

Instruction manual

Coromant Capto® DTH Plus



Introduction

Purchase

Congratulations on your purchase of a Coromant Capto® DTH Plus.

This manual contains important safety directions and instructions for product set up and operation.

Keep for further reference

Product identification

Product type and article numbers are printed on the product. Refer to this when contacting Sandvik Coromant.

Validity of this manual

This manual applies to the Coromant Capto® DTH Plus.

Available documents

Coromant Capto® DTH Plus handling instruction and other documents can be downloaded from the Sandvik Coromant website:

<http://www.sandvik.coromant.com>

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1 Safety

1.1 General

Description

The following instructions should enable the person responsible for the product and the person who actually uses the equipment to anticipate and avoid operational hazards. The person responsible for the product must ensure that all users understand these instructions and adhere to them.

Generalities

When operating and using the driven tool holder, observe the safety regulations of the regional associations and the safety laws and guidelines of the respective state and/or the European Union.

Above such regulations, observe the safety instructions of the manufacturer of your machine tool.

About warning messages

Warning messages are an essential part of product safety. They appear wherever hazards or hazardous situations can occur. For user safety, all safety instructions and safety messages shall be strictly observed and followed. Therefore, the manual must always be available to all product users.

DANGER, WARNING, CAUTION and NOTICE are standardized signal words for identifying levels of hazards and risks related to personal injury and property damage. For your safety it is important to read and fully understand the table below with the different signal words and their definitions. Supplementary safety information symbols may be placed within a warning message, as well as supplementary information.



DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates a potentially hazardous situation or an unintended use which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor or moderate injury.

NOTICE

Important information which must be adhered to in practice as it enables the product to be used in a technically correct and efficient manner.

1.2 Purpose

Permitted use

Prepare Coromant Capto® DTH Plus for operation.

Adverse use

- Use of the product without instruction
- Use outside of the intended limits
- Disabling safety systems
- Removal of hazard notices
- Opening the product using tools, e.g. screwdriver, unless specifically instructed for certain functions
- Modification or conversion of the product
- Use after misappropriation
- Use of products with obviously recognizable damages or defects
- Use with accessories from other manufacturers without the prior explicit approval of Sandvik Coromant



WARNING

Adverse use can lead to injury, malfunction and damage. It is the task of the person responsible for the equipment to inform the user about hazards and how to counteract them. The product is not to be operated until the user has been instructed on how to work with it.

1.3 Limits of use

Environment

Suitable for use under rough conditions, ref. technical data. Not suitable for use in aggressive or explosive environments.

1.4 Areas of responsibility

Manufacturer of the product

Sandvik Coromant is responsible for supplying the product, including the instruction manual and original accessories, in a completely safe condition.

Manufacturers of non-Sandvik Coromant accessories

The manufacturers of non-Sandvik Coromant accessories are responsible for developing, implementing and communicating safety concepts for their products, and are also responsible for the effectiveness of those safety concepts in combination with the Sandvik Coromant product.

Person in charge of the product

The person in charge of the product has the following duties:

- To understand the safety instructions on the product and the instructions in the instruction manual
- To be familiar with local regulations relating to safety and accident prevention
- To inform Sandvik Coromant immediately if the product becomes unsafe

1.5 Hazard of use

WARNING

The absence of instruction, or the inadequate imparting of instruction, can lead to incorrect or adverse use, and can give rise to accidents with far-reaching human, material, financial and environmental consequences.

Precautions: All users must follow the safety instructions given by the manufacturer and the directions of the person responsible for the product.

WARNING

This tool is intended for use by skilled persons with knowledge on the use of this tool and who understand the resulting risks.

Precautions: Read all instructions before using the tool.

WARNING

Use all appropriate safety guards or machine encapsulations to securely collect particles such as chips or cutting elements that may spin off.

Precautions: Always use appropriate personal protective equipment.

CAUTION

The user must use the tool as intended.

Precautions: Only Sandvik Coromant authorized service workshops are entitled to repair these products.

CAUTION

Check important components for damage prior to every operation.

Precautions: DO NOT USE or operate a damaged tool or product. Return the product to the appropriate location for repair, replacement or recycling.

1.6 Unpacking

When unpacking the product, make sure that no accessories are missing and that none of the package contents have been damaged.

If you detect any transport damages, please contact your sales representative.

WARNING



For safety reasons it is recommended to use lifting equipment for lifting Coromant Capto® DTH Plus heavier than 18 kg/40 lb. Lifting slings are recommended.

CAUTION

Check the centre of gravity before lifting.

NOTICE

Keep the packaging for safe storage of tools.

1.7 Battery

WARNING

Only use one of the batteries listed here with a maximum permissible operating temperature of at least +85°C (185°F). The use of another battery may present a risk of fire or explosion. One of the following types of batteries must be used.

- Panasonic CR2032
- Murata CR2032X
- Murata CR2032W

WARNING

The battery shall be inserted or exchanged by a trained technician only.



WARNING

Risk of fire, explosion and burns. Do not recharge, disassemble, heat above 100 °C (212 °F) or incinerate. Keep battery out of reach of children and in original package until ready to use. Dispose of used batteries promptly, the country-specific environmental protection laws need to be considered. Do not dispose of in fire.



WARNING

Never put batteries in your mouth. If swallowed, contact your physician or local poison control.

