



## Operating Instruction

# Driven Tool Holders with QuickFlex<sup>®</sup>

Type 4201

Type 4205





# Introduction



Operating Instruction for Driven Tool Holders with QuickFlex® can be downloaded in several languages.

Las instrucciones de operación para porta herramientas rotativas con sistema Quick Flex® pueden ser descargadas en varios idiomas.

Le manuel des porte-outils entraînés avec QuickFlex® peut être téléchargé en plusieurs langues.

Questo manuale di uso e manutenzione dei portautensili QuickFlex® può essere scaricato in diverse lingue.

QuickFlex® 仕様ドリブントールホルダの取扱説明書は、いくつかの国の言語版にてダウンロード可能です。

QuickFlex® 회전형 톨홀더의 작동 설명서는 여러 언어로 다운로드가 가능합니다.

Руководство по эксплуатации для приводных блоков с системой QuickFlex® может быть скачено на нескольких языках.

如需其他語言版本 QuickFlex® 動力刀座使用說明，可自行下載 QuickFlex® 動力刀座的操作說明可以多種語言下載

Návody k obsluze pro poháněné nástrojové držáky QuickFlex® jsou ke stažení v různých jazycích.

## General

WTO Driven Precision Tool Holders (DTH) are high quality products with low maintenance requirements. Please follow these instructions to maintain a high accuracy and a long service life.

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 WTO.

### Validity of this manual

This manual applies to the Driven Tool Holders with QuickFlex®, Chapter 2 describes the naming rules.

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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 our DTH, **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.

 <b>DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a potentially hazardous situation or an unintended use which, if not avoided, could result in death or serious injury
 <b>CAUTION</b>	Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor or moderate injury.
<b>NOTICE</b>	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

To prepare Driven Tool Holders with QuickFlex® 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 approval of WTO

### **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

WTO is responsible for supplying the product, including the operating instruction and original accessories, in a completely safe condition.

### Manufacturers of non-WTO Accessories

The manufacturers of non-WTO 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 WTO 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 manual
- To be familiar with local regulations relating to safety and accident prevention
- To inform WTO 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 who understand 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 such as safety gloves, safety shoes and workwear with tight fitting sleeves.

### CAUTION

The user must use the tool as intended.

**Precautions:** Only WTO owned service centers and authorized service workshops are permitted 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 DTH heavier than 18 kg/40 lb. Lifting slings are recommended.

### CAUTION

Check the center of gravity before lifting.

### NOTICE

Keep the packaging for safe storage of tools.

## 2 Product description

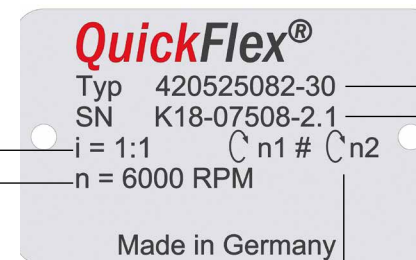
### DTH type label

#### Ratio

1:2, 1:3 => speed increaser

2:1, 3:1 => torque increaser

#### Max. output RPM



#### Product Code

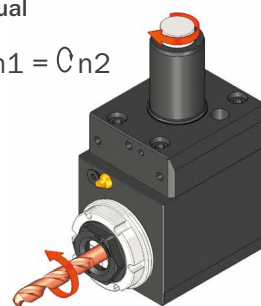
#### Serial No.

Important for DTH identification (e. g. for spare part request)

### Rotating direction

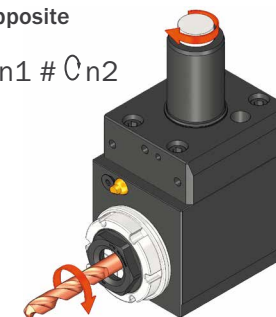
#### Equal

$C_{n1} = C_{n2}$



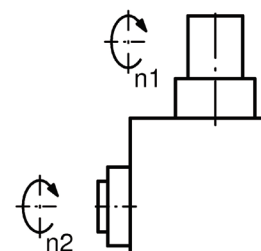
#### Opposite

$C_{n1} \neq C_{n2}$

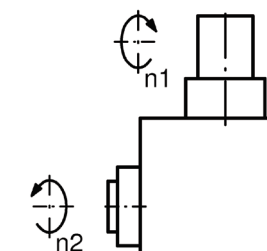


Rotating direction stated on DTH dimensional drawing

#### Equal



#### Opposite



A **dimensional drawing** is delivered with each DTH stating the technical specifications and the DTH outside dimensions.

