

SWISS+TOOLS

Operating instructions

Fine boring head $\varnothing 3-88$ with digital display



1. Basic safety information



Before first use, please read the operating instructions carefully. These provide important safety information and information concerning use and maintenance of the tool.

This precision boring tool is designed for finishing bores in metallic materials. Specific information on the machining of individual metallic materials is not the subject of these operating instructions. No other application is permitted and could be dangerous. The manufacturer cannot be held responsible for damage or injury caused by improper use. A damaged tool could endanger your safety! Decommission the tool immediately and contact your suppliers. This tool complies with the prescribed safety regulations. Repairs must be undertaken only by trained personnel. Improper repairs can represent a considerable risk for the user. Keep the Operating instructions for use in a safe place for future use.

2. Application and operation

The precision boring tools are designed for precision holes from diameter \varnothing 3 – 88.1 mm. For this diameter range Swiss Tools supplies different equipment

\varnothing 3 – 19mm boring bars with carbide tips \varnothing 6 – 40mm carbide boring bars
 \varnothing 10 – 88mm steel boring bars \varnothing 30 – 88mm adjustable boring bars
 \varnothing 5.3 – 48.6 pin turning adapter

If the boring depth is increased by reducers, a smaller external reducer diameter must be selected than the machining or interference circle diameter.

3. Tool features

- manufactured from hardened and ground alloyed case-hardening steel
- as monobloc- or modular tool available
- for boring bars with shank diameter 16mm and fine boring bridges
- resolution of the digital display 0.001mm (0.002mm in diameter)
- direct measuring system +/- adjustment on a μ -basis
- switch on with a magnetic switch (waterproof and wear resistant)
- automatic switch off (battery save mode)
- with inner coolant supply
- boring bar go through the head
- to reach the diameter range there is original SWISSTOOLS equipment necessary

Maximal speed rpm (unbalanced)

a.) validly for the adjustment concentric up to 1 mm in the diameter with SWISSTOOLS equipment.

diameter	max. rpm
3 – 20mm	16.000
20 – 48mm	12.000
48 – 88mm	8.000

b.) validly for the adjustment concentric up to 5 mm in the diameter with SWISSTOOLS equipment.

diameter	max. rpm
3 – 20mm	6.000
20 – 48mm	4.000
48 – 88mm	2.000

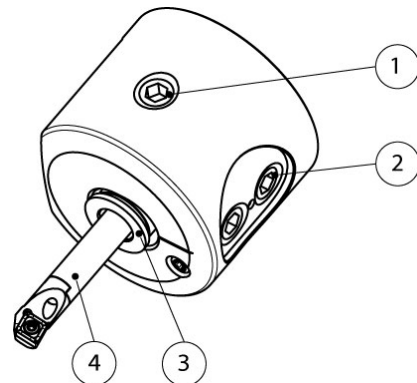
4. Balancing

The main body of this series is balanced. The unbalance, which normally occurs when adjusting the boring bar, is reduced to a minimum. For fine balancing is a balancing ring available. No additional balancing surfaces or holes must be added to this boring tool! Max. permitted residual imbalance of the machine manufacturer has to be observed (if necessary complete tools have to be balanced).

5. Operation


Assembling of the boring bar

The boring bar need a shank diameter of 16mm otherwise a reduction sleeve (3) is needed. The boring bars are adjustable in the length. The boring bars have to be clamped with the fastening screws (2). The tightening torques of the fastening screws (2) sees technical data.




Clamping

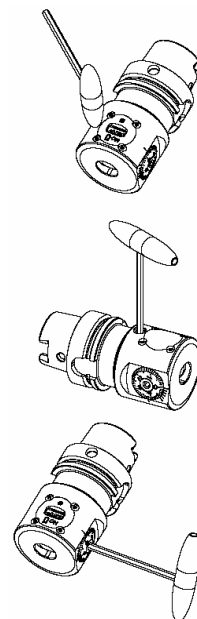
To clamp the adjustment and slider tighten the clamping screw (1). For machining the clamping screw has to be clamped. Before every adjustment of the diameter the screw has to be released. The size of the wrench for the adjustment and clamping is the same.

 To avoid damage to parts of the adjustment mechanism, do not make any diameter adjustments in the clamped state.

Fine adjustment mechanism: The coated scale screw allows a accurate adjustment. The adjustable range is blocked in both directions.

 To avoid damage to parts, never use force when carry out adjustment.