1.8 Power-off magnet



WARNING

Keep magnet out of reach of children.



WARNING

Never put magnets in your mouth. If swallowed, contact your physician.



WARNING

Magnets could affect the functioning of pacemakers and implanted heart defibrillators.

- A pacemaker could switch into test mode and cause illness.
- A heart defibrillator may stop working.
- If you wear these devices, keep a sufficient distance from the magnet. Minimum 46 mm (1.81 inch).
- Warn others who wear these devices from getting too close to magnets.

2 Product description

Coromant Capto® DTH Plus type label.

Ratio
1:2, 1:3 => speed increaser
2:1, 3:1 => torque increaser

Max. output rpm
Max. coolant pressure

SANDVIK
Coromant

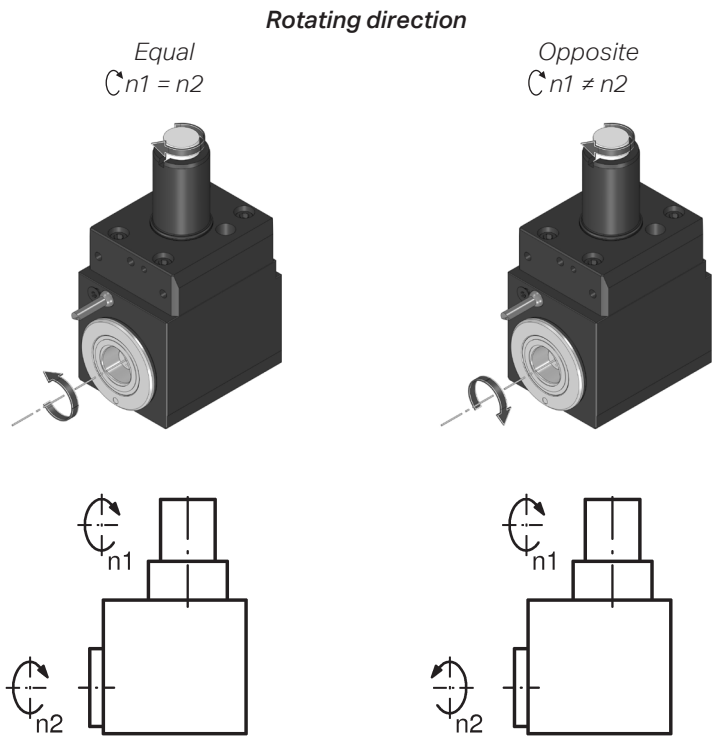
C4-DNE-MS60A-I-SA2
SN 1150050000001
i = 1:1 $n_1 = n_2$
 $n_{max} = 10000 \text{ rpm}$
IC $p_{max} = 100 \text{ bar}$



Product code
S=Integrated Sensors
A=Region EU

Serial No.
Important for driven tool holder identification (e.g. for spare part request)

Rotating direction



2.1 Product code description

C4-DNI-MS60A-E-SA1

C	Tool side interface, C: Coromant Capto®
4	Coupling size

-

D	Driven
N	Neutral
I	E = External (straight) I = Internal (90°)

-

MS	Machine brand, MS: Mori Seiki BT: Doosan Machine Tools MZ: Mazak OK: Okuma NA: Nakamura Tome BI: Biglia EM: Emag GM: Gildemeister MA: Muratec-Murata
60A	Bore size in turret, A =bolt pattern

-

E	E = External coolant I = Internal coolant
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-

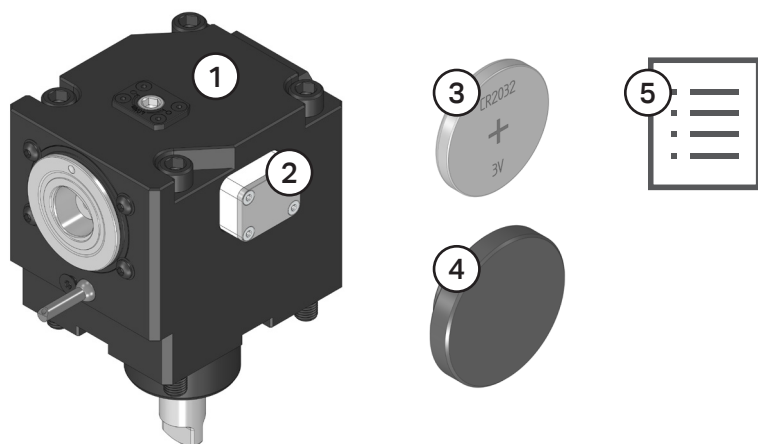
S	Sensors
A2	Region/Version, A = EU

3 System component description

Component

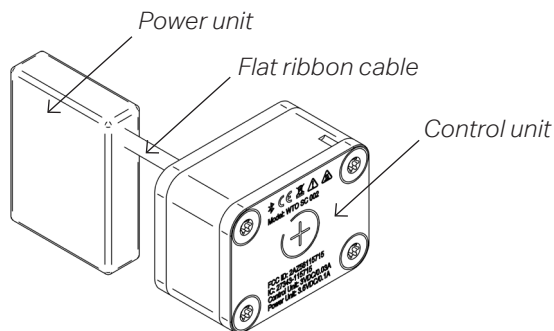
Description

- | | |
|-----------------------|--|
| 1. Driven tool holder | <ul style="list-style-type: none">• Driven tool holder with cutting tool interface for machining• Integrated electronic unit (2) |
| 2. Electronic unit | <ul style="list-style-type: none">• Electronic unit with Bluetooth interface and integrated sensors• Sensor 1, Vibration• Sensor 2, Temperature• Sensor 3, Rotation speed• Transmission unit |
| 3. Battery | Type: Coin cell CR2032
Not included in delivery. |
| 4. Power-off magnet | For switching off the electronic unit. |
| 5. Instruction manual | Coromant Capto® DTH Plus |



4 Electronic unit

The electronic unit WTO SC 002 contains a control unit and a power unit. Both are connected via flat ribbon cable.



