNER® WERKZEUGSYSTEME MÜLLER GmbH reserves the right to make technical changes to improve the product, if and when appropriate.

If the instructions in this manual are not followed, and this negligence results in mistakes, damages, loss of production, etc., WAGNER® WERKZEUGSYSTEME MÜLLER GmbH will not be responsible for any subsequent damages.

Due to copyrights, we must point out that this manual is for internal use only. Providing this manual to third parties is prohibited.

»Regulations for the prevention of industrial accidents«

During operation, maintenance and repair the respective national and international »regulations for the prevention of industrial accidents« apply in addition to the previously listed instructions. The operating instructions, particularly the chapter »Safety instructions«, has to be read in any case. Following the safety instructions and legal regulations helps to prevent doing damage to persons, machines and our product.

Warranty

In case of buying and using original WAGNER® spare parts and accessories, we guarantee proper operation of the Thread Rolling Attachment.

We exclude any warranty for damage of persons, machines and our products, in case of:

- improper mounting and operating
- using no original spare parts
- removing components and assemblies
- arbitrarily modifying our products
- using broken rolling attachments.

When using accessories which are not made by WAGNER® or explicitly approved by us, we exclude any warranty.

Generally, we are not liable for damages of all kind caused by removing safety equipment on the machine. We imply that our products are only set up on technically proper operating machines.

Specified operation

CAUTION: Do not use this product for any other purpose than its designated use! Follow the »safety instructions and notes on hazards«!

This product should only be used by trained specialists, otherwise its use may constitute a risk to life and limb of the user and cause damage to material property. For such cases, the manufacturer declines all responsibility.

Do not use force when mounting, demounting and operating. You could otherwise damage the attachment or the machine.

Initial operation


Please carry out an operational check before initial operation of the Thread Rolling Attachment.

2. Safety Instructions

- Persons in charge of operating, maintaining and repairing always have to read and understand the manual and the safety instructions. People who are under the influence of alcohol and/ or drugs may cause accidents!
- When mounting, please bear in mind the weight of the thread rolling attachment and, if necessary, lift by means of a lifting equipment.
- Take care that the cutting sides between the attachment and the machine are clean. Dirt may affect the precision of the workpiece.
- Generally, shut down the machine at the main switch when mounting the attachment. Make sure that the spindle cannot start unexpectedly when exchanging the rolls.
- Remove all tools and inspection equipments from the working chamber of the machine before setting into operation. **There is a risk of injury by centrifuging tools and equipment!**
- Close the safety gate or protection cover before operating! Hurling chips and broken attachments or workpieces may cause damage to people and machines.
- Make sure that the Thread Rolling Attachment cannot disengage during operation.
- When closing the Thread Rolling Attachment do not touch the head, do not touch rotating tools: **risk of injury!**
- Please check and handle the thread rolls extremely carefully. The rolls have square edges. If necessary, wear safety gloves!
- Please make sure the Thread Rolling Attachment is protected and fastened appropriately when transporting.

3. WAGNER® Tangential Rolling Head TGW for smoothing

3.1. Construction

( cf. exploded view on page 13)

The tangential rolling tool TGW consists of the head body [10], the roll bolt [20], the roller bearing [70] and the profile rolls.

Adapter [800 - 840] is used as an interface to the machine.

3.2. Areas of application

The smoothing tool TGW is specially designed for smoothing \varnothing 31 mm with collar \varnothing 84 mm. During the process, the work piece has to rotate, whereas the tool is at a standstill.

3.3. Working area

The working area is defined by the centre distance and the smallest respectively largest possible roll diameter.

Centre distance A_{\min} = 113,4 mm,

Centre distance A_{\max} = 115,4 mm (adjustable by means of the eccentric roll bolts)

Roll diameter D = 84,6 mm

Core- \varnothing = $A - D$


Core- \varnothing min.: 28,8 mm

Core- \varnothing max.: 30,8 mm

If and when required, the working area can be extended by varying the roll diameter. The maximum possible profile width is 22 mm due to the roll width.

