WALTER
Engineering Kompetenz

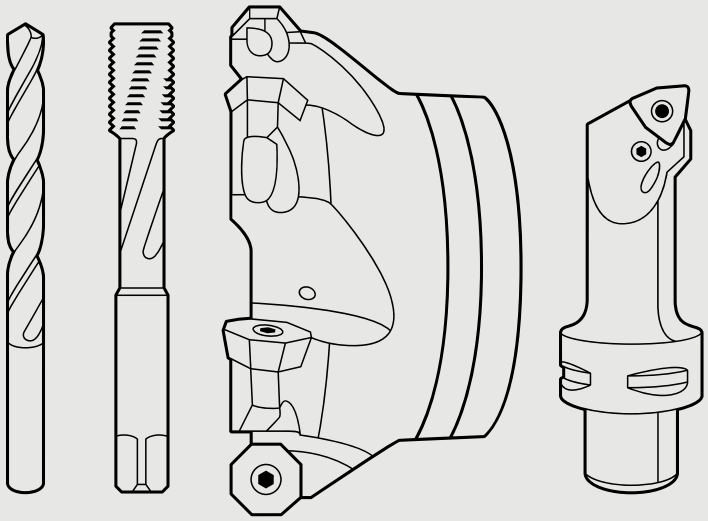
Stationary boring bars/adaptors
Rotating boring bars/adaptors

Technical Compendium – Boring bars/adaptors
Edition 2023

_ METAL IS OUR WHOLE WORLD

Technical Compendium

Boring bars/adaptors




WALTER

Technical Compendium – Boring bars/adaptors

Stationary boring bars/adaptors

General

Assembly parts and accessories

Rotating boring bars/adaptors

General

Technical Compendium – Boring bars/adaptors

Accure·tec® boring bars/adaptors

Application information

General information

Designation key

Technologies at Walter.

Accure·tec®

The patented Walter Accure·tec® technology ensures maximum vibration damping on boring bars for turning and adaptors for milling. Ideal for turning, milling and drilling operations involving extended tool applications.

Krato·tec™

Krato·tec™ is a unique Walter coating technology for solid carbide tools. The core of this consists of an extraordinarily fracture-resistant AlTiN multi-layer coating with a textured top layer. The special layer architecture is highly wear- and adhesion-resistant, even at high cutting speeds, and ensures the tools have universal application.

Tiger·tec® Gold

Tiger·tec® Gold, the new Walter generation platform for unique indexable insert coatings, enables maximum tool life and process reliability. The new grades are based on PVD, CVD or ULP technology, depending on the application. Unique coating properties, protected by multiple patents, guarantee the best protection against tool life-limiting types of wear and ensure outstanding performance.

Tiger·tec® Silver

With Tiger·tec® Silver, Walter is offering a world first in coating technology for indexable inserts. The special aluminium oxide layer with optimised microstructure reduces wear during turning, milling and drilling operations, and increases toughness and temperature resistance for significantly higher cutting data.

Walter BLAXX

Walter BLAXX is the benchmark for a new generation of milling cutters: The milling bodies are extremely robust thanks to their special surface treatment. The milling systems, which are mainly positioned tangentially, are equipped with Tiger·tec® indexable inserts. Tools with the "Walter BLAXX" designation combine high wear resistance with unbeatable performance data.

Walter Green

Walter Green: Sustainability and responsible use of resources are central components of our company principles. We use our "Walter Green" seal to show how we implement these principles – such as by offsetting our CO_2 emissions with environmental conservation projects.

Walter Xpress

Walter Xpress is the rapid ordering and delivery service offered by Walter Multiply for high-quality special tools. It is available for around 10,000 tool varieties, with a maximum delivery time of two to four weeks from the order date. The ordering process is clearly structured and guarantees absolute planning security. Quotations for all enquiries are calculated and provided within 24 hours.

Walter Precision XT

Precision boring tools are always used to finish an existing bore or to improve the precision of existing bores, for instance by correcting their position, narrowing the hole tolerance, or enhancing the surface quality. Precision boring is typically performed using a depth of cut < 0.5 mm (0.02 inches).

Walter Boring XT

Tools for rough boring are used to expand existing bores. Material removal is a key element of this process. The bore to be enlarged is machined in advance or created using casting or forging processes. The rough boring tools themselves can also be used for radial offsetting and multi-edge boring.

XD Technology

Walter Titex solid carbide drilling and reaming tools stand for precision, high performance and cost-efficiency when drilling in practically any material. Walter Titex XD Technology offers the greatest precision and cost-efficiency in deep-hole drilling operations up to $70 \times D_C$ without pecking.

Xill·tec®

With Xill·tec®, the solid carbide milling cutters from the MC230 Advance product line, Walter offers a uniquely wide range, with different dimensions, numbers of teeth and shank versions. This means that users are well-equipped for all conceivable milling operations and ISO materials. Universal application – with excellent quality.

Xtra·tec®

Xtra·tec® indexable insert milling cutters and drills guarantee extremely soft cutting action and optimal surface quality on almost all materials. Indexable inserts with highly positive geometries and the Tiger·tec® coating have a particularly beneficial hardness/toughness ratio. For maximum productivity and process reliability.

Xtra·tec®XT

Xtra·tec® XT is the latest generation of Walter milling tools. As the "Xtended" Xtra·tec® technology, it offers a completely new perspective on productivity and process reliability. It can cover nearly all milling operations in every common material group: More reliable, productive, cost-efficient than ever before – all while compensating for the CO_2 emissions through Walter Green.

X·treme Evo

For Walter, the X·treme Evo DC260 and DC160 Advance solid carbide drills as well as the X·treme Evo Plus DC180 Supreme and X·treme Evo 3 DC183 Supreme are the embodiment of the "next generation of drilling", offering versatility for a wide range of materials and machine concepts – with outstanding tool life, productivity and process reliability.

Walter Capto™ is a modular tool adaption system. It is suitable for all turning, milling, drilling and threading operations. Its ISO-standardised polygon taper absorbs torsional moments and bending moments extremely well and ensures optimal repeat accuracy.

Walter ConeFit is an extremely flexible solid carbide milling system with a wide range of high-performance exchangeable heads and shank variants. Its conical thread can self-centre, thereby guaranteeing maximum stability and concentricity.

Walter ScrewFit users benefit from maximum flexibility. Its modular interface is suitable for a wide variety of boring bars and adaptors and a wide range of tool diameters and lengths for milling and drilling.

The precision-ground QuadFit interface with taper and support face characterises the precision of the vibration-damped boring bars for turning and thread turning with Walter Accure·tec® technology. The exchangeable head system, which can be rotated by 180°, makes it possible to rapidly replace tools with high indexing accuracy.

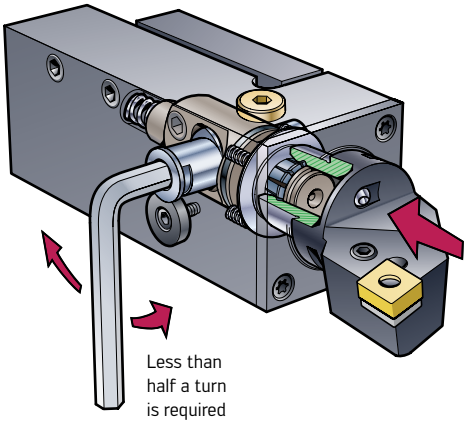
In turning and grooving operations, the Walter precision cooling system provides cooling at the centre of the chip formation. Its dual coolant jets are directed precisely onto the flank and rake faces. In drilling operations, the coolant jets exit close to the cutting edge. This system provides significantly increased tool life, improved chip breaking and chip removal, greater efficiency and higher quality.

"Flash" refers to specialised solid carbide milling cutters for high-feed milling. Their end-face geometry reduces the chip thickness "h" and therefore enables an extremely high feed per tooth. Forces that occur are diverted axially towards the centre of the tool, which helps to stabilise the machining process.

On Walter turning toolholders with "SmartLock", the clamping screw can be operated from the side of the tool. This makes it possible to index the inserts **in** the machine quickly and easily. Indexing times are reduced as a result. Ideal for use on CNC lathe and multi-spindle machines.

Operating instructions for Walter Capto™

Clamping principle for types 2035, 2045, 2055, 2065, 2080, 2085 and 2090 and VDI

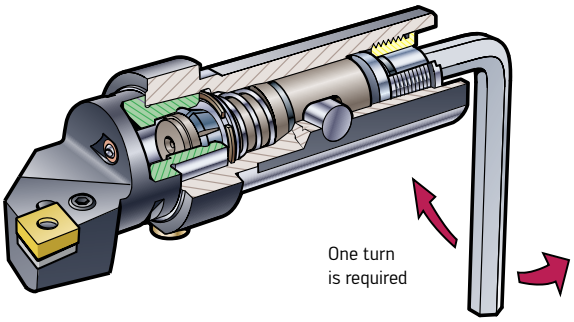


Clamped using a bushing –
Drawbar activated by a cam
The drawbar is moved forwards and backwards using a cam.
The tool is clamped and released by an eccentric shaft.

Recommended torque:
C3: 35 Nm
C4: 50 Nm
C5: 70 Nm
C6: 90 Nm
C8: 130 Nm

For the torque wrench, see page E 36.

Clamping principle for type 2000

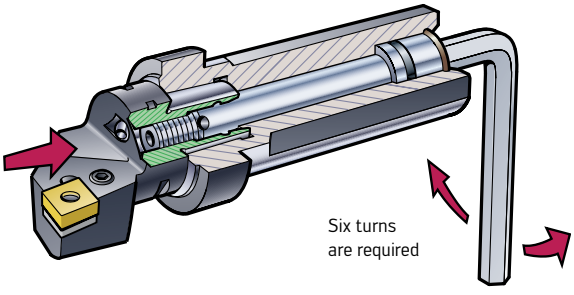


Clamped using a bushing –
Drawbar activated by a screw
The movement of the drawbar is controlled by a screw at the end of the clamping unit.

Recommended torque:
C3: 35 Nm
C4: 50 Nm
C5: 70 Nm

For the torque wrench, see page E 36.

Clamping principle for type 3000



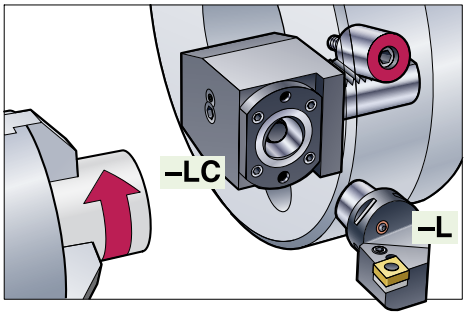
Clamped directly using a centre screw
The thread in the coupling system is used to clamp and release the tool with the centre screw.

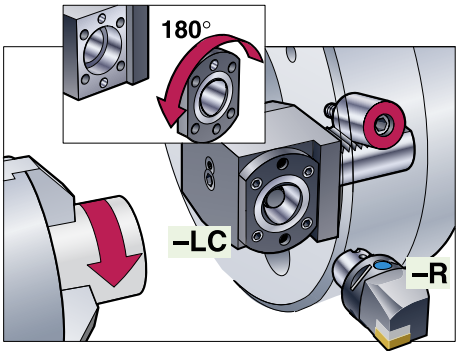
Recommended torque:
C3: 45 Nm
C4: 55 Nm
C5: 95 Nm
C6: 170 Nm
C8: 170 Nm

For the torque wrench, see page E 36.

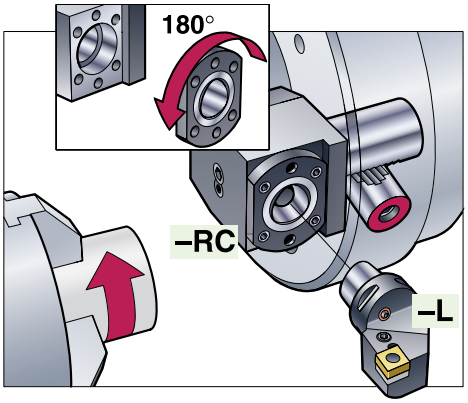
Conversion of VDI turrets to Walter Capto™ – Selection of clamping units

External machining

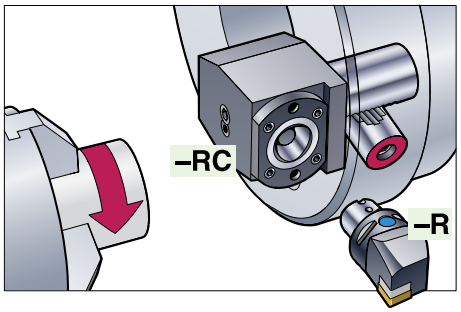




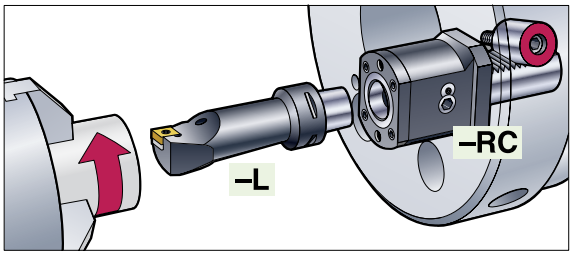
Important:
Turn the polygon socket 180° – see page E 16.

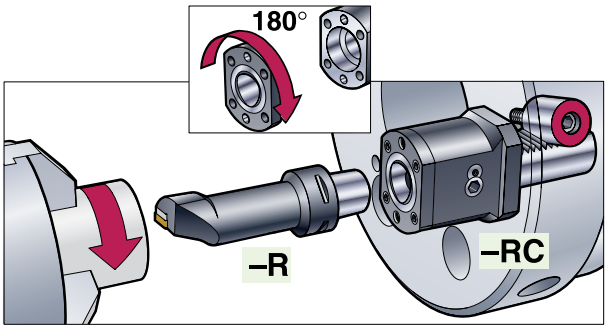


Important:
Turn the polygon socket 180° – see page E 16.

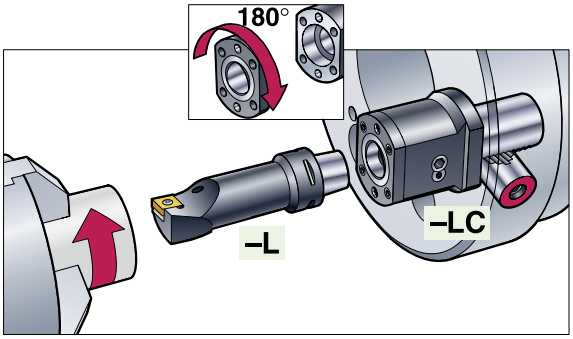


Internal machining

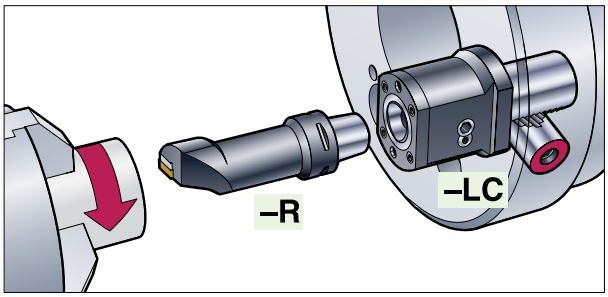




Important:
Turn the polygon socket 180° – see page E 16.

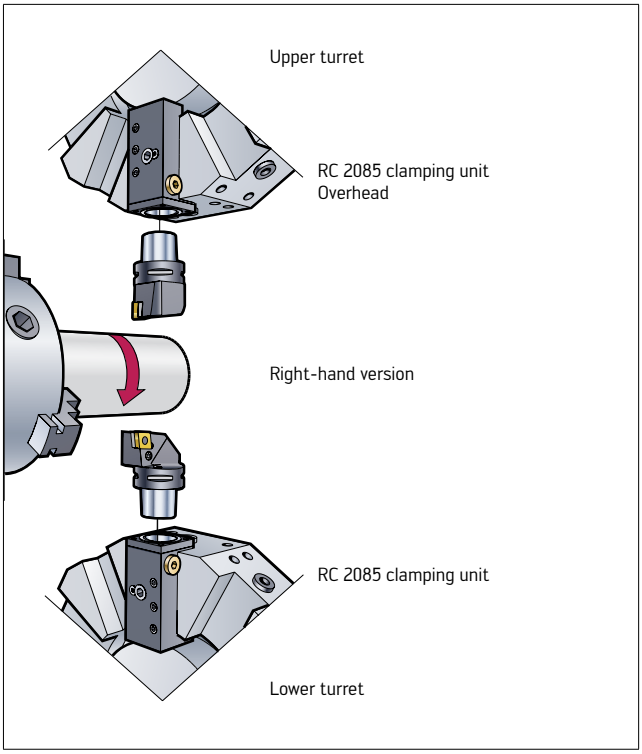


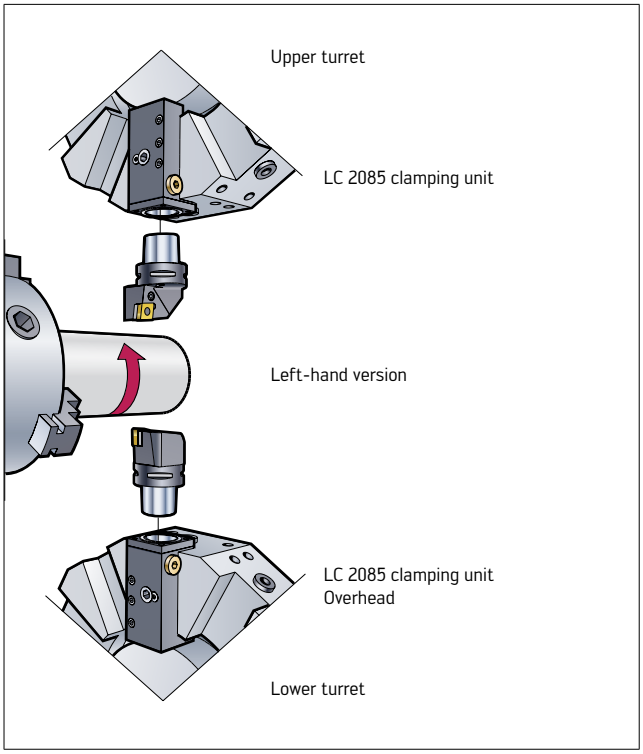
Important:
Turn the polygon socket 180° – see page E 16.



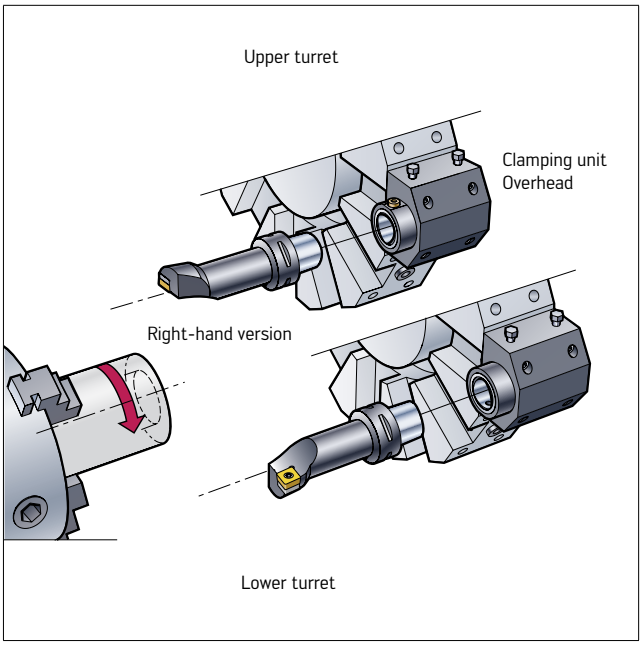
Conversion of turrets with square or round shank adaptors to Walter Capto™ – Selection of type 2000/3000/2085 clamping units

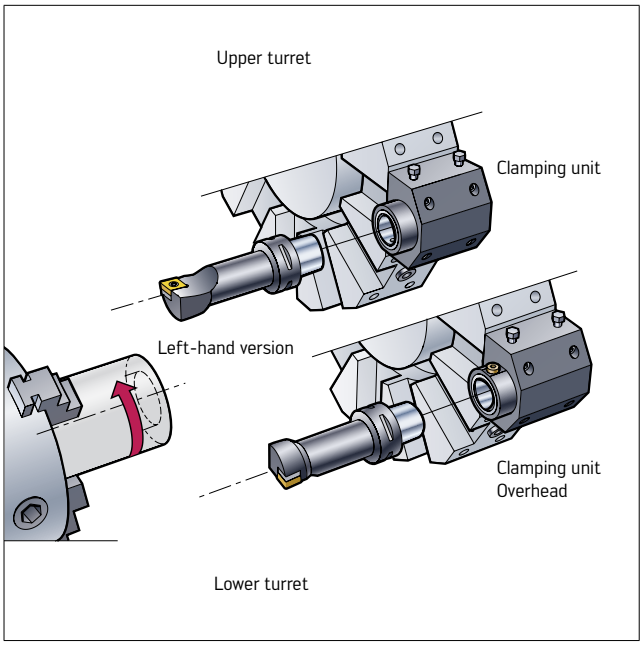
External machining with RC 2085/LC 2085 clamping unit





Internal machining with NC 2000/3000/2035/2045/2055/2065 clamping unit



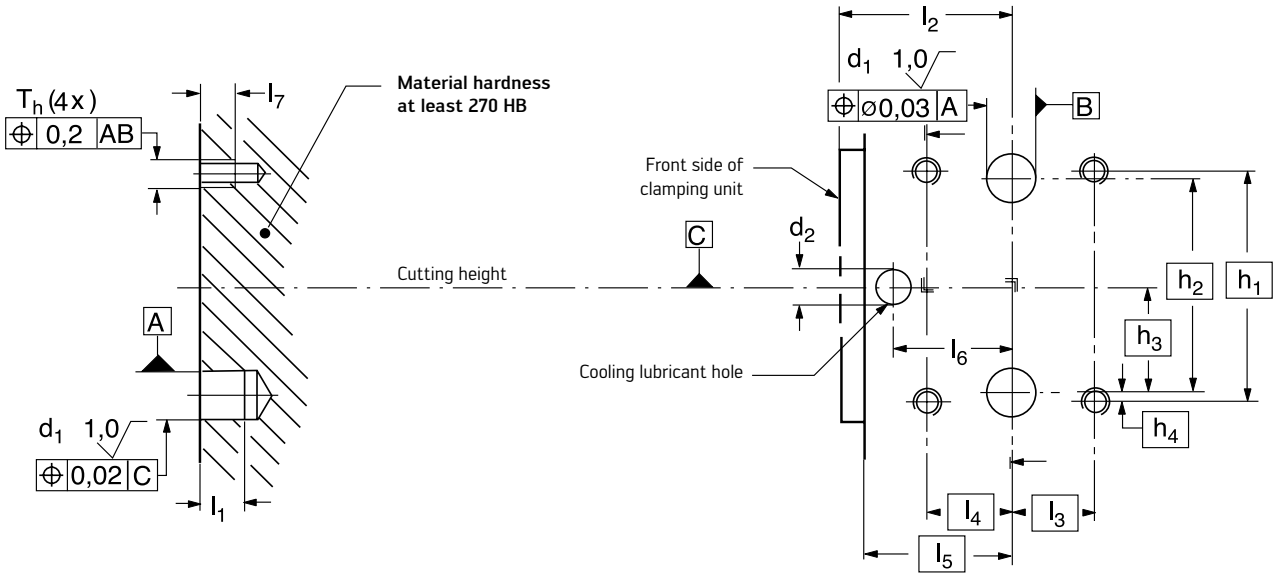


Assembly instructions on the use of the RC/LC 2090 clamping unit

Application example

The type 2090 clamping unit has been designed for universal applications.
For instructions on the design and use of these clamping units, please see below.

