

Operating instructions

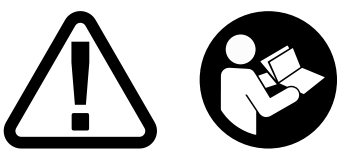
Driven and Static Tools

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EWS Tool Technologies

DRIVEN AND STATIC TOOLS

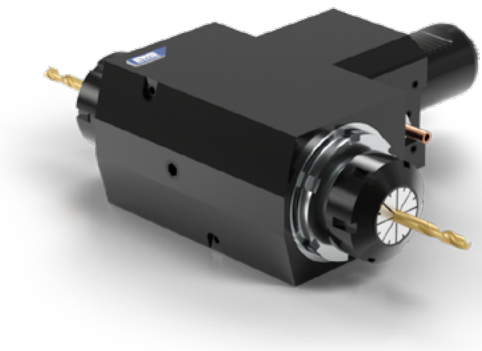
Operating instructions
Please carefully read and follow the operating instructions. Keep the operating instructions for the entire service life of the product. Use these operating instructions to familiarise yourself with the device, its correct use and the safety instructions.

Intended use
EWS driven and static tools are intended for use in turning and milling centres in an industrial environment. Components can be machined by inserting cutting tools.
They may only be operated within their specified performance limits.
Observance of the assembly instructions and compliance with the maintenance and repair instructions are prerequisites for the intended use.
The following materials can be processed in accordance with the intended use:

- Steels
- Cast iron materials
- Heavy and light metals
- Plastics

The user is liable in the event of improper use.

Dear Customer,
By purchasing tools from EWS you have made a good choice and we want to thank you for your trust.
Our tooling systems are designed according to the machine specifications and manufactured with high precision using state-of-the-art production units.



General notes:
In order to maintain the high quality of your EWS tools for as long as possible, there are some important points to consider.
Please ensure that the approved speeds, torques and coolant pressures are not exceeded. If you do not have the data sheet, you can download it from our online catalogue, where you will also find other tools suitable for your machine. Of course, you are also welcome to contact our sales and service staff.

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LIST OF ABBREVIATIONS

AGW = driven tool

BMT = bolt mount turret (tool is attached to the turret with screws)

IC = internal cooling

EC = external cooling

KSS = Cooling lubricant

1. SAFETY

Children and young people under the age of 16 as well as persons who are not familiar with these operating instructions must not use the device. Persons with reduced physical or mental abilities may only use the device if they are supervised or instructed by a competent person. Never use the device when tired, ill or under the influence of alcohol, drugs or medicines.



WARNING
Risk of injury from:

- **open moving and rotating parts**
- **media escaping at high pressure**

Tools may only be operated behind a guard (machine door).

- **slips/falls during transport/set-up**
- **pointed and sharp protruding parts**



- **hot surfaces (product can heat up)**

Tools can heat up to 90°C during operation.

- **pinching and crushing of body parts, e.g. fingers**

Wear suitable personal protective equipment (PPE).



- **infection through contact with contaminated media**
- **risk of poisoning from lubricants and media**

Wear suitable personal protective equipment (PPE).

- **misuse**



Read the operating instructions before use and keep them available at all times.
Exclude any other type of use or misuse. Always comply with the relevant specifications. If the permissible operating parameters are exceeded, serious injuries to people and damage to the technical equipment may occur.



- **noise emissions depending on the installation situation**

The noise emissions from the complete machine must be measured and, if necessary, noise-insulating measures must be taken.



WARNING
For tools with EWS.CyberCon4, the operating manual (LINK) must be observed!



DANGER
Clamp the tools in the holder with the minimum length possible.
If the clamping length is too long, dangerous vibrations may occur which can cause serious injuries due to parts being flung away, as well as damage to the machining tool/tool holder/turret system.

DANGER
Only use balanced machining tools.
Since driven tools generate large centrifugal forces at high speeds depending on the tool diameter, the machining tools must be balanced. It should be noted that, for safety reasons, their maximum permissible speed must be higher than the maximum permissible speed of the tool holder.

