



TOOL TECHNOLOGIES

Grooving



Practically every rotationally symmetrical workpiece has been grooved in some shape or form. Straight, external, internal, and face grooving is often used to accommodate fastening elements such as retaining rings. Profiling (with or without chamfered edges) is frequently used to accommodate sealing rings.

It is not possible to list all grooving configurations here, but they all have one thing in common: they all require an **appropriate grooving tool** in form of an insert holder and an insert suitable for the corresponding type of grooving. We have designed and developed a wide range of tools which meet these requirements. Apart from catalogue listings suitable for meeting all common grooving standards, we can also provide a wide range of customised profiles fabricated from our stock of blanks and semis.

We have outlined some common grooving forms on pages 12 to 15 to make it more convenient for you to submit an enquiry. You are welcome to use the dimension tables on these pages to fill in your specific data and mail us these forms.

Insert geometries

We differentiate between **vertical** and **horizontal** inserts. Both variants are used for specific applications.

- **TNEX form, vertical:** triple-edged, cost-effective price per cut, first choice for external machining jobs. For available sizes see top of page 6.
- **LNEX form, vertical:** double-edged, very stable fitting configuration, twice the cutting depth of the TN design model, perfectly suitable for internal machining jobs due to its low height. For available sizes see bottom of page 6.
- **LAEX and LNEX forms, horizontal:** double-edged, perfectly suitable for face grooving or profiling jobs with chamfered edges due to its low height. For available sizes see page 10.
- **TCEX form, horizontal:** triple-edged, available in additional dimensions, e.g. for customised design models. For available sizes (specifically for relief groove forms in accordance with DIN 509) see page 11.

Holders and cartridges

We offer a wide range of holder variants from simple, round or square shank tools, tools with standardised interfaces such as HSK (hollow shank taper), UTS (KM) (cylindrical shank) and CAPTO tool holders to customised tool holding systems to meet special requirements of, for example, multi-spindle lathes.

To ensure that we can really meet all the requirements, we also offer **universal cartridges** (see pages 32 to 33). These cartridges have the following advantages:

- Inserts can be easily changed in case of space restrictions or inaccessible insert retaining screws, whereby the insert can be changed outside of the machine, while the machine can continue to run with a prepared cartridge and a new blade.
- Protects the (often expensive) tool holder in case of insert breakage (cartridge => wear part).
- Efficient double grooving with radially variable cartridges (suffix "E" e.g. "TNKB 1603 RE") in combination with an axially adjustable holder.
- TNKB and LNKB cartridges equipped with identical cartridge seats (can be replaced in holder). See page 38 for examples.

Enquiry => Offer!

Your enquiry: a quick and simple way to obtain our offer.

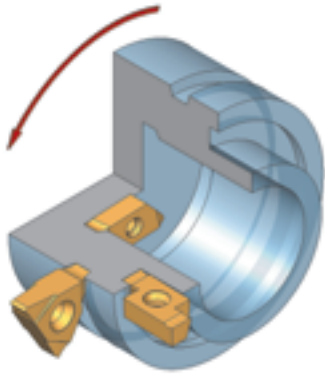
Send us your workpiece diagrams or an excerpt thereof with the following information:

- Marking of the area to be machined
- Drive side of machine
- Direction of rotation (for term definition see page 4)
- Workpiece material
- Area to be cut
- Cooling lubricant, Yes/No

You will promptly receive a non-binding proposal with our offer.

We are looking forward to your enquiry.

		page
Technical information		4-5
Inserts		
vertical	for straight grooving	6
	for circlip grooving	7
	for circlip grooving with chamfered edges	8-9
horizontal	for face grooving and profiling	10
	for relief grooves pursuant to DIN 509	11
custom designs	forms A1 to A4	12-13
	forms B1 to B3/DIN 509	14-15
Holders		
for external machining	right-hand version with direct insert seat	16-17
	left-hand version with direct insert seat	18-19
	right-hand version with cartridge seat	20-21
	left-hand version with cartridge seat	22-23
for internal machining	right-hand version with direct insert seat (vertical)	24
	right-hand version with cartridge seat (vertical)	25
	right-hand version with direct insert seat (horizontal)	26
	right-hand version with direct insert seat, full profile (horizontal)	27
for face machining	design with direct insert seat	28
	design with direct insert seat (full profile)	29
relief grooves as per DIN 509	for external and internal grooving	30
Order configuration for holders	K+G Factory Standard	31
Cartridges and incorporated parts	TNKB	32
	LNKB	33
Accessories and replacement parts		34-35
Examples of customised holders		36-37
Cartridge fitting examples		38
Quantity discounts and GTB		39