Drilling pattern

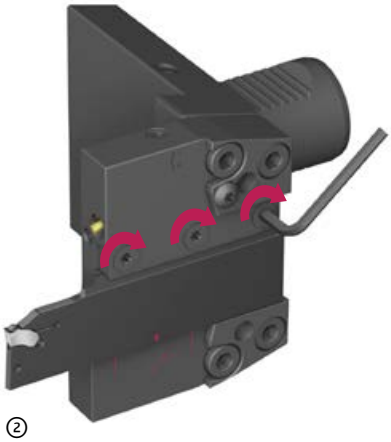


Clamping unit

	d_1/H_7 mm	d_2 mm	h_1 mm	h_2 mm	h_3 mm	h_4 mm	l_1 mm	l_2 mm	l_3 mm	l_4 mm	l_5 mm	l_6 mm	l_7 mm	T_h
C3-R/LC2090-19039M	12	5	42	39	19,5	1,5	8,5	39	19	19	33,5	28	7,5	M6
C4-R/LC2090-24043A	16	7	60	55	27,5	2,5	11	43	19	19	36,5	30	11	M8
C5-R/LC2090-32048A	20	7	70	62	31	4	12	48	21	21	39,5	33	13	M10
C6-R/LC2090-42060	25	10	82	71	35,5	5,5	20	60	24,5	24,5	50,5	41	12	M10
C8-R/LC2090-50088	32	11	110	92	46	9	20	88	43	43	76	63	145	M12

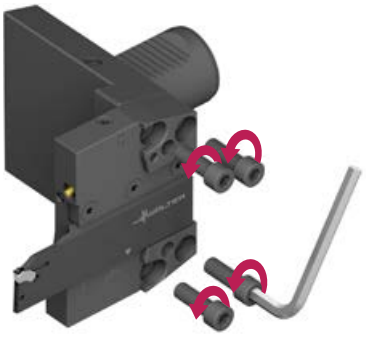
Installation instructions for precision-cooled parting blade adaptors

①



②

Conversion instructions for the A2110-P/version 1



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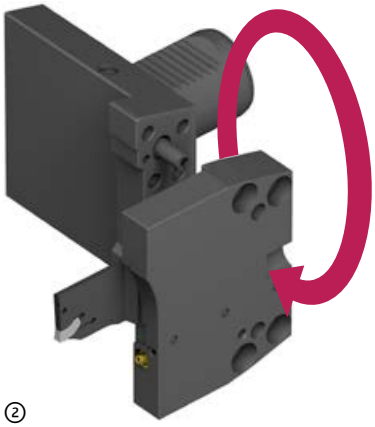

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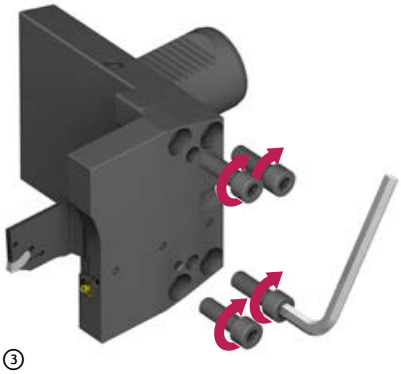

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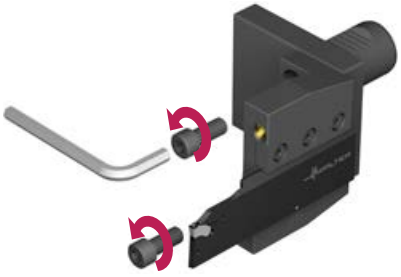
Conversion instructions for the A2110-P/version 2



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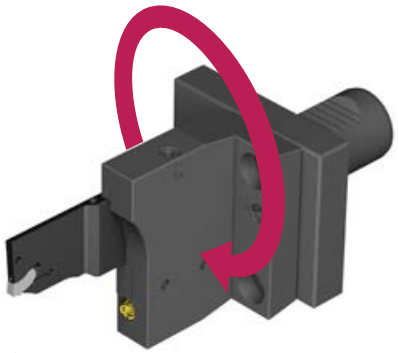

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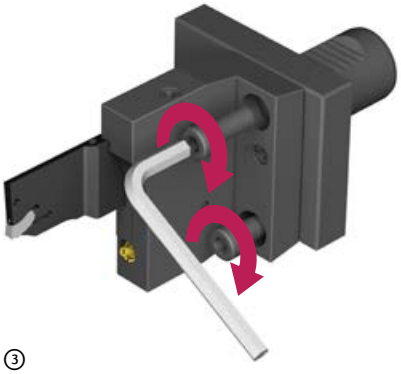
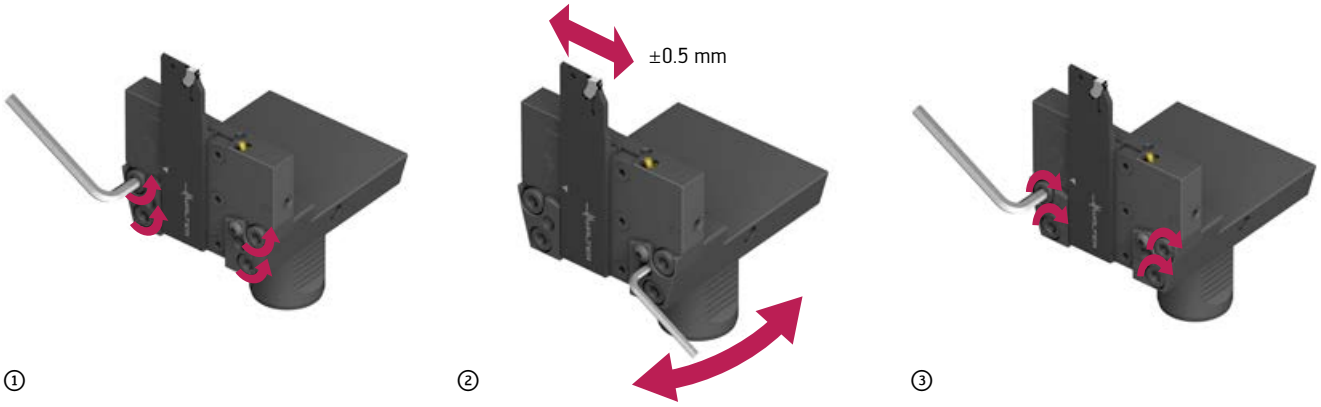
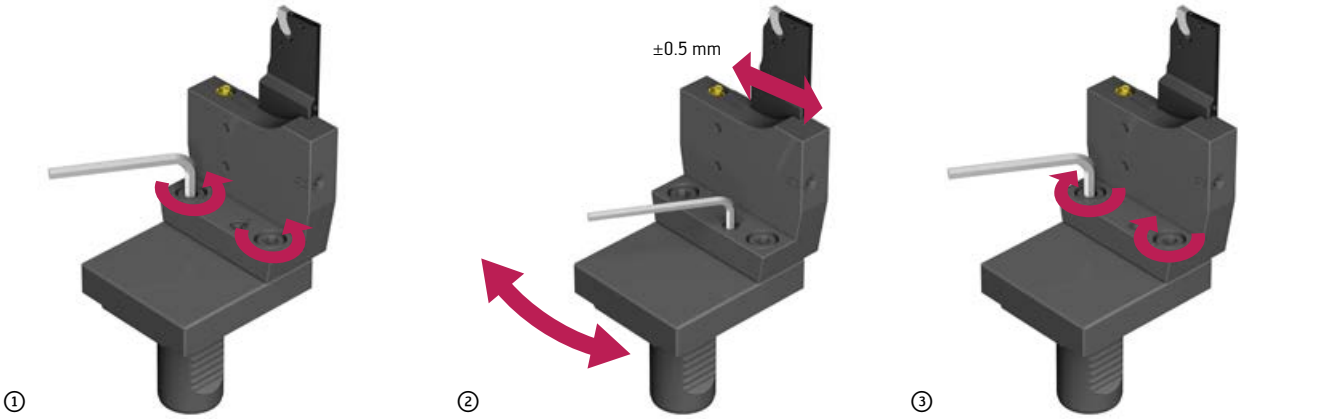


③

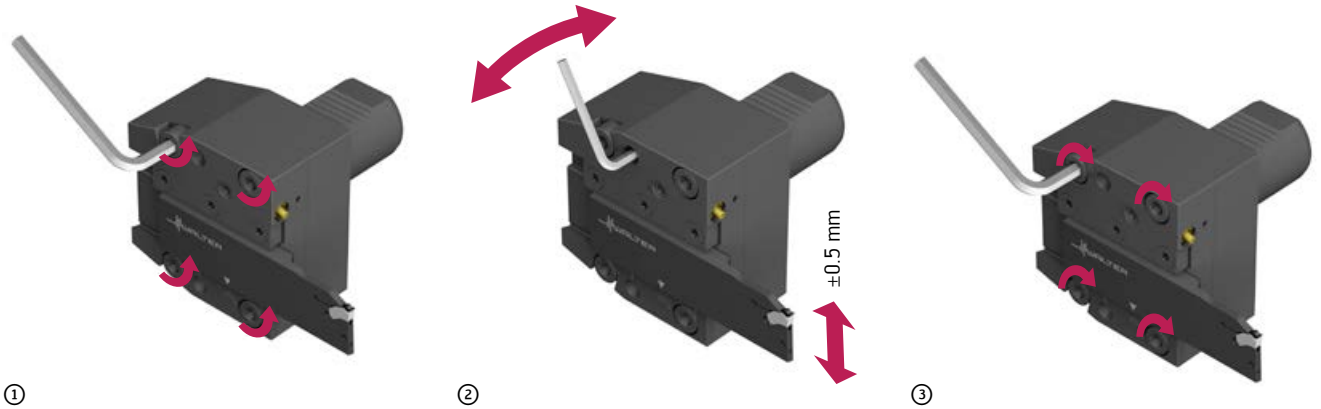
Setting the centre height for the A2110-P/version 1



Setting the centre height for the A2110-P/version 2



Setting the centre height for the A2111-P



Installation and removal instructions for precision-cooled shank tool adaptors – A2120 / A2121

①

②

③

Removal instructions

①

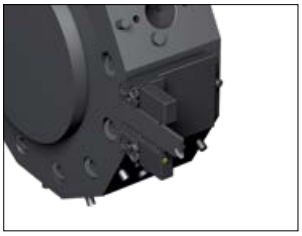
②

③

Conversion instructions for A2110 – Star turret

A2110-P blade adaptors – Star turrets

A2110…32R…P

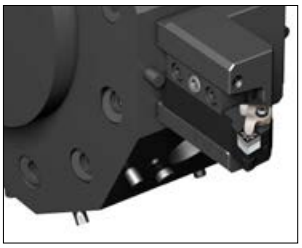


A2110…32R…P
Overhead installation position

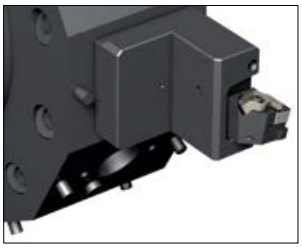
A2110…32L…P

A2110…32L…P
Overhead installation position

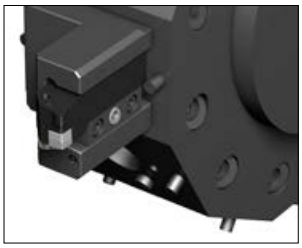
Conversion instructions for A2120 – Star turret



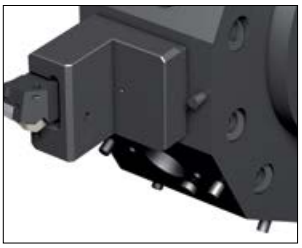
A2120-..**N**..-P / DCLN**L**..-P



A2120-..**N**..-P / DCLN**R**..-P



A2120-..**N**..-P / DCLN**L**..-P
Overhead
Fit the clamping wedge downwards.



A2120-..**N**..-P / DCLN**R**..-P
Overhead
Fit the clamping wedge downwards.

Conversion instructions for A2121 – Disc turret

A2121-..**L**..-P / G1011..**R**..-P

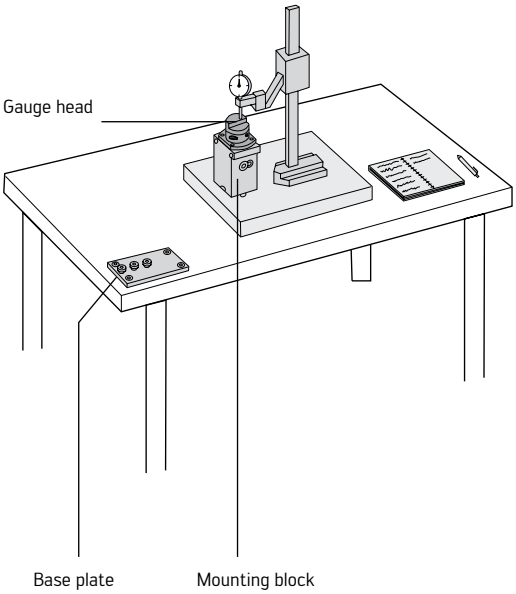
A2121-..**R**..-P / G1011..**L**..-P

A2121-..**L**..-P / G1011..**R**..-P
Overhead

A2121-..**R**..-P / G1011..**L**..-P
Overhead

Measuring fixtures for Walter Capto™

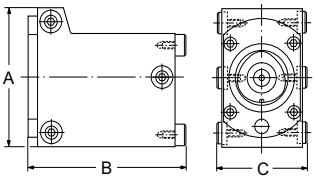
Walter Capto™ fixture



The accuracy of the Walter Capto™ coupling system provides outstanding repeat accuracy when replacing the cutting head. This degree of precision has consistently proven to be beneficial, for example during manual changeover operations where indexable inserts are changed outside the machine.
The new, easy-to-operate Walter Capto™ fixture can be used to measure the position of the cutting edge at two coordinates.
Once the measured cutting head has been mounted in the boring bar/adaptor, any cutting edge deviation can be compensated for by the machine control system.
The fixture can be used in combination with any normal gauge and test plate. However, Walter recommends using an indicator with zero setting and a flat tracing probe.

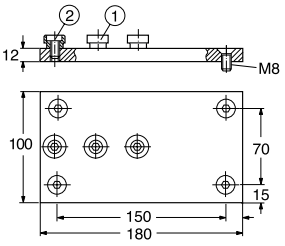
Basic equipment:
If you already have a surface plate with measuring device, all you require is the following additional equipment:
– Fixture for tool gauging
– Base plate
– Gauge head (see MAS gauges)

Mounting block for tool gauging



Order no.	Size	Dimensions [mm] A	B	C
C3-PMU-01M	C3	65	85	44
C4-PMU-01M	C4	77	94	54
C5-PMU-01M	C5	94	130	70
C6-PMU-01	C6	114	135	90
C8-PMU-01	C8	133	150	106

Base plate

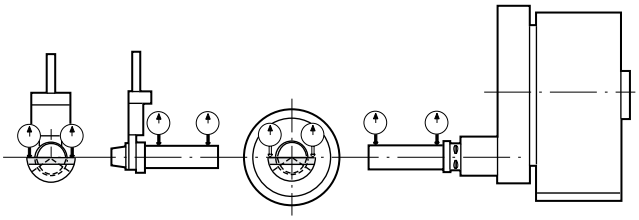


Order no.	Size	Spare parts ① Pin	② Screw
C-HP-01	C3–C8	5638 060-01	3212 020-409

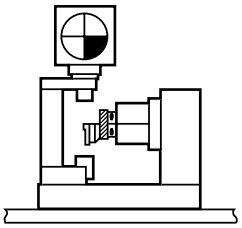
Measuring fixtures for Walter Capto™

(continued)

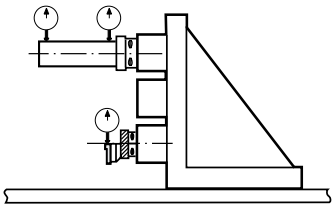
Walter Capto™ fixture



Spindle alignment Tool centre line



Spindle alignment

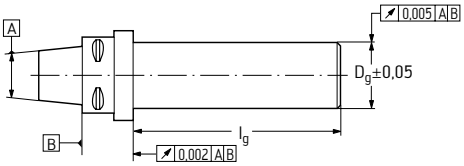


Geometric checking of indexing devices

The Walter Capto™ modular system provides outstanding repeat accuracy. However, this is only helpful if the other various components that are important during the entire machining process are also set accurately and correctly. Walter therefore offers a wide range of measuring devices for axial and centre measurement for all coupling system sizes, the use of which is highly recommended for setting the most important parameters, such as:

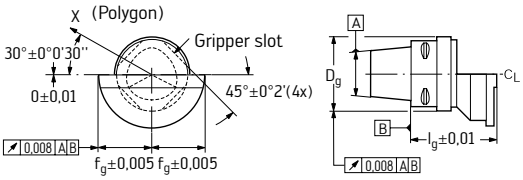
– Centre line
– Spindle alignment
– Tool position for the gripper
– Centre height of the tool and the cutting edge position (f_1 and l_1)
  The gauges can be used for pre-measuring
– Indexing device

Axial gauge/MAS-11 gauges



Order no.	Size	Dimensions [mm] D_g	l_g	
C3-MAS-11	C3	25	160	
C4-MAS-11	C4	25	160	
C5-MAS-11	C5	32	215	
C6-MAS-11	C6	40	320	
C8-MAS-11	C8	40	320	

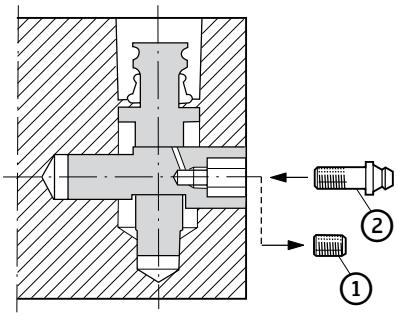
Centre height gauge/MAS-01 gauges



Order no.	Size	Dimensions [mm] f_g	D_g	l_g
C3-MAS-01	C3	22	34	40
C4-MAS-01	C4	27	42	50
C5-MAS-01	C5	35	52	60
C6-MAS-01	C6	45	65	65
C8-MAS-01	C8	55	80	82

Accessories for Walter Capto™

Lubrication



All manually actuated clamping units are lubricated with BP Energrease ACS-2* prior to delivery. The lubrication should be checked and replaced after approximately six months. New grease can be supplied through the eccentric bolt.

1. Undo the screw ①.
2. Insert the lubricating nipple ② 5692 012-01 (see below for ordering information).
3. Please ensure that the clamping mechanism is in the clamped position.
4. Using a grease gun, dispense grease until it begins to emerge on the outside.
5. Remove the lubricating nipple.
6. Screw the screw ① back into the eccentric bolt.

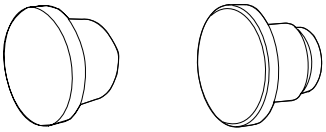
IMPORTANT
The clamping unit must be clamped during the lubrication process.

* Alternatives:
STATOIL Beacon 325, MOBIL Temp SHC 32, MOBIL grease, MOBIL special grease or any equivalent commercially available grease.

Lubricating nipple for Walter Capto™ clamping units

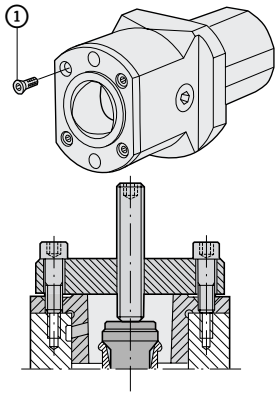
Order no.	Size	
5692 012-01	C3–C8	

Cover plug for Walter Capto™ tapers in clamping units



Order no.	Size	
C3-CP-01	C3	
C4-CP-01	C4	
C5-CP-01	C5	
C6-CP-01	C6	
C8-CP-01	C8	

Operating instructions – Turning the cutting head 180°

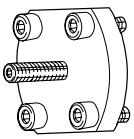


If overhead machining is required, proceed as described in the following steps:

Turn the polygon socket 180°.

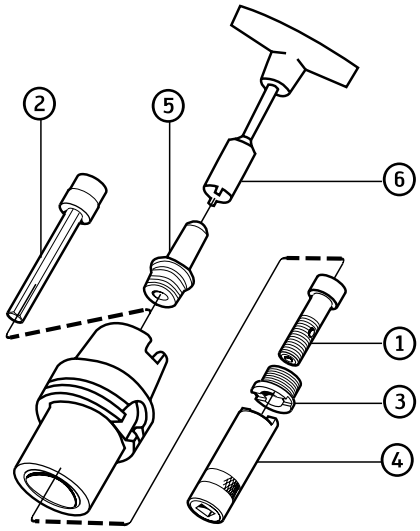
1. Undo four screws ①.
   Recommended wrenches (to be ordered separately):
   C3: (T15) FS 1047
   C4: (T20) FS 1048
   C5: (T25) FS 1049
   C6: Hexagon (5 mm) ISO 2936-5
   C8: Hexagon (6 mm) ISO 2936-6
2. Remove the polygon socket. Please use a removal fixture (see below for ordering information).
   – Secure the removal fixture to the polygon socket using the four screws.
   – Tighten the centre screw of the fixture until the polygon socket is released.
3. Turn the polygon socket 180° and reinstall it, using a plastic mallet or copper hammer if necessary.

Removal fixture for removing the polygon socket from manual clamping units



Order no.	Size	
C3-WDT-01M	C3	
C4-WDT-02	C4	
C5-WDT-02	C5	
C6-WDT-02	C6	
C8-WDT-02	C8	

Assembly parts and accessories for Walter Capto™ master C . – 390.410



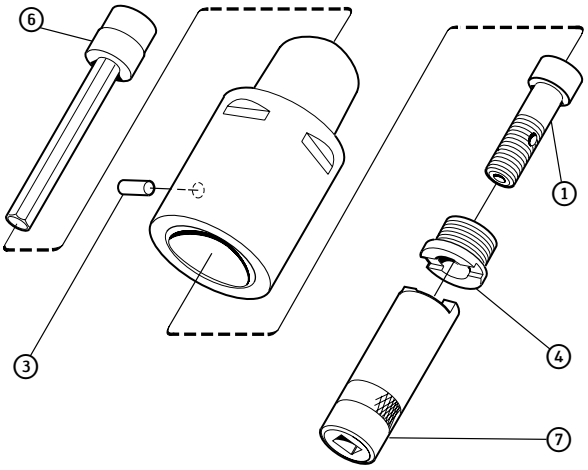
Assembly parts	Coupling system size C3	C4	C5	C6	C8
① Centre screw	5512 067-01	5512 067-02	5512 067-03	5512 067-04	5512 067-04
③ Threaded ring	5512 091-04	5512 091-03	5512 091-01	5512 091-02	5512 091-02
⑤ Transfer unit for					
HSK 50	5692 020-03	5692 020-03			
HSK 63	5692 020-04	5692 020-04	5692 020-04		
HSK 80	5692 020-05	5692 020-05	5692 020-05	5692 020-05	
HSK 100		5692 020-06	5692 020-06	5692 020-06	5692 020-06

Accessories	Coupling system size C3	C4	C5	C6	C8
② Extension key (mm)	5680 015-05 (SW 8,0)	5680 015-05 (SW 8,0)	5680 015-01 (SW 10,0)	5680 015-02 (SW 14,0)	5680 015-02 (SW 14,0)
④ Socket wrench for threaded ring	5680 065-13	5680 065-10	5680 065-11	5680 065-12	5680 065-12
⑥ Socket wrench for transfer unit					
HSK 50	FS 1212	FS 1212			
HSK 63	FS 952	FS 952	FS 952		
HSK 80	FS 1213	FS 1213	FS 1213	FS 1213	
HSK 100		FS 953	FS 953	FS 953	FS 953

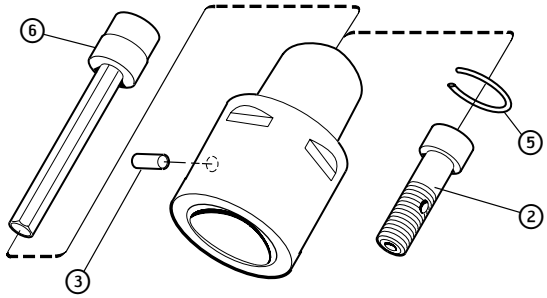
Important:
In machines with automatic tool changing systems, the transfer unit or the threaded ring must be mounted in the basic holder.
The clamping system release mechanism can be damaged if the transfer unit/threaded ring is not installed.

Assembly parts and accessories for Walter Capto™ extensions C . – 391.01

Normal version



Short version



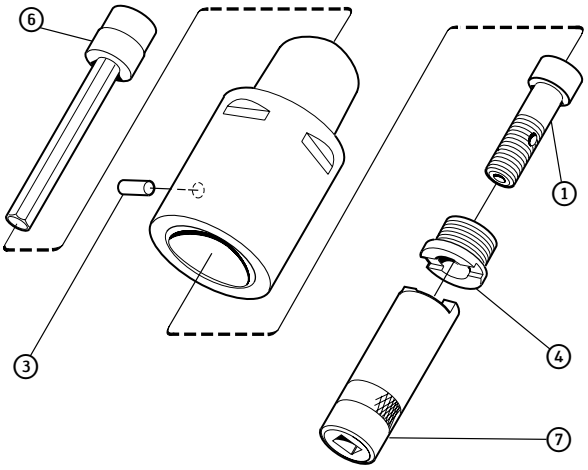
Assembly parts	Coupling system size C3	C4	C5	C6	C8
① Centre screw for normal version	5512 067-01	5512 067-02	5512 067-03	5512 067-04	5512 067-04
② Centre screw for short version	5512 068-01	5512 068-02	5512 068-03	5512 068-04	5512 068-05
③ Pin	3113 020-304	3113 020-355	3113 020-406	3113 020-457	3113 020-509
④ Retaining nut	5512 091-04	5512 091-03	5512 091-01	5512 091-02	5512 091-02
⑤ Circlip	5545 040-02	5545 040-03	5545 040-07	5545 040-08	5545 040-08

Remark:
The centre screw ① and ② can be used to extend Walter Capto™ cutting heads with internal coolant supply.

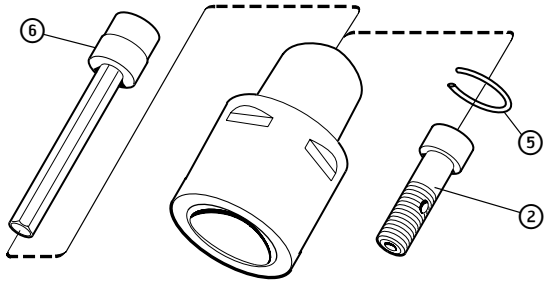
Accessories	Coupling system size C3	C4	C5	C6	C8
⑥ Extension key (mm)	5680 015-05 (SW 8,0)	5680 015-05 (SW 8,0)	5680 015-01 (SW 10,0)	5680 015-02 (SW 14,0)	5680 015-02 (SW 14,0)
⑦ Socket wrench for retaining nut	5680 065-13	5680 065-10	5680 065-11	5680 065-12	5680 065-12

Assembly parts and accessories for Walter Capto™ reducers C . – 391.02

Normal version



Short version



Assembly parts

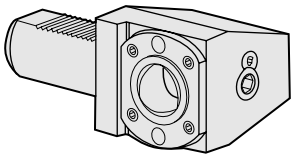
Coupling system size – Machine side	C4 / C5 / C6 / C8	C5	C6 / C8	C6	C8	C8
Coupling system size – Tool side	**C3**	**C4**	**C4**	**C5**	**C5**	**C6**
① Centre screw for normal version	5512 067-01	5512 067-02	5512 067-02	5512 067-03	5512 067-03	5512 067-04
② Centre screw for short version	5512 068-01	5512 068-06	5512 068-02	5512 068-07	5512 068-08	5512 068-05
③ Pin	3113 020-304	3113 020-355	3113 020-355	3113 020-406	3113 020-406	3113 020-457
④ Retaining nut	5512 091-04	5512 091-03	5512 091-03	5512 091-01	5512 091-01	5512 091-02
⑤ Circlip	5545 040-02	5545 040-07	5545 040-03	5545 040-08	5545 040-08	5545 040-08

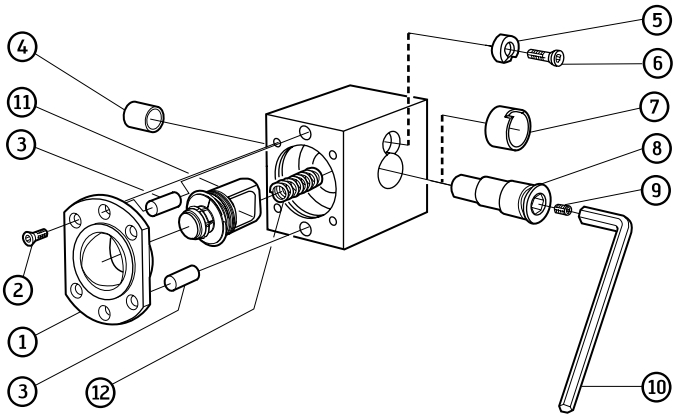
Remark:
The centre screw ① and ② can be used to extend Walter Capto™ cutting heads with internal coolant supply.