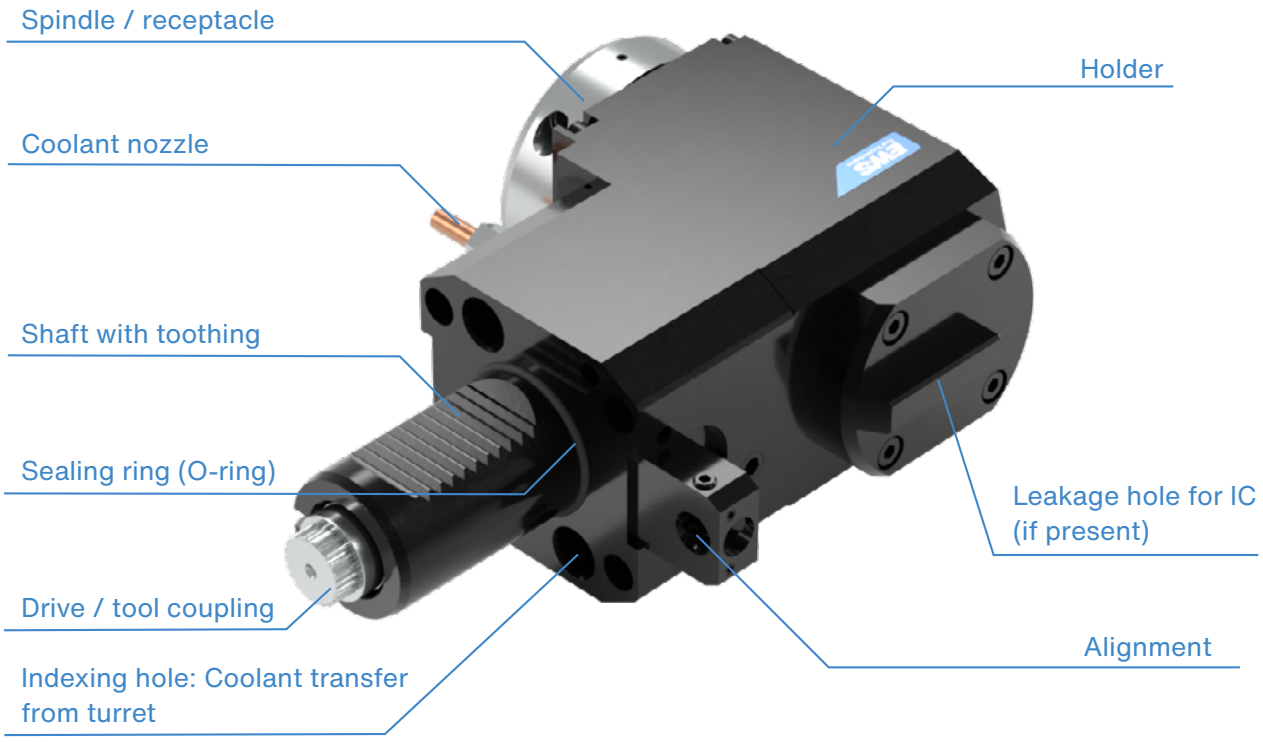
DANGER
During tool changes.
Protective gloves must be worn when changing tools.
All assembly aids (such as collet spanners) must be removed before using the tool holder.

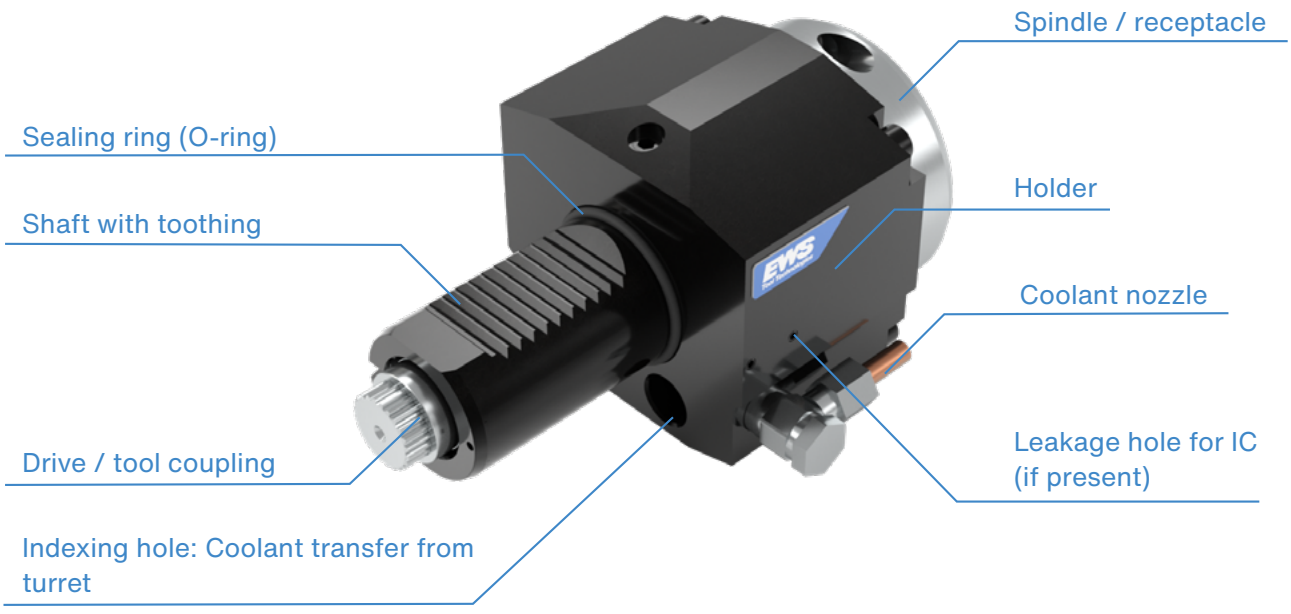
NOTE
Structural changes to tools may not be made without the written consent of EWS Weigele GmbH & Co. KG.

NOTE
For special features, instructions and notes for your EWS product, please refer to the corresponding separate instructions on the internet at:
www.ews-tools.de/en/downloads