Access the **WTO Online Catalog** to download the dimensional drawing at [www.wto-tools.com](http://www.wto-tools.com)



# 3 Operation

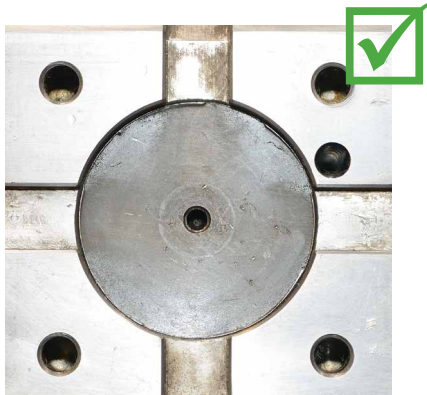
## 3.1 Installation and operation advices

### ⚠ WARNING

Consider the operating instructions of the machine tool manufacturer.



Avoid damage and dirt at the contact surfaces of the DTH and turret.



Rotate DTH spindle by hand before mounting on turret. In case of problems like roughness, backlash or visual runout, do not use the DTH and contact WTO immediately for repair.

### NOTICE

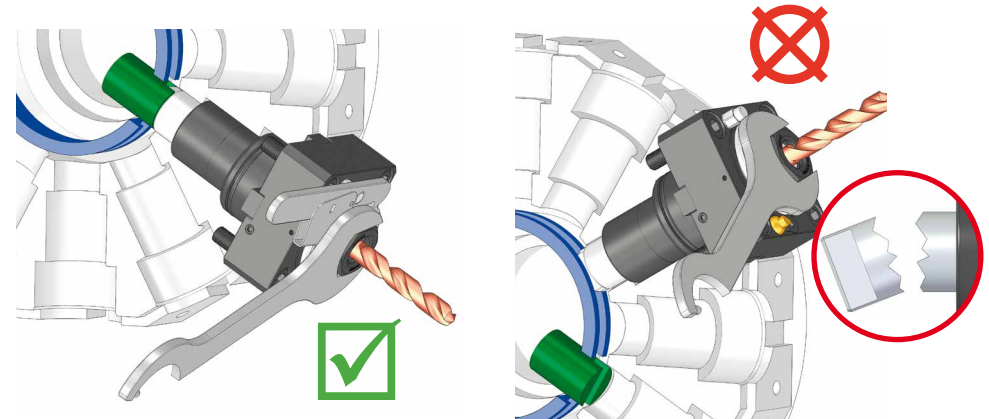
**Never operate DTH beyond the maximum design torque and/or output RPM** which are stated on the DTH dimensional drawing. Overloading the DTH will cause high wear and possibly gear breakage, and warranty will not cover damages caused by overloading.

### ⚠ WARNING

Remove or at least cover the cutting tool when handling, transporting or storing the DTH. Otherwise the danger of injury increases.

### ⚠ WARNING

Never change cutting tool or QuickFlex® adapter without holding the spindle! Use one-hand wrench for holding the spindle!



### ⚠ WARNING

Never change cutting tool or QuickFlex® adapter in turret positions other than the operation position when turret drive is released.

## 3.2 Break in period

Break in period is essential for long life of the DTH.

Break in removes intensified friction of internal components, especially bearings and gears, and helps to distribute the lubrication applied during assembly.

### NOTICE

**Run the DTH at 50 % of the maximum output RPM for 30 minutes without load** during first start-up. Maximum RPM is stated on the DTH dimensional drawing.

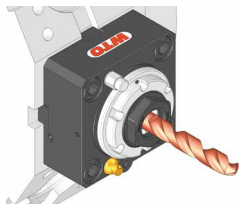
In case of error put DTH out of operation. Check if DTH is installed correctly, if necessary and possible, correct the error. Let potential errors be repaired by WTO. Vibrations of the DTH, excessive noises, high heat generation or excessive coolant leakage are signs of an error.