Accessories

Coupling system size – Machine side	C4 / C5 / C6 / C8	C5	C6 / C8	C6	C8	C8
Coupling system size – Tool side	**C3**	**C4**	**C4**	**C5**	**C5**	**C6**
⑥ Extension key	5680 015-05 (SW 8,0)	5680 015-05 (SW 8,0)	5680 015-05 (SW 8,0)	5680 015-01 (SW 10,0)	5680 015-01 (SW 10,0)	5680 015-02 (SW 14,0)
⑦ Socket wrench for retaining nut	5680 065-13	5680 065-10	5680 065-10	5680 065-11	5680 065-11	5680 065-12

Assembly parts and accessories for Walter Capto™ clamping units
VDI – DIN 69880 angled version
Type 2030/2040/2050/2060

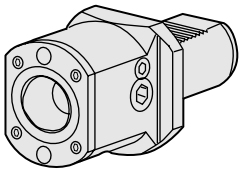


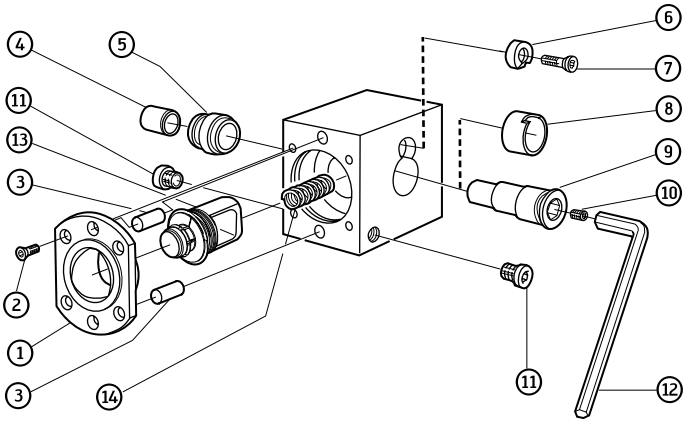


Assembly parts	Coupling system size			
	C3	C4	C5	C6
① Adaptor sleeve	5252 010-01	5252 010-02	5252 010-03	5252 010-04
② Screw (4 ×)	416.1-834	5513 020-26	5513 020-14	3213 010-410
③ Pin	3111 050-558	3111 050-610	3111 050-661	3111 050-715
④ Plain bearing	3823 010-101	3823 010-122	3823 010-162	3823 010-183
⑤ Retaining washer	5541 030-01	5541 030-02	5541 030-03	5541 030-04
⑥ Screw	416.1-834	416.1-834	5513 020-14	5513 020-14
⑦ Plain bearing	5638 022-01	5638 022-02	5638 022-03	5638 022-04
⑧ Eccentric bolt	5333 025-01	5333 025-02	5333 025-03	5333 025-04
⑨ Screw	3214 010-355	3214 010-355	3214 010-355	3214 010-355
⑪ Drawbar (set)	5461 100-101	5461 100-111	5461 100-121	5461 100-131
⑫ Spring	5561 001-71	5561 001-41	5561 001-41	5561 001-41

Accessories	Coupling system size			
	C3	C4	C5	C6
⑩ Wrench	SW 8 (DIN 911)	SW 10 (DIN 911)	SW 12 (DIN 911)	SW 12 (DIN 911)

Assembly parts and accessories for Walter Capto™ clamping units
VDI – DIN 69880 straight version
Type 2030/2040/2050/2060

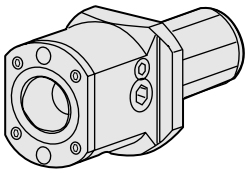


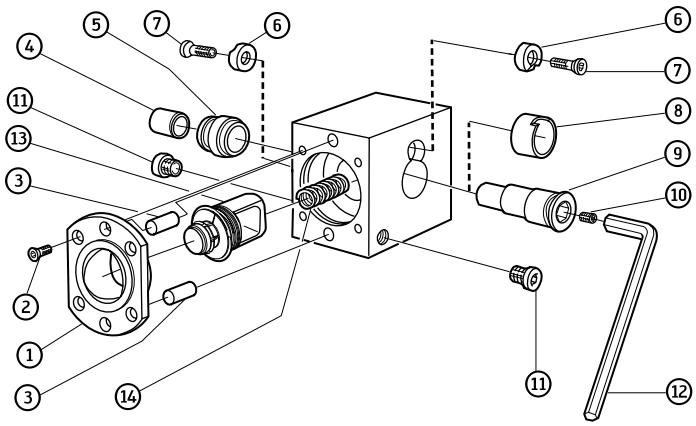


Assembly parts	Coupling system size C3	C4	C5	C6
① Adaptor sleeve	5252 010-01	5252 010-02	5252 010-03	5252 010-04
② Screw (4 ×)	416.1-834	5513 020-26	5513 020-14	3213 010-410
③ Pin	3111 050-558	3111 050-610	3111 050-661	3111 050-715
④ Plain bearing	3823 010-101	3823 010-122	3823 010-162	3823 010-183
⑤ Bushing	5638 024-01	5638 024-02	5638 024-03	5638 024-04
⑥ Retaining washer	5541 030-01	5541 030-02	5541 030-03	5541 030-04
⑦ Screw	416.1-834	416.1-834	5513 020-14	5513 020-14
⑧ Plain bearing	5638 022-01	5638 022-02	5638 022-03	5638 022-04
⑨ Eccentric bolt	5333 025-01	5333 025-02	5333 025-03	5333 025-04
⑩ Screw	3214 010-355	3214 010-355	3214 010-355	3214 010-355
⑪ Seal	3611 005-180	3611 005-180	3611 005-180	3611 005-140
⑬ Drawbar (set)	5461 100-101	5461 100-111	5461 100-121	5461 100-131
⑭ Spring	5561 001-71	5561 001-41	5561 001-41	5561 001-41

Accessories	Coupling system size C3	C4	C5	C6
⑫ Wrench	SW 8 (DIN 911)	SW 10 (DIN 911)	SW 12 (DIN 911)	SW 12 (DIN 911)

Assembly parts and accessories for Walter Capto™ clamping units
Round shank with clamping surface
Type 2035/2045/2055/2065

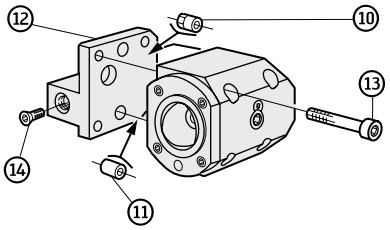


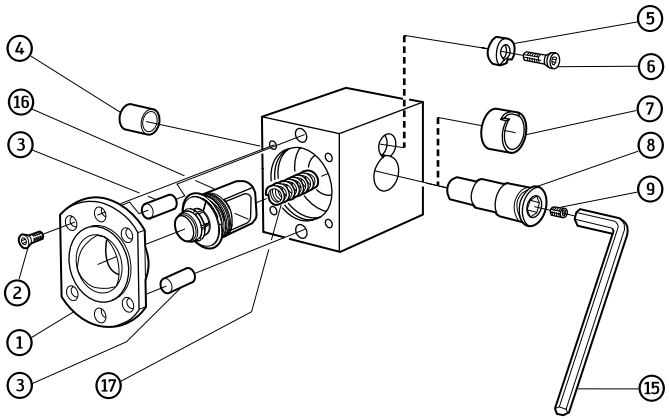


Assembly parts	Coupling system size C3	C4	C5	C6
① Adaptor sleeve	5252 010-01	5252 010-02	5252 010-03	5252 010-04
② Screw (4 ×)	416.1-834	5513 020-26	5513 020-14	3213 010-410
③ Pin	3111 020-558	3111 020-610	3111 020-661	3111 020-715
④ Plain bearing	3823 010-101	3823 010-122	3823 010-162	3823 010-183
⑤ Bushing	5638 024-01	5638 024-02	5638 024-03	5638 024-04
⑥ Retaining washer	5541 030-01	5541 030-02	5541 030-03	5541 030-04
⑦ Screw	416.1-834	416.1-834	5513 020-14	5513 020-14
⑧ Plain bearing	5638 022-01	5638 022-02	5638 022-03	5638 022-04
⑨ Eccentric bolt	5333 025-01	5333 025-02	5333 025-03	5333 025-04
⑩ Screw	3214 010-355	3214 010-355	3214 010-355	3214 010-355
⑪ Seal	3611 005-180	3611 005-180	3611 005-180	3611 005-140
⑬ Drawbar (set)	5461 100-101	5461 100-111	5461 100-121	5461 100-131
⑭ Spring	5561 001-71	5561 001-41	5561 001-41	5561 001-41

Accessories	Coupling system size C3	C4	C5	C6
⑫ Wrench	SW 8 (DIN 911)	SW 10 (DIN 911)	SW 12 (DIN 911)	SW 12 (DIN 911)

Assembly parts and accessories for Walter Capto™ clamping units Type 2080

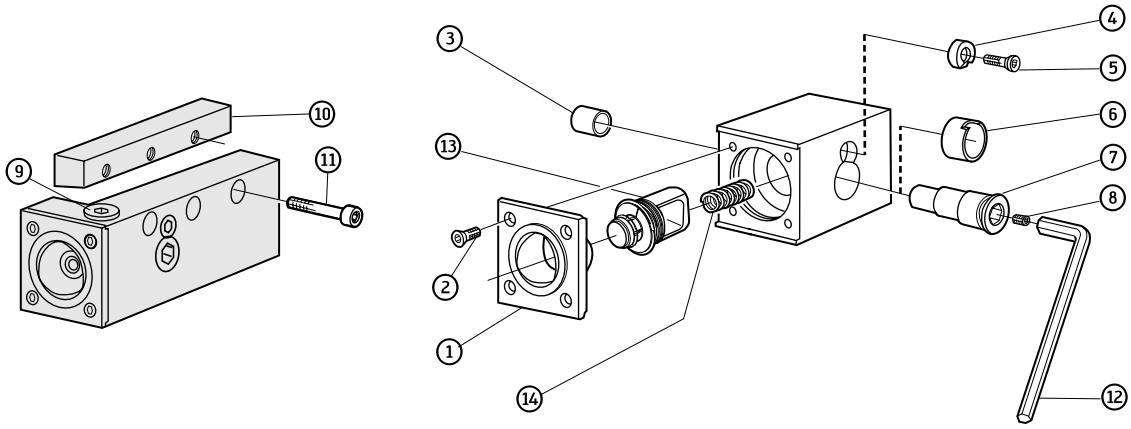




Assembly parts	Coupling system size C3	C4	C5	C6
① Adaptor sleeve	5252 010-01	5252 010-02	5252 010-03	5252 010-04
② Screw (4 ×)	416.1-834	5513 020-26	5513 020-14	3213 010-410
③ Pin	3111 020-558	3111 020-610	3111 020-661	3111 020-715
④ Plain bearing	3823 010-101	3823 010-122	3823 010-162	3823 010-183
⑤ Retaining washer	5541 030-01	5541 030-02	5541 030-03	5541 030-04
⑥ Screw	416.1-834	416.1-834	5513 020-14	5513 020-14
⑦ Plain bearing	5638 022-01	5638 022-02	5638 022-03	5638 022-04
⑧ Eccentric bolt	5333 025-01	5333 025-02	5333 025-03	5333 025-04
⑨ Screw	3214 010-355	3214 010-355	3214 010-355	3214 010-355
⑩ Shim pin	5552 063-05	5552 063-07	5552 063-06	—
⑪ Pin	5552 061-07	5552 061-09	5552 061-08	—
⑫ Right-hand adaptor	5253 005-01	5253 005-15	5253 005-11	—
⑫ Left-hand adaptor	5253 005-02	5253 005-16	5253 005-12	—
⑬ Screw	3212 010-363	3212 010-364	3212 010-416	—
⑭ Seal	3611 005-180	3611 005-140	—	—
⑯ Drawbar (set)	5461 100-101	5461 100-111	5461 100-121	5461 100-131
⑰ Spring	5561 001-71	5561 001-41	5561 001-41	5561 001-41

Accessories	Coupling system size C3	C4	C5	C6
⑮ Wrench	SW 8 (DIN 911)	SW 10 (DIN 911)	SW 12 (DIN 911)	SW 12 (DIN 911)

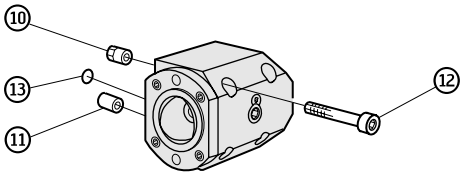
Assembly parts and accessories for Walter Capto™ clamping units Type 2085

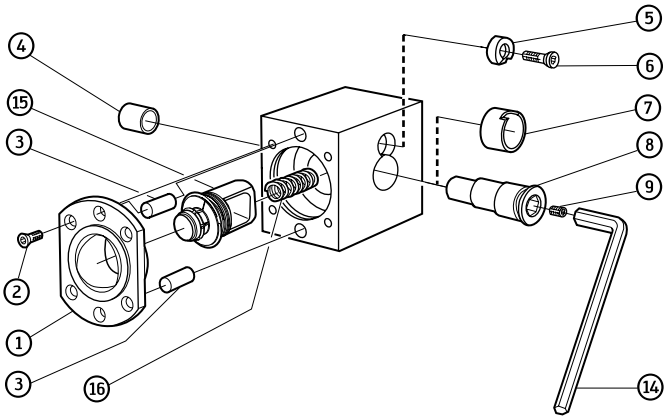


Assembly parts	Coupling system size C3	C4	C5
① Adaptor sleeve	5252 015-01	5252 015-02	5252 015-03
② Screw (4 ×)	416.1-834	5513 020-26	5513 020-14
③ Plain bearing	3823 010-101	3823 010-122	3823 010-162
④ Retaining washer	5541 030-01	5541 030-02	5541 030-03
⑤ Screw	416.1-834	416.1-834	5513 020-14
⑥ Plain bearing	5638 022-01	5638 022-02	5638 022-03
⑦ Eccentric bolt	5333 025-01	5333 025-02	5333 025-03
⑧ Screw	3214 010-355	3214 010-355	3214 010-355
⑨ Seal	3611 005-180	3611 005-180	3611 005-180
⑩ Clamping wedge system	5421 115-01	5421 115-02	5421 115-03
⑪ Screw	3212 101-362	3212 101-364	3212 101-416
⑬ Drawbar (set)	5461 100-101	5461 100-111	5461 100-121
⑭ Spring	5561 001-71	5561 001-41	5561 001-41

Accessories	Coupling system size C3	C4	C5
⑫ Wrench	SW 8 (DIN 911)	SW 10 (DIN 911)	SW 12 (DIN 911)

Assembly parts and accessories for Walter Capto™ clamping units Type 2090

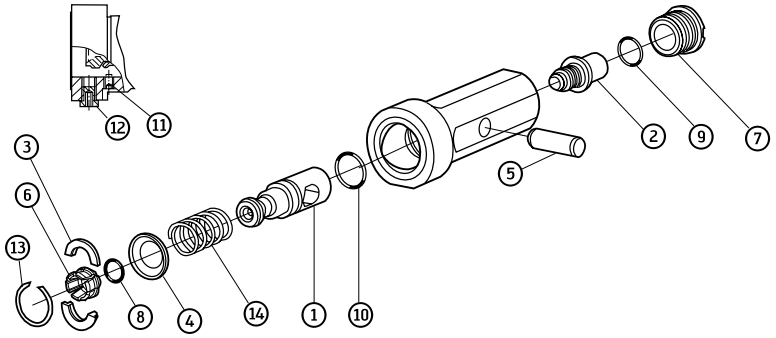




Assembly parts	Coupling system size				
	C3	C4	C5	C6	C8
① Adaptor sleeve	5252 010-01	5252 010-02	5252 010-03	5252 010-04	5252 010-05
② Screw (4 ×)	416.1-834	5513 020-26	5513 020-14	3213 010-410	3213 010-462
③ Pin	3111 050-558	3111 050-610	3111 050-661	3111 050-715	3111 050-769
④ Plain bearing	3823 010-101	3823 010-122	3823 010-162	3823 010-183	3823 010-225
⑤ Retaining washer	5541 030-01	5541 030-02	5541 030-03	5541 030-04	5541 030-05
⑥ Screw	416.1-834	416.1-834	5513 020-14	5513 020-14	5513 020-14
⑦ Plain bearing	5638 022-01	5638 022-02	5638 022-03	5638 022-04	5638 022-05
⑧ Eccentric bolt	5333 025-01	5333 025-02	5333 025-03	5333 025-04	5333 025-05
⑨ Screw	3214 010-355	3214 010-355	3214 010-355	3214 010-355	3214 010-355
⑩ Shim pin	5552 063-05	5552 063-07	5552 063-06	5552 063-03	5552 063-04
⑪ Pin	5552 061-07	5552 061-09	5552 061-08	5552 061-05	5552 061-06
⑫ Screw	3212 010-363	3212 010-414	3212 010-466	3212 010-469	3212 010-521
⑬ O-ring	5641 001-22	3671 010-114	3671 010-114	3671 010-119	3671 010-119
⑮ Drawbar (set)	5461 100-101	5461 100-111	5461 100-121	5461 100-131	5461 100-141
⑯ Spring	5561 001-71	5561 001-41	5561 001-41	5561 001-41	5561 001-41

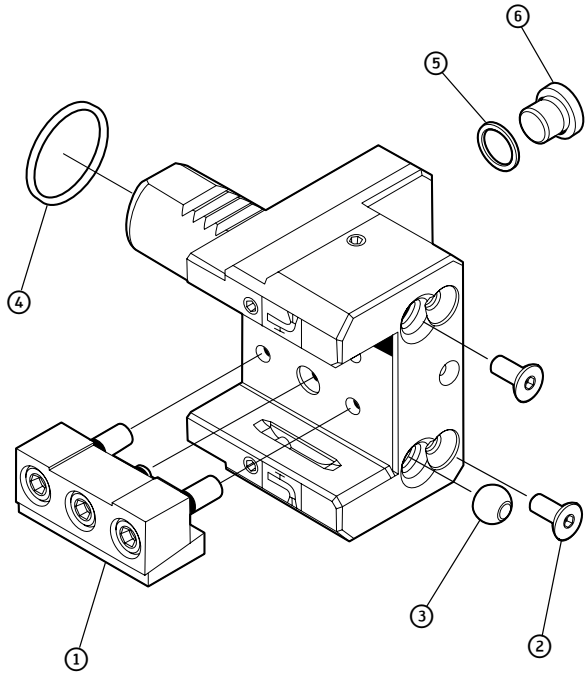
Accessories	Coupling system size				
	C3	C4	C5	C6	C8
⑭ Wrench	SW 8 (DIN 911)	SW 10 (DIN 911)	SW 12 (DIN 911)	SW 12 (DIN 911)	SW 12 (DIN 911)

Assembly parts and accessories for Walter Capto™ clamping units
Type 2000 bushing clamp



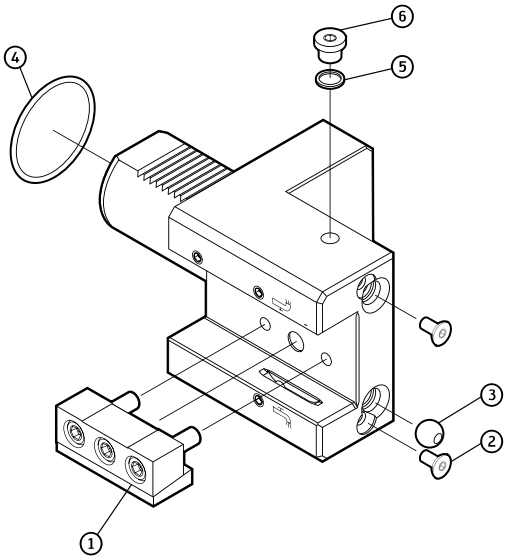
Assembly parts	Coupling system size C3	C4	C5
① Drawbar	5461 105-01	5461 105-02	5461 105-03
② Clamping screw	5519 105-01	5519 105-02	5519 105-03
③ Split guide ring	5546 002-01	5546 002-02	5546 002-03
④ Ring	5541 028-01	5541 028-02	5541 028-03
⑤ Locking pin	5552 032-01	5552 032-02	5552 032-03
⑥ Segment (1 set = 6 pieces)	5549 120-08	5549 120-06	5549 120-07
⑦ Threaded bushing	5512 091-03	5512 091-01	5512 091-02
⑧ O-ring	5641 005-01	5641 005-05	5641 005-06
⑨ O-ring	3671 010-118	3671 010-120	3671 010-124
⑩ O-ring	3671 010-124	3671 010-126	3671 010-128
⑪ Screw	3214 020-204	3214 020-255	3214 020-255
⑫ Seal	3611 005-180	3611 005-180	3611 005-180
⑬ Circlip	5545 042-01	3421 105-026	3421 105-032
⑭ Spring	5561 001-52	5561 001-53	5561 001-54

Assembly parts and accessories for VDI A2120-V25-20N-055-P



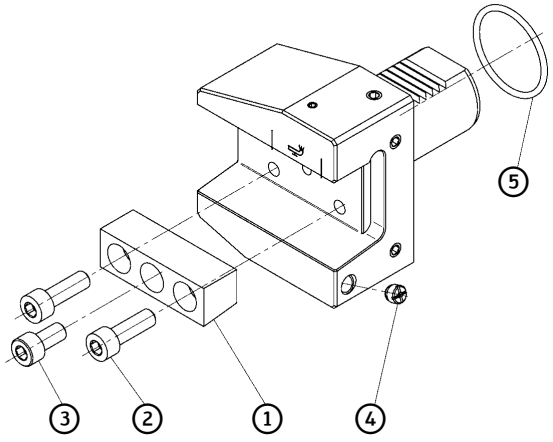
Assembly parts	VDI 50/25
① Wedge	FK385
② Screw	M05 × 012 DIN7991 10.9
③ Nozzle	FS2562
④ O-ring	23,52 × 1,78
⑤ Gasket	FS2564
⑥ Plug	G1/8 DIN908

Assembly parts and accessories for VDI A2120-V50-25N-100-P



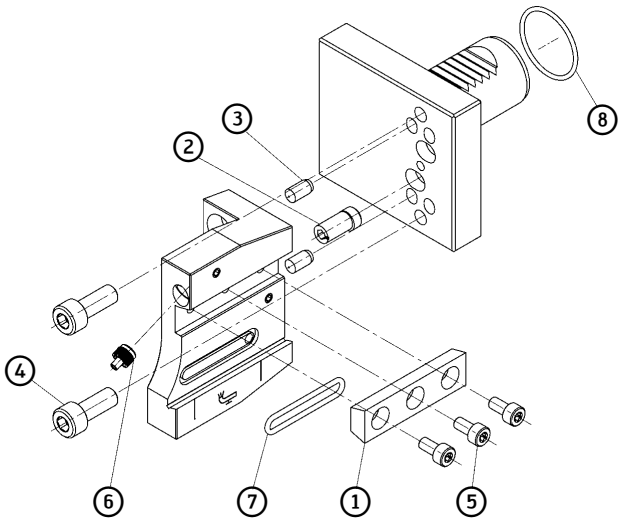
Assembly parts	VDI 50/25
① Wedge	FK393
② Screw	M06 × 012 DIN7991 10.9
③ Nozzle	FS2562
④ O-ring	47,29 × 2,62 70 / 75
⑤ Gasket	FS2564
⑥ Plug	G1/8 DIN908

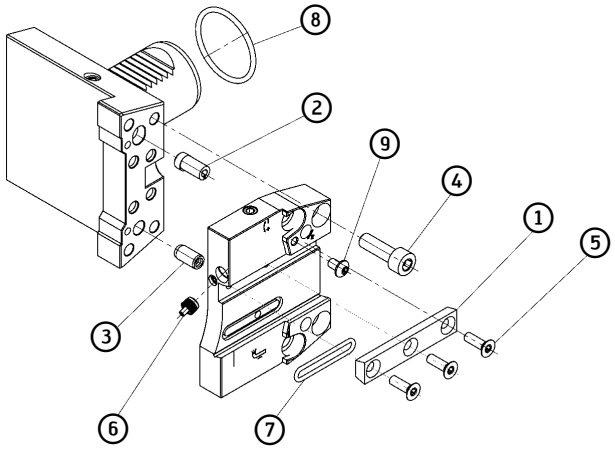
Assembly parts and accessories for VDI Type A2121-V-P



Assembly parts	VDI 30/20	VDI 40/25	VDI 50/25
① Wedge	FK392	FK393	FK393
② Screw	M06 × 014 ISO4762 12.9	M08 × 025 ISO4762 12.9	M08 × 025 ISO4762 12.9
③ Screw	M06 × 025 ISO4762 12.9	M08 × 016 ISO4762 12.9	M08 × 016 ISO4762 12.9
④ Screw	FS2278	FS2278	FS2278
⑤ O-ring	28,3 × 1,78 70 / 75	37,77 × 2,62 70 / 75	47,29 × 2,62 70 / 75

