



Silent Tools™ Plus Cylindrical turning adaptor

TA50D
TA51D
TA60D
TA61D

General user manual version 1.0

Introduction

Purchase

Congratulations on your purchase of a Silent Tools™ Plus Cylindrical turning adaptor.

This manual contains important safety directions and instructions for product setup 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 Silent Tools™ Plus adapter type: TA50D, TA51D, TA60D and TA61D, chapter 2 describe naming rules.

Available documents

Silent Tools™ Plus Cylindrical Turning adaptor user manual 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.

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 Silent Tools™ Plus Cylindrical Turning adaptor for work.

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 user 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 user 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 and knowledge on the use of this tool and have understood the resulting risks.

Precautions: Read all instructions before using the tool system.

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 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 representatives.

Warning



For safety reasons it is recommend to use lifting equipment for lifting damped boring adaptors heavier than 18kg/40lb. (BD x L > Ø60x800mm/Ø2,5"x31"). Lifting slings are recommended.

Warning



Do not use a magnet when lifting carbide reinforced boring adaptors.

Caution

The front of the dampened boring adaptor may be heavier because of the integrated damped system. Check the center of gravity before lifting.

Warning

Keep the packaging for safe storage of tools.

2 Product description

Example: TA61D-CY50C865W4RB (kit), includes

- adapter TB61D-CY50C865W4RB (tested adapter type 160782)
- electronic unit: ST+:BT A 2PP (160953) / ST+:BT A 1PP (157434)
- battery: ST+ A Bat9.6Wh (157432)

The adapter is delivered in many design variants based on the family, see naming description.

Product description

Product name		See marking on turning adaptor
Product family	TA	TA... Kit structure with accessory TB... Turning adaptor
Product type	6	5... 4C dampened bars (sensor embedded) 6... 3C dampened bars (sensor embedded)
Product material group	1	0... Steel 1... Carbide reinforced

Design versions

Adaptor type	D	D... Damped () ... Not damped
Machine side coupling	CY	CY... Cylindrical

Bar diameter	50	40, 50, 60 ... and other diameter sizes in millimeter A... Inch description, bar diameter given in 1/16 inch
Sensor type/ signal connection	C	A... Unsensored B... 1 sensor, connector type PP x1 C... 2 sensors, connector type PP x2 D... 2 sensors, connector type PP x1
Functional length	865	400, 500, 865...1500 and other, in mm (equal to body length for CY)
Work side coupling interface	W	W... Wedge lock S... Serration Lock
Work side coupling interface size	4	1... 16mm, 2... 25mm, 3... 32mm, 4... 40mm 6... 60mm, 8... 80mm, 0... 100mm
Work side coupling position	R	R... Right L... Left N... Neutral 2... 2 couplings
Area code electronics	B	A... Global B... CE and FCC/IC (Europe, North America) C... CCC (China) D... PSE (Japan) E... KC (Korea) F... NOM (Mexico)