This up-to-date boring head with digital display is provided with a direct measuring system which ensures maximum manufacturing precision. Switch on the measuring system by passing over the magnet / ON symbol with the magnetic end of the hexagonal key handle. In order to operate the boring head optimally and with maximum precision, switch on the measuring system before removing the clamping screw. In this manner you will also include measurement variations which result from the reduction of torque on the clamping mechanism. Now set the desired measurement. The display shows the adjustment of the boring tool on diameter and in millimetres. In order to avoid measurement variations during clamping, turn the scale back by approx. $\frac{1}{2}$ of a division. After this the clamping screw has to be tightened again. The measuring system switches off automatically 30 seconds after the last change in setting. When the display shows ,batt', the batteries should be replaced (See 'Changing the batteries in the boring head').



6. Service

It's not necessary to grease the tool. Tthe teeth profile has to be cleaned before assembling. Service and repairs will be done in our company.

7. Technical Data

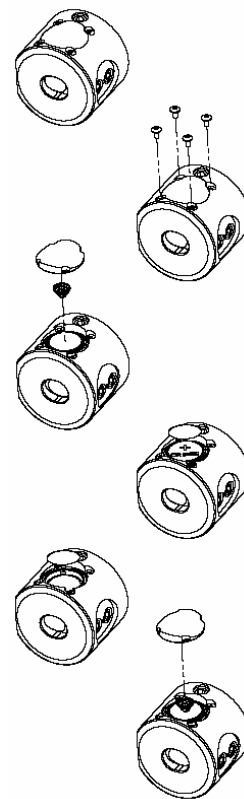
Diameter adjustment:

- 1 division on the scale:0.01 mm in dia.
- 1 revolution at the dial:0.5 mm in dia.

Position	Description	Tightening torque
1	Clamping screw	8 Nm
2	Fastening screw	10 Nm

8. Changing the batteries of the boring head

1. Prepare an SW 2 hexagonal key and two new CR 2430 batteries.
2. Press your thumb on the golden cover and remove all four screws.
3. Release the cover so that it slides up vertically.
4. Put the cover and the spring to one side.
5. Turn the boring head around; light tapping of the tool will release the batteries.
6. After turning the boring head back again please make sure that the white plastic ring and the O-ring have not tilted outwards and that the contact sheet metal is positioned in the centre.
7. Insert the new batteries in such a way that the + sign always is on the upper side.
8. Press the upper contact sheet metal back and place the spring with the smaller end downwards in the centre.
9. Place the battery cover vertically from above onto the spring which must remain in the centre of the cover. Make sure the recesses for the screws are aligned correctly in relation to each other.
10. While holding the cover, insert the four screws tightening them carefully diagonally opposite.



further information

SWISSTOOLS tools are subject to constant further technical development. You can obtain up-to-date information from our product catalogue as well as on our website.

We reserve the right to technical changes.

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SWISS+TOOLS

Operating instructions

Fine boring head Ø3-88 mm



1. Basic safety information



Before first use, please read the operating instructions carefully. These provide important safety information and information concerning use and maintenance of the tool.

This precision boring tool is designed for finishing bores in metallic materials. Specific information on the machining of individual metallic materials is not the subject of these operating instructions. No other application is permitted and could be dangerous. The manufacturer cannot be held responsible for damage or injury caused by improper use. A damaged tool could endanger your safety! Decommission the tool immediately and contact your suppliers. This tool complies with the prescribed safety regulations. Repairs must be undertaken only by trained personnel. Improper repairs can represent a considerable risk for the user. Keep the Operating instructions for use in a safe place for future use.

2. Application and operation

The precision boring tools are designed for precision holes from diameter \varnothing 3 – 88.1 mm. For this diameter range Swiss Tools supplies different equipment

\varnothing 3 – 19mm boring bars with carbide tips \varnothing 6 – 40mm carbide boring bars
 \varnothing 10 – 88mm steel boring bars \varnothing 30 – 88mm adjustable boring bars
 \varnothing 5.3 – 48.6 pin turning adapter

If the boring depth is increased by reducers, a smaller external reducer diameter must be selected than the machining or interference circle diameter.

3. Tool features

- manufactured from hardened and ground alloyed case-hardening steel
- as monobloc- or modular tool available
- for boring bars with shank diameter 16mm and fine boring bridges
- diametrical adjustment nearly without reversal backlash
- 0.01mm diametrical adjustment resp. 0.002mm by nonius
- with inner coolant supply
- boring bar go through the head
- to reach the diameter range there is original SWISSTOOLS equipment necessary

Maximal speed rpm (unbalanced)

a.) validly for the adjustment concentric up to 1 mm in the diameter with SWISSTOOLS equipment.

diameter	max. rpm
3 – 20mm	16.000
20 – 48mm	12.000
48 – 88mm	8.000

b.) validly for the adjustment concentric up to 5 mm in the diameter with SWISSTOOLS equipment.

diameter	max. rpm
3 – 20mm	6.000
20 – 48mm	4.000
48 – 88mm	2.000

4. Balancing

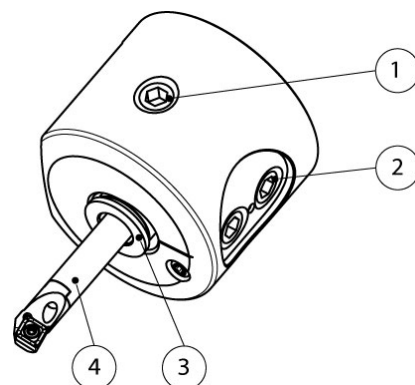
The main body of this series is balanced. The unbalance, which normally occurs when adjusting the boring bar, is reduced to a minimum. For fine balancing is a balancing ring available.