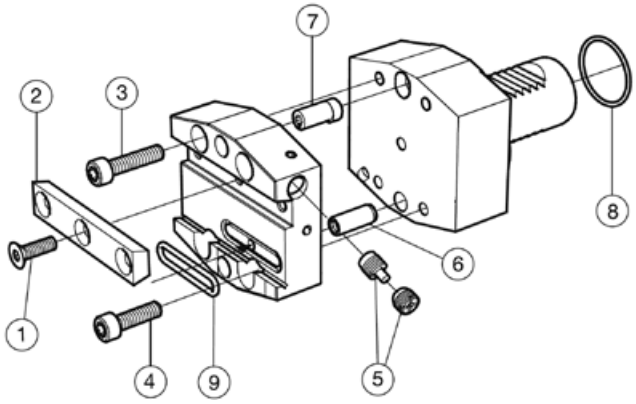
Assembly parts and accessories for VDI
Type A2110-V-P





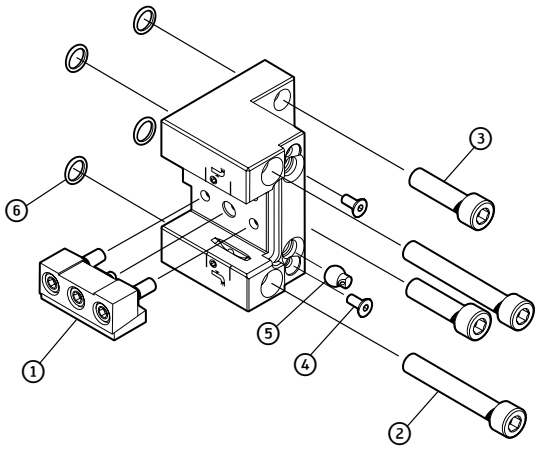
Assembly parts	VDI 25/26	VDI 30/26	VDI 30/32	VDI 40/32
① Wedge	FK383	FK383	FK383	FK384
② Eccentric pin	FS2275	FS2275	FS2275	FS2275
③ Parallel pin	06,0M6 × 012 DIN7	06,0M6 × 012 DIN7	06,0M6 × 012 DIN7	08,0M6 × 016 ISO8735
④ Screw	M08 × 016 ISO4762 12.9	M06 × 020 DIN7984 8.8	M06 × 020 DIN7984 8.8	M08 × 025 ISO4762 12.9
⑤ Screw	M05 × 010 ISO14579 8.8	M05 × 010 ISO14579 8.8	M05 × 010 ISO14579 8.8	M05 × 016 ISO14581 8.8
⑥ Nozzle	FS1477	FS1477	FS1477	FS1477
⑦ O-ring	24 × 2 70 / 80	24 × 2 70 / 80	24 × 2 70 / 80	27 × 2 70 / 80
⑧ O-ring	23,52 × 1,78 70 / 75	28,3 × 1,78 70 / 75	28,3 × 1,78 70 / 75	37,77 × 2,62 70 / 75
⑨ Screw	—	—	—	M5 × 8-10.9-Torx

Assembly parts and accessories for VDI Type A2111-V-P



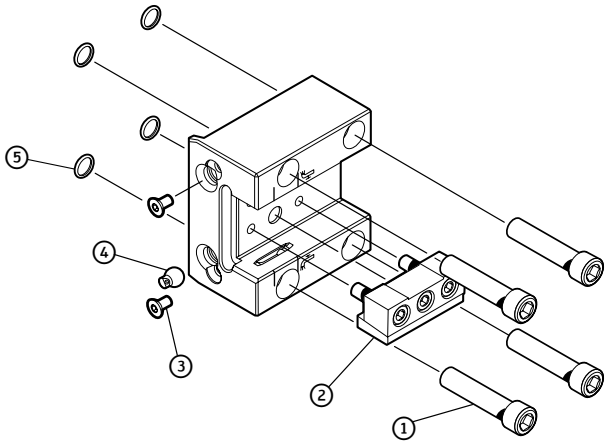
Assembly parts		VDI 30 / 26	VDI 30 / 32	VDI 40/32
①	Screw	M05 × 016 ISO14581 8.8	M05 × 016 ISO14581 8.8	M05 × 016 ISO14581 8.8
②	Wedge	FK384	FK384	FK384
③	Screw	M06 × 025 ISO4762 12.9	M08 × 025 ISO4762 12.9	M08 × 025 ISO4762 12.9
④	Screw	M06 × 020 DIN 7984 10.9	—	—
⑤	Screw	FS2278	FS2278	FS2278
	Nozzle	FS1477	FS1477	FS1477
⑥	Parallel pin	08,0M6 × 020 ISO8735	08,0M6 × 020 ISO8735	08,0M6 × 020 ISO8735
⑦	Eccentric pin	5333 011-01	5333 011-01	5333 011-01
⑧	O-ring	28,3 × 1,78 70 / 75	28,3 × 1,78 70 / 75	28,3 × 1,78 70 / 75
⑨	O-ring	24 × 2 70 / 80	27 × 2 70 / 80	27 × 2 70 / 80

Assembly parts and accessories for Doosan A2120-DO-25N-072-P



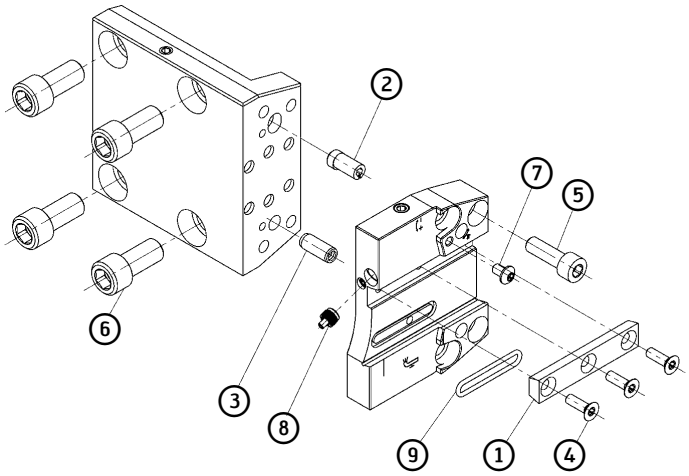
Assembly parts		DO/25
①	Wedge	FK393
②	Screw	M12 × 075 ISO4762 12.9
③	Screw	M12 × 040 ISO4762 12.9
④	Screw	M06 × 012 DIN7991 10.9
⑤	Nozzle	FS2561
⑥	O-ring	10 × 1,5-NBR 70

Assembly parts and accessories for Doosan A2121-DO-25N-050-P



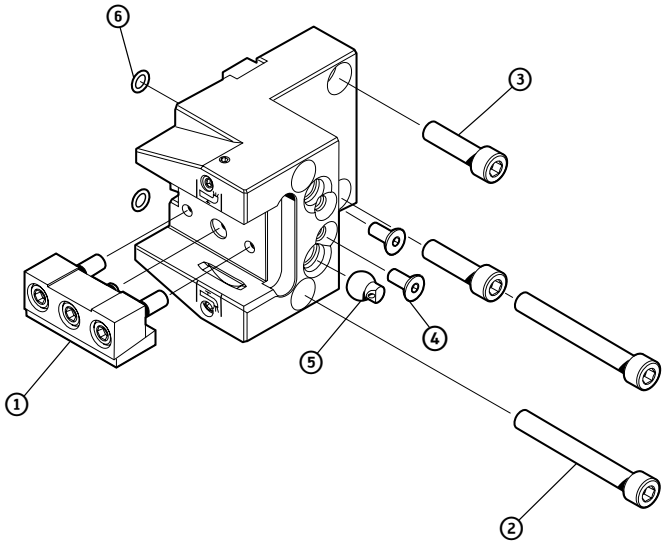
Assembly parts	DO/25
① Wedge	FK393
② Screw	M12 × 055 ISO4762 12.9
③ Screw	M06 × 012 DIN7991 10.9
④ Nozzle	FS2561
⑤ O-ring	10 × 1,5-NBR 70

Assembly parts and accessories for Doosan Type A2110-DO-P



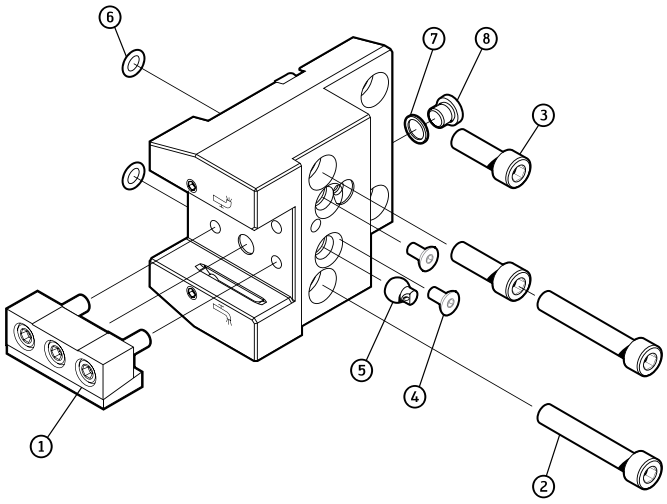
Assembly parts	DO/32
① Wedge	FK384
② Eccentric pin	FS2275
③ Parallel pin	08,0M6 × 020 ISO8735
④ Screw	M05 × 016 ISO14581 8.8
⑤ Screw	M08 × 022 ISO4762 12.9
⑥ Screw	M12 × 025 ISO4762 12.9
⑦ Screw	FS2287
⑧ Nozzle	FS1477
⑨ O-ring	27 × 2 70 / 80

Assembly parts and accessories for BMT
A2120-BT45-20N-063-P



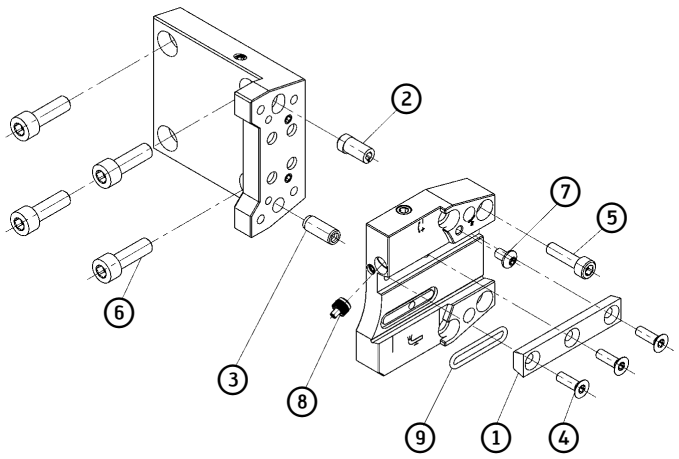
Assembly parts	BT 45/20
① Wedge	FK392
② Screw	M08 × 065 ISO4762 12.9
③ Screw	M08 × 030 ISO4762 12.9
④ Screw	M06 × 012 DIN7991 10.9
⑤ Nozzle	FS2561
⑥ O-ring	6 × 1,5-NBR 70

Assembly parts and accessories for BMT A2120-BT55-25N-060-P



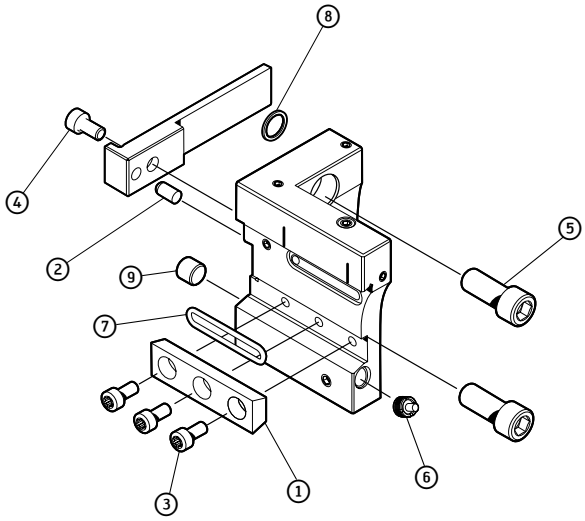
Assembly parts	BT 55/25
① Wedge	FK393
② Screw	M10 × 60 ISO4762 12.9
③ Screw	M10 × 30 ISO4762 12.9
④ Screw	M06 × 012 DIN7991 10.9
⑤ Nozzle	FS2561
⑥ O-ring	8.00 × 2.00 NBR 70
⑦ Gasket	FS2564
⑧ Plug	M10 × 1 DIN908

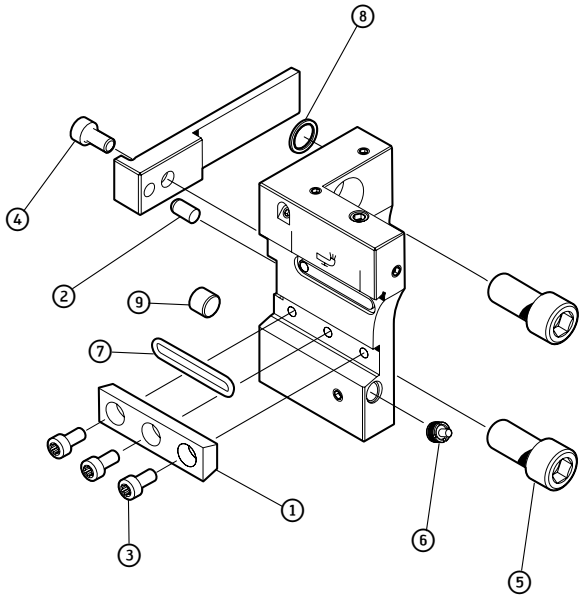
Assembly parts and accessories for BMT
Type A2110-BT-P



Assembly parts	BT 45/26	BT 55/32	BT 65/32
① Wedge	FK384	FK384	FK384
② Eccentric pin	FS2275	FS2275	FS2275
③ Parallel pin	08,0M6 × 020 ISO8735	08,0M6 × 016 ISO8735	08,0M6 × 016 ISO8735
④ Screw	M05 × 016 ISO14581 8.8	M05 × 016 ISO14581 8.8	M05 × 016 ISO14581 8.8
⑤ Screw	M06 × 022 ISO4762 12.9	—	M06 × 022 ISO4762 12.9
⑥ Screw	M08 × 025 ISO4762 12.9	M10 × 020 ISO4762 12.10	M08 × 025 ISO4762 12.9
⑥ Screw	—	M010 × 025 ISO4762 12.9	—
⑦ Screw	FS2287	FS2287	FS2287
⑧ Nozzle	FS1477	FS1477	FS1477
⑨ O-ring	24 × 2 70 / 80	27 × 2 70 / 80	27 × 2 70 / 80

Assembly parts and accessories for Nakamura Type A2110-NA-P

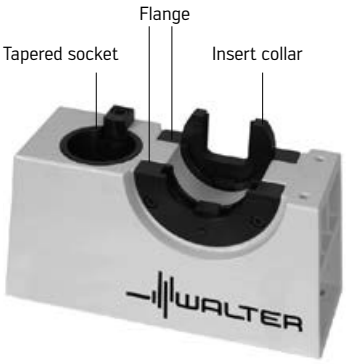




Assembly parts	NA 55/32	NA 65/32
① Wedge	FK383	FK383
② Parallel pin	06,0M6 × 012 DIN7	06,0M6 × 012 DIN7
③ Screw	M05 × 010 ISO14579 14.9	M05 × 010 ISO14579 14.9
④ Screw	M06 × 012 ISO4762 12.9	M06 × 012 ISO4762 12.9
⑤ Screw	M10 × 025 ISO4762 12.9	M10 × 025 ISO4762 12.9
⑥ Nozzle	FS1477	FS1477
⑦ O-ring	27 × 2 70 / 80	27 × 2 70 / 80
⑧ Gasket	FS2563	FS2563
⑨ Plug	R1/8 DIN906	R1/8 DIN906

Assembly accessories for Walter Capto™

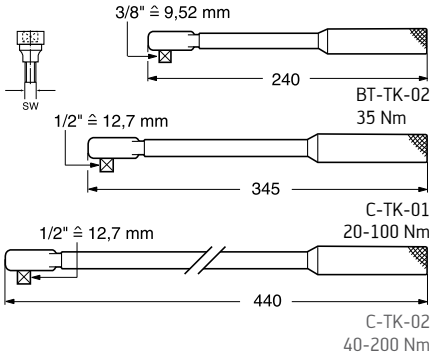
Assembly device, flange, insert collars



Size	Basic body with integrated tapered socket Order no.	Flange Order no.	Insert collar Order no.	Tapered socket Order no.
C3	V500.00.C3	V510.23.050	V530.C3	V540.C3
C4	V500.00.C4	V510.23.050	V530.C4	V540.C4
C5	V500.00.C5	V510.23.050	V530.C5	V540.C5
C6	V500.00.C6	V510.23.050	V530.C6	V540.C6
C8	V500.00.C8	V510.23.050	V530.C8	V540.C8

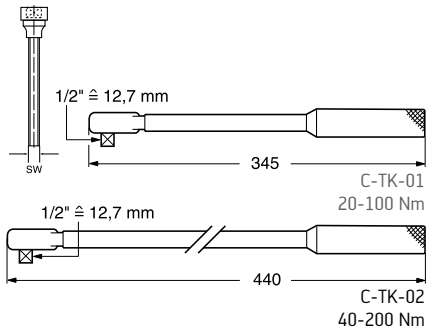
The assembly device is already equipped with the appropriate tapered socket.
The flange and insert collar must be ordered separately. The fixture enables two flanges (e.g. for equipping two different Walter Capto™ sizes) to be mounted opposite each other on the basic body.

Torque wrench for bushing/cam clamping



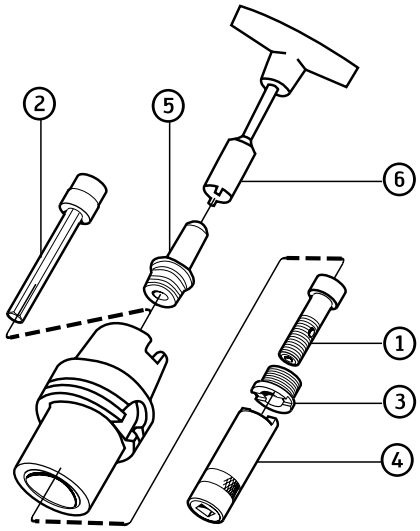
Torque wrench Order no.	Size	Tightening torque Nm	Spare parts Wrench adaptor	Spare parts SW [mm]
BT-TK-02	C3	35	5680 035-05	8
C-TK-01	C4	50	5680 035-06	10
C-TK-01	C5	70	5680 035-07	12
C-TK-01	C6	90	5680 035-07	12
C-TK-02	C8	130	5680 035-07	12

Torque wrench for centre screw clamping



Torque wrench Order no.	Size	Tightening torque Nm	Spare parts Wrench adaptor	Spare parts SW [mm]
C-TK-01	C3	45	5680 015-05	8
C-TK-01	C4	55	5680 015-05	8
C-TK-01	C5	95	5680 015-01	14
C-TK-02	C6	170	5680 015-02	14
C-TK-02	C8	170	5680 015-02	14

Assembly parts and accessories for Walter Capto™ master C . – 390.410



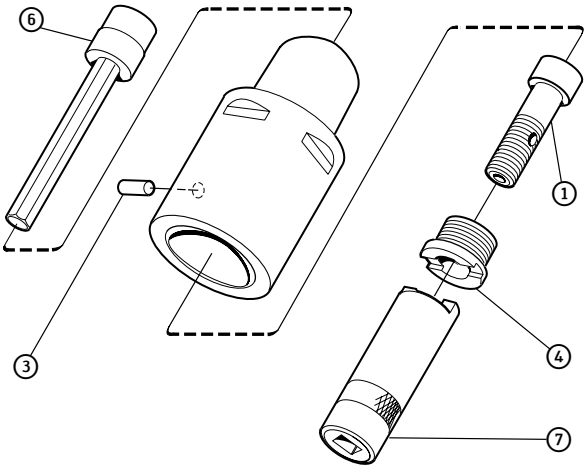
Assembly parts	Coupling system size C3	C4	C5	C6	C8
① Centre screw	5512 067-01	5512 067-02	5512 067-03	5512 067-04	5512 067-04
③ Threaded ring	5512 091-04	5512 091-03	5512 091-01	5512 091-02	5512 091-02
⑤ Transfer unit for					
HSK 50	5692 020-03	5692 020-03			
HSK 63	5692 020-04	5692 020-04	5692 020-04		
HSK 80	5692 020-05	5692 020-05	5692 020-05	5692 020-05	
HSK 100		5692 020-06	5692 020-06	5692 020-06	5692 020-06

Accessories	Coupling system size C3	C4	C5	C6	C8
② Extension key (mm)	5680 015-05 (SW 8,0)	5680 015-05 (SW 8,0)	5680 015-01 (SW 10,0)	5680 015-02 (SW 14,0)	5680 015-02 (SW 14,0)
④ Socket wrench for threaded ring	5680 065-13	5680 065-10	5680 065-11	5680 065-12	5680 065-12
⑥ Socket wrench for transfer unit					
HSK 50	FS 1212	FS 1212			
HSK 63	FS 952	FS 952	FS 952		
HSK 80	FS 1213	FS 1213	FS 1213	FS 1213	
HSK 100		FS 953	FS 953	FS 953	FS 953

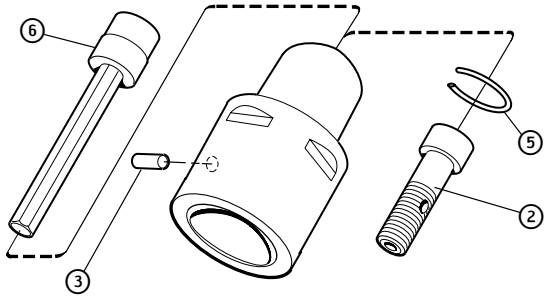
Important:
In machines with automatic tool changing systems, the transfer unit or the threaded ring must be mounted in the basic holder.
The clamping system release mechanism can be damaged if the transfer unit/threaded ring is not installed.

Assembly parts and accessories for Walter Capto™ extensions C . – 391.01

Normal version



Short version



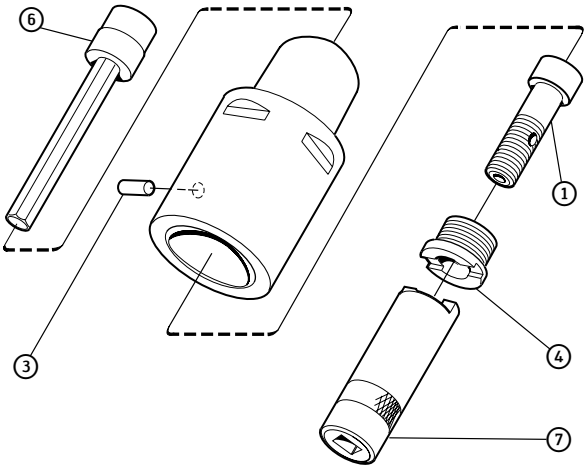
Assembly parts	Coupling system size C3	C4	C5	C6	C8
① Centre screw for normal version	5512 067-01	5512 067-02	5512 067-03	5512 067-04	5512 067-04
② Centre screw for short version	5512 068-01	5512 068-02	5512 068-03	5512 068-04	5512 068-05
③ Pin	3113 020-304	3113 020-355	3113 020-406	3113 020-457	3113 020-509
④ Retaining nut	5512 091-04	5512 091-03	5512 091-01	5512 091-02	5512 091-02
⑤ Circlip	5545 040-02	5545 040-03	5545 040-07	5545 040-08	5545 040-08

Remark:
The centre screw ① and ② can be used to extend Walter Capto™ cutting heads with internal coolant supply.

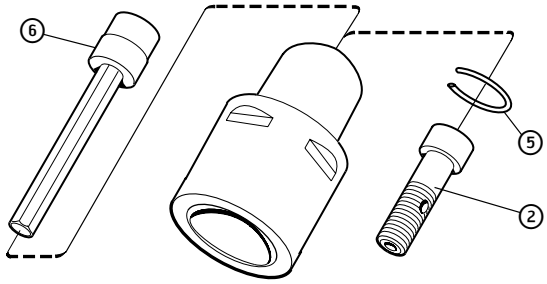
Accessories	Coupling system size C3	C4	C5	C6	C8
⑥ Extension key (mm)	5680 015-05 (SW 8,0)	5680 015-05 (SW 8,0)	5680 015-01 (SW 10,0)	5680 015-02 (SW 14,0)	5680 015-02 (SW 14,0)
⑦ Socket wrench for retaining nut	5680 065-13	5680 065-10	5680 065-11	5680 065-12	5680 065-12

Assembly parts and accessories for Walter Capto™ reducers C . – 391.02

Normal version



Short version



Assembly parts

Coupling system size – Machine side	C4 / C5 / C6 / C8	C5	C6 / C8	C6	C8	C8
Coupling system size – Tool side	C3	C4	C4	C5	C5	C6
① Centre screw for normal version	5512 067-01	5512 067-02	5512 067-02	5512 067-03	5512 067-03	5512 067-04
② Centre screw for short version	5512 068-01	5512 068-06	5512 068-02	5512 068-07	5512 068-08	5512 068-05
③ Pin	3113 020-304	3113 020-355	3113 020-355	3113 020-406	3113 020-406	3113 020-457
④ Retaining nut	5512 091-04	5512 091-03	5512 091-03	5512 091-01	5512 091-01	5512 091-02
⑤ Circlip	5545 040-02	5545 040-07	5545 040-03	5545 040-08	5545 040-08	5545 040-08

Remark:
The centre screw ① and ② can be used to extend Walter Capto™ cutting heads with internal coolant supply.