2. FUNCTIONS AND GENERAL DESCRIPTION

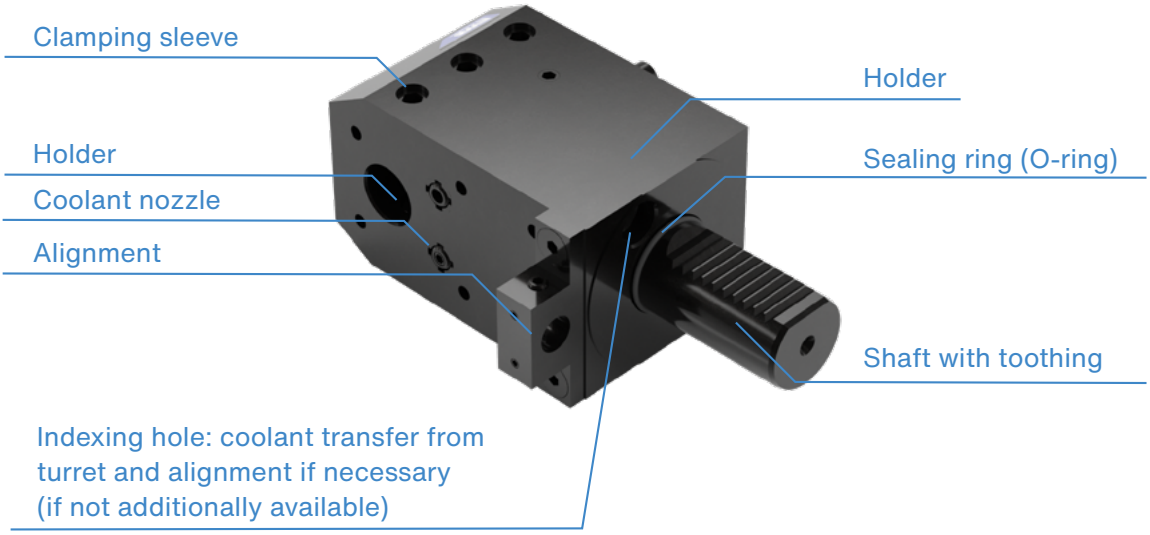
2.1 EXAMPLE OVERVIEW OF A DRIVEN TOOL





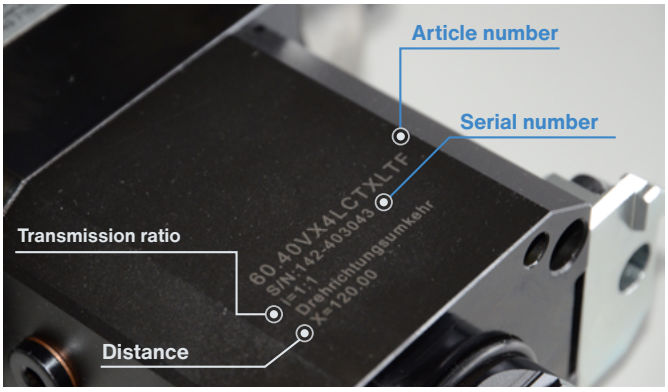
Strong coolant leakage from the leakage hole, very intense heating of and unusual noises from the tool indicate a defect.
The tool must not be operated any further in these cases.
In the event of a defect of any kind, always contact our service team (see 9. Troubleshooting).

2.2 EXAMPLE OVERVIEW OF A STATIC TOOL



2.3 LABELLING OF TOOLS

Each tool supplied by EWS is marked with an article number (e.g. 40.4032CTX) and a serial number (S/N). Depending on the tool type, additional information may be available.



Additional information

Third-party article number
Reversal of direction of rotation
(if input and output are in opposite directions)
Note on grease lubrication
No dry running (only with IC tools)

Pmax...	Max. coolant pressure for IC tools, see also P-v diagram
MA=...	Max. tightening torque on the tool spindle (not driven tool on the turret!)
X=...	Distance between contact surface and spindle axis
Y=...	Centre offset to tool shank in Y-direction
Z=...	Centre offset to tool shank in Z-direction
i=...	Transmission ratio
MNR=	Material number
Mmax=	max. permissible torque
Nmax=	max. permissible speed

3. COMMISSIONING AND OPERATION

Check the tool holders for completeness and possible transport damage. Any damage must be reported to EWS Weigele GmbH & Co. KG immediately.

3.1 MOUNTING IN THE MACHINE

- Check tool holders for damage before each use – if damaged, do not use them.
- Check that the drive of the turret and the coupling of the tool holder fit together.
- Make sure the coolant is transferred correctly from the turret to the tool holder.
- The presence, perfect condition and the fit of any add-ons and small parts, e.g. coolant pipes and O-rings, must be checked.
- The contact surfaces of the tool holder and the machine must be clean.
- Align the VDI tool holder so that the teeth on the shaft engage with the teeth on the clamping bolt on the turret and clamp it securely (see 3.2).
- The max. tightening torque for the VDI clamping bolt can be found in the data sheet provided by the relevant machine manufacturer. For general values see 6.1
- For fastening screws (e.g. Pro-Line, BMT) that are tightened and loosened by the operator, always use a torque spanner. For general values see 6.2
- All screws (clamping screws) must be tightened firmly as specified.
- Never operate a driven tool without a tool insert that has been inserted and clamped as instructed!
- When not in use, store the tool holder in a safe place to protect it, e.g. in an EWS tool shuttle.
- To protect the turret against soiling, a tool holder or a sealing plug must always be mounted on the turret.
- Never use compressed air for cleaning, only cleaning cloths.
- The tool weights are indicated on the drawing.



DANGER
Risk of injury from rotating parts!
Always keep the machine door closed:

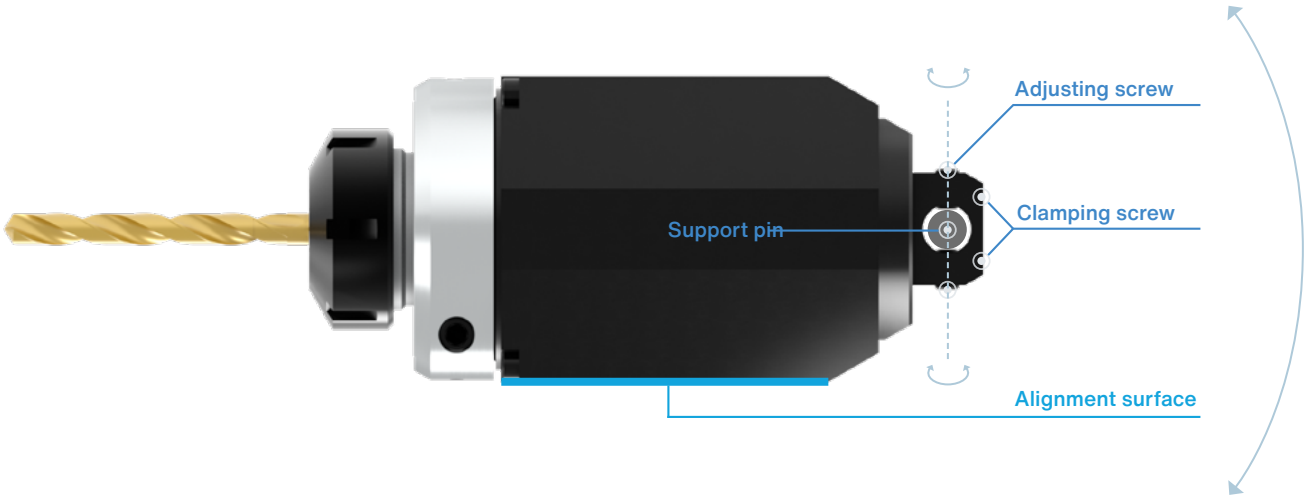
3.2 TOOL ALIGNMENT

Angled as well as off-axis driven and static tools must be aligned horizontally. This can be ensured by the machine or must be done manually by the operator. Our driven tools are equipped with a ground alignment surface on the tool head for measuring the angular position. For static tools, the outer surface serves as a reference.

Alignment of a VDI driven tool with support pin

1. Insert the tool into the turret, push it flush against the planar surface.
2. Tighten the clamping bolt for the VDI toothing with the recommended torque.
   [see 6. Characteristic values]
3. Slightly loosen the clamping bolt again until the tool can be rotated.
4. Check the angular position on the alignment surface.
5. Place set screws on the support pin to adjust the angular position.
6. Clamp the set screws on the support pin lightly against each other and fix them with clamping screws.
7. Check the angular position on the alignment surface again, correct if necessary.
8. Re-tighten the clamping bolts for the VDI toothing to the recommended torque.

For tools with other alignment systems, such as an alignment bar on the face of the turret, proceed accordingly.



Alignment of a BMT driven tool with alignment bar

Usually, BMT tools are provided with sliding blocks which are guided in grooves on the turret. The sliding blocks are aligned at the factory by EWS for guidance in the turret. Alignment by the operator is therefore usually unnecessary.

1. Insert the tool into the turret, push it flush against the planar surface.
2. Lightly tighten the fastening screws (4x) crosswise.
3. Slightly loosen the screws again until the tool can be turned.
4. Check the angular position on the alignment surface.
5. Place the adjusting screws on the alignment bar to adjust the angular position.
6. Fix the bar with the clamping screw.
7. Check the angular position on the alignment surface again, correct if necessary.
8. Tighten the fastening screws to the recommended torque [see 6. Characteristic values].

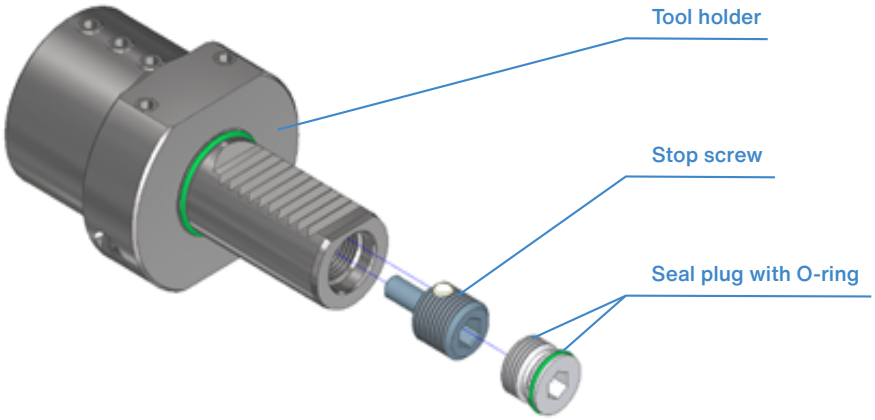
For tools with other alignment systems, such as an alignment bar on the face of the turret, proceed accordingly.



3.3 EWS TOOL HOLDER ACCORDING TO DIN ISO 10889

When using tool holders with a continuous stop screw in the shaft, the appropriate sealing plug must always be fitted to seal against coolant leakage! The O-ring of the sealing plug must be inserted correctly and be in perfect condition.

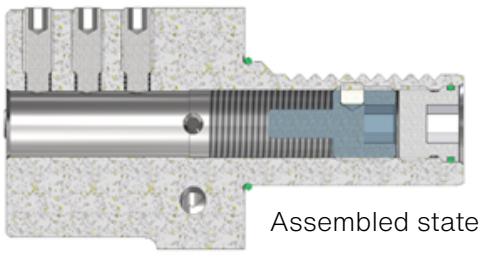
Attention: If coolant gets inside the tool turret, an internal drive can be severely damaged!



Tightening torques sealing plug

The following tightening torques (MA) for the sealing plugs must be observed!

VDI 25 → MA = 25 Nm
VDI 30 → MA = 30 Nm
VDI 40 → MA = 40 Nm
VDI 50 → MA = 50 Nm


Assembled state

Part numbers sealing plugs with O-ring

VDI 25 → BG-VS -M14X1.5-S25xx
VDI 30 → BG-VS -M18X1.5-S30xx
VDI 40 → BG-VS -M22X1.5-S40xx
VDI 50 → BG-VS -M28X1.5-S50xx



3.3 OPERATION

To avoid damage, do not exceed the approved specifications of the tool holder.