4. Preparing the tool

4.1. Fitting the profile rolls

In order to fit the profile rolls in the tool, please proceed as follows ( cf. illustration on page 12 as well):

- Provide the inside and outside of the carbide sockets [70] and thrust washer [30] with Molykote D paste or a corresponding assembly paste. Push the carbide sockets [70] into the boreholes of the profile rolls.
- Undo the two cylinder screws [80] and push out one of the roll bolts [20] so far that a thrust washer [30] and a profile roll with carbide socket can be pushed on to the roll bolt [20].
- Subsequently the second thrust washer [30] is placed. The roll bolt is pushed in completely.
- The second roll is placed in this order as well.

4.2. Setting up the diameter

The diameter is set by means of a gauge or gauge block which corresponds to the measure of the requested diameter at the bottom of the profile to be rolled.

A socket wrench with a hexagon is used to turn the roll bolts in such a way that the marking of both bolts point to the centre of the scale approximately. The cylinder screws [60] are tightened a bit in order to prevent automatic turning of the bolts.

Subsequently the gauge or the gauge block is used to set the requested dimension between the rolls. In order to set the rolls to a smaller measure, the bolts are turned in direction (-); in order to increase the distance of the rolls turn in direction (+). It is recommended to set the two roll bolts to about the same value.

Once the right setting has been found, the roll bolts are clamped by tightening the cylinder screws [60].

4.3. Fitting the thread rolling attachment to the adapter

In order to fit the adapter, the tool is placed on the adapter with the corresponding recess and is attached to it by pushing in the bolt [40]. Make sure that the spring-mounted pressure piece [50] snaps into the groove of the bolt [40] and fastens it.

5. Preparing the machine

5.1. Fitting the tool with adapter into the machine

The adapter [800] is the interface to the machine. With the shaft side the adapter is placed and clamped in the borehole of the spindle.

A dial gauge is used to pass along the match surface of the tool in such a way that the deviation measured is < 0.02 mm across the width of the surface.

After successful aligning, the spindle position is secured.

5.2. Determining the longitudinal position (Z) and the plane travel (X)

The required dimensions to determine the Z position of the tool can be seen in the installation drawing (📖 see page 12).

The programming dimension C required for the determination of the entire cross travel (X) and feed travel are listed in the calculation sheet enclosed (📖 see page 11).

By means of the programming dimension C, the cross travel (X) is determined in such a way that the tool can be moved forward so far during the machining process that the roll axis is located above the work piece axis.

The cross travel (X) is divided up into the travel which can be covered by rapid feed and the feed travel.

The feed travel is calculated from the work travel (travel from the first contact of the roll with the work piece to the centre axis of the work piece) and a safety addition of 25 per cent. The feed travel is moved with the work feed mentioned on the calculation sheet.

5.3. Centring the thread rolling attachment in the machine

Pendular adjustment: 📖 see illustration on page 9.

The spindle with the installed tool is moved in X direction in setting mode until the upper roll touches the work piece whilst the distance of the lower roll to the work piece still amounts to approx. 0.5 mm. Keep the upper roll pressed against the work piece and place the lower threaded pin [810] to the tool. Counter the threaded pin with the hexagon nut [820].

In the next step the tool is lifted by hand until the lower roll touches the work piece. Now the upper threaded pin [810] can be screwed in until it touches the tool body. Here as well a hexagon nut [820] is used for countering.

ATTENTION!

If the self-centering stroke is too big, the tool in the adapter knocks when the spindle is switched. If the self-centering stroke is not sufficient, the tool cannot centre.