No additional balancing surfaces or holes must be added to this boring tool! Max. permitted residual imbalance of the machine manufacturer has to be observed (if necessary complete tools have to be balanced).

5. Operation


Assembling of the boring bar

The boring bar need a shank diameter of 16mm otherwise a reduction sleeve (3) is needed. The boring bars are adjustable in the length. The boring bars have to be clamped with the fastening screws (2). The tightening torques of the fastening screws (2) sees technical data.




Clamping

To clamp the adjustment and slider tighten the clamping screw (1). For machining the clamping screw has to be clamped. Before every adjustment of the diameter the screw has to be released. The size of the wrench for the adjustment and clamping is the same.

 To avoid damage to parts of the adjustment mechanism, do not make any diameter adjustments in the clamped state.

Fine adjustment mechanism: The coated scale screw allows a accurate adjustment. The adjustable range is blocked in both directions.

 To avoid damage to parts, never use force when carry out adjustment.

Example:

2. Open the clamping screw (1).
3. For the diameter setting, adjust the tool by turning the scale screw either
 - on a tool setting device or
 - by carrying out a trial drilling or gauge cut on the machine.

One revolution of the dial is equivalent to the adjusting bolt (and hence also the cutter on the tool) undergoing a diameter adjustment of 0.5 mm. One division on the dial corresponds to a diameter adjustment of 0.01 mm. 3. To readjust the tool (i.e. increase diameter): Readjust the scale screw by the value required. The smallest value on the scale screw will give a diameter adjustment of 0.002 mm

4. Setting the tool back (i.e. decrease diameter)

- read off the value set on the tool
- turn the scale screw back (i.e. anti-clock-wise) approx. half of one full turn. Left turn direction.
- set the new (smaller) value on the scale screw.

5. Tighten the clamping screw (1). Torque for the clamping screw, see technical data

6. Service

It's not necessary to grease the tool. Tthe teeth profile has to be cleaned before assembling. Service and repairs will be done in our company.

7. Technical Data

Diameter adjustment:

- 1 division on the scale:0.01 mm in dia.
- 1 vernier line:0.002 mm in dia.
- 1 revolution at the dial:0.5 mm in dia.

Position	Description	Tightening torque
1	Clamping screw	8 Nm
2	Fastening screw	10 Nm

further information

SWISSTOOLS tools are subject to constant further technical development. You can obtain up-to-date information from our product catalogue as well as on our website.

We reserve the right to technical changes.

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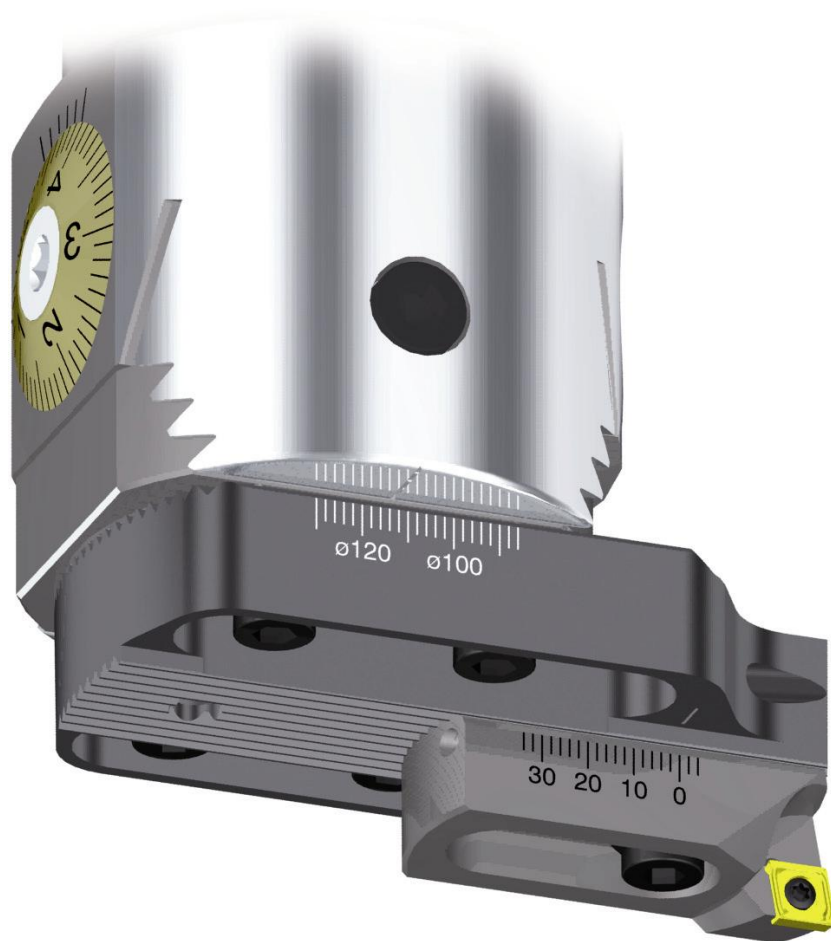
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SWISS+TOOLS