Accessories

Coupling system size – Machine side	C4 / C5 / C6 / C8	C5	C6 / C8	C6	C8	C8
Coupling system size – Tool side	C3	C4	C4	C5	C5	C6
⑥ Extension key	5680 015-05 (SW 8,0)	5680 015-05 (SW 8,0)	5680 015-05 (SW 8,0)	5680 015-01 (SW 10,0)	5680 015-01 (SW 10,0)	5680 015-02 (SW 14,0)
⑦ Socket wrench for retaining nut	5680 065-13	5680 065-10	5680 065-10	5680 065-11	5680 065-11	5680 065-12

Assembly instructions for Walter NCT

1. Assembly device with accessories

2. Example tool combination

3. Clean the inside taper and the support face

4. Insert the V 530 insert collar into the V 510.10.050 flange

5. Insert the extension into the insert collar

6. Screw the extension and the end mill adaptor together by hand using the socket wrench

7. Tighten using a torque wrench

8. Insert the master into the associated flange

9. Screw the NC tool elements together with the master

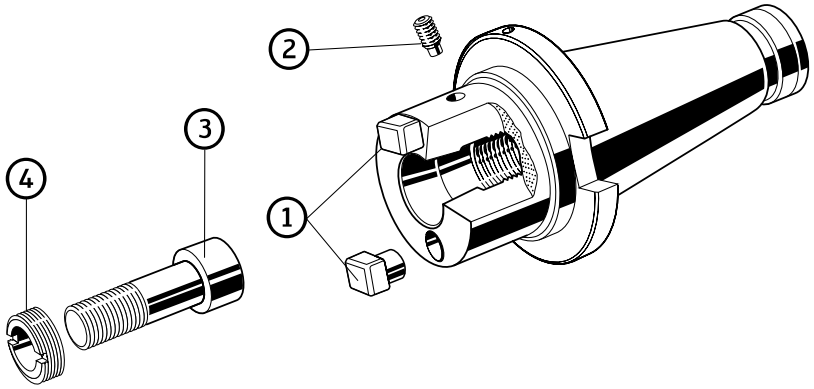
10. Tighten using a torque wrench

11. Insert the assembled tool adaptor into the steep taper

12. Install and tighten the tool

For tightening torques, see assembly parts and accessories for NCT master.

Assembly parts and accessories for Walter NCT master



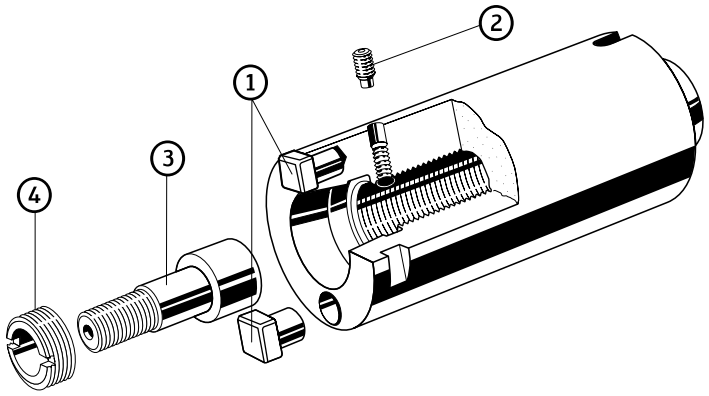
Assembly parts		d_{11} = 25 mm	d_{11} = 32 mm	d_{11} = 40 mm	d_{11} = 50 mm	d_{11} = 63 mm	d_{11} = 80 mm
① Drive pin		—	—	—	FS554	FS555 (B = 12) FS557 (B = 14)	FS556 (B = 14) FS558 (B = 16)
② Threaded plug DIN 914	for SK 40	M4 × 12	M4 × 10	M5 × 10	M5 × 10	M6 × 8	M6 × 16
	for SK 50	M4 × 12	M4 × 12	M5 × 12	M5 × 12	M6 × 16	M6 × 16
③ Screw	for SK 40	FS414	FS414	FS415	FS415	FS416	FS850
	for SK 50	FS414	FS414	FS415	FS415	FS416	FS417
④ Threaded ring		FS410	FS410	FS411	FS411	FS412	FS413

Accessories	d_{11} = 25 mm	d_{11} = 32 mm	d_{11} = 40 mm	d_{11} = 50 mm	d_{11} = 63 mm	d_{11} = 80 mm
Pipe wrench for threaded ring	FS738	FS738	FS739	FS739	FS740	FS741

Axial clamping

d_{11} mm	③ Thread	Wrench size	Torque wrench	Socket wrench	Tightening torque	Limit speed
25	M8	5	FS1385	FS402	18 Nm	20,000 rpm
32	M8	5	FS1385	FS402	18 Nm	30,000 rpm
40	M12	8	FS1386	FS403	80 Nm	30,000 rpm
50	M12	8	FS1386	FS403	80 Nm	30,000 rpm
63	M16	12	FS1386	FS404	150 Nm	30,000 rpm
80	M20	14	FS1386	FS405	200 Nm	30,000 rpm

Assembly parts and accessories for Walter NCT reducers and extensions



Assembly parts	d_{11} = 25 mm	d_{11} = 32 mm	d_{11} = 40 mm	d_{11} = 50 mm	d_{11} = 63 mm	d_{11} = 80 mm
① Drive pin	FK 311	FK 312	FK 313	FS554	FS555 (B = 12) FS557 (B = 14)	FS556 (B = 14) FS558 (B = 16)
Screw for drive pin	FS502	FS503	FS504	—	—	—
② Threaded plug DIN 914	M4 × 6	M4 × 8	M5 × 10	M5 × 12	M6 × 16	M6 × 16
③ Screw	FS414	FS414	FS415	FS415	FS416	FS417
④ Threaded ring	FS410	FS410	FS411	FS411	FS412	FS413

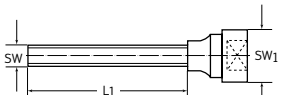
Accessories	d_{11} = 25 mm	d_{11} = 32 mm	d_{11} = 40 mm	d_{11} = 50 mm	d_{11} = 63 mm	d_{11} = 80 mm
Pipe wrench for threaded ring	FS738	FS738	FS739	FS739	FS740	FS741

Axial clamping

d_{11} mm	③ Thread	Wrench size	Torque wrench	Socket wrench	Tightening torque	Limit speed
25	M8	5	FS1385	FS402	18 Nm	20,000 rpm
32	M8	5	FS1385	FS402	18 Nm	30,000 rpm
40	M12	8	FS1386	FS403	80 Nm	30,000 rpm
50	M12	8	FS1386	FS403	80 Nm	30,000 rpm
63	M16	12	FS1386	FS404	150 Nm	30,000 rpm
80	M20	14	FS1386	FS405	200 Nm	30,000 rpm

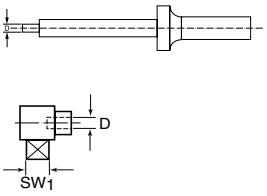
Accessories for NCT and ScrewFit

Socket wrench for NCT tools



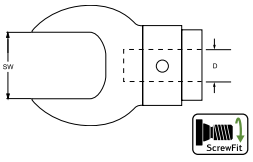
Designation	SW mm	SW_1 mm	L_1 mm	for NCT mm	for Walter helical milling cutters D_c mm
FS402	5	9,52	130	25-32	
FS403	8	12,7	130	40-50	
FS404	12	12,7	150	63	
FS405	14	12,7	150	80	
FS1043	8	12,7	329		63
FS1044	10	12,7	329		80

Torque wrench and head pieces



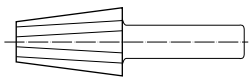
Designation	D mm	Torque range	SW_1 mm	
FS1384	16	2–25 Nm		
FS1385	16	10–100 Nm		
FS1386	16	20–200 Nm		
FS398	16		9,52	
FS399	16		12,7	

Fork heads for ScrewFit tools

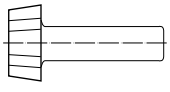


Designation	SW mm	for NCT	D mm	Tightening torque
FS1387	SW 8	T 9	16	6 Nm
FS1388	SW 12	T 14	16	25 Nm
FS1389	SW 14	T 18	16	50 Nm
FS1390	SW 17	T 22	16	80 Nm
FS1391	SW 21	T 28	16	150 Nm
FS1392	SW 30	T 36	16	200 Nm
FS1393	SW 36	T 45	22	200 Nm
FS1394	Adaptor for FS1393 (from D22 to D16)		22	200 Nm

Taper cleaner



Version A

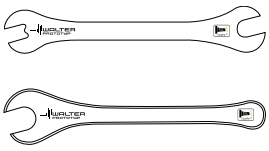


Version B for NCT

Designation	for tapered shank	Version	
V520.40.000	ISO 40	A	
V520.45.000	ISO 45	A	
V520.50.000	ISO 50	A	
V520.25.032	D_2 = 25 + 32	B	
V520.40.050	D_2 = 40 + 45	B	
V520.63.000	D_2 = 63	B	
V520.80.000	D_2 = 80	B	

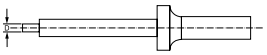
Accessories for ConeFit

Open-ended spanner



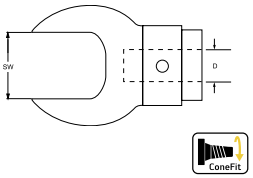
Designation	E	SW	Type
FS2124-E10	10	8 + 6	Twin head
FS2125-E12	12	10 + 8	Twin head
FS2126-E16	16	12 + 10	Twin head
FS2127-E20	20	16	Single head
FS2128-E25	25	20	Single head

Torque wrench



Designation	D	Torque range	
FS1384	16	2–25 Nm	
FS1385	16	10–100 Nm	

Fork heads for ConeFit tools



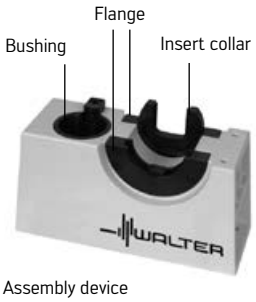
Designation	E	SW	D	Nm
FS2135-E10–R	10	8	16	12
FS2136-E12–R	12	10	16	15
FS2137-E16–R	16	12	16	30
FS2138-E20–R	20	16	16	50
FS2141-E25-R	25	20	16	65

ConeFit set – metric

Designation	E	Contents	Remarks
CONEFIT-SET-E12-MULTI	12	H3E82378-E12-12	Q_{max} roughing cutter
		H3E21138-E12-12	N50 finishing face milling cutter
		H3E21317-E12-12	N50 Tough Guys
		H3E58318-E12-12	90° chamfer milling cutter
		AK610.Z12.E12.022	Toolholder type A
		AK610.Z16.E12.025	Toolholder type C
		FS2125-E12	Open-ended spanner

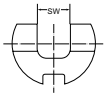
Assembly accessories for SK and HSK

Assembly device, flange, insert collars



Assembly device


Flange



Insert collar

Assembly device		Bushing	Flange		Insert collars for NCT		
Designation	Integrated bushing for	Designation	Designation	for	Insert collar designation	SW mm	D_1 mm
V 500.00.040	SK 40	V540.23.040	V 510.10.040	ISO 40 DIN 2080			
			V 510.23.040	ISO 40 DIN 69871 ANSI B5.50 and CAT			
			V 510.40.040	ISO 40 MAS BT			
V 500.00.050	SK 50	V540.23.050	V 510.10.050	ISO 50 DIN 2080 (Adaptor for NCT insert collars)	V 530.22.025 V 530.27.032 V 530.32.040 V 530.41.050 V 530.55.063 V 530.70.080	22 27 32 41 55 70	25 32 40 50 63 80
					Insert collars suitable for V 510.10.050 flange		
			V 510.23.050	ISO 50 DIN 69871 ANSI B5.50 and CAT			
			V 510.24.050	ISO 50 DIN 69871 Part 2 Form C			
			V 510.40.050	ISO 50 MAS BT			
V 500.00.HSK063	HSK 63	V540.HSK.063AC	V 510.HSK063AC	HSK 63 Forms A + C			
V 500.00.HSK100	HSK 100	V540.HSK.100AC	V 510.HSK100AC	HSK 100 Forms A + C			

The assembly device, flange and insert collars must be ordered separately. The assembly device is equipped with a suitable bushing.
Up to two flanges can be attached to the assembly device.

Assembly set

Designation	Consisting of	
FS 1407	Torque wrench	FS 1385 + 1386
	Socket wrench	FS 402–405
	Taper cleaner	All V 520, version B
	Insert collars	All V 530
	Torx inserts	FS 806–808
	Wooden box	
FS 1395	Torque wrench	FS 1384 – FS 1386
	Fork heads	FS 1387 – FS 1393
	Adaptor	FS 1394
	Wooden box	


NCT assembly set

ScrewFit assembly set

Synchronous machining

To reduce process times in threading operations, manufacturers are increasingly favouring higher rotational speeds and cutting speeds (HSC). Synchronous machining is recommended for high cutting speeds in particular.

Walter Prototyp offers **Synchrospeed** tools which have been optimised specifically for this process variant.
The key characteristics of these tools are their extremely high clearance, their extra short thread section and their sharp cutting edges.

While Synchrospeed threading tools have been developed exclusively for synchronous application conditions, Eco threading tools can be used for both rigid and conventional tapping.

Synchronous tapping requires a machine that can synchronise the rotary motion of the main spindle with the feed motion. This is usually a standard feature on today's machining centres.

Synchronous taps are compatible with conventional Weldon chucks as well as collet chucks (with square drive if possible). Both clamping devices have the disadvantage of being unable to compensate for the axial forces that are generated.

A better alternative is the synchronous tapping adaptor with minimum compensation. The synchronous tapping adaptor is a tapping chuck for machining centres with synchronous control. It guarantees a precisely defined minimum compensation and is matched to the geometry of Synchrospeed tools.

Synchronous tapping adaptor

The special features of the synchronous tapping adaptor

Unlike all other known tapping chucks, the synchronous tapping adaptor is based on a precision-machined flexor with high spring rate, which compensates both radially and axially for microscopic changes in position. The patented microcompensator is made from a special alloy originally developed for NASA. Conventional synchronous chucks use plastic parts for this purpose, but these lose their flexibility over time, at which point they are no longer able to provide microcompensation.

The synchronous tapping adaptor helps to considerably reduce the pressure forces that act on the flanks of the tap. This results in:
- Improved surface quality on the flanks of the cut threads
- Greater process reliability thanks to the reduced risk of breakage, particularly for small dimensions
- Longer threading tool life due to less friction
- Maximum utilisation of machine power

Flexor with minimum compensation


Accure·tec

Application information:
Accure·tec® A3000 – Vibration-damped boring bars/adaptors for turning

1. Assembly recommendations

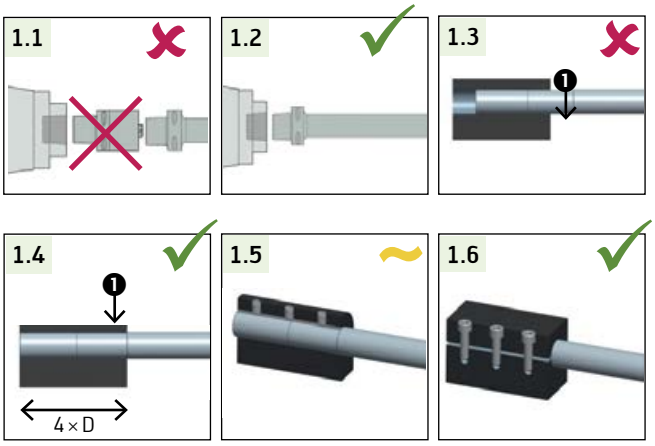
The Accure·tec® vibration-damped boring bars are instantly ready for use: The built-in damping system is preset to provide the best results. The boring bars must be clamped directly onto the machine without any extensions or adaptor sleeves (see 1.1 and 1.2).

Additional recommendations are applicable when using plain cylindrical adaptors:

– Optimal clamping is achieved when clamping the boring bar directly into the lathe's machine tool adaptor or using a split adaptor (see 1.6) with 4 × D clamping length. Example: Clamp the boring bar diameter of 40 mm with a clamping length of 160 mm.

– Marking ❶ (see 1.3 and 1.4) indicates the divide between the clamping area and usable length. This marking has to be aligned such that it is flush with the face of the machine tool adaptor.

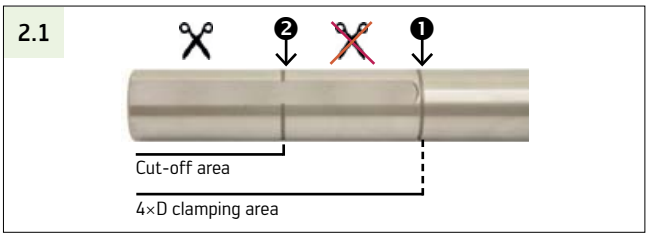
– As an alternative (though this is not ideal), the 6 × D and 8 × D plain cylindrical adaptors feature a clamping surface in the clamping length range suitable for clamping with clamping screws (see 1.5). 10 × D boring bars do not feature this clamping surface and can achieve maximum stability only if clamped using a split adaptor (see 1.6).



2. Shortening plain cylindrical adaptors

Optimal clamping is achieved using the Accure·tec® boring bars as delivered. If necessary, the adaptor can be shortened within the cut-off area between the end of the boring bar and the first marking ❷.

Take care: Shortening the boring bars will also remove the coolant connection thread.



3 . Fitting and removing QuadFit exchangeable heads

Turning and boring heads are fitted on the Accure·tec® boring bars/adaptors using the QuadFit interface. The QuadFit interface allows quick and easy replacement of exchangeable heads, with perfect positioning and repeat accuracy.

Fitting:
Clamp the Accure·tec® boring bar to an assembly block or directly into the lathe tool adaptor.
– Ensure the tool-side and machine-side QuadFit interface is clean.
– Use the exchangeable head in a standard or overhead position (turned 180°).
– Tighten the union nut on the boring bar by hand.
(Tighten the union nut in the direction of the "locked padlock" symbol (see 3.1)).
– Tighten the nut with the appropriate wrench.

Remark:
Using a torque wrench is advisable, to comply with the recommended tightening torque. Torque wrenches are available as an accessory (see Table 3.2).

Removal:
– Loosen the union nut using a suitable wrench (do not use a torque wrench).
– Hold the exchangeable head and turn the nut manually until the head can be released. Turn the union nut in the direction of the "open padlock" symbol (see 3.1).

3.2. Tightening key/tightening torque

Connection size	Q25	Q32	Q40	Q50
Mounting wrench	SD9000-Q25	SD9000-Q32	SD9000-Q40	SD9000-Q50
Torque wrench	–	SD4000-Q32-25	SD4000-Q40-35	SD4000-Q50-55
Tightening torque	25 Nm	25 Nm	35 Nm	55 Nm

4. Speed limits for boring

Please make sure not to exceed the maximum speed of the vibration-damped boring bar/adaptor (see Table 4.1).

Remark:
Plain cylindrical adaptors are intended for static applications (turning) only. The specified maximum speed is not applicable.

4.1. Maximum speed in boring [rpm]*

Connection size	Length		
	6 × D	8 × D	10 × D
Q25	10000	8000	6000
Q32	10000	8000	6000
Q40	8000	6000	5000
Q50	6000	4000	2500

* The maximum speed can be lower, depending on the rigidity of the spindle.

5. Maximum temperature in use

Make sure that the Accure·tec® boring bar never exceeds the maximum temperature in use, as this would damage the damping system.

Maximum temperature in use = 80 °C/176 °F

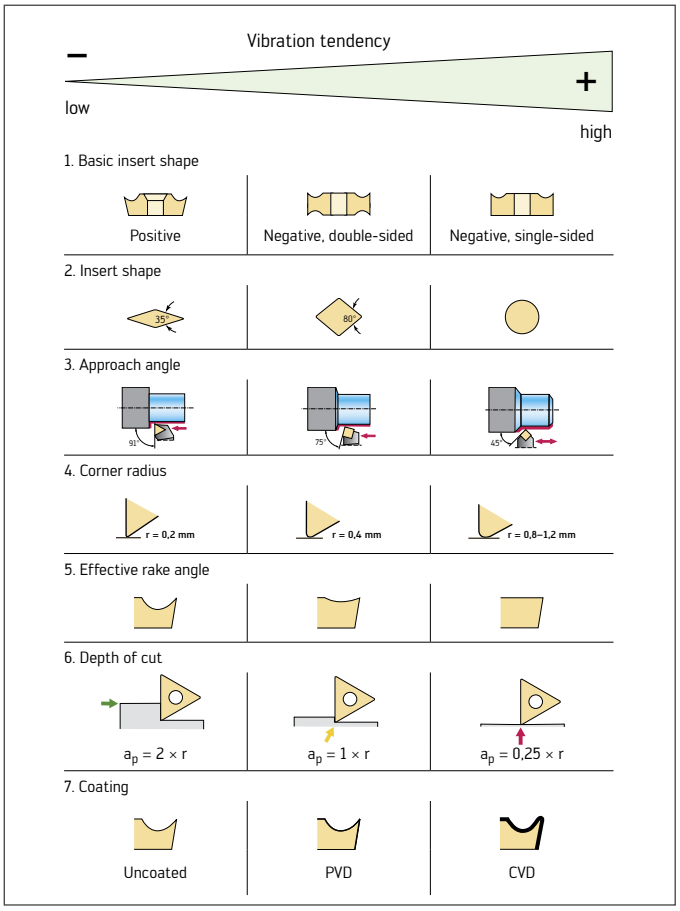
6. Recommended cutting data

Incorrect cutting data could cause vibration in the tooling system. This would influence the damper's efficiency and could damage the Accure·tec® boring bar's components. Therefore, make sure to set the cutting data so that no vibration occurs.

Cutting data selection order:
1. Cutting speed v_c and feed f: Select the average value for the indexable insert you are using (see Walter GPS tool navigation system).

2. Depth of cut a_p is the preferred parameter for optimisation. It can be increased within the recommended application range of the indexable insert provided that no vibration occurs.

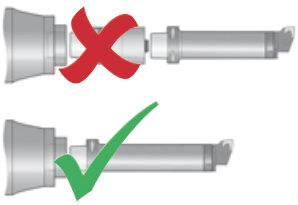
Take care:
– In contrast to the use of conventional boring bars, machining cannot be stabilised using additional radial forces (e.g. by increasing the feed).
– Particularly for small boring bars (< 32 mm dia.), be mindful of good chip control to avoid chips getting stuck in the bore.



Application information:
Accure·tec® A3001 – HSK-T and Walter Capto™ vibration-damped boring bars/adaptors with QuadFit Large interface

1. Installation instructions

1.1

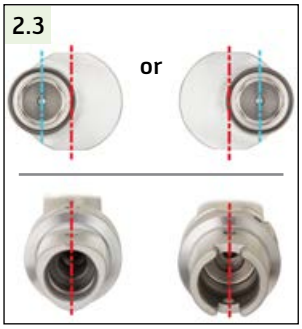


2. Installation of QuadFit Large intermediate adaptor

2.1

2.2

2.3



2.4

2.5

2.6

For QL size	4 × screw	Tightening torque Nm	ft Lb
QL60 / QL64	FS2609	11	8.2
QL80 / QL76	FS2610	16	11.8

3. Installation of QuadFit exchangeable head

3.1

3.2

3.3

For QuadFit size	Tightening torque Nm	ft Lb
Q50	55	40.6

4. Removal of QuadFit and QuadFit Large exchangeable heads

4.1

4.2

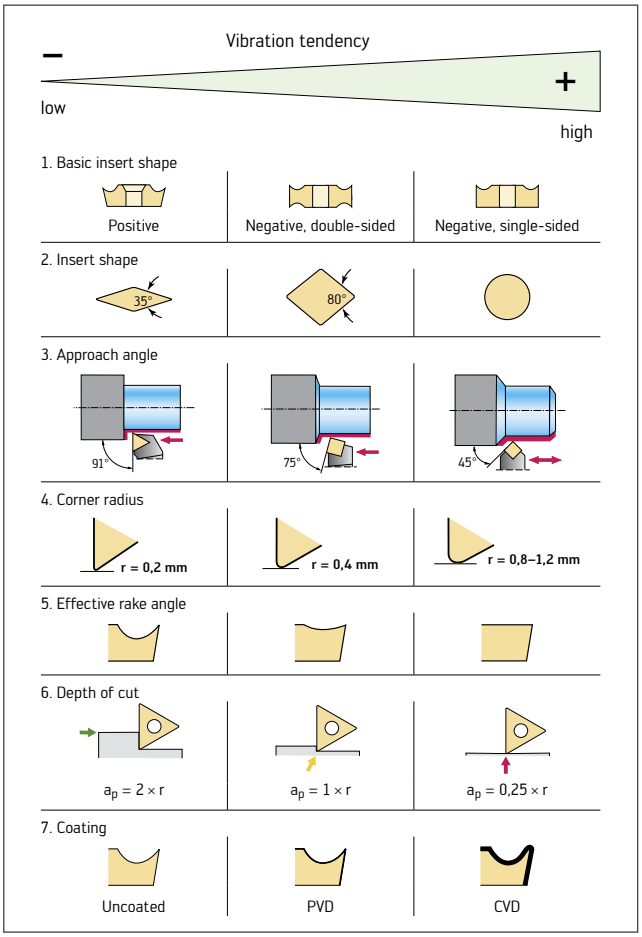
4.3

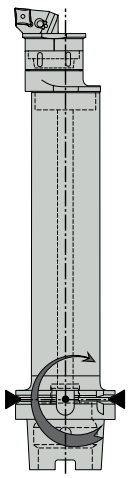
4.4

5. Max. permitted operating temperature, speed and load

5.1

6. Recommended cutting data and pull-out torques





For QL tool size	Pull-out torque* Nm	ft Lb
A3001-H100T-QL60-301	12	8,9
A3001-H100T-QL60-421	24	17,7
A3001-H100T-QL60-541	39	28,8
A3001-H100T-QL80-421	41	30,2
A3001-H100T-QL80-581	77	56,8
A3001-C6-QL60-301	13	9,6
A3001-C6-QL60-421	25	18,4
A3001-C8-QL60-301	13	9,6
A3001-C8-QL60-421	25	18,4
A3001-C8-QL60-541	40	29,5
A3001-C8-QL80-421	42	31
A3001-C8-QL80-581	79	58,3

* Calculated with a standard exchangeable head installed

7. Safety recommendations

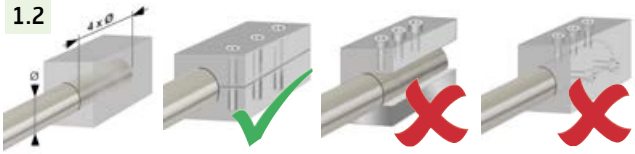
– Risk of injury due to tool cutting edges
– Protective gloves recommended
– Do not exceed the max. speed (see point 5.1)
– Observe the tool manufacturer's recommended cutting speeds