Definition of "direction of rotation"

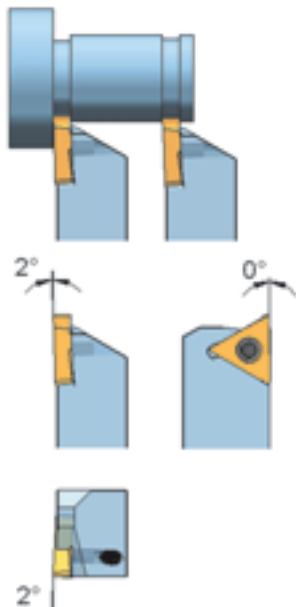
In order to eliminate the recurring uncertainty in determining the direction of rotation, we should not use "left-hand" or "right-hand" but clockwise and anti-clockwise direction as seen from the top of the drive side or workholder. In this way it does not matter whether the workpiece is chucked at the front, rear or upside down.

Please note:

The following examples are based on the direction of rotation as shown in the opposite diagram (anti-clockwise direction).

Definition of insert position in tool holder

(see also Page 31, Items 6a to 6c)



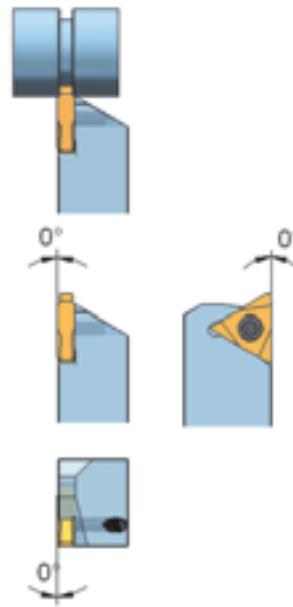
"ANA" external grooving

Insert fitting position in tool holder: "continuous face grooving".

Each at 2° axial tilt (work angle (χ)) and in cutting direction (tilt angle (γ)), with neutral angle, radial (tilt angle (λ)).

Advantage:

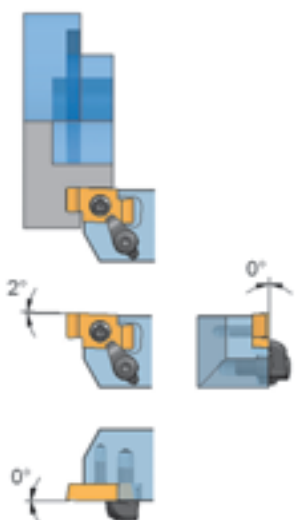
In this fitting position the insert is "released" on one side, and side clearance is not required.



"NNN" external grooving

Normal insert position for profiling.

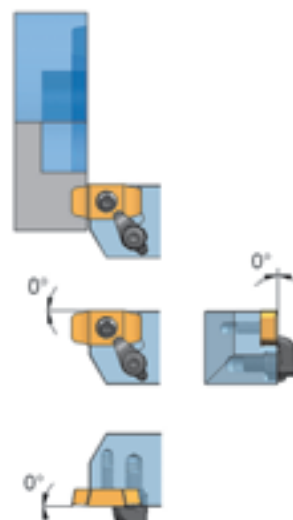
Insert is in neutral position on all sides.



"ANN" face grooving

Insert fitting position in tool holder: "continuous axial grooving".

With face grooving, the outer diameter of the groove determines the insert configuration. For this reason the work angle χ is released; the other clearance angles are integrated into the insert.



"NNN" face grooving

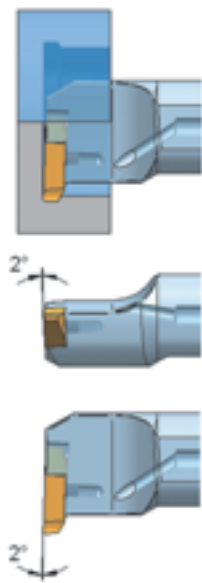
Normal insert fitting position for profiling.

With face grooving, the outer diameter of the groove determines the insert configuration.