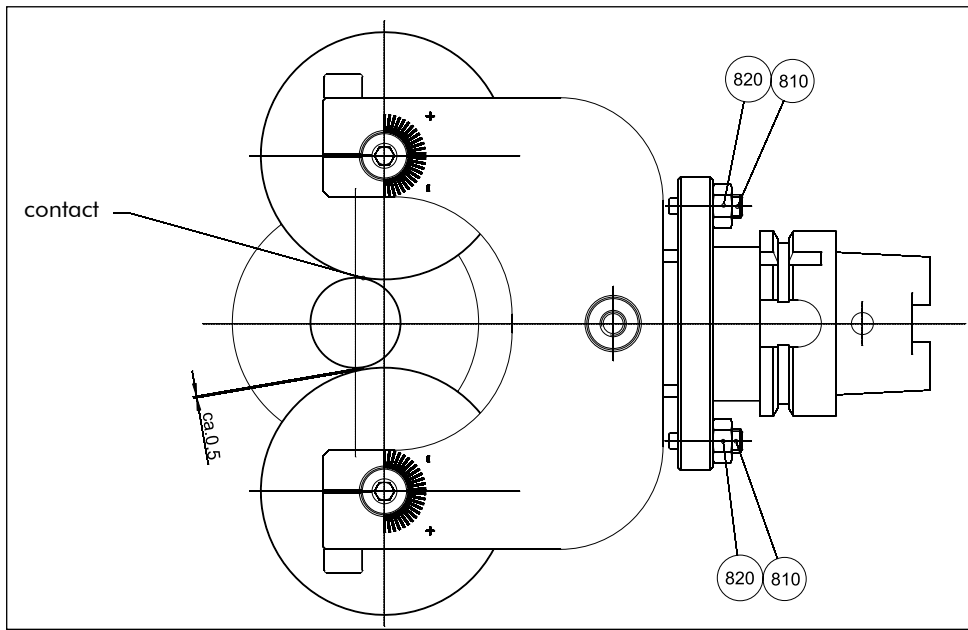


Figure: Pendular adjustment

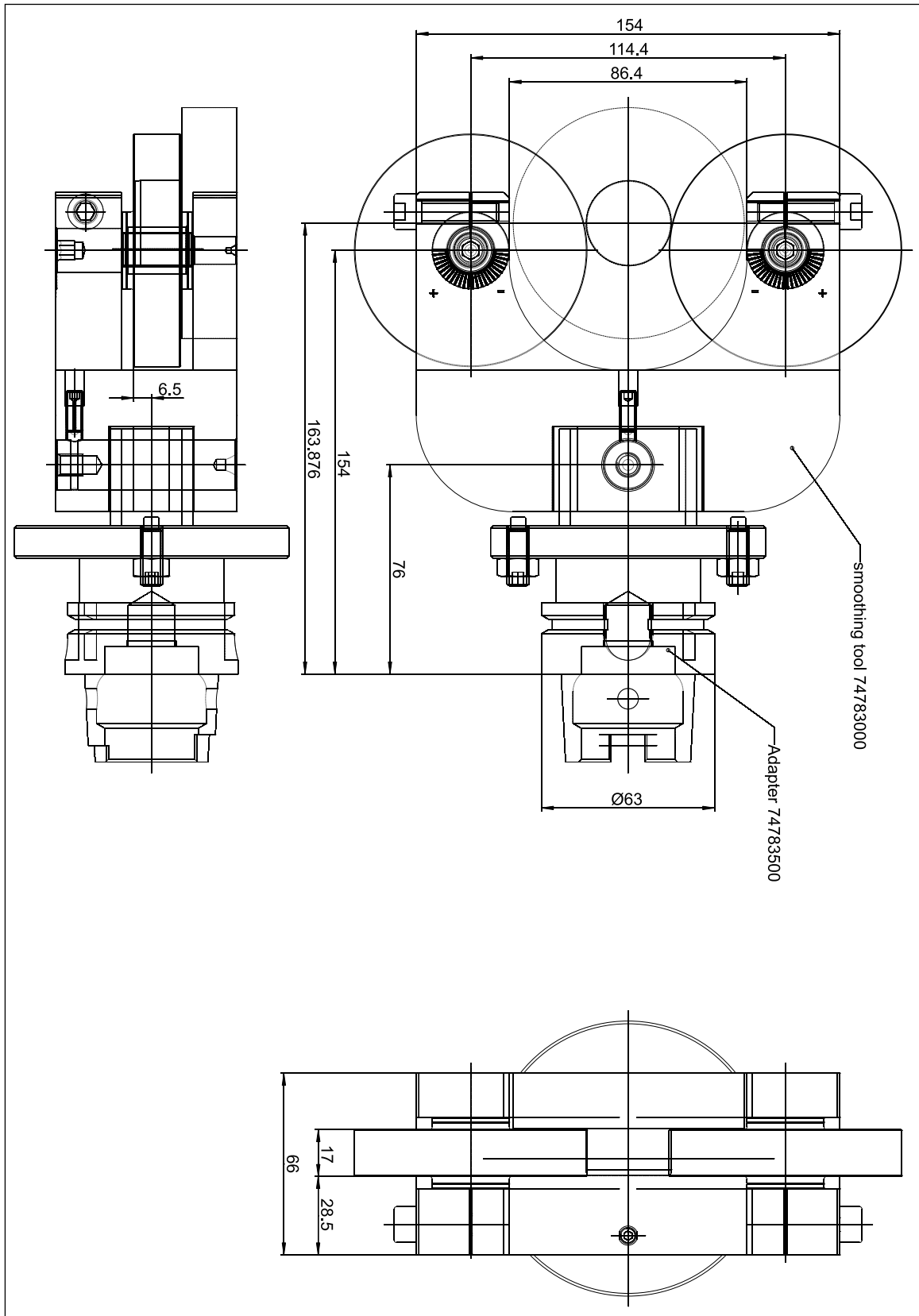
6. Functional sequence whilst rolling

- The work piece is clamped in the chuck and is pre-processed to the required diameter, if and when required.
- The spindle positions the thread rolling attachment in longitudinal direction (Z) to the work piece.
- The spindle moves the tool to the work piece in rapid feed motion.
- The spindle moves the tool onto the work piece in work feed motion.
- After reaching the end position (work piece centre) and a short dwell time (0.2 s), the spindle moves back to the initial position with rapid feed motion.
ATTENTION! No movement in Z permissible !