4.1 Intended use

The electronic unit model WTO SC 002 enables the transmission of sensor data of tool holders based on Bluetooth® low energy 5.0 technology. This enables condition monitoring and predictive maintenance.

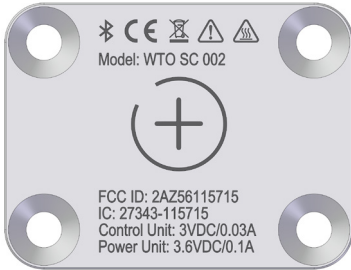
The following sensor data are measured and transmitted:

- Sensor 1, Vibration
- Sensor 2, Temperature
- Sensor 3, Rotation speed

The battery status is also detected and transmitted.

The electronic unit is mounted at all Coromant Capto® DTH Plus.

4.2 Symbols on the WTO SC 002



Product with Bluetooth® low energy 5.0 technology.



Product certified according to applicable European standards.



Do not dispose of the product with household waste. See section 9 *Disposal*.

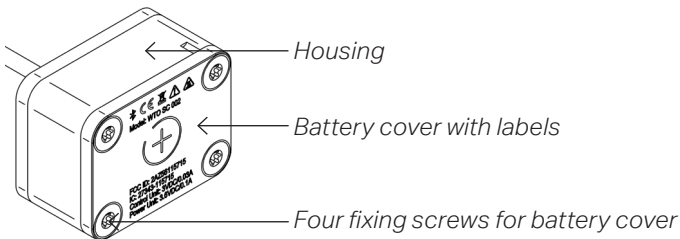


Read and follow the information and safety instructions.



Product can have hot surface. See section 1.5 *Hazard of use*.

4.3 Control unit



NOTICE

Only parts specified by Sandvik Coromant must be used as battery covers, fixing screws and power-off magnet.

4.4 Power unit

The WTO SC 002 contains a power unit for generating electrical energy. The amount of the generated energy depends strongly on the applied RPMs; depending on these the lifetime of the battery can be heavily increased. The power unit contains also an energy buffer to optimize the energy management of the WTO SC 002.

With an intact battery, the WTO SC 002 will operate over the full RPM range. The WTO SC 002 is designed for running even with empty batteries in the case that in the startup phase at least 2500 RPMs are achieved for minimum of two seconds. Afterward enough energy is available down to lower operation RPM. The minimum operation RPM depends on driven tool holder.

NOTICE

Please take attention to the battery; to avoid damage to the electronics, old and/or empty batteries should be replaced.

The power unit is located in the centre of the driven tool holder. Due to the big RPM range there might appear quite high voltages, but they are not accessible and specially protected. The achieved voltage is then converted to a low voltage of less than 4V DC. This low voltage supplies the control unit in the outside housing.

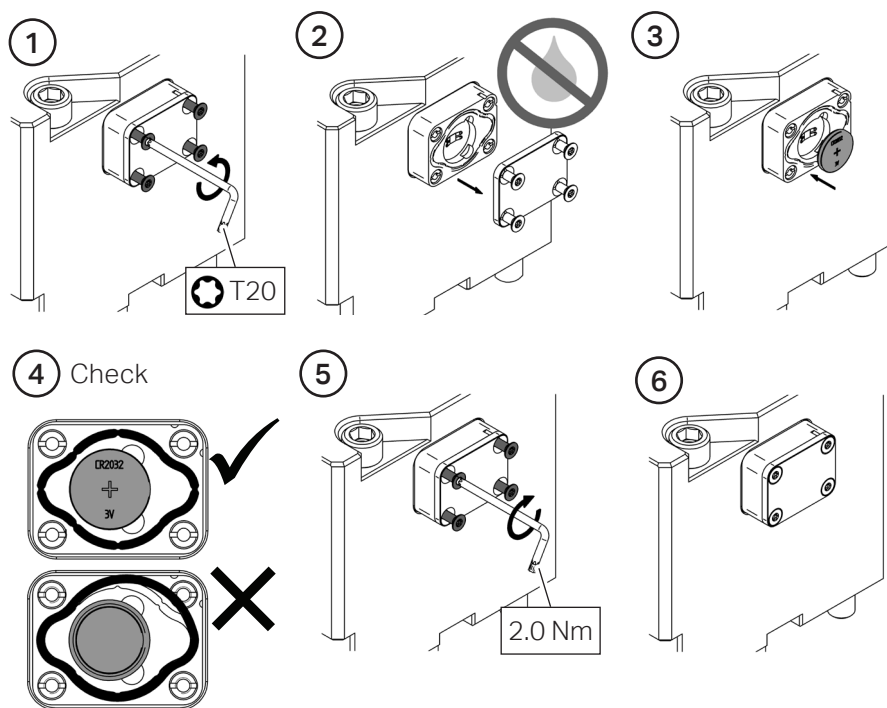
5 Operation

NOTICE

If the equipment is used in a manner not specified, the protection provided by the equipment may be impaired.