The insert is in neutral position on all sides.

Technical information

Grooving inserts and holders



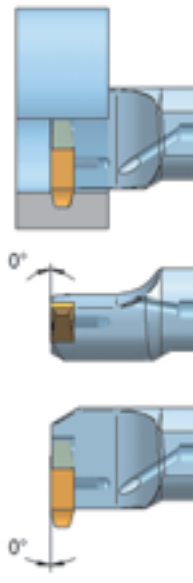
“ACA” internal grooving

Insert fitting position in tool holder: “continuous face grooving”.

Each at 2° axial tilt (work angle (χ)) and in cutting direction (tilt angle (γ)), whereby the insert receives an additional radial tilt (tilt angle (λ)) of 7° for internal grooving to achieve the greatest possible groove depth without damaging the inner diameter.

Advantage:

In this fitting position the insert is “released” on one side, and side clearance is not required.



“NCN” internal grooving

Normal insert fitting position for profiling.

Radial tilt (tilt angle (λ)) only; neutral face and axial fitting position of insert.



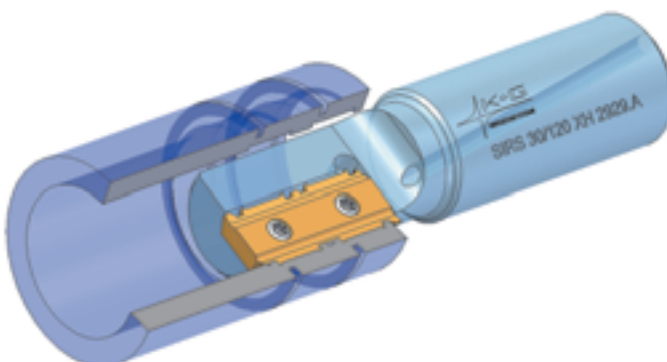
Internal machining

All K+G-holders for internal machining applications are equipped with a tapped M8x1 central coolant bore so that a variety of coolant supply adapters can be connected. Seal washers are also available for sealing the chucked surfaces of the tool shank when used in drilling adapters. In this way, the coolant is fed to the central bore (IK) and the holders can be used for turning tool adapters and cylindrical boring bar adapters.

With a series of different adapters, boring bars can be adapted to various types of coolant supply systems. For a minor surcharge it is also possible to receive boring bars according to individual length specifications, which enables optimum adaptation to cutting requirements. Simply specify the required length when you place your order.

- Example for holder shown above for a length of 185 mm **SIRS 25/185 ACA LN1608**

If seal washers are used, a total length of 10 mm has to be taken into account for all diameters.



We deliver the optimum solution even for the most challenging grooving operations. Just ask us!

See pages 36 to 38 for examples.

Inserts

vertical, for straight grooving

External machining, shaft grooves without chamfered edges

Designation	Dimensions					Cutting Material					
	E max	t max	IC	fx	s	P25M/K20M			PTALS/KTALS		
	-0.03	-0.03	±0.015	-0.03	-0.02	10 pc.	20 pc.	50 pc.	10 pc.	20 pc.	50 pc.
TNEX 1102 E..SP RH or LH	2.45	2.50	6.35	5.20	2.50						
TNEX 1103 E..SP RH or LH	3.15				3.20						
TNEX 1602 E..SP RH or LH	2.45	3.50	9.52	7.80	2.50						
TNEX 1603 E..SP RH or LH	3.15				3.20						
TNEX 16T3 E..SP RH or LH	3.95				4.00						
TNEX 1604 E..SP RH or LH	4.70				4.76						
TNEX 1605 E..SP RH or LH	5.55				5.60						
TNEX 1606 E..SP RH or LH	6.35				6.40						
TNEX 2203 E..SP RH or LH	3.15	4.60	12.70	10.50	3.20						
TNEX 2204 E..SP RH or LH	4.70				4.76						
TNEX 2205 E..SP RH or LH	5.55				5.60						
TNEX 2206 E..SP RH or LH	6.35				6.40						
TNEX 2208 E..SP RH or LH	7.95				8.00						

Ordering example: for right-hand version, width of cut: 2.48:
for left-hand version, width of cut: 4.25:

TNEX 16T3 E 2.48 SP RH (HM grade)
TNEX 1604 E 4.25 SP LH (HM grade)