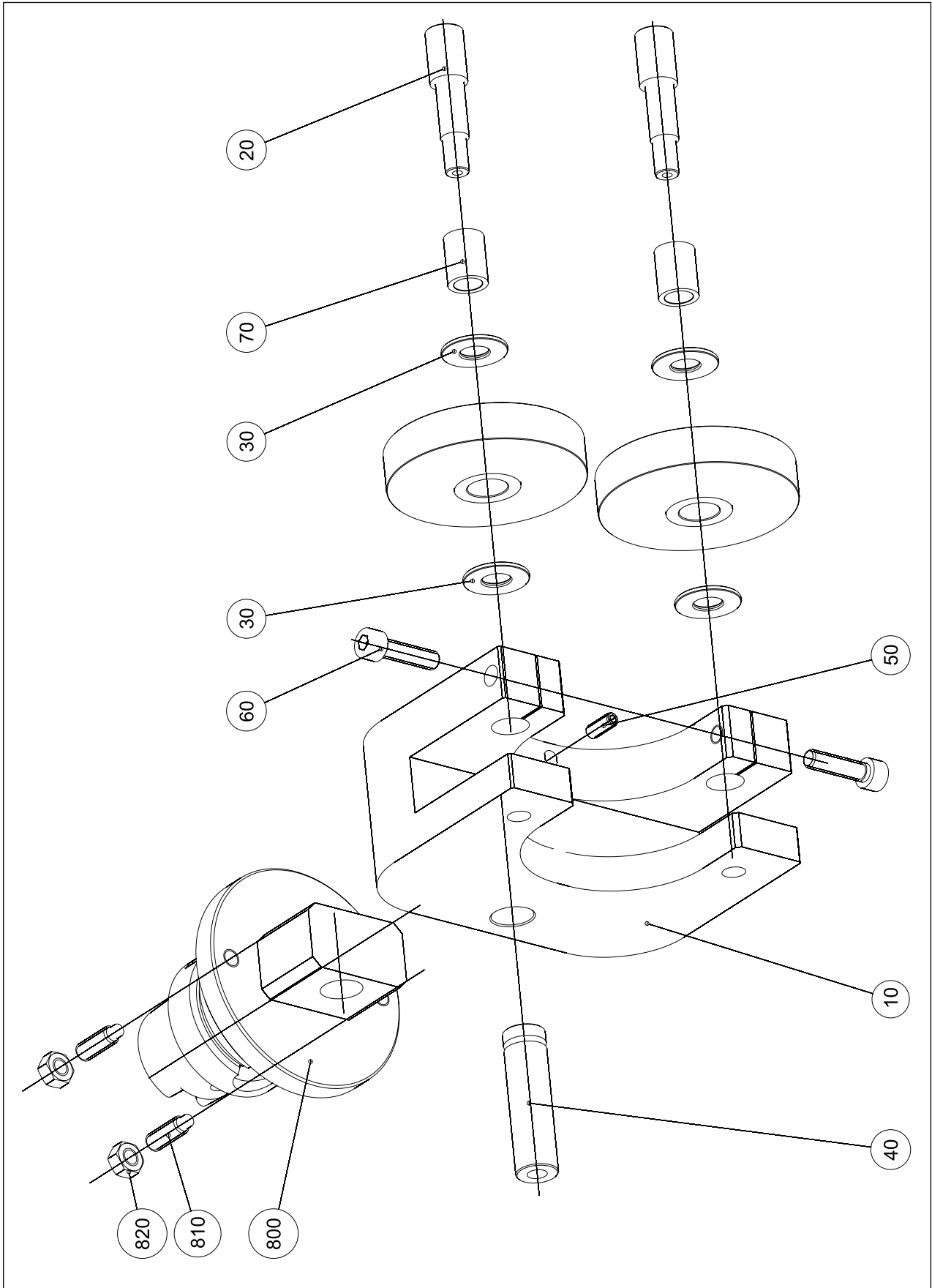
7. Calculation Sheet

Calculation sheet no.		Workpiece / sketch no.		
Customer		Customer no. :		
Adaptor no.				
Machine				
Slide		Turret :		
Tool size				
Type of roll		Profile width (Pb) :		
Thread				
Material				
Thread dimensions	External thread/ tolerance	max. size	min. size	medium value d2
	External diameter d:			
	Pitch diameter d_2 :			Q =
	Core diameter d_1 :			
Data for thread rolling				
Number of starts on roll		$N =$		
Roll advance		$S =$ mm		
Setting value (engraved on thread roll)		$E =$ mm		
Shoulder diameter max. (without modification)		$B =$ mm		
Shoulder diameter max. (with modification)		$B+Z =$ mm		
Required revolutions of workpiece		$W =$		
Blank diameter (medium value d2)		$Q =$ mm		
Revolutions p.m. of spindle		$n =$ min ⁻¹		
Roll speed		$V =$ m/min		
Rev. p.m. of thread rolls		$n_R =$ min ⁻¹		
Note max. revolutions p.m.!		$n_R = \frac{n}{N}$		
Calculation of feed				
Feed		$f_u = \frac{S}{W}$	=	mm/rev. of spindle
Feed hydraulic		$f_m = \frac{S \cdot n}{W}$	=	mm/min
ATTENTION! Feed stroke = work stroke S+25% security			=	mm
Feed adjustment for hydr. feed according to measuring X (mm)		$t_x = \frac{X \cdot 60 \cdot W}{S \cdot n}$	=	sec.
Presumed measuring stroke X =		_____ mm		