3.3.1 LIMIT VALUES DURING OPERATION OF DRIVEN TOOLS

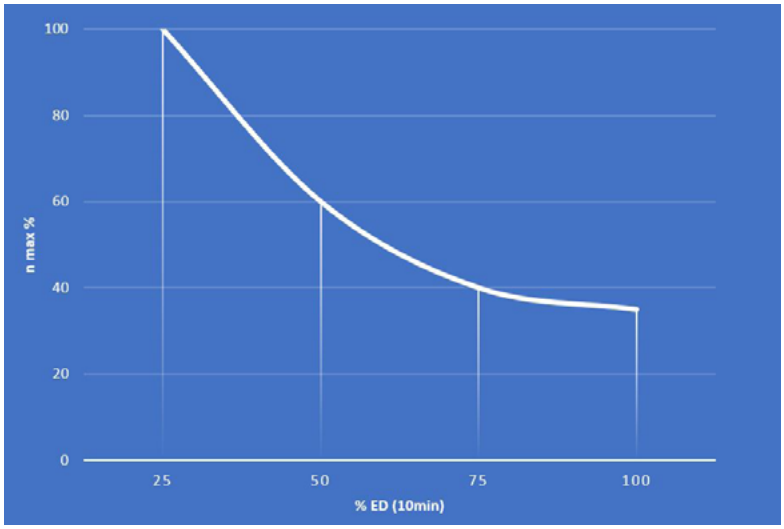
Max. speed	See data sheet
Max. torque	See data sheet and 3.3.3
Max. duty cycle	See 3.3.2
Max. tool holder temperature in use	80°C
Max. coolant pressure, external cooling	70bar and see 3.3.4
Max. coolant pressure, internal cooling	See labelling on tool holder and 3.3.4

3.3.2 DUTY CYCLE

Theoretically permissible duty cycle (ED) for externally and internally cooled driven tools.

For dry running of internally cooled driven tool, max. 25% duty cycle applies.

The allowable duty cycle of a driven tool is for reference only and depends on factors such as the type of machining, bearing and heat dissipation and is a guideline for light machining.



Reading example:
Max. permissible speed of the AGW of 6,000/min:
At a speed of 100% (6,000/min), the AGW may run 25% of 10min (2.5min) and 75% of 10min it must stop (7.5min).
At a speed of 60% (3,600/min), the AGW may run 50% of 10min (5min) and 50% of 10min it must stop (5min).
At a speed of 35% (2,100/min) the AGW may run without limited time (100% ED = infinite).

3.3.3 PERMISSIBLE TORQUE

The max. torque values (M1/M2) given in the data sheet apply to uniform loads with light impacts. The permissible torque is significantly reduced in the event of heavy impact loads. The cutting values of the machining tool must always be selected in such a way that overloading of the driven tool is ruled out.

Standard values based on DIN 3990 / ISO 6336

Machining example	Impact load	Reduction of the max. torque
Drilling with twist drill	low	0 %
Milling with end mill	medium	-25 %
Groove milling with cutter head, polygon turning	high	-45 %

3.3.4 COOLING (KSS) EXTERNAL / INTERNAL

External cooling
After being transferred from the turret, the coolant is fed to the cutting edge of the machining tool from the outside via ball nozzles or a coolant pipe.

Internal cooling
After being transferred from the turret, the coolant is guided inside the tool holder before being transferred to the clamped machining tool.

Before using a driven tool with internal cooling, please always check the max. permissible pressure of the tool. You will find this on the corresponding data sheet. The cooling emulsion must be filtered to 50µ.

Driven tools with internal cooling must be maintained at regular intervals. A visual inspection of the turret for water ingress is strongly recommended. Water in the turret disc can cause considerable damage! The EWS service department will be happy to advise you.

Internally cooled tools with dry-running capability are identified by the marking on the tool housing (see 2.3 Additional information).

However, exclusive dry running is only intended for EC tools.

In the event of a defective seal, we strongly recommend that you only use authorised EWS service centres.

Coolants other than cooling emulsion (water-oil emulsion) such as oil may cause the tool to heat up more. Their use must be checked on a case-by-case basis. The stated values are only valid for cooling emulsion (water-oil emulsion).

3.3.5 AIR PURGE SYSTEM

Some tool holders are equipped with a purge air seal.
A pressure of 0.4bar to 0.8bar must be maintained and the compressed air must be purified with a filtration of 5µm. The tool holder must not be operated without purge air.

4. EWS.VARIA / EWS.VARIA VX

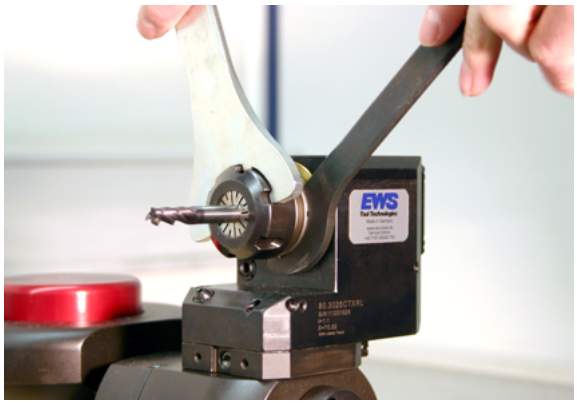
Please note that the tightening screw may only be tightened to the specified torque of 10 Nm (Varia VX 6 Nm). Failure to do so may result in damage to the Varia insert. We recommend the use of a torque spanner. For tool mounting in the inserts we recommend the corresponding mounting device MB-V(X)3, MB-V(X)4 and MB-V5. For tool holders that are equipped with a clamping nut or an axial tightening screw, this device must be used without fail, as otherwise irreparable damage to the inserts may occur. Never tighten clamping nuts or similar in the tool holder (static or driven)! Please check the Varia screws V3 and V4 regularly for wear and replace them if necessary.