During **break in period** DTH body temperature **75°C (167°F)** must not be exceeded.

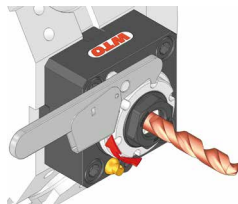


### 3.3 Changing the cutting tool

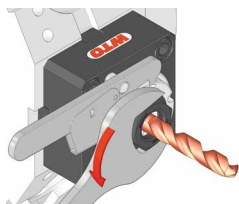
- ❶ Rotate turret into machining position (released machine drive)



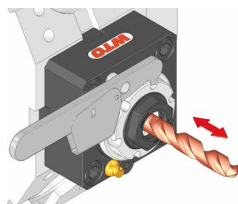
- ❷ Put on one-hand wrench and rotate DTH spindle by hand until it locks into the spindle nose



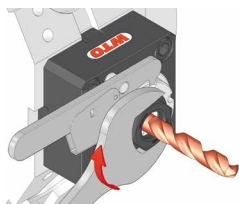
- ❸ Release clamping nut with spanner wrench



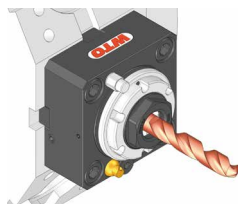
- ❹ Change cutting tool



- ❺ Tighten clamping nut with spanner wrench. Follow torque recommendation!



- ❻ Remove spanner wrench and one-hand wrench



Recommended tightening torque for the collet clamping nut

ER-20QF	ER-25QF	ER-32QF	ER-40QF	ER-50QF
80 Nm	110 Nm	140 Nm	180 Nm	240 Nm
59 ft-lb	81 ft-lb	103 ft-lb	133 ft-lb	177 ft-lb

#### ⚠ WARNING

Tighten or release the clamping nut only when holding the spindle!

#### NOTICE

Never clamp oversize tool shanks. Never use a  $\varnothing 12$ -11 mm collet to clamp a shank  $\varnothing 12.2$  mm. Rather use the next bigger collet, in that case  $\varnothing 13$ -12 mm! Improper handling causes poor runout and damage of the clamping nut!

### 3.4 Changing the QuickFlex® adapter

- ❶ Rotate turret into machining position (released machine drive)



- ❷ Put on one-hand wrench and rotate DTH spindle by hand until it locks into the spindle nose



- ❸ Release clamping nut with spanner wrench



- ❹ Change QuickFlex® adapter



- ❺ Tighten clamping nut with spanner wrench. Follow torque recommendation!



- ❻ Remove spanner wrench and one-hand wrench



Recommended tightening torque of the clamping nut for adapters

ER-20QF	ER-25QF	ER-32QF	ER-40QF	ER-50QF
70 Nm	90 Nm	110 Nm	150 Nm	180 Nm
52 ft-lb	66 ft-lb	81 ft-lb	111 ft-lb	133 ft-lb

Watch video:





### 3.5 DTH with internal coolant supply

Designed to supply coolant both through spindle (internal coolant supply) and external coolant supply port. External coolant port can be plugged.

#### NOTICE

Must **not** be operated **without coolant**. Coolant must be switched on and available before tool rotation. Running dry might damage the internal seals. Seal damage is not covered under warranty.

#### NOTICE

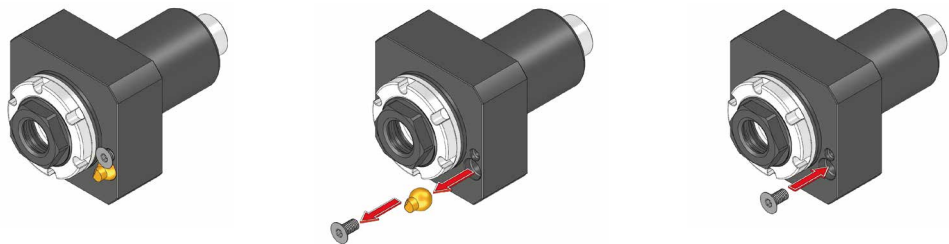
To avoid excess wear and/or damage to the internal sealing system, **coolant fluid must be filtered to a particle size less than 50 µm**. If not available on the machine, install an additional filtration system.