5.1 Insert battery

Mount the battery as shown below.



NOTICE

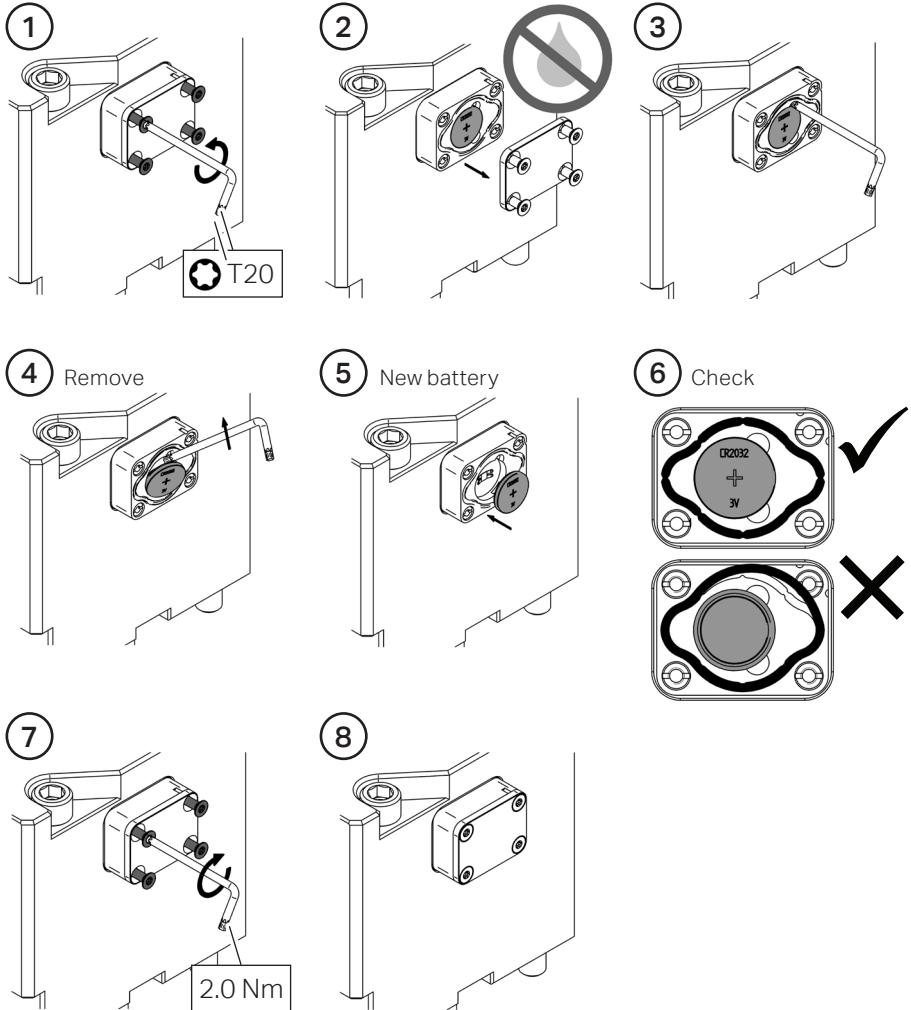
After inserting the battery, the electronics go into power-saving mode after five minutes. The driven tool holder must be connected via Bluetooth within this period. If the connection does not take place within this period, a connection is only possible again during operation (rotation > 0 rpm) of the tool holder or when re-activating the electronic unit using the power-of magnet, see section 5.5 *Activate electronic unit*.

NOTICE

If the battery is empty and low RPM, no data of the machining cycles will be stored in the memory of the electronic unit.

5.2 Change battery

The battery of the electronic unit must be changed as soon as displayed by the software. Change the battery as shown below.



5.3 Updating the firmware

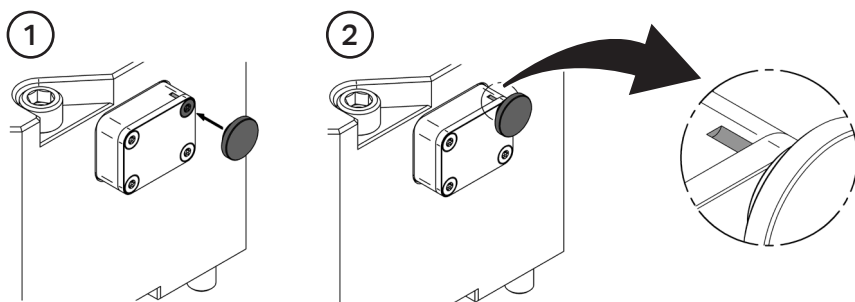
Firmware updates will be notified on the Tool View page in the software.

The updates are provided automatically, over the Bluetooth connection to the tool holder, and may take a couple of minutes to complete.

When an update is selected, it will be queued in the tool. The next time a tool turns on, it will perform the update. Work cycle data from machining during the firmware update process will not be stored. The status can be seen in the software during the update.