5. COLLET CHUCK HOLDERS

Insert the collet chuck into the clamping nut before tightening it in the tool holder. When tightening or loosening the clamping nut, it is essential to hold the tool spindle in place. Failure to do so may cause damage to the gearbox or the drive coupling. Countering the rotation by holding the drive coupling is not permitted and will cause damage.

The max. tightening torque of the collet nut is shown in the following table.

Size	Thread	Tightening torque Max. [Nm]
ER 08	M10 x 0.75	8
ER 11	M13 x 0.75	25
ER 16	M22 x 1.5	50
ER 20	M25 x 1.5	75
ER 25	M32 x 1.5	90
ER 32	M40 x 1.5	120
ER 40	M50 x 1.5	160
ER 50	M50 x 1.5	220



6. CHARACTERISTIC VALUES

6.1 DIN ISO 10889 (DIN 69880)

Tightening torque for the clamping bolt for tools in accordance with DIN ISO 10889 (DIN 69880):

The max. tightening torque for the VDI clamping bolt can be found in the data sheet provided by the relevant machine manufacturer.

Reference values (EWS and Sauter turrets)

Shank diameter DIN ISO 10889 (DIN 69880) [mm]	Tightening torque Max. [Nm]
16	6
20	10
25	10
30	25
40	50
50	50
60	86



6.2 TIGHTENING TORQUE SCREWS AND BMT

The max. tightening torque for the fastening screws can be found in the data sheet provided by the machine manufacturer.

Thread size	Tightening torque max. [Nm]
M3	1,4
M4	3
M5	6,5
M6	10
M8	25
M10	50
M12	90
M16	200

6.3 EWS.PSC

The max. tightening torque for the fastening screws can be found in the data sheet provided by the machine manufacturer.

Size	PSC 32	PSC 40	PSC 50	PSC 63	PSC 80
Max. tightening torque (Nm)	35	50	70	90	130
Max. clamping force (kN)	16	21	27	30	37

6.4 KENNAMETAL KM™

Size	KM32	KM40	KM50	KM63	KM80
Max. tightening torque [Nm]	10	12	27	47	79
inner hex key wrench size	5	6	10	12	14

For further information on the use of Kennametal KMTM , please refer to the separate operating instructions.

6.5 HSK

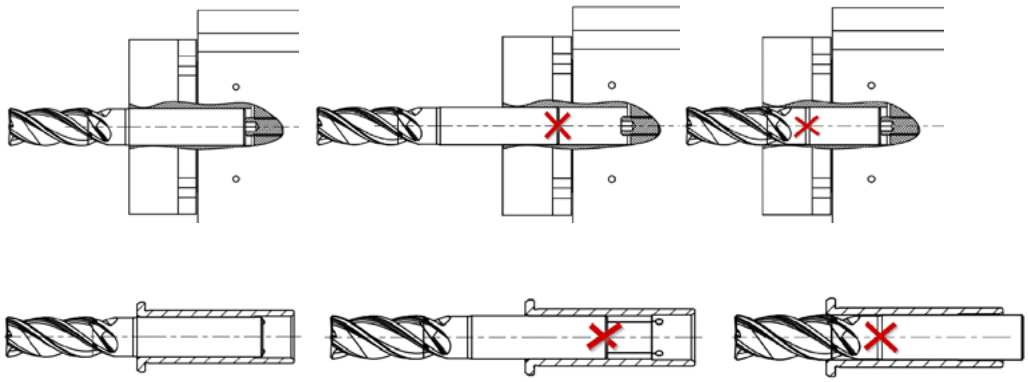
Größe	HSK 32	HSK 40	HSK 50	HSK 63	HSK 80	HSK 100
Max. tightening torque [Nm]	6	6	12	20	30	50
inner hex key wrench size	3	3	5	5	6	8