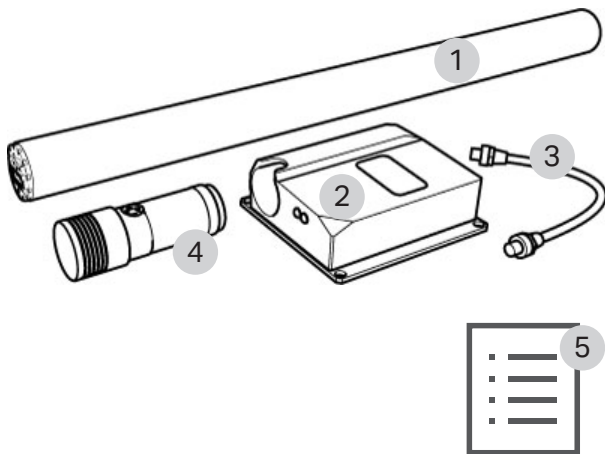
3 Description of the system

3.1 System components adaptor

Main components

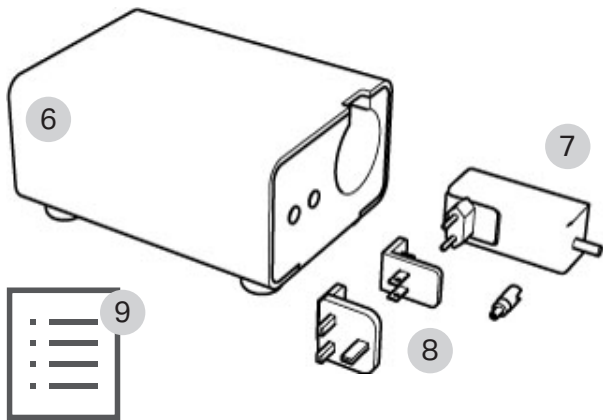
Component	Description
1 Turning adaptor	<ul style="list-style-type: none">• A turning adaptor that can mount a cutting head with an insert and perform metal cutting• Consists of various models with a range of sizes in diameter and length• Integrated with sensor(s)• Electronic unit (2), a connecting cable (3) and a battery (4) to form a system* for remote monitoring of the machining process
2 Electronic unit	<ul style="list-style-type: none">• Provide a link to the tool, through the connecting cable (3), type PP (Push-Pull)• Provide communication to/from the sensor in the tool (1)• Provide power to the sensor and the transmitter• Transmit the signal to the tablet (7)

- 3 Connecting cable
- Connecting the turning adaptor (1) to the electronic unit (2)
 - Cable with PP type connectors (push-pull)
 - Length 300mm or 500mm
- 4 Battery
- Type-A Li-ion
- 5 User Manuals
- Silent Tools™ Plus Turning adaptor
 - Silent Tools™ Electronic unit
 - Silent Tools™ Battery



3.2 System components charger kit (if ordered together)

Component	Description
6 Charger	• Provide charging of Type-A Li-ion battery
7 AC power adaptor	• Wall adaptor
8 AC socket	• Socket for EU/UK/USA
9 User Manuals	• Silent Tools™ Plus Charger • AC power



4 Operation

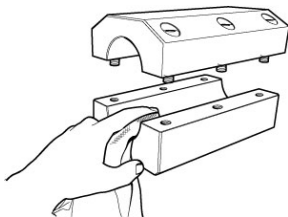
Notice

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

4.1 Setting up dampened turning adaptor

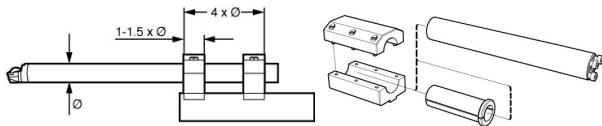
Before use

Make sure that the machine side, coupling surfaces of the tool and tool holder are free from dust or chips. If necessary, clean with a wet/dry cloth.



Setting up dampened adaptors

Two important factors for achieving the right dimensional tolerances and surface finish of the component are clamping stability and correct center height for the insert.



- Ensure that the length of the turning adaptor allows for the recommended clamping lengths. The clamping length is recommended to be 4 times the diameter of the bar, minimum $3 \times d$.
- Clamp in a split sleeve holder to achieve maximum contact area. Recommended clamping tolerance is ISO H7. Recommended bushing material with a minimum 45 HRC to avoid permanent deformation.
- Never use screws in direct contact with the bar shank as they may damage the bar.

Orient tool

The tool must be rotated to the correct position (around center axis), for correct placement of the insert. This is done most easily with the Silent Tools™ Plus software. We recommend doing this when the Silent Tools™ Plus software is up and running.

A manual lever can be used on slant bed machines.

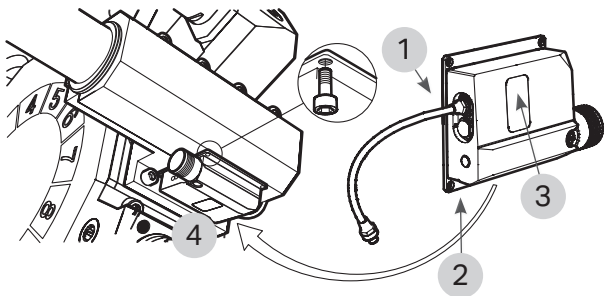
Overhang (OHX)

The Silent Tools™ Plus Cylindrical Turning adaptor with Load Sensor has a fixed overhang position. The sensor is placed at a specific position inside the tool to ensure it functions as intended. Refer to the catalog drawing for the adaptor.