5.4 Energy-saving mode

For saving energy for the battery, fix the power-off magnet on top of the marked screw. The electronic unit is switched off completely, as long as the power-off magnet is fixed.

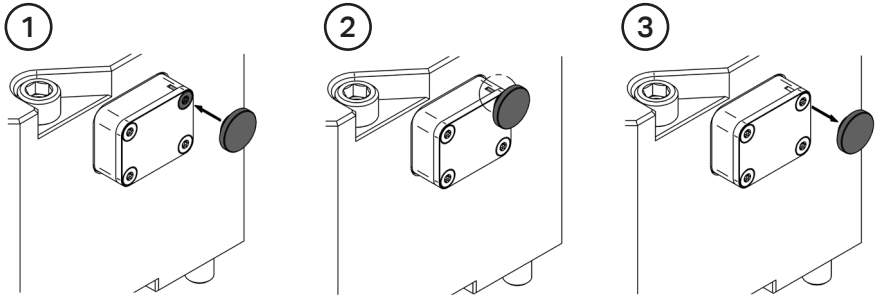


NOTICE

Use this function to save energy when the driven tool holder is outside the machine. Remove the power-off magnet before using the driven tool holder inside the machine.

5.5 Activate electronic unit

To activate the electronic unit, place the power-off magnet on top of the marked screw and remove it. Now the control unit is active for five minutes.



NOTICE

Use this function when the driven tool holder is outside the machine to connect it via Bluetooth, or for data export.

5.6 Installation and operation advice



WARNING

Before every action intruding into the working space of the machine you must place spindles and drives out of operation and make certain that they cannot be inadvertently turned on. In case of doubt: activate and lock the EMERGENCY-OFF SWITCH.



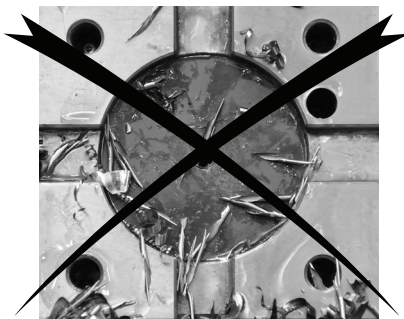
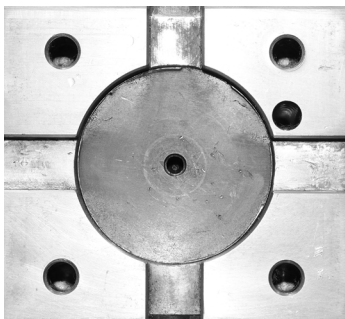
WARNING

Increased dangers of injuries arise if the cutting tool has not been removed when handling, transporting or storing the driven tool holder.

NOTICE

Carefully read and follow the operation instructions of the machine tool manufacturer before any set-up and operation.

- Visually inspect the contact surfaces of the driven tool holder and turret for dirt and external damage (e.g. cracks, nicks, scratches deformations). Any damage must be corrected prior to installation



- Perform a general function test before mounting the driven tool holder on the machine. To verify proper function, rotate the driven tool holder by hand. Do not use the driven tool holder if any problems occur, such as bearings roughness, a grinding feeling, backlash or visual run-out. Contact Sandvik Coromant immediately for repair

CAUTION

Never operate the driven tool holder beyond the maximum design torque and/or output rpm. Overloading the driven tool holder will cause high wear and possibly gear damage, and warranty will not cover damages caused by overloading.

NOTICE

Always have a tool or cover plug clamped when the driven tool holder is mounted in the turret but not used.

Cx-CP-01



5.7 Break-in period

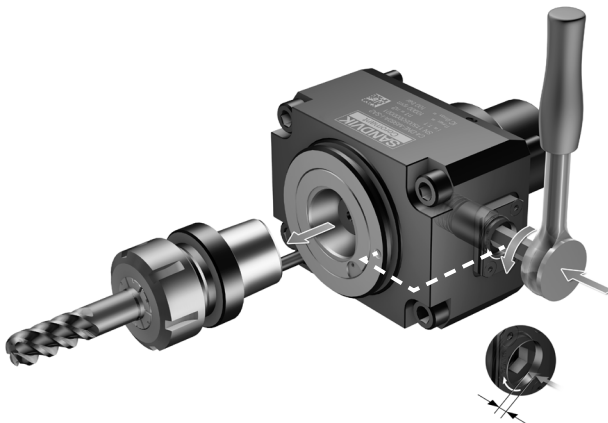
A break-in period is essential for a long life of the driven tool holder. Running the driven tool holder for a break-in period removes intensified friction in internal components, especially bearings and gears, and helps to distribute the lubrication applied during assembly.

- Run the driven tool holder at 50% of the maximum output rpm for 30 minutes without load during the first start-up. Maximum rpm for each specific unit is stated in the software. For driven tool holder with internal coolant, apply coolant during the break-in period
- Vibrations of the driven tool holder and exorbitant noises are signs of an error
- In case of error, put the driven tool holder out of operation. Check if the driven tool holder is installed correctly
- Have potential errors repaired by Sandvik Coromant
- During a break-in period, the driven tool holder body temperature must not exceed 75 °C (167 °F)

5.8 Change cutting tool

Always use a torque wrench when changing the cutting tool. Clamp with torque according to the specification on the driven tool holder.