Operating instructions

Fine boring head $\text{Ø}3\text{-}320$ mm



1. Basic safety information



Before first use, please read the operating instructions carefully. These provide important safety information and information concerning use and maintenance of the tool.

This precision boring tool is designed for finishing bores in metallic materials.

Specific information on the machining of individual metallic materials is not the subject of these operating instructions. No other application is permitted and could be dangerous. The manufacturer cannot be held responsible for damage or injury caused by improper use. A damaged tool could endanger your safety! Decommission the tool immediately and contact your suppliers. This tool complies with the prescribed safety regulations. Repairs must be undertaken only by trained personnel. Improper repairs can represent a considerable risk for the user. Keep the Operating instructions for use in a safe place for future use.

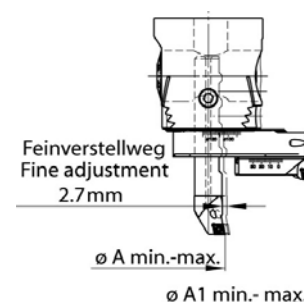
2. Application and operation

The precision boring tools are designed for precision holes from $\varnothing 3$ to 320 mm diameter. The diameter range could be reached with 6 boring bars and 2 aluminium bridges.

If the boring depth is increased by reducers, a smaller external reducer diameter must be selected than the machining or interference circle diameter.

3. Tool features

- manufactured from hardened and ground alloyed case-hardening steel resp. aluminium
- Main body balanced
- as monobloc- or modular tool available
- for boring bars with shank diameter 16mm and fine boring bridges
- diametrical adjustment nearly without reversal backlash
- 0.01mm diametrical adjustment resp. 0.002mm by nonius
- with inner coolant supply
- boring bar go through the head
- to reach the diameter range there is original SWISSTOOLS equipment necessary



4. Balancing

The main body of the Multi-Head series is balanced. The unbalance, which normally occurs when adjusting the blade holder, is reduced to a minimum. For machining with the aluminium bridges, a counter weight is available.

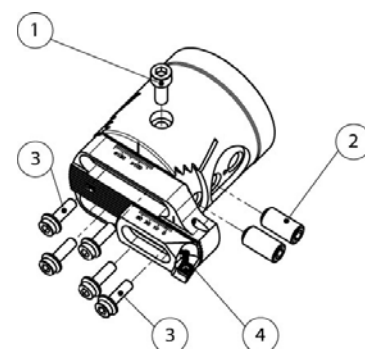
No additional balancing surfaces or holes must be added to this boring tool! Max. permitted residual imbalance of the machine manufacturer has to be observed (if necessary complete tools have to be balanced).

5. Operation

Assembling of the aluminium bridges and insert holders

The aluminium bridges and the insert holders are manufactured with a teeth profile, the parts can be assembled in a simple and fast way. The tightening torques of the fastening screws (3) see technical data. The scale values of the aluminium bridge and the insert holder have to be added.

Example: Presetting bridge $\varnothing 120$ + insert holder $\varnothing 20$ corresponds to a diameter from 140mm.




Assembling of the boring bar

The aluminium bridge and the fastening screws (3) have to be disassembled. The boring bar need a shank diameter of 16mm otherwise a reduction sleeve is needed. The boring bars are adjustable in the


length. The boring bars have to be clamped with the fastening screws (2). The tightening torques of the fastening screws (2) see technical data.

Clamping

To clamp the adjustment and slider tighten the clamping screw (1). For machining the clamping screw has to be clamped. Before every adjustment of the diameter the screw has to be released. The size of the wrench for the adjustment and clamping is the same.

 To avoid damage to parts of the adjustment mechanism, do not make any diameter adjustments in the clamped state.

Fine adjustment mechanism: The TIN coated scale screw allows a accurate adjustment. The adjustable range is blocked in both directions.

 To avoid damage to parts, never use force when carry out adjustment.