#### NOTICE

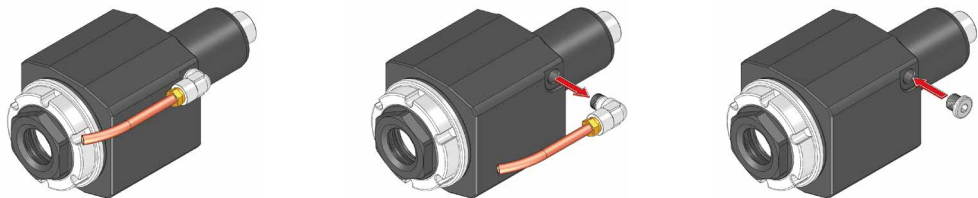
For machining **Gray Cast Iron**, use only DTH with **external coolant design**.

### 3.6 Plug DTH coolant nozzle to use for IC only

Ball nozzle

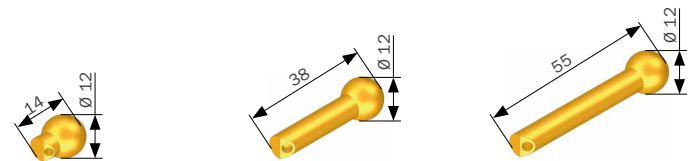


Copper pipe fitting



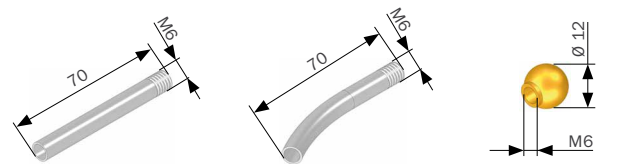
### 3.7 Ball nozzle options

One-piece ball nozzles



Item No.	59145	45168	79542
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Modular ball nozzles



	Straight pipe	Angular pipe	Straight adaptor
Item No.	111128	111129	111126

### 3.8 Copper pipe fitting options

Straight type

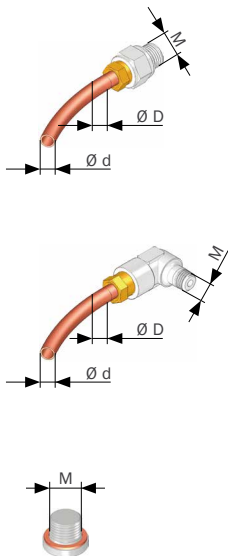
Item No.	M	ØD	Ød
30549	M 10 x 1	6	4.8
31638	M 12 x 1	8	6

Angular type

Item No.	M	ØD	Ød
55753	M 8 x 1	6	4.8
47997	M 10 x 1	6	4.8

Plug screw

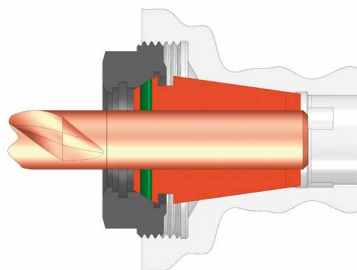
Item No.	M	Sealing ring Item No.
97184	M 8 x 1	-
18483	M 10 x 1	26263
18529	M 12 x 1	26264



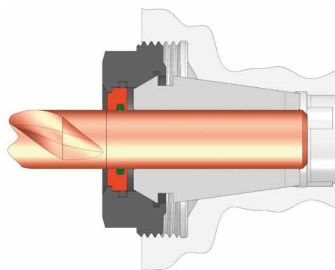


### 3.9 Collet solutions for DTH with internal coolant supply

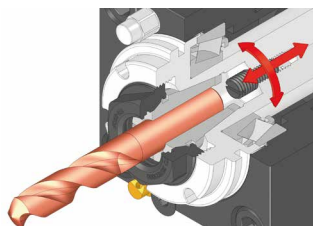
For DTH with internal coolant supply use:  
Sealed ER collets (WTO type 1910...)



or Standard ER collets (WTO type 1900...) in combination with seal washer (WTO type 2101...)