Application information:
Accure·tec® A3001 – Vibration-damped plain cylindrical adaptors with QuadFit Large interface

1. Installation instructions

1.1

1.2



2. Installation of QuadFit Large intermediate adaptor

2.1

2.2

2.3

2.4

2.5

For QL size	4 × screw	Tightening torque Nm	ft Lb
QL60 / QL64	FS2609	11	8.2
QL80 / QL76	FS2610	16	11.8
QL100	FS2611	23	16.9

3. Installation of QuadFit exchangeable head

3.1

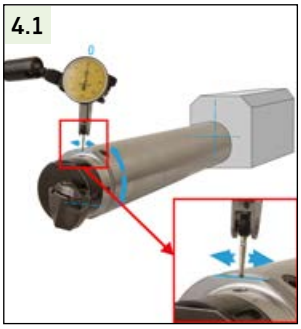
3.2

3.3

For QuadFit size	Tightening torque Nm	ft Lb
GL 50	55	40.6

4. Centre height adjustment

4.1



4.2

5. Removal of QuadFit (Q) and QuadFit Large (QL) exchangeable heads

5.1

5.2

5.3

5.4

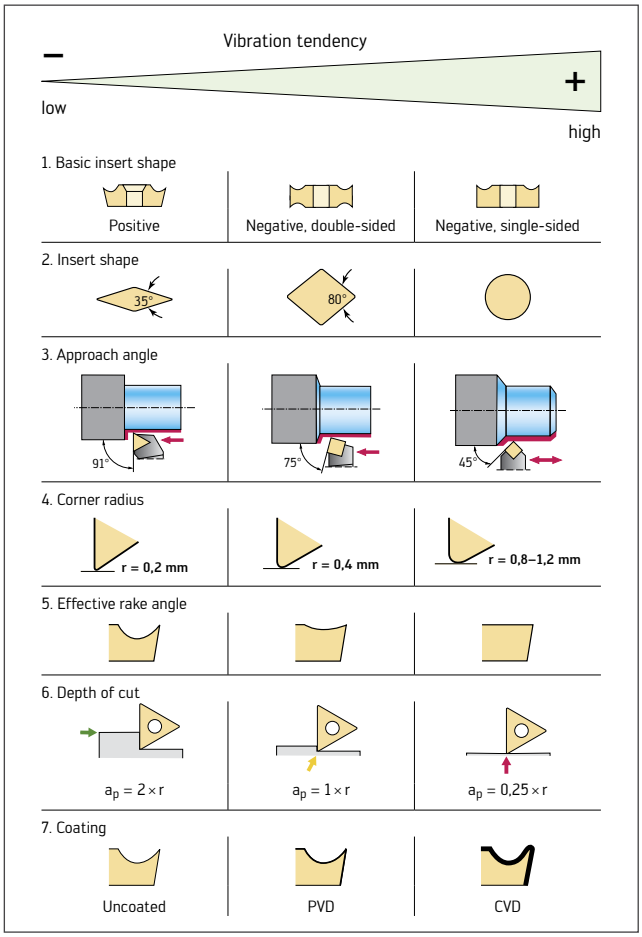
6. Max. permitted operating temperature and load

6.1

8. Safety recommendations

– Risk of injury due to tool cutting edges
– Protective gloves recommended
– Observe the tool manufacturer's recommended cutting speeds

7. Cutting edge and tool design



Turning system overview – Accure·tec® internal machining

Accure·tec® A3000
Vibration-damped boring bars/adaptors – QuadFit interface

Accure·tec® A3001
Vibration-damped boring bars/adaptors – QuadFit Large interface

A3000…

A3000-C…

A3000-HSK-T…

A3001…

A3001-C…

A3001-HSK-T…

QuadFit Large intermediate adaptor

A2201…

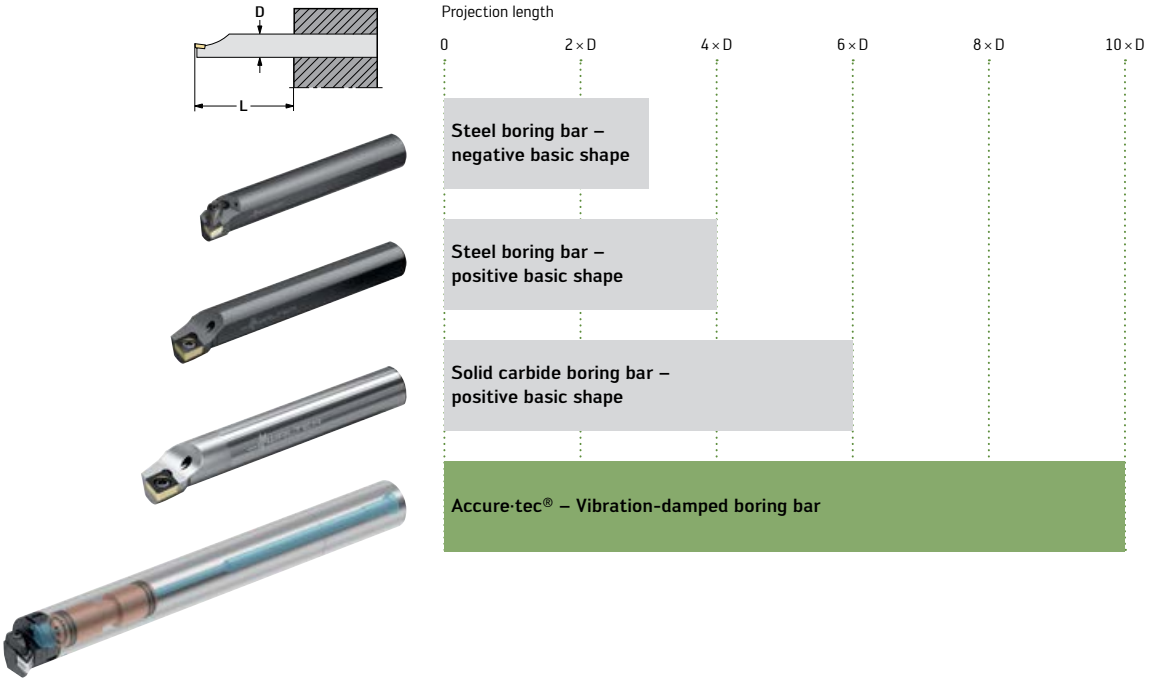
QuadFit quick-change heads

Internal machining Negative basic shape	Internal machining Positive basic shape	Grooving Internal machining	Threading Internal machining
			
e.g. Q40-DCLN…	e.g. Q40-SDXC…	G4221-Q…-P	T1820-Q…-P

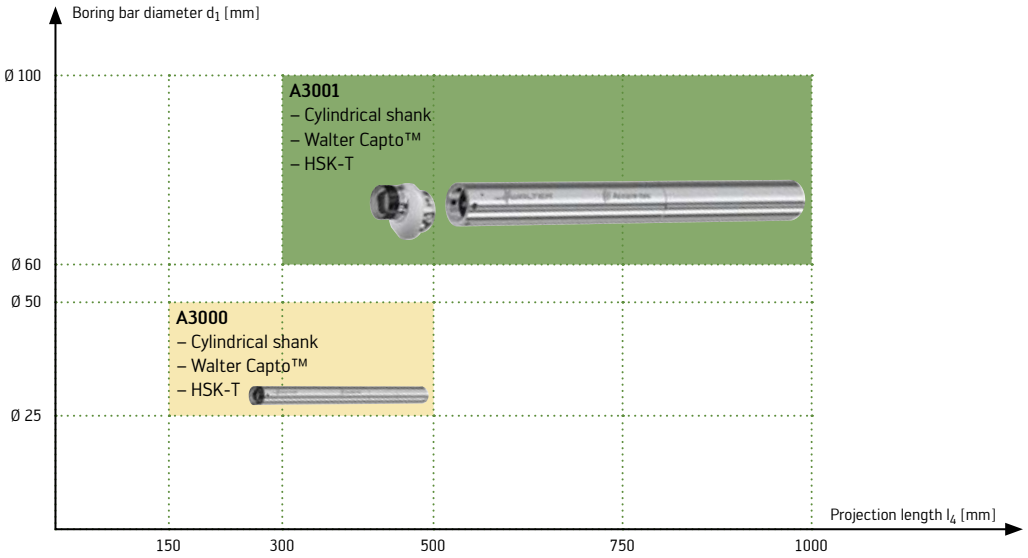
Overview – Internal machining: Projection lengths

Walter Turn boring bars in comparison to Accure·tec® vibration-damped boring bars

The projection lengths (L/D) given are general standard values and may be influenced by the basic shape of the indexable insert/approach angle, cutting parameters, stability of the adaptor/machine, etc.



Product range overview of Accure·tec® A3000/A3001 vibration-damped boring bars

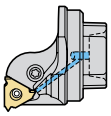


Application information:
Accure·tec® Thread turning with Walter NTS

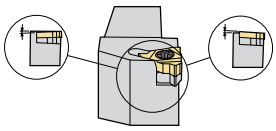
Thread turning – Shims

Shims fitted in the tool holder exchangeable head

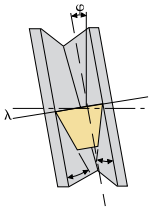
The table shows the shims that are fitted in the tool holder as standard and are used when cutting in the direction of the headstock.

Tool adaptor		Q…-T1820… QuadFit exchangeable head with precision cooling
Tool adaptor		 Internal thread
Type of indexable insert		Single-tooth indexable insert
Shim		
Indexable insert size	16	GXA 16-1
	22	NXA 22-1

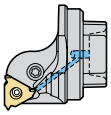
By replacing the shim, the inclination angle can be selected between +5 and -2. The same shims should be used for right-hand and left-hand threads. The centre height dimension always remains constant.



To achieve the best possible profile accuracy and even wear, the indexable insert inclination angle (λ) must be correspond to the thread inclination angle (φ) as closely as possible.

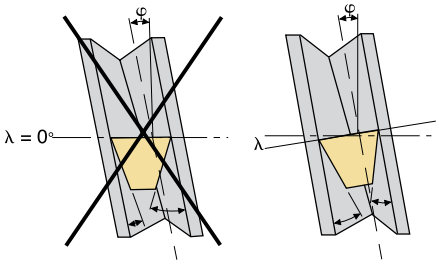


Selecting a shim

Tool adaptor		Q…-T1820… QuadFit exchangeable head with precision cooling	
Tool adaptor		 Internal thread	
Type of indexable insert		Single-tooth indexable insert	
Shim		 Direction of cut towards the headstock	 Direction of cut towards the tailstock
Indexable insert size	16	GXA16-0, -1, -2, -3, -4	GXA16-0, -99, -98
	22	NXA22-0, -1, -2, -3, -4	NXA22-0, -99, -98

Selecting a shim

Use the diagram above to select the right shim.
This shows you the last digit in the shim designation.
Example: GX16-1



Production method

Direction of cut towards the headstock = see right-hand triangle on the diagram
Direction of cut towards the tailstock = see left-hand triangle on the diagram
This diagram can be found in the "Turning" section of the Technical Compendium, page A202.

Vertical rows – Pitch

Single-start thread, pitch height (Ph) = pitch (P)
Multi-start thread, pitch height (Ph) = pitch (P) × number of starts

Application information:
Accure·tec® AC001 – Vibration-damped boring bars/adaptors for bore adaption milling cutters

1.–3. Securing the milling cutter

The Accure·tec® boring bars/adaptors for bore adaption milling cutters are designed with dynamic passive vibration damping to improve the dynamic rigidity of long-reach milling tools. They enable higher cutting parameters than conventional bore adaption milling cutter adaptors. For optimal use of Accure·tec® boring bars/adaptors, please ensure you follow the operating instructions below.

Remark:
Vibration-damped Accure·tec® boring bars/adaptors for bore adaption milling cutters are immediately ready for use. No adjustments are required.

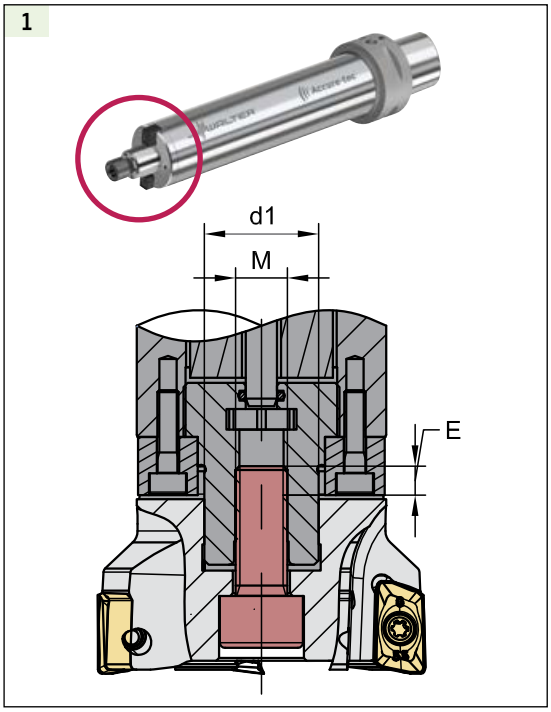
Please take the following steps for higher cutting parameters and conditions:

Axial tightening screw with suitable screw length
For optimum clamping, the screw (strength class 12.9) must project out of the milling cutter end face by at least the protrusion value E specified in Table 2.

Tightening screw torque: See Table 3.

Remark:
The Accure·tec® bore adaption milling cutter arbors with d_1 = dia. 40 mm feature one central screw and four threaded holes for securing the milling cutter using four screws. When mounting the milling cutter, four suitable fastening screws should be used. These can vary depending on the milling cutter type.

1



2 Screw protrusion value (E)

	Ø mm				
d_1	16	22	27	32	40
M	8 mm	10 mm	12 mm	16 mm	20 mm
E_{min}	3 mm	6 mm	8 mm	12 mm	15 mm
E_{max}	4 mm	8 mm	10 mm	16 mm	20 mm

3 Tightening torque

	Ø mm				
d_1	16	22	27	32	40
Nm	30 Nm	40 Nm	60 Nm	80 Nm	110 Nm

4. Recommended machining parameters

The specified maximum speeds (see Table 4 or label on the boring bar/adaptor) must not be exceeded.
Machining parameters that are too large can create strong vibration that can reduce the functionality of the damping element. That is why the machining parameters must always be set such that no vibration occurs.

Optimising cutting data, order:

1. **Cutting speed v_c and feed per tooth f_z:**
   Select the starting values depending on the milling cutter and indexable insert (see Walter GPS tool navigation system).

2. **Select the maximum depth of cut a_p and cutting width a_e values.**
   The width and depth of cut can be increased, bearing in mind the specified recommendations for milling cutters and indexable inserts, so long as no vibration occurs.

Important:
Contrary to the use of conventional shell end milling cutter arbors, machining cannot be stabilised by increasing the radial cutting force (e.g. increasing the feed).

4 Maximum speed

	Dia. mm				
d_1	16	22	27	32	40
n_{max} [rpm]	8.000	8.000	6.000	4.000	3.000

5. Maximum temperature in use

The Accure·tec® boring bar/adaptor must not exceed the maximum permitted temperature in use, as this would damage the damping system.

Maximum temperature in use = 80 °C/176 °F

Application information:
Accure·tec® AC060 – Vibration-damped boring bars/adaptors for ScrewFit exchangeable heads

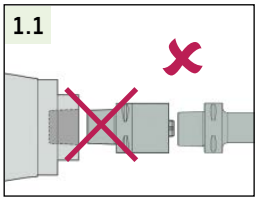
The Accure·tec® boring bars/adaptors for ScrewFit exchangeable heads feature dynamic passive vibration damping in order to increase the dynamic rigidity of milling tools with a long projection length. They enable higher cutting parameters than conventional boring bars/adaptors with ScrewFit exchangeable heads.
For optimal use of Accure·tec® boring bars/adaptors, please ensure you follow the operating instructions below.

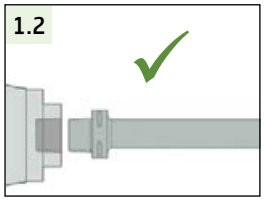
Remark: Vibration-damped Accure·tec® boring bars/adaptors for ScrewFit exchangeable heads are immediately ready for use. No adjustments are required.

1. Installation recommendations

The Accure·tec® AC060 boring bar/adaptor is a plug-and-play system. The integrated damping system is ready for immediate use and is set to provide optimal results.

We strongly recommend that you do not fit any extensions/reducers as this may lead to a loss of the damping effect.





2. Walter ScrewFit exchangeable head system

Due to the high cutting conditions that can be achieved, the ScrewFit exchangeable head must be reliably secured in the Accure·tec® boring bar/adaptor.

We advise you to use a torque wrench to tighten the ScrewFit exchangeable head to the recommended torque (see Table A below).

A Tightening torque

Connecting thread		T 9	T 14	T 18	T 22	T 28	T 36	T 45
Wrench size for assembly [width across flats]		8	12	14	17	21	30	36
Tightening torque	Nm	6	25	50	80	150	200	200
	ft Lb	4	19	37	59	111	148	148

3. Recommended machining parameters

Make sure that you never exceed the maximum speed of the boring bar/adaptor (specified on the boring bar/adaptor and in Table B below).

B Maximum speed (rpm*)

A Length of the boring bar/adaptor (mm)	≤ 185	> 185 ≤ 235	> 235 ≤ 285
Max. rpm	10.000	8.000	6.000

* Depending on the rigidity of the spindle, it may be necessary to reduce the maximum speed specified above. Improper cutting conditions may cause the complete tool to vibrate, which would prevent the damper from working efficiently and may potentially damage the components of the boring bar/adaptor. Adapt the cutting conditions for vibration-free operation.

4. Optimisation of the cutting conditions

To optimise the cutting conditions, take the following steps:

1. Cutting speed v_c and feed per tooth f_z:
Select the starting values depending on the milling cutter and indexable insert (see Walter General Catalogue or Walter GPS tool navigation system).

2. Select values for maximum depth of cut a_p and cutting width a_e.
The width and depth of cut can be increased, bearing in mind the specified recommendations for milling cutters and indexable inserts, so long as no vibration occurs.

Take care:
In contrast to the use of conventional long boring bars/adaptors, the machining process cannot be stabilised using additional radial forces (e.g. by increasing the feed).

5. Maximum temperature in use

The Accure·tec® boring bar/adaptor must not exceed the maximum permitted temperature in use, as this would damage the damping system.

Maximum temperature in use = 80 °C/176 °F

Tightening torques for thread cutting and tap shank dimensions

Standard values for torque adjustment of tapping chucks

Thread type	Dimension [mm]	Pitch [mm]	Torque setting value for thread cutting	Tap fracture torque	Torque setting value for thread forming
M, MF	1	≤ 0,25	0,03*	0,03	0,07*
M, MF	1,2	≤ 0,25	0,07*	0,07	0,12
M, MF	1,4	≤ 0,3	0,1*	0,1	0,16
M, MF	1,6	≤ 0,35	0,15*	0,15	0,25
M, MF	1,8	≤ 0,35	0,24*	0,24	0,3
M, MF	2	≤ 0,4	0,3*	0,3	0,4
M, MF	2,5	≤ 0,45	0,4	0,6	0,6
M, MF	3	≤ 0,5	0,6	1	1
M, MF	3,5	≤ 0,6	1,0	1,6	1,5
M, MF	4	≤ 0,7	1,6	2,3	2,4
M, MF	5	≤ 0,8	2,5	5	4
M, MF	6	≤ 1,0	5	8,1	8
M, MF	8	≤ 1,25	10	20	17
M, MF	10	≤ 1,5	18	41	30
M, MF	12	≤ 1,75	25	70	50
M, MF	14	≤ 2,0	45	130	75
M, MF	16	≤ 2,0	50	160	85
M, MF	18	≤ 2,5	80	260	150
M, MF	20	≤ 2,5	90	390	160
M, MF	22	≤ 2,5	100	450	170
M, MF	24	≤ 3,0	103	550	260
M, MF	27	≤ 3,0	160	850	290
M, MF	30	≤ 3,5	220	1100	430
M, MF	33	≤ 3,5	240	1600	470
M, MF	36	≤ 4,0	280	2300	650
M, MF	39	≤ 4,0	320		
M, MF	42	≤ 4,5	400		
M, MF	45	≤ 4,5	420		
M, MF	48	≤ 5,0	560		
M, MF	52	≤ 5,0	630		
M, MF	56	≤ 5,5	710		

When correction values are used, the torque setting can exceed the fracture torque of the tap.
Basis: Material 42CrMo4, 1000 N/mm^2, thread depth $1.5 \times D_N$
* Thread depth is not reached

Tap shank dimensions

Shank dimensions [mm]	DIN 371	DIN 374	DIN 376	Square bolt	Size
3,5 × 2,7	M3	M5	M5	FS779	1, 3, 4
4,5 × 3,4	M4	M6	M6	FS536	1, 3, 4
6,0 × 4,9	M5 / M6	M8	M8	FS538	1, 3, 4
7,0 × 5,5		M10	M10	FS539	1, 3, 4
8,0 × 6,2	M8			FS540	1, 3, 4
9,0 × 7,0		M12	M12	FS541	1, 3, 4
10,0 × 8,0	M10			FS542	1, 3, 4
11,0 × 9,0		M14	M14	FS543	1, 3, 4
12,0 × 9,0		M16	M16	FS544	1, 3, 4
14,0 × 11,0		M18	M18	FS545	1, 3, 4
16,0 × 12,0		M20	M20	FS546	1, 3, 4
18,0 × 14,5		M22 / M24	M22 / M24	FS547	1, 3, 4
20,0 × 16,0		M27	M27	FS548	1, 3, 4
22,0 × 18,0		M30	M30	FS549	1, 3, 4
25,0 × 20,0		M33	M33	FS550	1, 3, 4
18,0 × 14,5		M22 / M24	M22 / M24	FS780	5
20,0 × 16,0		M27	M27	FS781	5
22,0 × 18,0		M30	M30	FS782	5
25,0 × 20,0		M33	M33	FS783	5
28,0 × 22,0		M36	M36	FS784	5
32,0 × 24,0		M39 / M42	M39 / M42	FS785	5
36,0 × 29,0		M48	M48	FS786	5

Conversion for other materials

Material	Factor
Soft steel	0,7
Steel 1200 N/mm^2	1,2
Steel 1600 N/mm^2	1,4
VA	1,3
GG/GGG	0,6
Aluminium/copper	0,4
Titanium alloys	1,1
Nickel alloys	1,4

Tightening screws for face mill adaptors

When using the A150, A155 and AK155 face mill adaptors in combination with helical and ramping milling cutters with parallel bore and transverse keyway in accordance with DIN 138, the tightening screw of the adaptor must be replaced.