The Silent Tools™ Plus Cylindrical Turning adaptor with only Vibration Sensor can be used with overhang between OHN and OHX, as specified in the catalog drawing for the adaptor.

4.2 Mounting of the electronic unit to tool post

Mounting to tool post



Follow instruction in the user manual for the electronic unit.

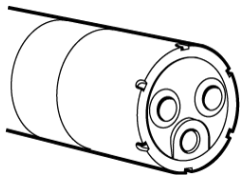
- Make threading holes on the machine tool holder (4).
- Fasten the electronic unit to the machine tool holder (4).
- Connect the dampened turning adaptor to the electronic unit using connecting wire (1).
- Antenna lid (3) should be in front when fastening the electronic unit to the tool holder.
- Risk for breakage: Make sure that the connecting cable is not in contact with machine or other parts that may cause damages by running over, pinching, dragging or the like.

4.3 Connect coolant

Coolant flow

Make sure that the coupling surfaces and threads of the fitting are free from dust or particles. If necessary, clean with a cloth.

Thread type: G1/8 (1/8 BSP), Sealing is provided by an O-ring gasket or a sealing washer. Torque according to fitting instructions.



Maximum pressure

The tool is design for a maximum coolant pressure of 150 PN (bar).

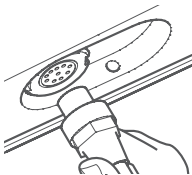
Caution

Use fittings and tubing towards the tool according to the maximum coolant pressure used.

4.4 Connecting cables

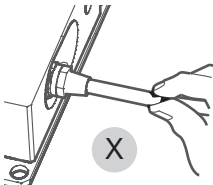
Connect cable(s)

The adaptor sensor is connected to the radio module through a cable. The adaptor may be equipped with one or two connector(s). The connector is of a type PP (push-pull). Orient the cable as indicated by the groove in the connector or N-mark. Push it in. Do not twist.



Removing cable(s)

Grasp the cable by the plug and pull out. Do not twist.



Caution

Do not pull from the cable.

4.5 Starting up

Updating adaptor

See User Manual Silent Tools™ Plus Electronic Unit.

4.6 Updating the firmware

Firmware upload

Caution

Uploading firmware can take some time. Ensure that the battery is at least 75% charged before you start the upload. Do not remove the battery during the upload process. Software is downloaded to the tablet/PC.

When new application software is connected to the tools electronic unit:

- 1) It will check if new firmware has been downloaded, compared to the version used.
- 2) User will be prompted to update firmware or postpone update.
- 3) When the update is complete, a message appears.

5 The sensors

Sensors

The Silent Tools™ Plus Cylindrical Turning adaptor can be equipped with one or two sensor units.

Sensor 1, vibration

The vibration sensor is located just behind the cutting head interface. It is positioned as close to the insert as possible, ensuring that the vibrations that affect the surface quality are monitored. The sensor monitors vibration in three axes. The sensor monitors vibration values from very small vibrations up to crash situations.

The algorithms in the Silent Tools™ Plus software provide you with analysis of the sensor information registered during the machining process. The main functions are in cut-, roughness- and vibration monitoring. In the Silent Tools™ Plus software the algorithms are analyzed in more detail.

The temperature probe monitors the internal temperature in the adaptor. Operating the adaptor within the specified temperature range ensures optimal performance of the damping system.

The vibration sensor is calibrated from the factory.

Sensor 2, Load

The load sensor monitors the cutting forces and the bending of the tool. It monitors the adaptors bending in two axes (X and Y).

The sensor provides input to the load and deflection functions. It also provides enhanced functions of the in cut and roughness functions. More information about these functions can be found in the Silent Tools Plus software.



Caution

The sensor must be calibrated for best performance:

- Load function is factory calibrated, and can be further improved
- Deflection calibration must be done in the turning machine where the tool is to be used

Calibration is done by a Sandvik Coromant technician or through a specific test cut procedure. This will also enhance the tolerance of the load function.