1. Rotate the driven tool holder spindle to match the dot with the hexagon driver position.



2. Fully push down to engage the hexagon driver and change the cutting tool.



3. Make sure the hexagon driver is in top position when finished.



Coromant Capto® size	Torque		Torque wrench	Key adapter		
	Nm	ft.lbs			mm	inch
C3	25	18	C-TK-01M	5680 035-17	5	0.20
C4	40	30	C-TK-01M	5680 035-14	8	0.32
C5	60	44	C-TK-01M	5680 035-06	10	0.39
C6	75	55	C-TK-01M	5680 035-07	12	0.47

5.9 Use of coolant supply

The driven tool holder is designed to supply coolant both through spindle (internal coolant supply) and external coolant supply port. The driven tool holder can also be operated without coolant.

If using the driven tool holder with only internal coolant, plug the external coolant port, see section *5.10 Plug external coolant port*.

All driven tool holders with internal coolant supply are specified for maximum coolant pressure of 100 bars (1450 PSI) up to their maximum rpm.

NOTICE

When internal coolant is used, the coolant flow must be ensured. Only use cutting tools and adaptors with internal coolant.



CAUTION

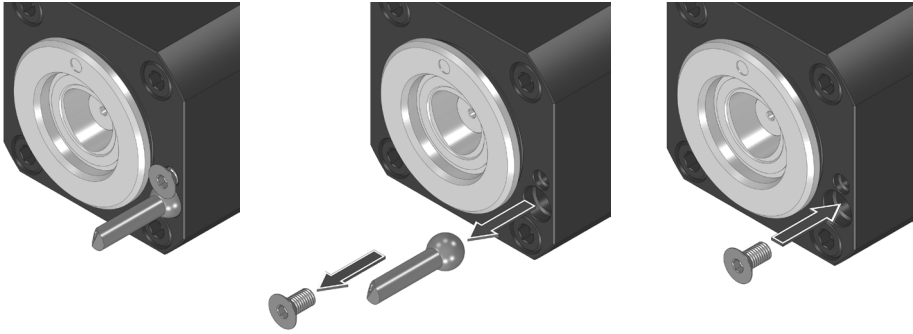
To avoid excessive wear and/or damage to the internal sealing system, coolant must be filtered to a particle size less than 50 µm. If not available on the machine, install an additional filtration system.

NOTICE

When machining grey cast iron, only use driven tool holders with external coolant design.

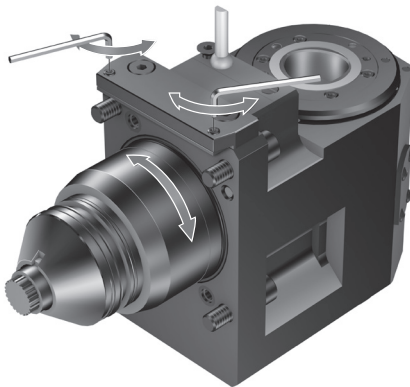
5.10 Plug external coolant port

Plug the external coolant nozzle to use the driven tool holder with internal coolant only.



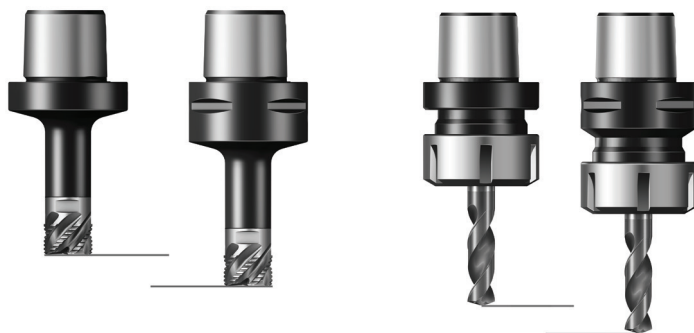
5.11 Turret centreline alignment

Using turret surface:



5.12 Coromant Capto® short

Use Coromant Capto® short tools to reduce swing diameter and achieve better clearance. The short gauge line reduces the bending moment, which leads to reduced vibrations and allows for increased cutting data. Coromant Capto® short tools are without gripper grooves and are for manual tool change only.

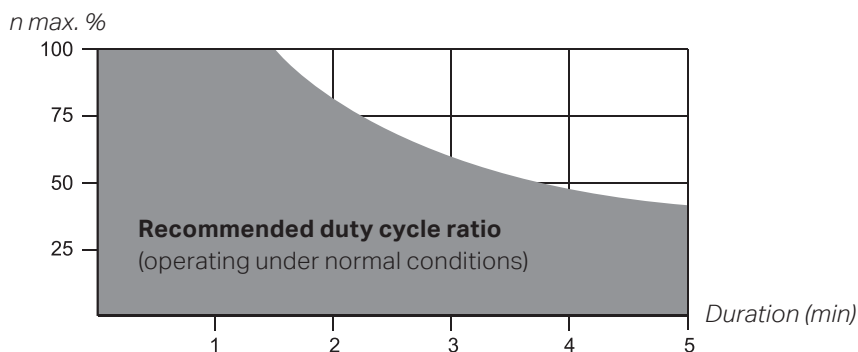


Coromant Capto® short without gripper grooves and standard tool with gripper grooves.