Example:

4. Open the clamping screw (1).
5. For the diameter setting, adjust the tool by turning the scale screw either
 - on a tool setting device or
 - by carrying out a trial drilling or gauge cut on the machine.

One revolution of the dial is equivalent to the adjusting bolt (and hence also the cutter on the tool) undergoing a diameter adjustment of 0.5 mm. One division on the dial corresponds to a diameter adjustment of 0.01 mm. 3. To readjust the tool (i.e. increase diameter): Readjust the scale screw by the value required. The smallest value on the scale screw will give a diameter adjustment of 0.002 mm

4. Setting the tool back (i.e. decrease diameter)
 - read off the value set on the tool
 - turn the scale screw back (i.e. anti-clock-wise) approx. half of one full turn. Left turn direction.
 - set the new (smaller) value on the scale screw.
5. Tighten the clamping screw (1). Torque for the clamping screw, see technical data

6. Service

It's not necessary to grease the tool. The teeth profile has to be cleaned before assembling. Service and repairs will be done in our company.

7. Technical Data

Diameter adjustment:

- 1 division on the scale:0.01 mm in dia.
- 1 vernier line:0.002 mm in dia.
- 1 revolution at the dial:0.5 mm in dia.

Position	Description	Tightening torque
1	Clamping screw	8 Nm
2	Fastening screw	10 Nm
3	Fastening screw	5 Nm



SWISSTOOLS tools are subject to constant further technical development. You can obtain up-to-date information from our product catalogue as well as on our website. We reserve the right to technical changes.

SWISS+TOOLS

Operating instructions

Fine boring head Ø24-171



1. Basic safety information



Before first use, please read the operating instructions carefully. These provide important safety information and information concerning use and maintenance of the tool.

This precision boring tool is designed for finishing bores in metallic materials.

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2. Application and operation

The precision boring tools are designed for precision holes from diameter \varnothing 23.9 - 171.1 mm. For this diameter range Swiss Tools supplies different equipment

If the boring depth is increased by reducers, a smaller external reducer diameter must be selected than the machining or interference circle diameter.

3. Tool features

- manufactured from hardened and ground alloyed case-hardening steel
- as monobloc- or modular tool available
- diametrical adjustment nearly without reversal backlash
- 0.01mm diametrical adjustment resp. 0.002mm by nonius
- with inner coolant supply
- the construction dimensions (length and diameter range) are identical with the twin cutter
- with an reversal adapter it is possible to machining backwards
- to reach the diameter range there is original SWISSTOOLS equipment necessary

4. Balancing

The main body of this series are balanced. The unbalance, which normally occurs when adjusting the insert holder, is reduced to a minimum.

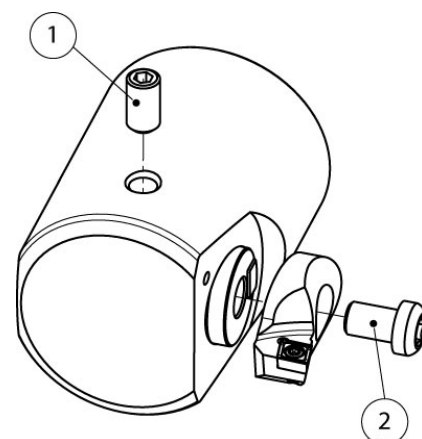
No additional balancing surfaces or holes must be added to this boring tool! Max. permitted residual imbalance of the machine manufacturer has to be observed (if necessary complete tools have to be balanced).

5. Operation

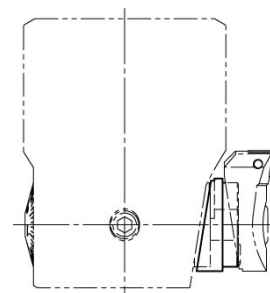
Assembling of the insert holder

The adjusting spindle is especially profiled to fixed quick and easy different insert holders. Torque for the insert holder screw (2), see Technical data.

Attention: The insert holder must be fixed correctly in the profile. If the insert holder isn't correctly in the profile the tool can be damaged.




Reverse machining: For back boring the insert holder is turned through 180° and mounted on the reversal adapter. A longer fastening screw is included. Attention: The reverse machining is carried out with anti-clockwise spindle rotation.




Clamping

To clamp the adjustment and slider tighten the clamping screw (1). For machining the clamping screw has to be clamped. Before every adjustment of the diameter the screw has to be released. The size of the wrench for the adjustment and clamping is the same.

 To avoid damage to parts of the adjustment mechanism, do not make any diameter adjustments in the clamped state.

Fine adjustment mechanism: The coated scale screw allows an accurate adjustment. The adjustable range is blocked in both directions.

 To avoid damage to parts, never use force when carry out adjustment.

Example:

1. Open the clamping screw (1).
2. For the diameter setting, adjust the tool by turning the scale screw either
 - on a tool setting device or
 - by carrying out a trial drilling or gauge cut on the machine.