6 Care and transport

6.1 Transport

Shipment

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

6.2 Storage

Product

When the adaptor is stored in a wet environment, i.e. in the machine, keep the adaptor connected to the cable to protect the connectors.



Caution

Respect the temperature limits when storing the product, particularly in summer if the product is inside a vehicle. Refer to section “7 Technical Data” for information about temperature limits.

Keep the packaging for safe storage of the tool.

6.3 Cleaning and drying

Product

Use a clean, soft, lint-free cloth for cleaning. Electrical contact cleaner can be used in small amounts on cable connector(s).

Cables and plugs

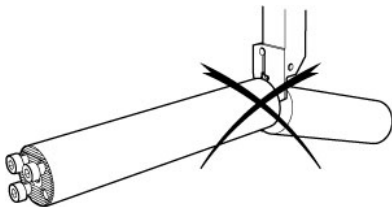
Keep plugs clean and dry. Blow away any dirt lodged in the plugs of the connecting cables.

6.4 Modify tool

Modifying of damped boring adaptor

Caution

- Shortening the adaptors with integrated electronic data collecting system is not allowed



6.5 Conformity

EU

Sandvik Coromant AB declares that the product Silent Tools™ Plus

Cylindrical Turning adaptor complies to the:

Safety:

- EN61010-1

Electromagnetic Compability (EMC):

- EN 61000-6-2
- EN 61000-6-4

Following the provisions of EU-directives:

- 2014/35/EU (low voltage)
- 2014/30/EU (EMC)
- 2011/65/EU (Rohs2)

USA/Canada

Safety:

- UL 61010-1
- CSA-C22.2#61010-1

6.6 FCC statement, applicable in U.S.

This product 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.

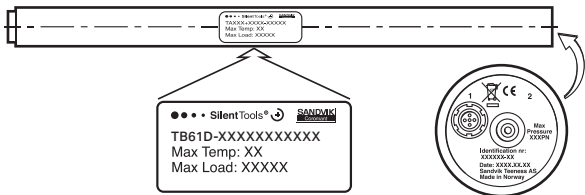
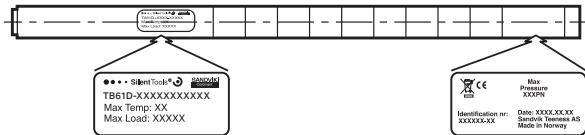
This equipment generates, uses and can radiate frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

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 eliminate the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to 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.

Labels



7 Warranty

Product

Sandvik Coromant AB warrants its equipment for a limited period of two years, from purchase date, provided that it is installed exactly as defined in associated Sandvik Coromant documentation.

Failure to comply with this will invalidate the Sandvik Coromant warranty. Claims under warranty must be made from authorized service/ sales personnel from Sandvik Coromant only.

For more information about Silent Tools damped adaptors please visit www.sandvik.coromant.com (Application guide).

8 Technical data

Sensors

Sensor 1, Vibration	Monitor vibrations from 0-50 G Monitor vibrations in 3 axes (X-, Y- and Z-axis) Temperature 0 – 120°
Sensor 2, Load	Load, up to tools maximum load (see label on tool) Deflection in two directions (X- and Y-axis)

Input / Output Signal

Vibration signal	Signal cable, shielded 10 pin push-pull, maximum 500 mm
Deflection signal	Signal cable, shielded 10 pin push-pull, maximum 500 mm
Input voltage	3.3v and 5.0v
Power maximum	0.18W (3.3v) and 0.25W (5.0v)

Operating environment	IP56 according to IEC 60529 Indoor use in lathe/CNC machine, closed or open, dry or wet machining
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Temperature range	Storage : -40°C to +85°C Operating: 0°C to +70°C
Relative humidity	Use 10%-95%, Storage recommended 10%- 50%
Maximum altitude	2000 m
Weight	See adaptor catalog drawing (packaging not included).
Dimensions	See adaptor catalog drawing.

Get started

To get started using Silent Tools™ Plus, please go to the Sandvik Coromant website and activate the software using the serial number.

www.sandvik.coromant.com/silentTools™ Plus/activate

Serial number:

Manufacturer:

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Norway

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