### 3.10 Adjusting the projection length of the cutting tool



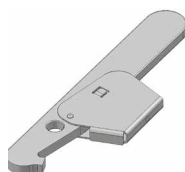
Turn screw inside the DTH spindle to adjust the projection length of the cutting tool.

#### NOTICE

Remove stop screw from spindle when using QuickFlex® adapter.

### 3.11 One-hand wrench

Size	Item No.
20	107720000
25	107725000
32	107732000
40	107740000
50	107750000

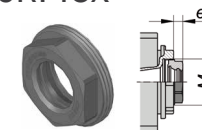


For DTH: to hold the QuickFlex® spindle when tightening.

### 3.12 Available ER collet nuts for QuickFlex®

#### Collet nut ERQF

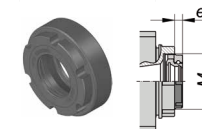
For external and internal coolant supply using seal washers  
For collets DIN 6499, ISO 15488



Size	Item No.	e	M	Recommended torque [Nm]	Seal washer	
ER-20QF	207020000	7.5	M 32 x 1.50	80	210120...	107520020
ER-25QF	207025000	8	M 40 x 1.50	110	210125...	107525020
ER-32QF	207032000	8	M 50 x 1.50	140	210132...	107532020

#### Collet nut ERQF-BC

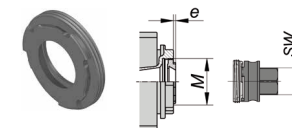
With ball bearing  
For external and internal coolant supply using seal washers  
For collets DIN 6499, ISO 15488



Size	Item No.	e	M	Recommended torque [Nm]	Seal washer	
ER-40QF	208040001	9	M 62 x 1.50	180	210140...	107540020
ER-50QF	208050001	17	M 68 x 1.50	240	210150...	107550020

#### Collet nut ERQF-A – short

For external and internal coolant supply using sealed collets  
For collets DIN 6499, ISO 15488



Size	Item No.	e	M	Recommended torque [Nm]			SW
ER-20QF	202120001	2.4	M 32 x 1.50	75	107525101	107525104	27
ER-25QF	202125001	2.0	M 40 x 1.50	100	107532101	107532104	30
ER-32QF	202132001	2.3	M 50 x 1.50	130	107540101	107540104	36
ER-40QF	202140001	3.0	M 62 x 1.50	150	107540101	107540104	36

#### Seal washer for collet nuts ERQF, ERQF-BC

For internal coolant supply



Size	Item No. Single parts	Item No. Complete set	d min.	d max.	Range per seal washer	Number per set	No. included per set
ER 16	210116...[d*10]	210116000	3.0	10	0.5	14	3.0-10
ER 20	210120...[d*10]	210120000	3.0	13	0.5	20	3.0-13
ER 25	210125...[d*10]	210125000	3.0	16	0.5	26	3.0-16
ER 32	210132...[d*10]	210132000	3.0	20	0.5	34	3.0-20
ER 40	210140...[d*10]	210140000	3.0	26	0.5	46	3.0-26
ER 50	210150...[d*10]	210150000	6.0	25	0.5	11	6, 8, 10, 12, 14, 19, 20, 21, 23, 24, 25

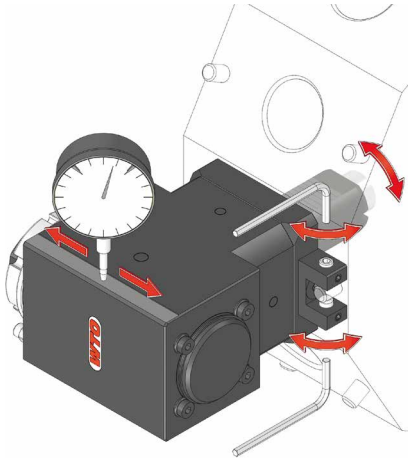
Ordering example: 210116040 suits to ER 16 and shank d = 4.0 - 3.5