One revolution of the dial is equivalent to the adjusting bolt (and hence also the cutter on the tool) undergoing a diameter adjustment of 0.5 mm. One division on the dial corresponds to a diameter adjustment of 0.01 mm.

3. To readjust the tool (i.e. increase diameter): Readjust the scale screw by the value required. The smallest value on the scale screw will give a diameter adjustment of 0.002 mm
4. Setting the tool back (i.e. decrease diameter)
 - read off the value set on the tool
 - turn the scale screw back (i.e. anti-clock-wise) approx. half of one full turn. Left turn direction.
 - set the new (smaller) value on the scale screw.
5. Tighten the clamping screw (1). Torque for the clamping screw, see technical data

6. Service

It's not necessary to grease the tool. The teeth profile has to be cleaned before assembling. Service and repairs will be done in our company.

7. Technical Data

Diameter adjustment:

- 1 division on the scale: 0.01 mm in dia.
- 1 vernier line: 0.002 mm in dia.
- 1 revolution at the dial: 0.5 mm in dia.

Ø range mm	Tightening torque clamping screw (1) Nm	Tightening torque fastening screw (2) Nm	Max. rpm balanced	Max. rpm unbalanced
24 – 31	1.4	2.4	12.000	9.000
31 – 40	2.4	5	10.000	7.500
40 – 51	3.4	9	8.000	5.250
51 – 67	5.2	20	6.500	4.000
67 – 87	8	35	5.000	3.000
87 – 116	8	35	4.000	2.500
116 – 171	8	35	3.000	1.750

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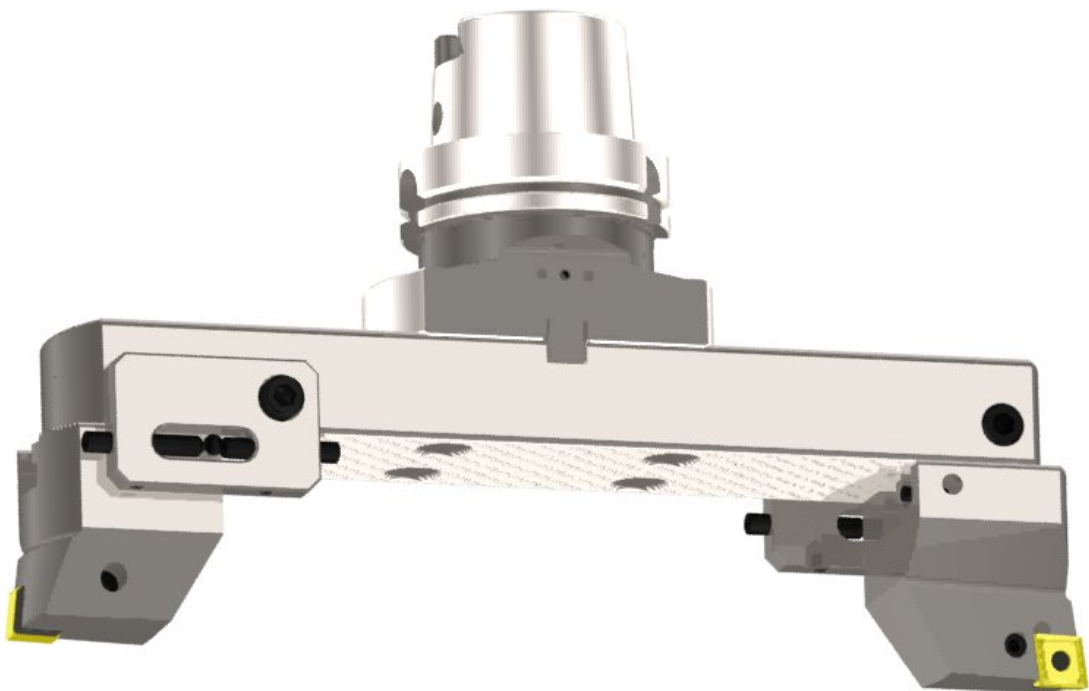
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www.swisstools.org

SWISS+TOOLS

Operating instructions

Bridge tools Ø150-655 mm



1. Basic safety information



Before first use, please read the operating instructions carefully. These provide important safety information and information concerning use and maintenance of the tool.

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2. Application and operation

The tools of this series are for roughing and finishing operations. The diameter range \varnothing 150 – 655mm can be reached with 10 extension bridges.