6.6 HYDRO EXPANSION

Size	Ø6 – Ø50	ECO Ø6 – Ø50
Max. tightening torque(Nm)	10	6

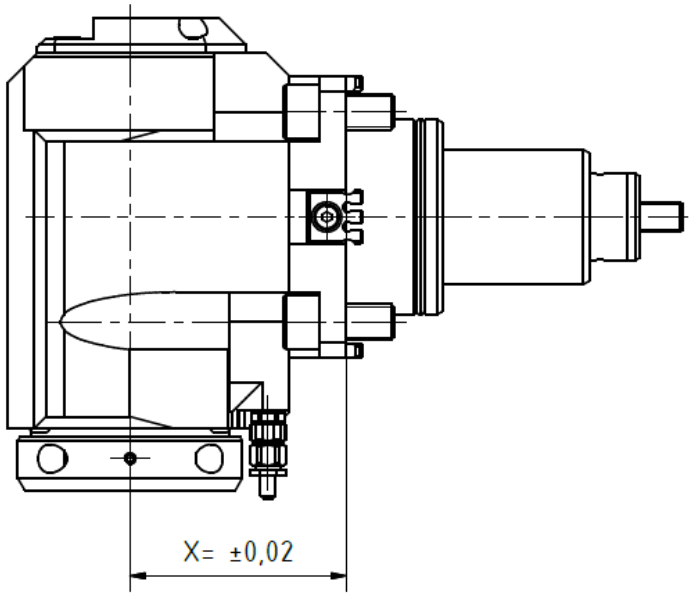
Clamping shanks

- Tool shank quality h6 or h7 can be used. With h7, the transmissible torque is slightly reduced.
- Only clamp fully cylindrical tool shanks or tool shanks in accordance with DIN 1835 Form A, Form B, and Form E.
- Never clamp hydro expansion chucks without a tool.
- Never clamp reduction sleeves without a tool. Only use suitable reduction sleeves.
- Clamp only over the entire surface in the hydro expansion chuck and reduction sleeve. The tool diameter must not be stepped or shortened within the chuck or reduction sleeve.



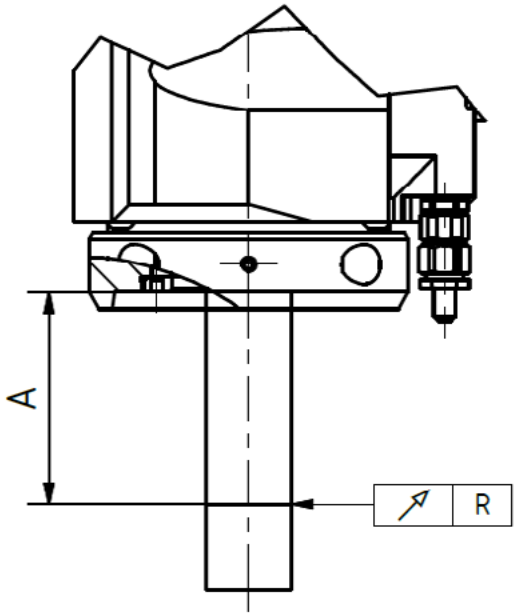
6.7 TOLERANCES DRIVEN TOOLS

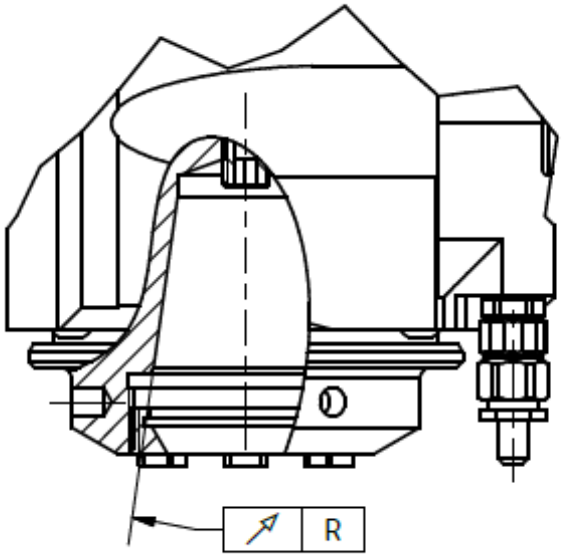
X= Distance between contact surface and spindle axis