Dimensions in mm

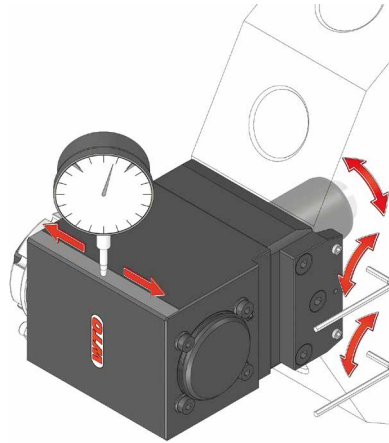


### 3.13 Turret centerline alignment

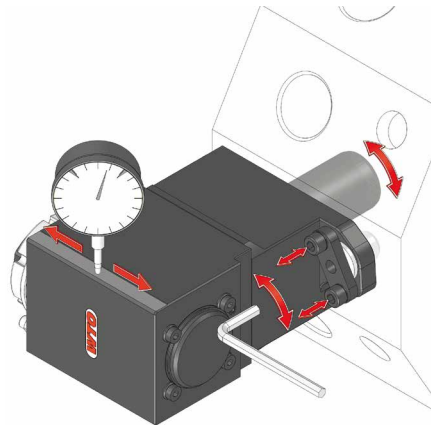
Using orientation pin on turret:



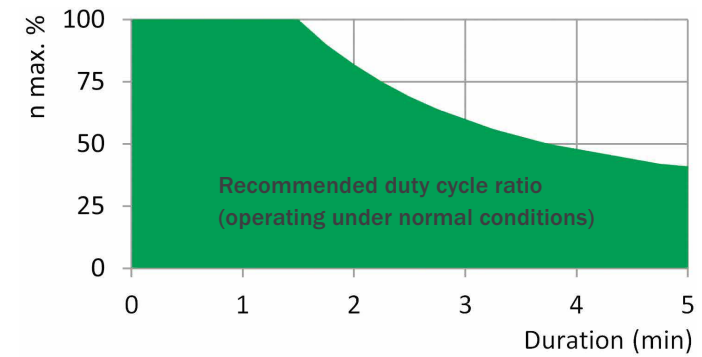
Using turret surface:



Using eccentric pin on DTH:



### 3.14 Duty cycle ratio



#### NOTICE

Operating the DTH beyond the recommended duty cycle ratio can cause excessive heat generation and damages to the DTH like bearing failures. DTH body temperature should **not exceed 65° C (149° F)** when operating under normal conditions.

### 3.15 Service interval

DTH life time depends on cutting application and operation conditions.

Wear items 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 DTH with internal coolant supply.

Maintenance includes cleaning the inside of the DTH and lubricating the bearings and gears.

Maintenance work must be performed by WTO factory owned service centers or by staff who are trained by WTO.



## 4 Care and Cleaning

### NOTICE

**DTH must be cleaned frequently in order to maintain the high quality and accuracy.**

Chips, grease, oil, coolant, etc. must be removed after every 24 hours of operation.

Cleaning must be performed only by using a clean rag.

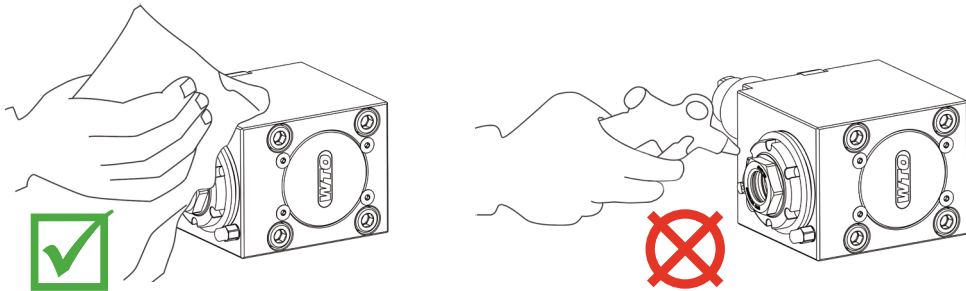
### NOTICE

**Never use compressed air to clean the DTH.**

Compressed air forces chips and coolant through the sealing system causing premature failure of the DTH.