Special setting values				
Dimensional micrometer setting at "0" (Lm)			=	mm
Dimension A (for NA adapter)			=	mm
Dimension C (for NC adapter) = Lm + E + Q/2 + A			=	mm
(Dimension "C" assists the tool correction. Definate dimension must be checked in the machine by means of a micrometer setting and corrected if necessary)				
Measuring location y for taper threads			=	mm
Bemerkungen:		Wagner Werkzeugsysteme		
		Gutenberg-Str.4/1		
		D-72124 Pliezhausen		
		Telefon (0 71 27) 973-300		
Date:		Name:		
		Telefax (0 71 27) 973-390		

8. Installation drawing



9. Exploded Drawing



10. Spare Parts List

Rolling Attachment TGW | Product No. 74786000

Part No.	Quantity	Designation	Order No.
10	1	HEAD BODY	74783100
20	2	ROLL BOLT	74783600
30	4	WASHER	74783700
40	1	BOLT	74783800
50	1	SPRING-LOADED PRESSURE PIECE W. ALLEN SCREW	03700004
60	2	CYLINDER SCREW M8x30	02015140
70	2	CARBIDE SOCKET	73818000
80	1	SCREW DRIVER 6	02677006
90	1	CYLINDER SCREW M8x50	02015174

Adapter for Tangential Rolling Attachment TGW | Product No. 74783500

800	1	ADAPTER WITH SHANK HSK-T063	74783200
810	2	THREADED PIN M8x25	02048208
820	2	HEXAGON NUT M8	02061006
830	1	SCREW DRIVER 4	02677004
840	1	WRENCH SW13	02673027



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