3. Tool features

- manufactured from hardened and ground alloyed case-hardening steel
- as monobloc- or modular tool available
- main body and insert holders have a teeth profile
- the tools have a special teeth profile which is positive locking and actuated by adherence
- with inner coolant supply
- tools are able for pin turning
- to reach the diameter range there is original SWISSTOOLS equipment necessary

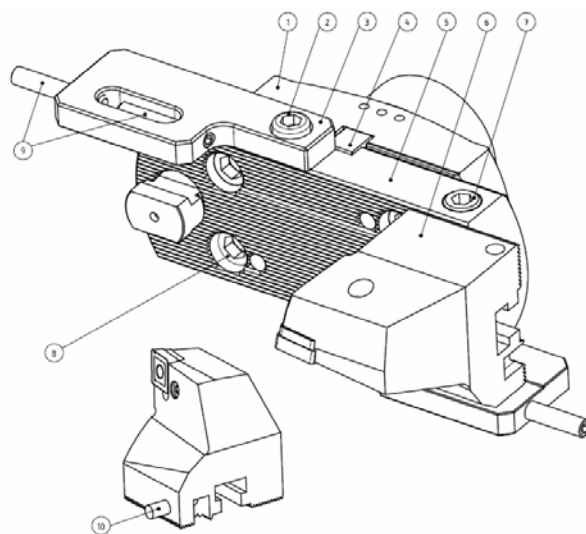
4. Operation

Hole making

1. Clean the gearing and lubricate it
2. Wedge (4) must be installed on the bridge (1)
3. Install the extension bridge (5) with four head screws (8) onto the bridge
4. Tighten the screws (8) with 50 Nm
5. Push the insert holder (6) onto the extension bridge (5)
6. Install the presetting plate (3), for extension bridge \varnothing 130 and \varnothing 230 use screw (2) M10x12, for all others use the screw (2) M10x18
7. For presetting the insert holders (6) use the setting screws (9).
8. Tighten the clamping screw (7) with 50 Nm



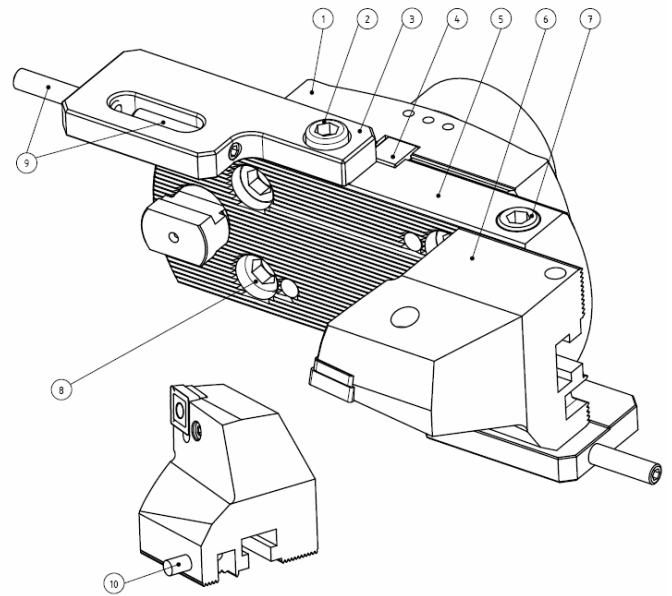
Attention: Facing a pin turning application the pin (10) must be installed. The pin is included in the set.



Tools delivered prior to year 2007 / 2008 can be upgraded. For upgrading remove the safety handle and follow the installation instruction above.

Pin turning

1. Clean the gearing and lubricate it
2. Wedge (4) must be installed on the bridge (1)
3. Install the extension bridge (5) with four head screws (8) onto the bridge
4. Tighten the screws (8) with 50 Nm
5. Push the insert holder (6) onto the extension bridge (5)
6. Install the presetting plate (3), for extension bridge Ø130 and Ø230 use screw (2) M10x12, for all others use the screw (2) M10x18
7. For presetting the insert holders (6) use the setting screws (9).
8. Tighten the clamping screw (7) with 50 Nm



⚠ Attention: Facing a hole making application the pin (10) must be installed. The pin is included in the set.

Tools delivered prior to year 2007 / 2008 can be refitted by making a bore for the pin. Please contact your distributor or www.swisstools.org.

⚠ To avoid damage to parts of the adjustment mechanism, do not make any diameter adjustments in the clamped state.

⚠ To avoid damage to parts, never use force when carry out adjustment.

6. Service

It's not necessary to grease the tool. The teeth profile has to be cleaned before assembling. Service and repairs will be done in our company.

7. Technical data

Ø range mm Hole making	Ø range mm pin turning	Max. rpm
150-205		1250
200-255	10-65	1000
250-305	60-115	850
300-355	110-165	700
350-405	160-215	600
400-455	210-265	530
450-505	260-315	480
500-555	310-365	440
550-605	360-415	400
600-655	410-465	360

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Operating instructions

Twin cutter boring head Ø23.5-153.0 mm



1. Basic safety information



Before first use, please read the operating instructions carefully. These provide important safety information and information concerning use and maintenance of the tool.