Designation	Tightening screw for adaptor*
F4138.B16.040.Z03.33	M8 × 40 (SW6)
F4138.B16.040.Z03.43	M8 × 50 (SW6)
F4138.B22.050.Z04.43	M10 × 45 (SW8)
F4138.B22.050.Z04.54	M10 × 55 (SW8)
F4138.B27.063.Z05.43	M12 × 45 (SW10)
F4138.B27.063.Z05.54	M12 × 55 (SW10)
F4138.B32.080.Z06.54	M16 × 65 (SW14)
F4138.B32.080.Z06.65	M16 × 70 (SW14)
F4238.B22.050.Z03.43	M10 × 45 (SW8)
F4238.B27.063.Z04.43	M12 × 55 (SW10)
F4238.B27.063.Z04.57	M12 × 70 (SW10)
F4238.B27.066.Z04.57	M12 × 70 (SW10)
F4238.B32.080.Z05.57	M16 × 70 (SW14)
F4238.B32.080.Z05.71	M16 × 90 (SW14)
F4238.B32.085.Z05.71	M16 × 90 (SW14)
F4338.B27.063.Z04.31	M12 × 40 (SW10)
F4338.B27.063.Z04.47	M12 × 50 (SW10)
F4338.B27.063.Z04.63	M12 × 65 (SW10)
F4338.B32.080.Z05.31	M16 × 35 (SW14)
F4338.B32.080.Z05.63	M16 × 70 (SW14)
F4338.B32.080.Z05.78	M16 × 90 (SW14)
F4338.B40.100.Z05.78	M20 × 80 (SW17)
F4338.B40.125.Z06.94	M20 × 90 (SW17)

Designation	Tightening screw for adaptor*
F5038.B16.040.Z03.32	M8 × 40 (SW6)
F5038.B16.040.Z03.40	M8 × 50 (SW6)
F5138.B22.040.Z02.34	M10 × 40 (SW8)
F5138.B22.040.Z02.45	M10 × 45 (SW8)
F5138.B22.050.Z03.34	M10 × 40 (SW8)
F5138.B22.050.Z03.45	M10 × 45 (SW8)
F5138.B27.063.Z04.45	M12 × 50 (SW10)
F5138.B27.063.Z04.56	M12 × 60 (SW10)
F5138.B32.080.Z05.56	M16 × 65 (SW14)
M2131-040-B16-03-15	M8 × 40 (SW6)
M2131-050-B22-04-15	M10 × 35 (SW8)
M2131-063-B22-05-15	M10 × 35 (SW8)
M2131-080-B27-05-15	M12 × 40 (SW10)
M2131-050-B22-03-20	M10 × 40 (SW8)
M2131-063-B22-04-20	M10 × 35 (SW8)
M2331-040-B16-03-15	M8 × 40 (SW6)
M2331-050-B22-02-15	M10 × 35 (SW8)
M2331-050-B22-03-15	M10 × 35 (SW8)
M2331-050-B27-04-15	M10 × 35 (SW8)
M2331-050-B22-02-20	M10 × 40 (SW8)
M2331-050-B22-03-20	M10 × 40 (SW8)
M3255-050-B22-04-46	M10 × 45 (SW8)
M3255-050-B22-05-46	M10 × 45 (SW8)
M3255-063-B27-05-46	M12 × 50 (SW10)
M3255-063-B27-06-46	M12 × 50 (SW10)
M3255-080-B32-05-58	M16 × 65 (SW14)
M3255-080-B32-06-58	M16 × 65 (SW14)
M4257-050-B22-02-47	M10 × 45 (SW8)
M4257-063-B27-03-54	M12 × 70 (SW10)
M4258-080-B32-03-67	M16 × 90 (SW14)
M4258-100-B40-04-77	M20 × 80 (SW17)

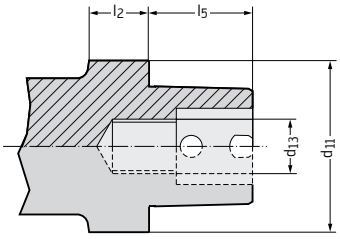
* ISO 4762 cap screw (12.9)

Recommended a_p [mm] limits for AK182 hydraulic expansion chuck

D_c [mm]		12 mm			16 mm		20 mm	
Adaptor in the hydraulic expansion chuck		AK182…12 direct	AK182…20 reduced	AK182…32 reduced	AK182…20 reduced	AK182…32 reduced	AK182…20 direct	AK182…32 reduced
P	ISO-P	10	15	30	10	25	10	20
M	ISO-M	10	13	30	10	30	10	23
K	ISO-K	12	18	40	12	30	10	28
N	Aluminium	30	40	40	40	40	16	40
S	Inconel	8	12	27	10	23	8	18

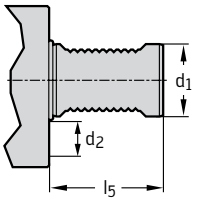
Clamping systems for tools and tool adaptors

Walter Capto™ tool adaptor ISO 26623



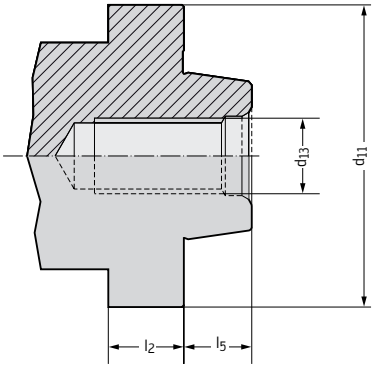
Type	d_{11} mm	l_2 mm	l_5 mm	d_{13}
Capto™ C3	32	15	19	M12 × 1,5
Capto™ C4	40	20	24	M14 × 1,5
Capto™ C5	50	20	30	M16 × 1,5
Capto™ C6	63	22	38	M20 × 2
Capto™ C8	80	30	48	M20 × 2

VDI tool adaptor DIN 69880



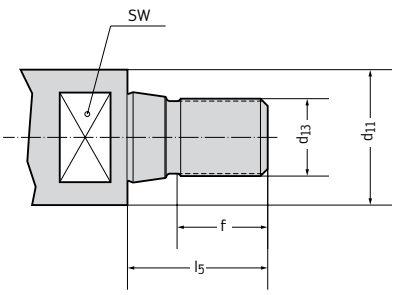
Type	d_1 mm	d_2 mm	l_5 mm
VDI 16	16	8	32
VDI 20	20	10	40
VDI 25	25	10	48
VDI 30	30	14	55
VDI 40	40	14	63
VDI 50	50	16	78

NCT tool adaptor



Type	d_{11} mm	d_{13}	l_5 mm	l_2 mm
25	24,85	M8	6,975	14
32	31,85	M8	6,975	14
40	39,85	M12	11,975	16
50	49,85	M12	11,975	16
63	62,85	M16	15,975	16
80	79,85	M20	17,975	18

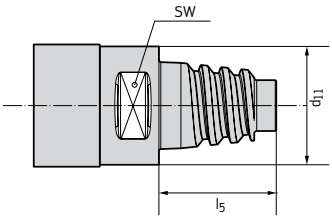
ScrewFit tool adaptor



Type	d_{11} mm	d_{13}	l_5 mm	f mm	SW mm
T09	9,7	M5	14	6	8
T14	14,5	M8	18	10	12
T18	18,5	M10	21	12	14
T22	22	M12	23	14	17
T28	28	M16	29	18	21
T36	36	M20	35	20	30
T45	45	M20	35	20	36

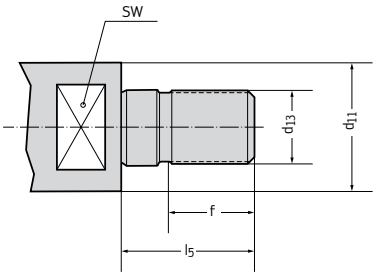
Clamping systems for tools and tool adaptors (continued)

ConeFit tool adaptor



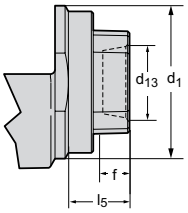
Type	d_{11} mm	l_5 mm	SW mm
E10	9,7	12,4	8
E12	11,7	14,5	10
E16	15,5	18,7	12
E20	19,3	21,3	16
E25	24,2	25,6	20

Cylindrical modular tool adaptor



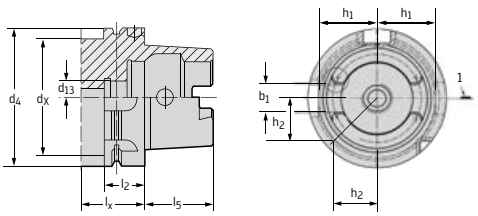
Type	d_{11} mm	d_{13}	l_5 mm	f mm	SW mm
TC06	9,7	M6	14,5	7,5	8
TC08	14,5	M8	17,5	9	12
TC10	18,5	M10	19,5	10,5	14
TC12	22	M12	22	13	17
TC16	28	M16	24	14	21

QuadFit tool adaptor



Type	d_1 mm	d_{13}	l_5 mm	f mm	
Q25	25	M23,25 × 0,75	10,5	5,5	
Q32	32	M30 × 1	12,3	6,5	
Q40	40	M37 × 1	16,5	9,5	
Q50	50	M46 × 1	19,5	11,5	

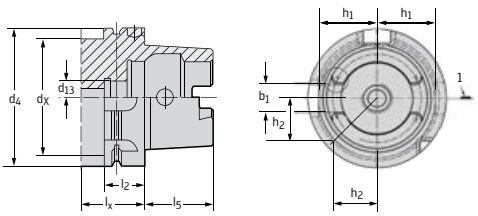
HSK tool adaptor ISO 12164-1, Form A



HSK	l_5 mm	d_4 mm	$d_{x\ max.}$ mm	d_{13}	l_2 mm	$l_{x\ min.}$ mm	h_1 −0,2 mm	h_2 −0,3 mm	b_1 ±0,04 mm
63	32	63	53	M18 × 1,0	26	42	26,5	20	12,54
100	50	100	85	M24 × 1,5	29	45	44	31,5	20,02

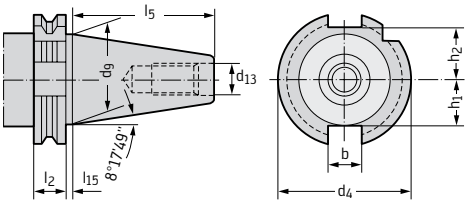
Clamping systems for tools and tool adaptors (continued)

HSK tool adaptor ISO 12164-3, Form T



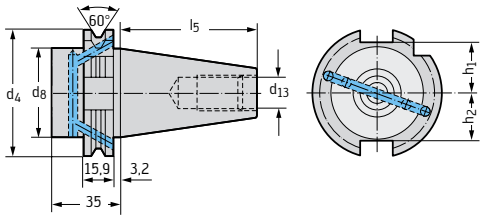
HSK	l_5 mm	d_4 mm	$d_{x\ max.}$ mm	d_{13}	l_2 mm	$l_{x\ min.}$ mm	h_1 –0,2 mm	h_2 –0,2 mm	b_1 ±0,04 mm	b_5 ±0,035 mm
63	32	63	62	M18 × 1,0	21	30	26,5	20	12,54	12,425
100	50	100	99	M24 × 1,5	24	34	44	31,5	20,02	19,91

SK tool adaptor DIN 69871 Part 1, Form A



SK	l_5 –0,3 mm	l_2 –0,1 mm	l_{15} ±0,2 mm	d_9 mm	d_{13}	d_4 –0,1 mm	b H_{12} mm	h_1 –0,4 mm	h_2 –0,4 mm
40	68,4	15,9	3,2	44,45	M16	63,55	16,1	22,8	25,0
50	101,75	15,9	3,2	69,85	M24	97,50	25,7	35,5	37,7

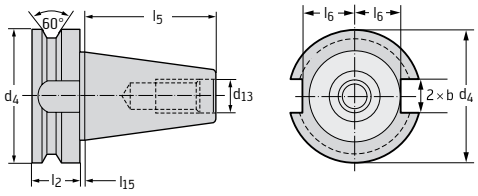
SK tool adaptor DIN 69871 Part 1, Form B



(with internal coolant supply; dimensions as for Form A)

SK	l_5 mm	d_4 mm	$d_{8\ max.}$ mm	d_{13}	h_2 mm	h_1 mm
40	68,40	63,55	50	M16	22,8	25,0
50	101,75	97,50	80	M24	35,5	37,7

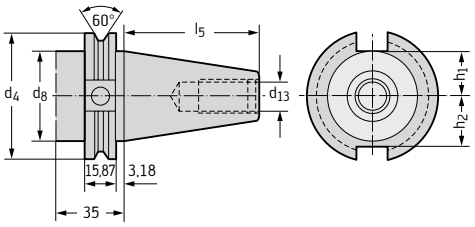
MAS BT tool adaptor DIN ISO 7388 Part 2



SK	l_5 mm	l_2 mm	l_{15} mm	d_9 mm	d_{13}	d_4 mm	b mm	h_1 mm	h_2 mm
40	65,4	25	2	44,45	M16	63	32,2	16,3	16,3
50	101,8	35	3	69,85	M24	100	51,4	35,4	35,4

Clamping systems for tools and tool adaptors (continued)

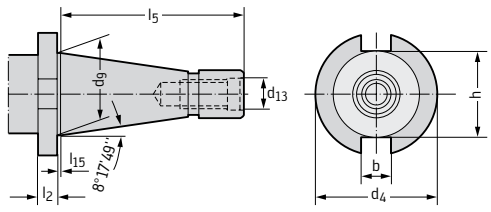
CAT tool adaptor ANSI B5.50 / CAT



SK	l_5 mm	d_4 mm	d_8 mm	d_{13}	h_2 mm	h_1 mm
40	68,25	63,5	44,5	M16	22,6	25,0
50	101,6	98,4	70,0	M24	35,3	37,7

(ANSI / ASME B5.50 – 1985)

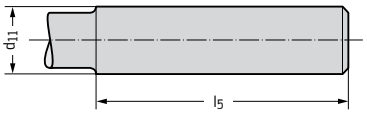
SK tool adaptor DIN 2080



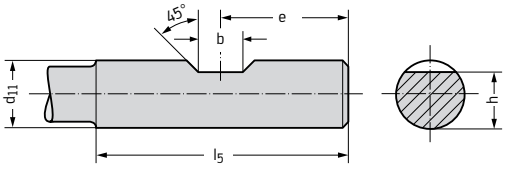
SK	d_9 mm	l_5 mm	l_{15} ±0,2 mm	d_{13}	d_4 –0,4 mm	l_2 ±0,15 mm	b H_{12} mm	h max. mm
40	44,45	93,4	1,6	M16	63	10	16,1	45
50	69,85	126,8	3,2	M24	97,5	12	25,7	70,6

Cylindrical shank DIN 6535 HA / DIN 6535 HB

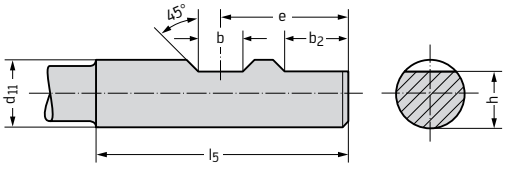
Form HA
for d_{11} = 6–20 mm



Form HB
for d_{11} = 6–20 mm



Form HB
for d_{11} = 25 mm

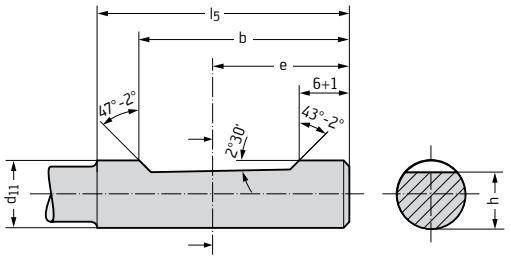


d_{11} h_6 mm	l_5 +2 mm	b +0,05 mm	e –1 mm	b_2 +1 mm	h h_{11} mm
6	36	4,2	18	–	5,1
8	36	5,5	18	–	6,9
10	40	7	20	–	8,5
12	45	8	22,5	–	10,4
14	45	8	22,5	–	12,7
16	48	10	24	–	14,2
18	48	10	24	–	16,2
20	50	11	25	–	18,2
25	56	12	32	17	23,0

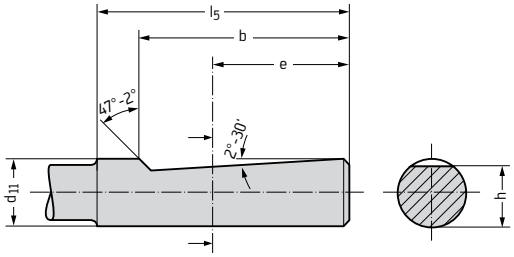
Clamping systems for tools and tool adaptors (continued)

Cylindrical shank DIN 6535 HE

for d_{11} = 6–20 mm



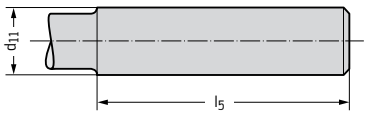
for d_{11} = 25 mm



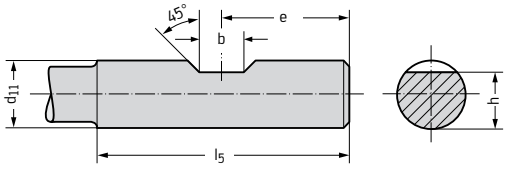
d_{11} h_6 mm	l_5 +2 mm	b –1 mm	e mm	h mm
6	36	25	18	5,1
8	36	25	18	6,9
10	40	28	20	8,5
12	45	33	22,5	10,4
14	45	33	22,5	12,7
16	48	36	24	14,2
18	48	36	24	16,2
20	50	38	25	18,2
25	56	44	32	23,0

Cylindrical shank DIN 1835 A / DIN 1835 B

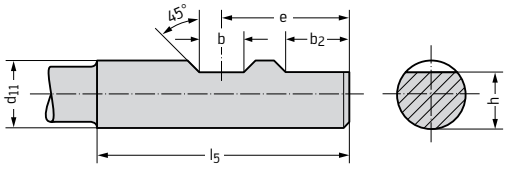
Form A
for d_{11} = 3–20 mm



Form B
for d_{11} = 3–20 mm



Form B
for d_{11} = 25 mm

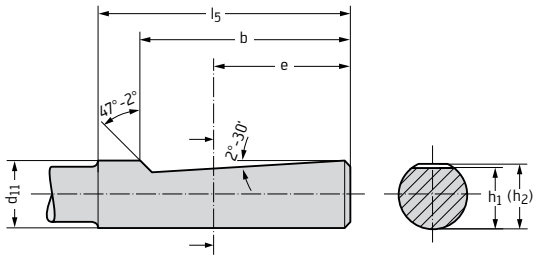


d_{11} h_6 mm	l_5 +2 mm	b +0,05 mm	e –1 mm	b_2 +1 mm	h h_{13} mm
3	28	–	–	–	–
4	28	–	–	–	–
5	28	–	–	–	–
6	36	4,2	18	–	4,8
8	36	5,5	18	–	6,6
10	40	7	20	–	8,4
12	45	8	22,5	–	10,4
16	48	10	24	–	14,2
20	50	11	25	–	18,2
25	56	12	32	17	23,0
32	60	14	36	19	30,0
40	70	14	40	19	38,0
50	80	18	45	23	47,8

Clamping systems for tools and tool adaptors (continued)

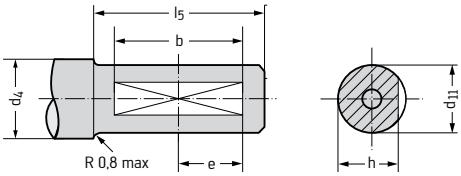
Cylindrical shank DIN 1835 E

Form E



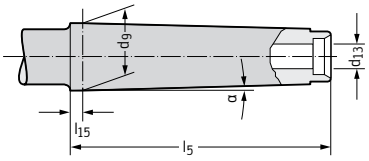
d_{11} h_6 mm	l_5 +2 mm	b −1 mm	e mm	h_1 mm	(h_2) h_{13} mm
6	36	25	18	5,4	4,8
8	36	25	18	7,2	6,6
10	40	28	20	9,1	8,4
12	45	33	22,5	11,2	10,4
16	48	36	24	15,0	14,2
20	50	38	25	19,1	18,2
25	56	44	32	24,1	23,0
32	60	48	35	31,2	30,0

Cylindrical shank ISO 9766:1990 (E)



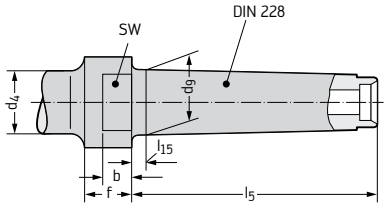
d_{11} h_6 mm	d_4 min. mm	h h_{13} mm	l_5 ±1 mm	e mm	b mm
20	25	18,2	50	14,5	29
25	31	23	56	17,5	35
32	38	30	60	19,5	39

Morse taper tool adaptor DIN 228 A



MK	d_9 mm	l_5 mm	l_{15} mm	α	d_{13}
0	9,045	53	3	1°29'27"	–
1	12,065	57	3,5	1°25'43"	M6
2	17,780	69	5	1°25'50"	M10
3	23,825	86	5	1°26'16"	M12
4	31,267	109	6,5	1°29'15"	M16
5	44,399	136	6,5	1°30'26"	M20

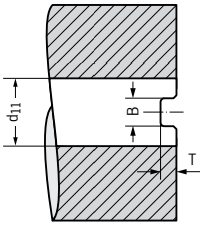
Morse taper tool adaptor DIN 2207



MK	d_9 mm	l_5 mm	l_{15} mm	d_4 mm	f mm	b mm	SW d_9 mm
3	23,825	86	5	36	18	12	24
4	31,267	109	6,5	43	23	15	32
5	44,399	136	6,5	60	28	18	45

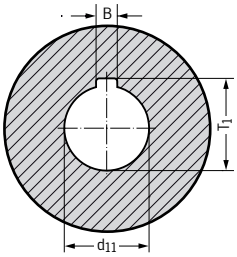
Clamping systems for tools and tool adaptors (continued)

Bore with transverse keyway
DIN 138 – A 10



d_{11} H_{11} mm	B H_{11} mm	T H_{12} mm
16	8,4	5,6
22	10,4	6,3
27	12,4	7
32	14,4	8
40	16,4	9

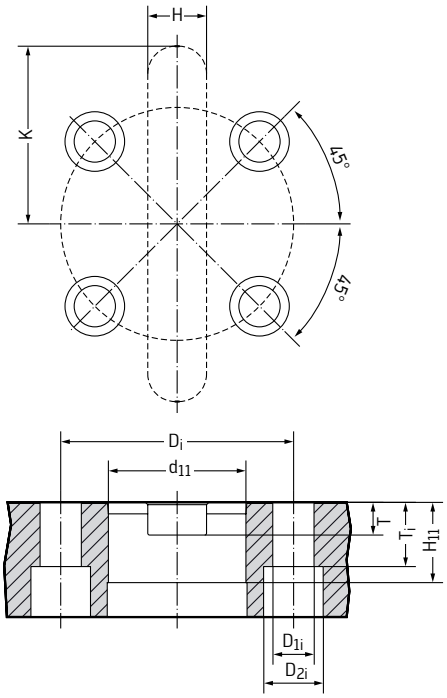
Bore with longitudinal keyway
DIN 138 – L 10

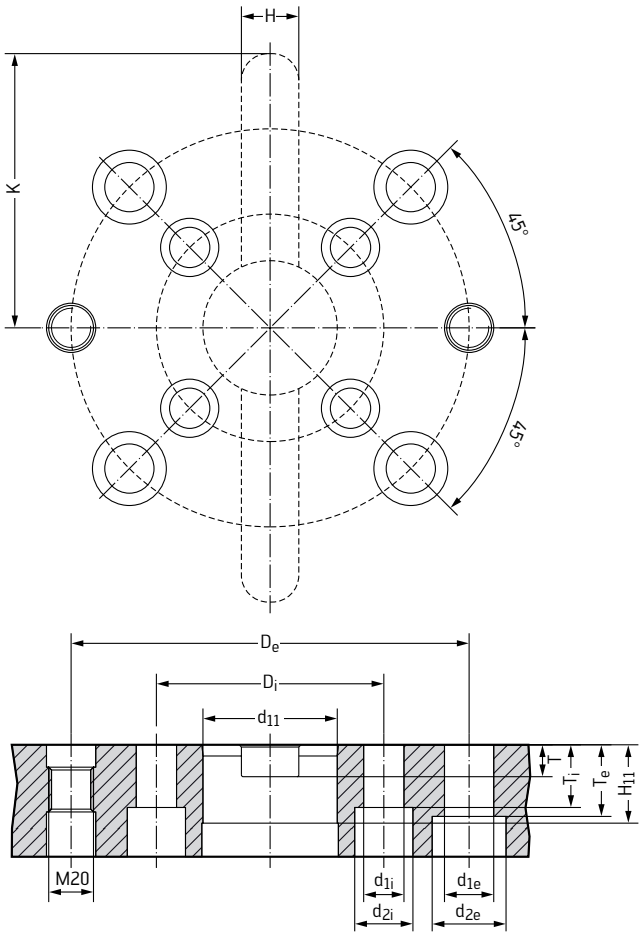


d_{11} H_7 mm	B mm	T_1 mm
16	4	17,7
22	6	24,1
27	7	29,8
32	8	34,8
40	10	43,5
50	12	53,6
60	14	64,2

Clamping systems for tools and tool adaptors (continued)

Bores with transverse keyway for spindle heads in accordance with DIN 2079 Form B	d_{11} mm	H_{11} mm	D_i mm	d_{1i} mm	d_{2i} mm	D_e mm	d_{1e} mm	d_{2e} mm	H mm	T mm	K mm	T_i mm	T_e mm
ISO 40/40 B	40	30	66,7	14	–	–	–	–	16,455	9,075	52,5	–	–
ISO 60/50 B	60	35	101,6	18	26	–	–	–	25,64	14,25	77,5	28	–
ISO 60/60-50 BB	60	35	101,6	18	26	177,8	22	33	25,64	14,25	122,5	28	32





ISO tolerances

Nominal dimension range [mm]	Tolerances* for external dimensions																	
	d_{11}	e_7	e_8	h_5	h_6	h_7	h8	h_9	h_{10}	h_{11}	h_{12}	p_7	js_{14}	js_{16}	k_6	k_{10}	k_{11}	k_{12}
> 3	−20 −80	−14 −24	−14 −28	0 −4	0 −6	0 −10	0 −14	0 −25	0 −40	0 −60	0 −100	+16 +6	+125 −125	+300 −300	+6 0	+40 0	+60 0	+100 0
> 3 ≤ 6	−30 −105	−20 −32	−20 −38	0 −5	0 −8	0 −12	0 −18	0 −30	0 −48	0 −75	0 −120	+24 +12	+150 −150	+375 −375	+9 +1	+48 0	+75 0	+120 0
> 6 ≤ 10	−40 −130	−25 −40	−25 −47	0 −6	0 −9	0 −15	0 −22	0 −36	0 −58	0 −90	0 −150	+30 +15	+180 −180	+450 −450	+10 +1	+58 0	+90 0	+150 0
> 10 ≤ 18	−50 −160	−32 −50	−32 −59	0 −8	0 −11	0 −18	0 −27	0 −43	0 −70	0 −110	0 −180	+36 +18	+215 −215	+550 −550	+12 +1	+70 0	+110 0	+180 0
> 18 ≤ 30	−65 −195	−40 −61	−40 −73	0 −9	0 −13	0 −21	0 −33	0 −52	0 −84	0 −130	0 −210	+43 +22	+260 −260	+650 −650	+15 +2	+84 0	+130 0	+210 0
> 30 ≤ 50	−80 −240	−60 −75	−50 −89	0 −11	0 −16	0 −25	0 −39	0 −62	0 −100	0 −160	0 −250	+51 +26	+310 −310	+800 −800	+18 +2	+100 0	+160 0	+250 0
> 50 ≤ 80	−100 −290	−80 −90	−60 −106	0 −13	0 −19	0 −30	0 −46	0 −74	0 −120	0 −190	0 −300	+62 +32	+370 −370	+950 −950	+21 +2	+120 0	+190 0	+300 0
> 80 ≤ 120	−120 −340	−72 −107	−72 −126	0 −15	0 −22	0 −35	0 −54	0 −87	0 −140	0 −220	0 −350	+72 +37	+435 −435	+1100 −1100	+25 +3	+140 0	+220 0	+350 0
> 120 ≤ 180	−145 −395	−86 −125	−85 −148	0 −18	0 −25	0 −40	0 −63	0 −100	0 −160	0 −250	0 −400	+83 +43	+500 −500	+1250 −1250	+28 +3	+160 0	+250 0	+400 0
> 180 ≤ 250	−170 −460	−100 −148	−100 −172	0 −20	0 −29	0 −46	0 −72	0 −115	0 −185	0 −290	0 −460	+96 +50	+575 −575	+1450 −1450	+33 +4	+185 0	+290 0	+460 0
> 250 ≤ 315		−110 −162																
> 315 ≤ 400		−125 −182																
> 400 ≤ 500		−135 −198																

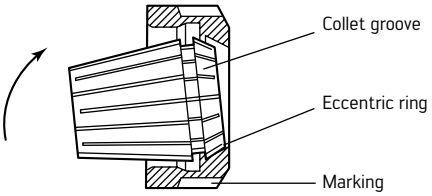
Nominal dimension range [mm]	Tolerances* for external dimensions
	z_9
> 3	+51 +26
> 3 ≤ 6	+65 +35
> 6 ≤ 10	+78 +42
> 10 ≤ 14	+93 +50
> 14 ≤ 18	+103 +60
> 18 ≤ 24	+125 +73
> 24 ≤ 30	+140 +88
> 30 ≤ 40	+174 +112
> 40 ≤ 50	+196 +136
> 50 ≤ 65	+246 +172
> 65 ≤ 80	+284 +210
> 80 ≤ 100	+345 +258
> 100 ≤ 120	+397 +310
> 120 ≤ 140	+465 +365
> 140 ≤ 160	+515 +415
> 160 ≤ 180	+565 +465
> 180 ≤ 200	+635 +520

Nominal dimension range [mm]	Tolerances* for internal dimensions			
	H_6	H_7	H_{11}	H_{12}
> 3	+6 0	+10 0	+60 0	+0,10 0
> 3 ≤ 6	+8 0	+12 0	+75 0	+0,12 0
> 6 ≤ 10	+9 0	+15 0	+90 0	+0,15 0
> 10 ≤ 18	+11 0	+18 0	+110 0	+0,18 0
> 18 ≤ 30	+13 0	+21 0	+130 0	+0,21 0
> 30 ≤ 50	+16 0	+25 0	+160 0	+0,25 0
> 50 ≤ 80	+19 0	+30 0	+190 0	+0,30 0
> 80 ≤ 120	+22 0	+35 0	+220 0	+0,35 0
> 120 ≤ 180	+25 0	+40 0	+250 0	+0,40 0
> 180 ≤ 250	+29 0	+46 0	+290 0	+0,46 0

* Tolerances in µm in accordance with DIN ISO 286

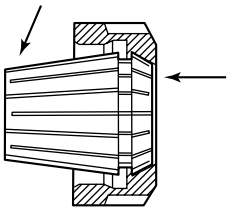
Assembly instruction for collet chucks with ER collets (C330, C340) and sealing discs

Fitting the collet chuck



Fitting

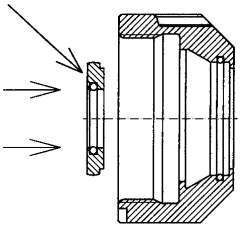
1. Fit the collet groove into the eccentric ring of the clamping nut at the marked point.
2. Tilt the collet in the opposite direction until you hear it click into place.
3. Insert the tool.
4. Screw the clamping nut onto the toolholder and tighten it.