Clean and check the DTH once per week, rotate spindle several times by hand.

Clean carefully the spindle area when removing the cutting tool.



## 5 Storage and transport

### 5.1 Storage

#### NOTICE

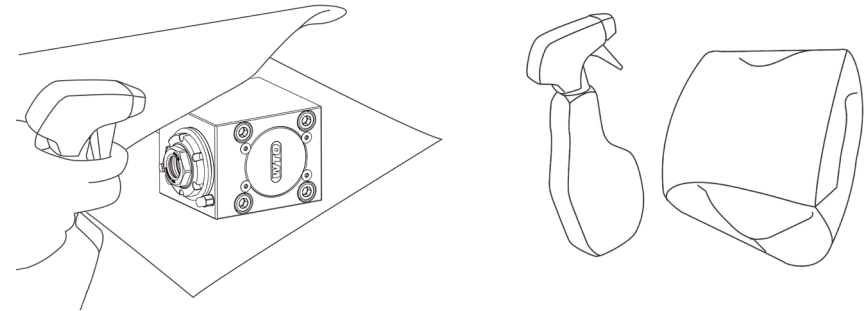
**Store DTH and accessories in clean and dry environment.**

Surfaces of DTH must be lightly lubricated and covered with corrosion protection paper to protect the unit from dirt and rust.

Tool interface needs to be protected with a proper cover.

#### NOTICE

**Rotate DTH spindle by hand before storage and once per month when being in storage to avoid contact corrosion in the bearings.**



### 5.2 Shipment

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

### 5.3 Shipping claims

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



## 6 Warranty

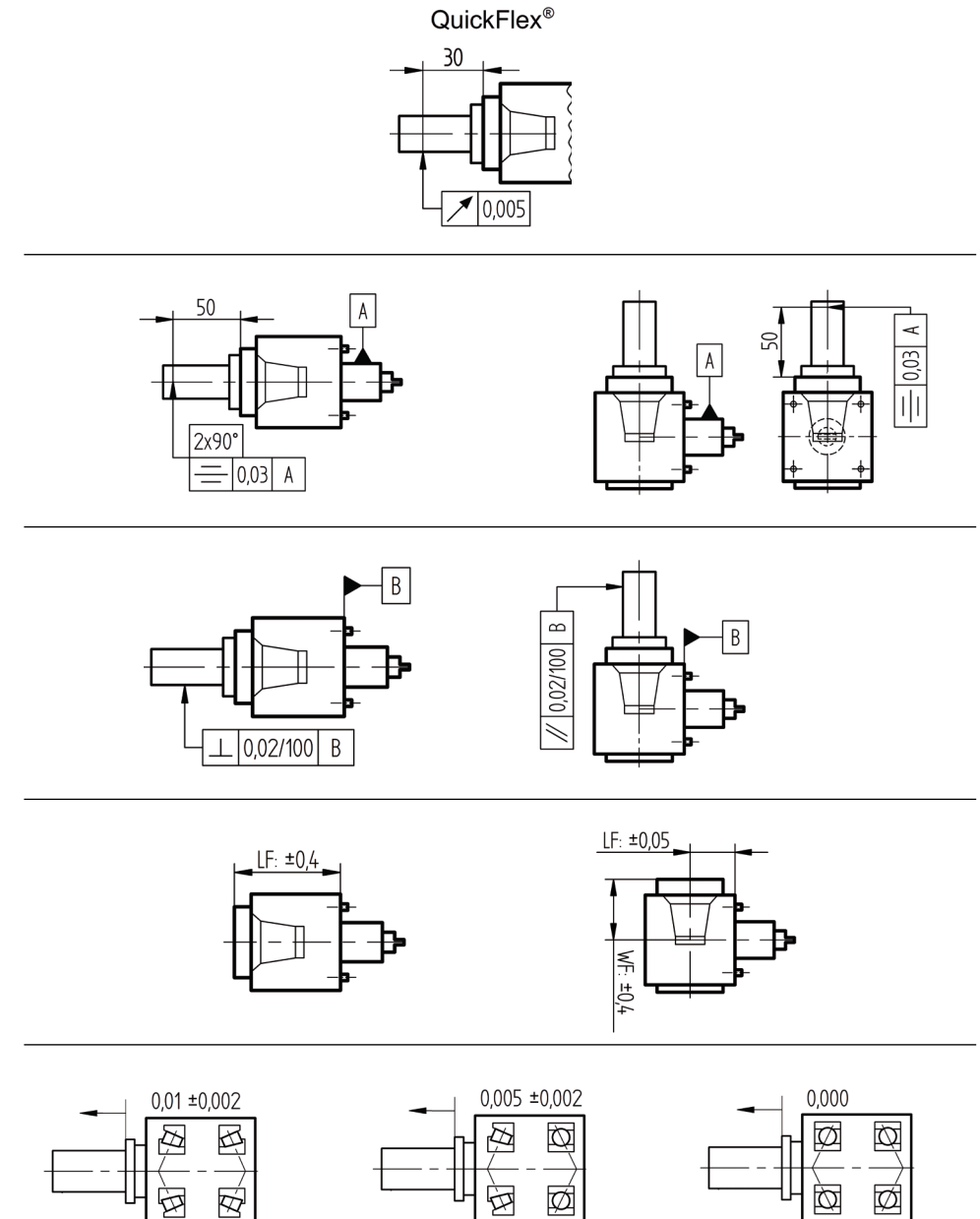
WTO will repair, free of charge, any manufacturers defects arising from failure due to design, material, or workmanship in accordance with following conditions:

1. Warranty only applies to manufacturer's 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 DTH 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 WTO.
5. Warranty repairs must be performed by WTO factory owned service centers.
6. Transportation to WTO must be prepaid. Customer assumes all risks for freight to WTO.
7. Warranty units will be returned by WTO via ground transportation. Upgrade to express shipping must be paid by the customer.

## 7 Disposal

For disposal of the DTH, the country specific environmental protection laws need to be considered. Commonly the DTH can be handled as scrap metal disposal and can be passed through the appropriate recycling process.

## 8 DTH tolerances



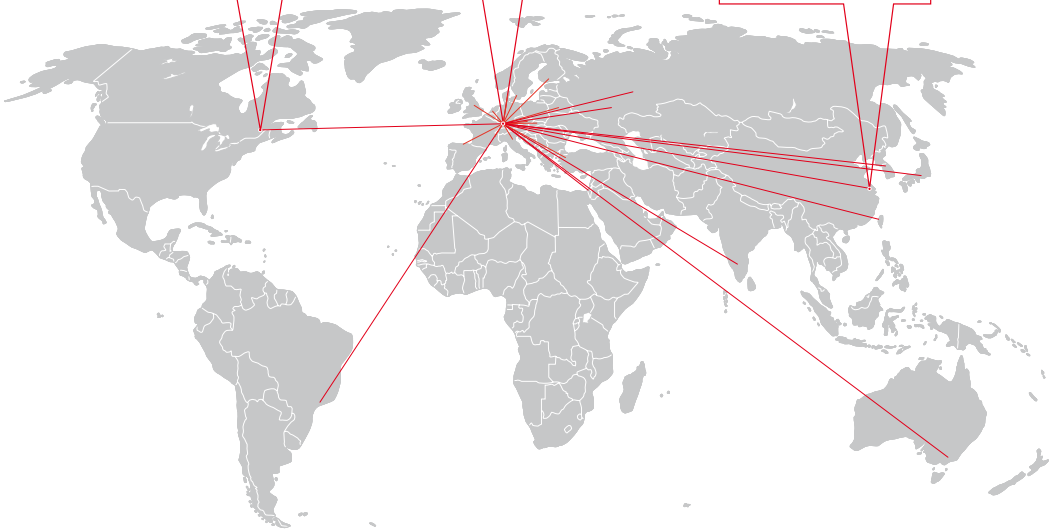


## WTO Service Centers

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Europe **WTO**  
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Asia **WTO**  
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