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2. Application and operation

The rough boring tools are designed for holes from diameter \varnothing 23.5 – 153.0. There are 7 tools to cover this diameter range. Every tool has to be assembled with two insert holders. The insert holders are available in 70° and 90°, with a single and synchronous adjustment. For heavy duty cutting it is also possible to do a staggered cutting.

If the boring depth is increased by reducers, a smaller external reducer diameter must be selected than the machining or interference circle diameter.

3. Tool features

- manufactured from hardened and ground alloyed case-hardening steel
- as monobloc- or modular tool available
- main body and insert holders have a teeth profile
- with inner coolant supply
- the construction dimensions (length and diameter range) are identical with the fine boring heads
- staggered cutting is available
- to reach the diameter range there is original SWISSTOOLS equipment necessary

4. Balancing

The main body of this series are balanced. The unbalance, which normally occurs when adjusting the insert holder, is reduced to a minimum.

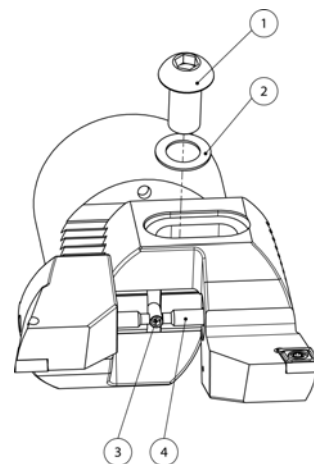
No additional balancing surfaces or holes must be added to this boring tool! Max. permitted residual imbalance of the machine manufacturer has to be observed (if necessary complete tools have to be balanced).

5. Operation

Assembling and adjustment of the single adjustment insert holders:

1. The teeth profile of the main body and the insert holders have to be cleaned.
2. Fit the insert holder on the teeth profile from the main body
3. Clamp the insert holder with the fastening screw (1) and the spring washer (2).

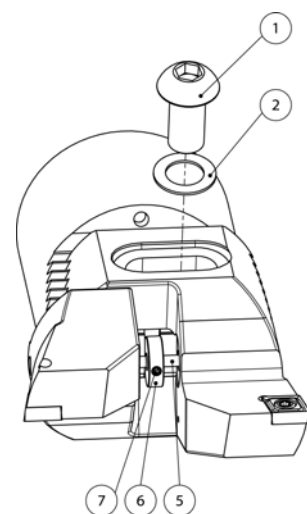
Attention: Use only original SWISSTOOLS spare parts. The function isn't warranted without the spring washer, and the insert holder will be damaged. The pin (3) must be fixed in the main body.



For diameter adjustment the fastening screws (1) have to be loose. The insert holder can be moved on the main body. The fine adjustment can be done with the adjustment screw (4). For machining the adjustment screw (4) have to be locked on the pin (3) and the insert holders have to be clamped.


Assembling and adjustment of the synchronous insert holders:


1. The teeth profile of the main body and the insert holders have to be cleaned.
2. The pin (4) is not needed.
3. Push central ring (6) towards the centre of the synchronization screw (5).
Tighten one of the 3 screws of the central ring (6)
4. Insert the central ring together with the synchronization screw in the central bore. Align one tool holder moving it towards the synchronization screw..
5. Align the second tool holder moving it towards the screw. Now turn the screw by means of the key until at least one tool holder contacts the central ring.
6. Remove the previously fixed screw of the central ring. Now turn the synchronization screw until both tool holders touch the central ring.
7. Now the tool holders are in a central position. Tighten the 3 screws of the central ring. Mount clamping screws (7) and slightly tighten them. The head is now ready for synchronized machining.
8. Set bore \varnothing and fix the two clamping screws (1).



Attention: Use only original SWISSTOOLS spare parts. The function isn't warranted without the spring washer, and the insert holder will be damaged.

To set the bore \varnothing the clamping screws have to be loose. By turning the synchronization screw (5) both insert holders are moving synchronous. After the presetting the clamping screws have to be clamped.

 To avoid damage to parts of the adjustment mechanism, do not make any diameter adjustments in the clamped state.

 To avoid damage to parts, never use force when carry out adjustment.

6. Service

It's not necessary to grease the tool. The teeth profile has to be cleaned before assembling. Service and repairs will be done in our company.

7. Technical data

\varnothing range mm	Anziehdrehmoment fastening screw (2) Nm	Max. rpm
24 – 31	2.4	12.000
31 – 40	5	10.000
40 – 51	9	8.000
51 – 67	20	6.500
67 – 87	35	5.000
87 – 116	35	4.000
116 – 153	35	3.000

further information

SWISSTOOLS tools are subject to constant further technical development. You can obtain up-to-date information from our product catalogue as well as on our website.
We reserve the right to technical changes.

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