5.13 Duty cycle ratio

Operating the driven tool holder beyond the recommended duty cycle ratio can cause exorbitant heat generation and damages to the driven tool holder like bearing failures.

The driven tool holder body temperature should not exceed 65 °C (149 °F) when operating under normal conditions.



5.14 Service interval

The driven tool holder lifetime depends on cutting application and operation

conditions. With Coromant Capto® DTH Plus, the software will tell you when it is time for service.

- Perishable parts such as bearings and seals need to be replaced periodically
- Recommended service interval is:
 - 12 months under normal conditions in 2 shifts
 - 6 months when operating under 3 shifts or heavy conditions or high RPM
 - 6 months for driven tool holder with internal coolant supply
- Maintenance contains cleaning the inside of the driven tool holder and lubricating the bearings and gears
- Maintenance work must be done by Sandvik Coromant factory-owned service centers or by staff who is trained by Sandvik Coromant

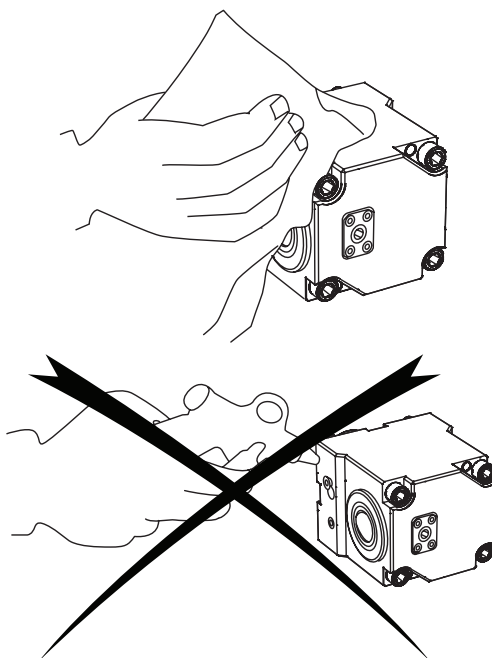
6 Care and cleaning

The driven tool holder must be cleaned frequently to maintain high quality and accuracy. Use a clean rag to clean the driven tool holder.

CAUTION

Do not use compressed air to clean the driven tool holder. Compressed air forces chips and coolant through the sealing system causing premature failure of the driven tool holder.

- Daily: Clean the driven tool holder from chips, grease, oil, coolant, etc.
- Weekly: Clean the driven tool holder from chips, grease, oil, coolant, etc. Rotate the spindle several times by hand to check bearings and gears
- Clean the spindle area when removing the cutting tool



7 Transport and storage

7.1 Shipment

When transporting the product by rail, air or sea, always use the complete original Coromant Capto® DTH Plus packaging, transport container and cardboard box, or equivalent, to protect against shock and vibration.

NOTICE

Always remove the battery before transporting the driven tool holder.

7.2 Shipment claims

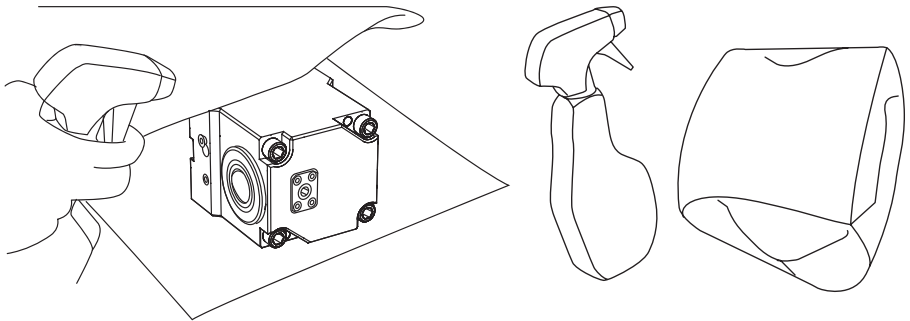
Damage caused during shipment must be reported to Sandvik Coromant in writing immediately upon receipt of the product. Claim for damage must include pictures of the damage to packaging and product.

7.3 Storage

NOTICE

Store the driven tool holder and accessories in a clean and dry environment.

- Disassemble the cutting tool from the driven tool holder before storage
- Lightly lubricate the surfaces of the driven tool holder
- Cover the tool interface with a cover plug (Cx-CP-01)
- Cover the driven tool holder with corrosion protection paper to protect the unit from dirt and rust



NOTICE

To avoid contact corrosion in the bearings, rotate the driven tool holder spindle by hand once per week.

8 Conformity

8.1 Simplified EU Declaration of conformity

Sandvik Coromant AB declares that the product Coromant Capto® DTH Plus is in compliance with the following directives and standards.

Following the provisions of EU-directives:	2014/53/EU (RED) 2014/35/EU (Low Voltage) 2014/30/EU (EMC) 2011/65/EU (RoHS2) including 2015/863/EU (RoHS3) 2012/19/EU (WEEE), see section 9 <i>Disposal</i>
Safety:	EN61010-1:2010+A1:2019
Radio:	EN 300328 V2.2.2:2019-07 EN 50663:2017 EN 301489-1 V2.2.3:2019-11 EN 301489-17 V3.2.4:2020-09
EMC:	EN IEC 61000-6-2:2019 EN IEC 61000-6-4:2019

For more information, see the Declaration of conformity.