Removal

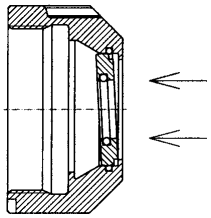
After unscrewing from the toolholder, simultaneously press down on the front and end of the collet.

Fitting the sealing discs



Fitting

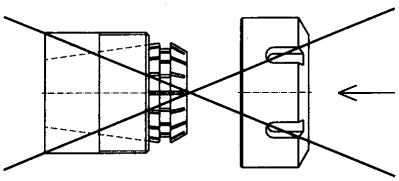
1. Insert the sealing disc into the nut so that the marking is at the rear.
2. Insert the sealing disc and press it until you hear a click.
3. If correctly fitted, the sealing disc is flush with the front of the nut.



Removal

Press the disc from the outside until it is ejected.

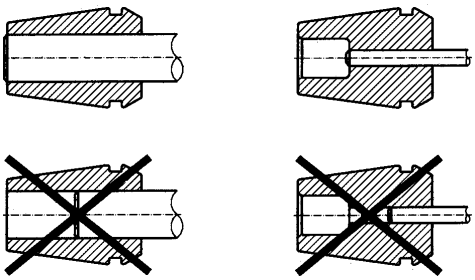
Please note



a. The collet must be engaged in the clamping nut during assembly.

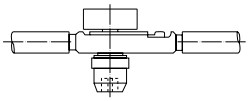
b. Never clamp oversized shanks.
Use the next-largest collet in each case.
E.g. tool shank dia. = 14.3 mm
Collet dia. 15–14 mm

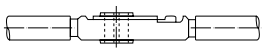
c. Where possible, clamp the tool shank along the whole length of the collet (min. $^{2}/_{3}$ of the collet length).

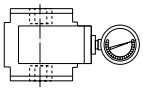


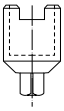
Torque setting tools for A331 quick-change collet

Setting tools

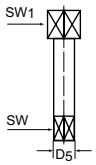




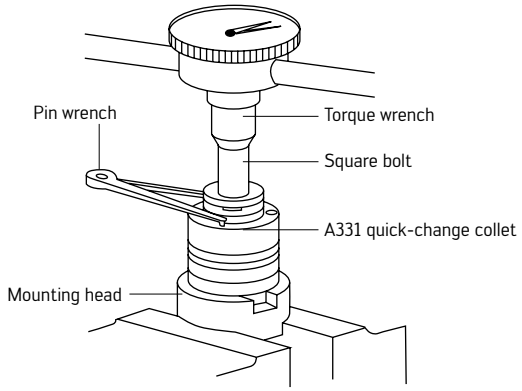




Setting tool	Designation	for collet size	Thread	Torque Nm	
Torque wrench	FS518	1	M3–M12	30	
	FS519	3	M8–M20	120	
	FS791	4	M14–M33	300	
Ratchet	FS792	5	M22–M48		
Torque setting device	FS793	5	M22–M48	1000	
Pin wrench	FS524	1			
	FS526	3			
	FS527	4			
	FS794	5			
Mounting head	FS520	1			
	FS522	3			
	FS523	4			
	FS795	5			

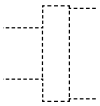
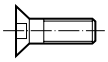


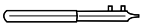
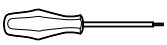
	Designation	for collet size	D_5 mm	SW_1 mm	SW mm
Square bolt	FS779	1, 3, 4	3,5	13	2,7
	FS536	1, 3, 4	4,5	13	3,4
	FS538	1, 3, 4	6,0	13	4,9
	FS539	1, 3, 4	7,0	13	5,5
	FS540	1, 3, 4	8,0	13	6,2
	FS541	1, 3, 4	9,0	13	7,0
	FS542	1, 3, 4	10,0	13	8,0
	FS543	1, 3, 4	11,0	13	9,0
	FS544	1, 3, 4	12,0	13	9,0
	FS545	1, 3, 4	14,0	13	11,0
	FS546	1, 3, 4	16,0	13	12,0
	FS547	1, 3, 4	18,0	13	14,5
	FS548	1, 3, 4	20,0	13	16,0
	FS549	1, 3, 4	22,0	13	18,0
	FS550	1, 3, 4	25,0	13	20,0
	FS780	5	18,0	25	14,5
	FS781	5	20,0	25	16,0
	FS782	5	22,0	25	18,0
	FS783	5	25,0	25	20,0
	FS784	5	28,0	25	22,0
	FS785	5	32,0	25	24,0
	FS786	5	36,0	25	29,0



For tightening torques, see “Technical information/Rotating boring bars/adaptors”

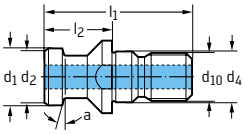
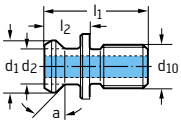
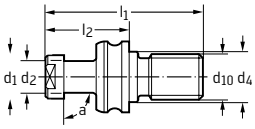
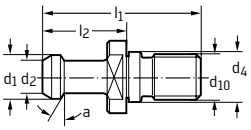
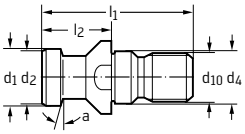
Assembly parts and accessories for F5055

Assembly parts	D_c mm	63		80		100	125	160
	d_1 mm	T36	16	T45	16	22	32	40
	Adaptor part		AA704-B16-G16-040-A		AA704-B16-G16-040-B	AA704-B22-G22-040-B	AA704-B27-G32-050-B	AA704-B40-G40-063-B
	Adaptor part	AA766-T36-G16-040		AA766-T45-G16-050				
	Clamping screw for body	FS2270 (SW 2,5) 4,0 NM					FS2271 (SW 3) 5,0 Nm	FS2272 (SW 5) 10,0 Nm

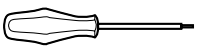
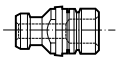
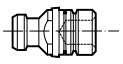
Accessories	D_c mm	63	80	100	125	160
	Mounting wrench for cutting insert	FS2249	FS1494			
	Screwdriver for clamping screw	ISO 2936-2,5 (SW 2,5)			ISO 2936-3 (SW 3)	ISO 2936-5 (SW 5)
	Torque T-handle	—			FS2041	
	Interchangeable blade for torque T-handle	—			FS2050 (SW 3)	FS2052 (SW 5)

Accessories for tool adaptors

Pull stud for steep taper

	Designation	for SK	d_1 mm	d_2 mm	d_4 mm	d_{10}	l_1 mm	l_2 mm	a
DIN 69872, Form AD 	C100.40.115	40	19	14	17	M16	54	26	15°
	C100.50.115	50	28	21	25	M24	74	34	15°
ANSI B5.50 	C100.40.345	40	18,8	12,8		M16	38	16,2	45°
	C100.50.345	50	28,9	19,5		M24	58	25,4	45°
CAT 	C100.40.390	40	15	10	17	M16	52	26,75	90°
	C100.50.390	50	23	17	25	M24	85	45,2	90°
MAS BT 	C100.40.430	40	15	10	17	M16	60	35	30°
	C100.40.445	40	15	10	17	M16	60	35	45°
	C100.50.430	50	23	17	25	M24	85	45	30°
	C100.50.445	50	23	17	25	M24	85	45	45°
DIN 69872, Form B 	C100.40.215	40	19	14	17	M16	54	26	15°
	C100.50.215	50	28	21	25	M24	74	34	15°

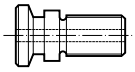
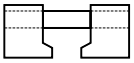
Accessories for boring bars/adaptors

	Designation	D_c = 20–32mm	D_c = 40–65mm	D_c = 80–125mm	D_c = 50mm	D_c = 63–80mm
	Screwdriver	FS230 (Torx 8)	FS229 (Torx 15)	FS228 (Torx 20)		
	Socket wrench for FS1032 + FS1033					FS1043 (SW8)
	Pull stud	C100.40.600 for DIN 2080 (SK 40)			C100.50.600 for DIN 2080 (SK 50)	
	Pull stud	C100.40.615 A for DIN 69871 Form AD (SK 40)			C100.50.615 A for DIN 69871 Form AD (SK 50)	
	Pull stud	C100.40.615 B for DIN 69871 Form B (SK 40)			C100.50.615 B for DIN 69871 Form B (SK 50)	

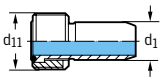
Accessories for tool adaptors

(continued)

Accessories for boring bars/adaptors

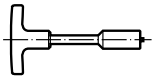
	Designation	Size	Description	Suitable for
	FS709 FS710 FS711 FS712	M12 × 18 (SW 16) M12 × 17 (SW 19) M16 × 24 (SW 22) M20 × 30 (SW 30)	Tensioning bolt	NCT radial adaptors
	FS930 FS931 FS932 FS933	M4 × 10 (Torx 15)	Clamping unit	NCT radial adaptors
	FS1079 FS1080	for SK 40 for SK 50	Intermediate bushing for pull stud	Tools with steep taper

Transfer units for HSK adaptors



Designation	d_{11}	$d_{1\ f8}$ mm	for HSK	
FS1064	M18 × 1	12	HSK63–A	
FS1065	M24 × 1,5	16	HSK100–A	

Socket wrench for installing transfer units



Designation	for HSK			
FS952	HSK63–A			
FS953	HSK100–A			

Designation key for stationary boring bars/adaptors

Example:

A	2	1	10	–	V	30	–	25	L	–	080	–	P
1	2	3	4	5	6	7		8	9		10		11

1 – Tool group

A	Boring bars/adaptors

2 – Generation

1	
2	

3 – Tool type

0	Monoblock
1	Shank adaptor

4 – Tool type

10	Parting blade adaptor, axial
11	Parting blade adaptor, radial
20	Square shank adaptor, axial
21	Square shank adaptor, radial

5 – 1. Delimiters

–	Metric
·	Inch

6 – Machine-side boring bar/adaptor type

V25	VDI25 d = 25 mm
V30	VDI30 d = 30 mm
V40	VDI40 d = 40 mm
V50	VDI50 d = 50 mm
BT45	BMT45A
BT55	BMT55A
BT65	BMT65A
DO	Doosan Puma 2100, 2600, 3100
NA	Nakamura

7 – Machine-side interface size

8 – Tool type

	Blade adaptor
26	Blade height in mm
32	Blade height in mm
	Shank adaptor
20	Shank height in mm
25	Shank height in mm

9 – Tool-side boring bar/adaptor type

R	Right
L	Left
N	Neutral

10 – Length of the boring bar/adaptor

	Blade adaptor
045	45 mm
080	80 mm
087	87 mm
	Shank adaptor
070	70 mm
085	85 mm
100	100 mm

11 – Version

P	Precision cooling

Designation key for NCT adaptors

Example:

A	K	200	M	.	2	.	50	.	030	.	63
1	2	3	4		5		6		7		8

1
Tool group
A Boring bars/adaptors

2
Coolant supply
K With internal coolant supply

3
Family

4
Modular system

5	
Spindle-side interface type	
0	NCT
1	Steep taper DIN 2080
2	Steep taper DIN 69871/1 AD
3	Steep taper ANSI/AS ME B 5.50 – 1985
4	MAS BT steep taper
5	Steep taper DIN 69871/1 AD + B
7	HSK-A DIN 69893/1
8	Walter Capto™

6
Spindle-side interface size

7
Projection length

8
Tool-side interface size

Designation key for ScrewFit adaptions

Example:

A	K	540	.	S	50	.	T	22	.	050	CO
1	2	3		4	5		6	7		8	9

1	
Tool group	
A	Boring bars/adaptors

2	
Coolant supply	
K	With internal coolant supply

3
Family

4			
Spindle-side interface			
H	HSK	**T**	ScrewFit
M	Morse taper	**BT**	MAS BT steep taper
N	NCT	**C**	Walter Capto™
S	Steep taper	**Z**	Cylindrical shank

5
Spindle-side interface size

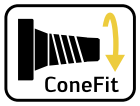
6	
Interface	
T	ScrewFit
TC	Cylindrical screw head

7
Tool-side interface size

8
Projection length

9	
Version/cutting edge orientation (optional)	
CS	Solid carbide version
CO	Cutting edge orientation

Designation key for ConeFit adaptors



Example:

A	K	641	.	H	6	3	.	E	10	.	0	4	9	.	C
1	2	3		4	5			6	7		8				9

1	2	3	4
Tool group	**Coolant supply**	**Family**	**Spindle-side interface**
A Boring bars/adaptors	**K** With internal coolant supply		**H** HSK **S** Steep taper **BT** MAS BT steep taper **C** Walter Capto™ **Z** Cylindrical shank

5	6	7
Spindle-side interface size	**Interface**	**Tool-side interface size**
	E ConeFit	

8	9
Projection length	**Version**
	C Solid carbide version

Designation key for HSK adaptors

Example:

A	K	155	.	7	.	063	.	050	.	16	HSK
1	2	3		4		5		6		7	

1	2	3	4
Tool group	**Generation**	**Family**	**Spindle-side interface**
A Boring bars/adaptors	**K** With internal coolant supply	**155** Bore adaption milling cutter **170** Weldon **171** Whistle Notch **182** Hydraulic expansion **300** Collet	**7** HSK-A DIN 69893/1

5	6	7
Spindle-side interface size	**Projection length**	**Tool-side interface size**

Designation key for SK adaptors

Example:

A	K	155	.	S	40	.	0	3	5	.	16
1	2	3		4	5		6				7

1	2	3	4
Tool group	**Coolant supply**	**Family**	**Spindle-side interface**
A Boring bars/adaptors	**K** With internal coolant supply	**155** Bore adaption milling cutter **170** Weldon **182** Hydraulic expansion **300** Collet	**BT** MAS BT steep taper **S** Steep taper

5	6	7
Spindle-side interface size	**Projection length**	**Tool-side interface size**

Designation key
for Accure·tec® boring bars/adaptors for turning

Example:

A	3	0	00	–	32	–	Q	32	–	288	–	
1	2	3	4	5	7		8	9		10		11

1 – Tool group

A	Boring bars/adaptors

2 – Generation

3	Vibration-damped with internal coolant
4	Vibration-damped without internal coolant

3 – Tool type

0	Monoblock

4 – Type

00	Modular interface without intermediate adaptor
01	Modular interface with intermediate adaptor

5 – 1. Delimiters

–	Metric
·	Inch

6 – Machine-side boring bar/adaptor type

25	Cylindrical, 25 mm
32	Cylindrical, 32 mm
40	Cylindrical, 40 mm
50	Cylindrical, 50 mm
60	Cylindrical, 60 mm
80	Cylindrical, 80 mm
100	Cylindrical, 100 mm
C4	Walter Capto™
C5	Walter Capto™
C6	Walter Capto™
C8	Walter Capto™
H63T	HSK-T
H100T	HSK-T
16	Cylindrical, 1"
20	Cylindrical, 1.25"
24	Cylindrical, 1.5"
32	Cylindrical, 2"
40	Cylindrical, 2.5"
48	Cylindrical, 3"
64	Cylindrical, 4"

7 – Machine-side interface size

8 – Tool-side version boring bar/adaptor type

Q	QuadFit
QL	QuadFit Large

9 – Tool-side version size

25	25 mm	Q
32	32 mm	
40	40 mm	
50	50 mm	
60	60 mm	QL
80	80 mm	
64	2.5"	
76	3"	
100	100 mm	

10 – Length of the shank adaptor

160	160 mm
224	224 mm
...	...

11 – Version

Optional

Designation key
for Accure·tec® intermediate adaptors for turning

Example:

A	2	2	01	–	QL	60	–	05	27	–	Q50	–	
1	2	3	4	5	6	7		8	9		10		11

1	2	3	4	5
Tool group	**Generation**	**Tool type**	**Type**	**1. Delimiters**
A Boring bars/adaptors	**2** Intermediate adaptor	**0** Monoblock **2** Intermediate adaptor	**01** Intermediate adaptor	**–** Metric **·** Inch

6	7	8	9	10
Machine-side boring bar/adaptor type	**Machine-side interface size**	**Centric offset**	**Length of the intermediate adaptor**	**Tool-side version boring/bar adaptor type/size**
QL60 Intermediate adaptor, 60 mm **QL64** Intermediate adaptor, 64 mm/ 2.5" **QL76** Intermediate adaptor, 76 mm/ 3" **QL80** Intermediate adaptor, 80 mm **QL100** Intermediate adaptor, 100 mm/ 4"		**05** Offset in mm **10** **15** **23** **07** **12** **13** **21**	**27** 27 mm **29** 29 mm	**Q50** QuadFit 50

11
Version
Optional

Designation key
for Accure·tec® boring bars/adaptors for milling

Example:

A	C	0	01	–	C	6	–	B	16	–	160	–	
1	2	3	4	5	6	7		8	9		10		11

1	2	3	4	5
Tool group	**Generation**	**Tool type**	**Type**	**1. Delimiters**
A Boring bars/adaptors	**C** Vibration-damped with internal coolant	**0** Monoblock	**01** Bore adaption with transverse keyway **60** ScrewFit adaption	**–** Metric **·** Inch

6	7	8	9	10
Machine-side boring bar/adaptor type	**Machine-side interface size**	**Tool-side version boring bar/adaptor type**	**Tool-side version size**	**Length of the boring bar/adaptor**
C6 Walter Capto™ 6 **H63 H100** HSK63 **S40 S50** Steep taper DIN 69871/1 AD + B **J40 J50** Steep taper MAS-BT **K40 K50** Steep taper ASME B 5.50		**B** Bore adaption **T** ScrewFit adaption	**16** 16 mm (B) **22** 22 mm (B) **27** 27 mm (B) **32** 32 mm (B) **40** 40 mm (B) **18** 18 mm (T) **22** 22 mm (T) **28** 28 mm (T)	**160** 160 mm **210** 210 mm **260** 260 mm **...** ...

11
Version
Optional

Designation key for rotating boring bars/adaptors

Example:

A	B	0	09	–	H	63	–	ER	40	–	080	–	BL
1	2	3	4	5	6	7		8	9		10		11

1 – Tool group

A	Boring bars/adaptors

2 – Generation

A	Without IC
B	With IC
C	Vibration damping + IC
D	Single-channel MQL
E	Dual-channel MQL

3 – Tool type

0	Monoblock adaptors
1	Shank adaptors
2	Blank
3	Boring bars/adaptors, modular
4	Shank adaptors, modular
5	Master, modular
6	Intermediate elements, modular
7	Intermediate elements

4 – Tool type

01	Bore adaptions
09	ER collet adaptors
17	Hydraulic expansion adaptors, universal
19	Hydraulic expansion adaptors, Pencil
25	Shrink-fit adaptors, universal
44	Weldon adaptors

5 – 1. Delimiters

–	Metric
·	Inch

6 – Machine-side boring bar/adaptor type

C	Walter Capto™
N	Walter NCT
H	HSK
S	SK
J	MAS-BT
K	CAT-V
W	Weldon adaptors

7 – Machine-side interface size

8 – Tool-side boring bar/adaptor type

B	Bore adaptions with transverse keyway
T	ScrewFit adaptions
P	Bore in shrink-fit or hydraulic expansion adaptors
W	Weldon adaptors
ER	ER collet adaptors

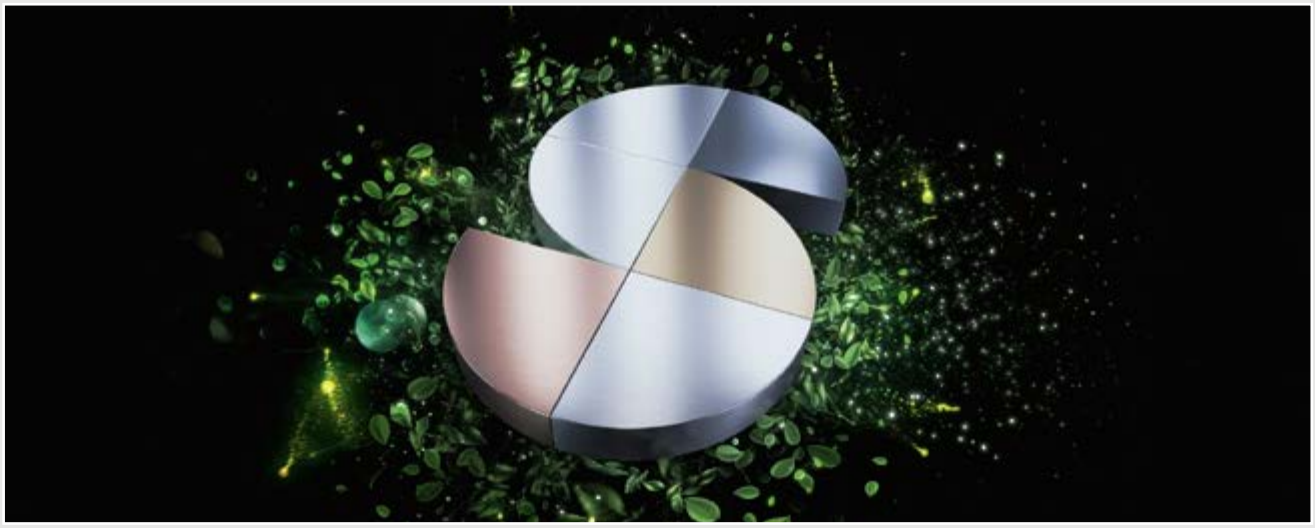
9 – Tool-side interface size

10 – Boring bar/adaptor length

080	80 mm
...	

11 – Version

BL	Balanced
CO	Cutting edge-oriented
A	Shank version
B	Shank version
C	Shank version



Sustainable products and services – certified and transparent

Walter is a company that takes responsibility for people and the environment. Sustainability is a central component of our corporate strategy. It pervades our products and business divisions and is reviewed and certified by independent third parties on a regular basis.

Proven to be produced to high standards

All processes, procedures, methods and instruments that we use are checked and certified by an independent body according to strict criteria. Occupational health and safety, quality assurance and environmentally friendly actions (for example through resource-saving, energy-efficient and CO_2-offset production) are examples of this. Our social commitment shows that Walter has a broader definition of responsibility.

Transparency throughout the entire process chain – for your peace of mind

The integrated management system at Walter includes the sustainable use of resources and production equipment as well as of people – our customers, partners and employees. So that you can count on all of our products meeting these requirements throughout the entire process chain, we apply our own benchmarks to our suppliers too.

Certification

The integrated management system at Walter includes certification in accordance with:

- ISO 9001 (Quality management)
- VDA 6.4 (Production equipment for the automotive industry)
- ISO 14001 (Environmental management)
- ISO 45001 (Occupational health and safety management)
- ISO 50001 (Energy management)

You can find more information on Walter certification here:

Occupational health and safety
Walter protects its employees against health hazards. To prevent accidents, we continuously review our processes and take proactive measures as a precaution.

Environmental and energy management
Environmental protection is an important company objective for Walter. We use energy efficiently and deploy practical methods to sustainably reduce the consumption of energy, water and resources.

Quality management
Walter is continuously improving its products and processes. We ensure our product quality using effective measures and procedures – and check it on a regular basis with our comprehensive quality management system.

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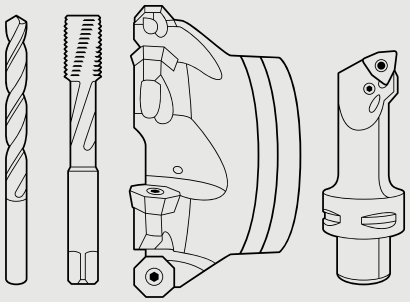

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