on the test mandrel

Concentricity of various interfaces



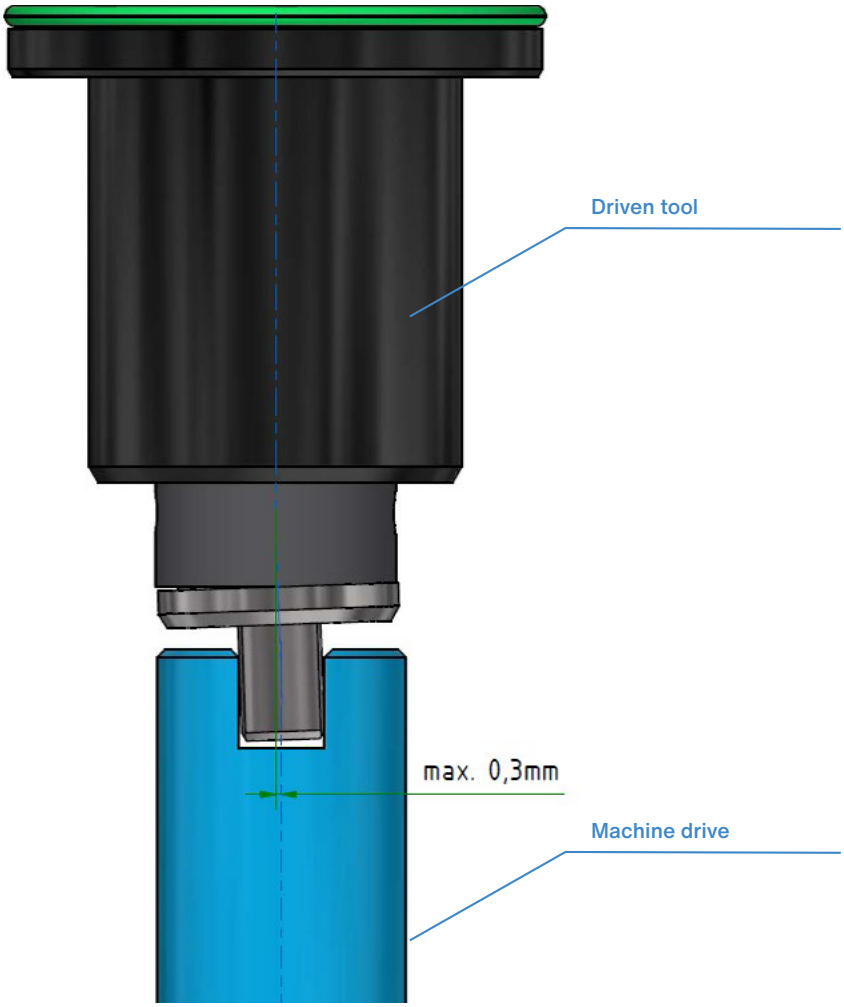


Interface	Concentricity (R)	Test method for distance (A)
EWS Varia V5	0,02mm	to 50mm on the test mandrel
EWS Varia VX3/4	0,01mm	to 30mm on the test mandrel
Whistle Notch/Weldon (WN)	0,02mm	to 50m on the test mandrel
Polygon ISO 26623 (PSC)	0,01mm	to 30mm on the test mandrel
Hydraulic expansion absorption (HYD)	0,01mm (0,005mm with limited tolerance)	to 30mm on the test mandrel
Kennametal (KM)	0,01mm	to 30mm on the test mandrel

Interface	Concentricity (R)	Test method in cone
Ceratizit ABS (ABS)	0,01mm	in cone
Collet chuck ER	0,005mm	in cone

6.8 MISALIGNMENT-COMPENSATING CLUTCH

The misalignment-compensating coupling compensates for a radial offset of max. 0.3 mm from the driven tool to the machine drive.
The coupling joint pivots in one axis and slides in the second plane in the groove of the drive, similar to the Oldham principle.
An elastomer support ring reduces vibrations and noise.



Advantages:

- Alignment error compensation of max. 0.3 mm
- Bending moments in the driven tool are reduced and the bearing service life is increased
- Wear on the double flat is reduced
- Reduces vibrations and noise

7. MAINTENANCE AND CARE

Maintenance:	The driven tool and static tool holders are maintenance-free for the user. However, we recommend that you have a revision check of the driven tool carried out after 6 months. For this purpose, please send the tool to EWS or an EWS service point in order to define a maintenance cycle, if necessary.
Care/cleaning:	Clean only with a cleaning cloth. Never use compressed air or cleaning agents. Spray the tools with spray oil after use to prevent corrosion.
Service case:	Wear parts must be replaced in good time. In case of defects of any kind, contact the EWS service staff. E-mail: service@ews-tools.de

TIP: Annual maintenance prevents major damage.

WARNING!
The cover of an EWS.CyberCon4 must not be dismantled under any circumstances.
Failure to observe this will expose you to the risk of electric shock or fire.

8. STORAGE, TRANSPORT AND DISPOSAL

Some components and operating materials used in our powered tools are subject to the usual ageing processes, even when the tool is not in operation. The high-performance greases we use have a shelf life of at least 24 months in closed containers according to the manufacturer's instructions. During transport and storage, rolling bearings should be protected against vibrations and shocks as much as possible in order to avoid tribological processes. Special climatic conditions must also be observed to prevent premature tool failure. Excessive temperature fluctuations during transport and storage could cause condensation to form and lead to corrosion inside the tool.

Proper storage is guaranteed under the following conditions:

Temperature	Max. temperature fluctuation	Humidity
6-25 °C	10 °C	< 65 %

The storage location should also always be clean and dry and, in every case, frost-free and ideally cool. Constant vibrations or strong shocks must be avoided.

Do not dispose of these products with normal household waste.
Please contact our service department or return the unit to us.

DANGER!
Return transport of an EWS.CyberCon4 tool by air freight is prohibited.

9. TROUBLESHOOTING

WARNING!
Stop the tool immediately if any malfunctions occur. Further work can lead to serious damage to the tool holder as well as to the machine tool. If you are unable to remedy the fault yourself, please contact the EWS service department.

Please check visually whether you can eliminate the fault yourself.
If this is not possible, please inform us of the following when returning the tool holder for speedy repair processing at the factory:

- Type / Article number
- Serial number (S/N) inscription on the tool holder
- Year of manufacture
- Type of fault

The EWS service department can be reached at:

EWS Weigele GmbH & Co. KG

Tel +49(0)7161-93040-700
Fax +49(0)7161-93040-30

E-mail service@ews-tools.de

10. SERVICE / WARRANTY

Services
- Professional, fast repair by our service team
- Competent advice from our service department in the event of faults

NOTE
In the event of a warranty claim, please contact our service department.

The EWS service department can be reached at:

EWS Weigele GmbH & Co. KG

Tel +49(0)7161-93040-700
Fax +49(0)7161-93040-30

E-mail service@ews-tools.de

- The warranty period is 1 year.
- The shipping date at EWS is decisive.
- The warranty does not cover wear parts such as seals, etc. and any consequential damage caused by them.
- The service life of EWS products depends largely on the corresponding runtime and application.
- The warranty covers all significant defects that can be proven to be the result of material or production faults.

The warranty shall expire in the event of:

- conversions / alterations / repairs not carried out by EWS or not approved in writing
- improper and inappropriate setup, maintenance and operation
- improper clamping of the machining tool
- damage due to unsuitable or defective machining tools
- collisions in the machine tool
- non-compliance with the permissible machining data (e.g. speed) with driven tools
- force majeure
- damage due to non-observance of the operating instructions

11. TECHNICAL SPECIFICATIONS

EC/EU Declaration of Incorporation for partly completed machinery (original) within the meaning of Directive 2006/42/EC Annex II B

12. SEPARATE OPERATING INSTRUCTIONS

Separate operating instructions are available for other EWS products at

https://www.ews-tools.de/en/downloads

Scan and access all manuals online!

EWS Group

Tooling Systems and Turrets

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