8.2 FCC Compliance statement (USA)

FCC Compliance statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

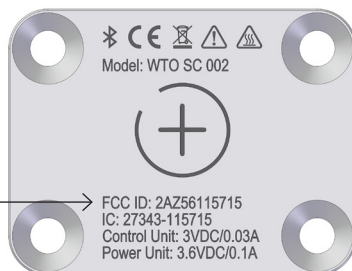
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Safety compliance to: UL 61010-1

Labeling for FCC:

FCC ID: 2AZ56115715



8.3 Industry Canada compliance statement (Canada)

This device complies with Industry Canada's applicable license-exempt RSSs. Operation is subject to the following two conditions:

1. this device may not cause interference, and
2. this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. l'appareil ne doit pas produire de brouillage;
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This product is certified as type of the portable device with Industry Canada Rules. To maintain compliance with RF Exposure requirement, please use within specification of this product and have a separation distance of minimum 15 mm between the user and/or bystander and the antenna and / or radiating element.

This distance ensures that the output power (e.i.r.p.) of EYSKBN is below the SAR evaluation Exemption limits defined in RSS-102 issue 5.

Ce produit est certifié comme type de l'appareil portable avec Industrie Règles de Canada. Pour maintenir l'acquiescement avec exigence Exposition de RF, veuillez utiliser dans spécification de ce produit et respecter une distance de séparation d'au moins 15 mm entre l'utilisateur et / ou un tiers et l'antenne et / ou l'élément rayonnant.

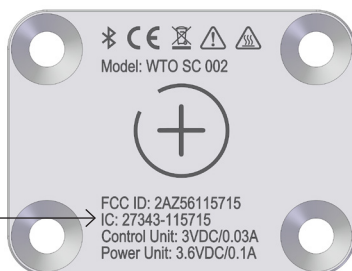
Cette distance garantit que la puissance de sortie (p.i.r.e.) d'EYSKBN est inférieure aux limites d'exemption de l'évaluation SAR définies dans le numéro 5 de la norme RSS-102.

This product complies to ICES-003, CAN ICES-003 (B)/ NMB-003(B).
Ce produit est conforme à ICES-003, CAN ICES-003 (B)/ NMB-003(B).

Safety compliance to: CSA-C22.2 No. 61010-1
Conformité de la sécurité à: CSA-C22.2 No. 61010-1

Labeling for IC:

IC: 27343-115715



8.4 Japan

This product installs a radio system which has been approved as a radio station in a low power data communication system based on the Radio Law.

EYSKBN: 001-A14398

Safety compliance to: IEC61010-1

9 Disposal



For disposal in European Union countries

This symbol means that the Coromant Capto® DTH Plus must be disposed of in accordance with the directive on waste electrical and electronic equipment (WEEE). Dispose the Coromant Capto® DTH Plus via the local collection points for waste electronic equipment or send it back to Sandvik Coromant.

Visit this webpage for more information: <https://www.sandvik.coromant.com/en-gb/services/pages/recycling-of-sensorized-tools.aspx>

Do not dispose of the Coromant Capto® DTH Plus with household waste.

The battery must be removed before disposing of the Coromant Capto® DTH Plus. Dispose of the battery separately in compliance with the country-specific environmental protection laws.

WEEE Directive: 2012/19/EU

WEEE Reg. No. DE 63980008

For disposal in countries outside the European Union

This symbol is only valid in the European Union (EU). If you wish to dispose of this product, please contact your local authorities or dealer and ask for the correct method of disposal.

10 Warranty

Sandvik Coromant will repair, free of charge, any manufacturers defects arising from failure due to design, material, or workmanship in accordance with the following conditions:

1. Warranty only applies to manufacturers defects occurring within 12 months after delivery for new products and 90 days after delivery for repair service.
2. Wear on perishable items and damage caused by overloading, or not operating in accordance with Coromant Capto® DTH Plus specifications, are excluded.
3. Customer must discontinue use immediately and submit a claim in writing upon detection of defect.
4. Written claim must include a detailed description of fault and is subject to verification by Sandvik Coromant.
5. Warranty repairs must be performed by Sandvik Coromant factory-owned service centers.

11 Technical data

Supply voltage

Max 3.3VDC, 0.08W

Power supply

Battery	3V Coin cell CR2032 See section <i>1.7 Battery</i>
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Sensors

Sensor 1, vibration	Monitor vibrations from 0 to 8 g Monitor vibrations in 3 axes (X-, Y- and Z-axis)
Sensor 2, temperature	Monitor temperature from 0 °C to +85 °C (32 °F to 185 °F)
Sensor 3, rotation	Monitor rotation maximum 12000 rpm

Environmental conditions

Operating environment	IP56 according to IEC 60529 Indoor use in lathe/CNC machine, closed or open, dry or wet machining.
Temperature range	Storage : -40 °C to +85 °C (-40 °F to 185 °F) Operating: 0 °C to +65 °C (32 °F to 149 °F) For battery operating and storage condition, please refer to the battery datasheet.
Relative humidity	Use 10%–95% Storage recommended 10%– 50%
Maximum altitude	2000 m (6562 ft)

Instruction manual Coromant Capto® DTH Plus
English
Part No: 92063
Version 2.0



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Sweden
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