Holders: for external machining see pages 16 to 23

External and internal machining, bore grooves without chamfered edges

Designation	Dimensions					Cutting Material					
	E max -0.03	t max -0.03	IC ±0.015	fx -0.03	s -0.02	P25M/K20M			PTALS/KTALS		
						10 pc.	20 pc.	50 pc.	10 pc.	20 pc.	50 pc.
LNEX 1102 E..SP RH or LH	2.45	5.00	6.35	7.50	2.50						
LNEX 1103 E..SP RH or LH	3.15										
LNEX 11T3 E..SP RH or LH	3.95										
LNEX 1602 E..SP RH or LH	2.45	7.00	9.52	11.20	2.50						
LNEX 1603 E..SP RH or LH	3.15										
LNEX 16T3 E..SP RH or LH	3.95										
LNEX 1604 E..SP RH or LH	4.70										
LNEX 1605 E..SP RH or LH	5.55										
LNEX 1606 E..SP RH or LH	6.35										
LNEX 1607 E..SP RH or LH	7.15										
LNEX 1608 E..SP RH or LH	7.95										
						K20M			KTALS		
LNEX 2404 E..SP RH or LH	4.70	9.00	12.00	16.00	4.76						
LNEX 2405 E..SP RH or LH	5.55				5.60						
LNEX 2406 E..SP RH or LH	6.35				6.40						
LNEX 2407 E..SP RH or LH	7.15				7.20						
LNEX 2408 E..SP RH or LH	7.95				8.00						
LNEX 2409 E..SP RH or LH	9.45				9.52						
LNEX 2411 E..SP RH or LH	10.95				11.00						
LNEX 2412 E..SP RH or LH	12.65				12.70						

Ordering example: for right-hand version, width of cut: 2.48:
for left-hand version, width of cut: 4.25:

LNEX 1103 E 2.48 SP RH KTALS
LNEX 1604 E 4.25 SP LH P25M

Holders: for external machining see pages 16 to 23
for internal machining see pages 24 to 25

Right-hand version
as shown.
Left-hand version
as mirror image.

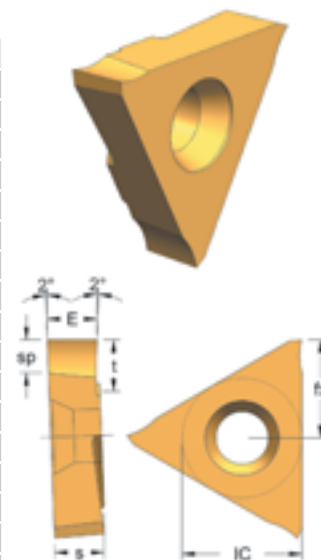
Right-hand version
as shown.
Left-hand version
as mirror image.

Inserts, DIN 472

vertical, for circlip grooving without chamfered edges

External machining

Designation	Dimensions					Cutting Material					
	E max	t	Shaft	IC	s	P25M/K20M			PTALS/KTALS		
	-0.03	±0.015	Ø	±0.015	-0.02	10 pc.	20 pc.	50 pc.	10 pc.	20 pc.	50 pc.
TNEX 1102 E 0.45 SP RH or LH	0.45	0.90	3-4	6.35	2.50						
TNEX 1102 E 0.67 SP LH or RH	0.67	1.30	5								
TNEX 1102 E 0.78 SP LH or RH	0.78	1.50	6								
TNEX 1102 E 0.88 SP LH or RH	0.88	1.75	7-8								
TNEX 1102 E 1.10 SP LH or RH	1.10	2.20	9-17								
TNEX 1102 E 1.30 SP LH or RH	1.30	2.50	18-27								
TNEX 1102 E 1.60 SP LH or RH	1.60	2.50	28-35								
TNEX 1102 E 1.85 SP LH or RH	1.85	2.50	36-48								
TNEX 1102 E 2.15 SP LH or RH	2.15	2.50	50-63								
TNEX 1103 E 2.65 SP LH or RH	2.65	2.50	65-82								
TNEX 1103 E 3.15 SP LH or RH	3.15	2.50	85-100		3.20						
TNEX 1602 E 0.45 SP LH or RH	0.45	0.90	3-4	9.52	2.50						
TNEX 1602 E 0.67 SP LH or RH	0.67	1.30	5								
TNEX 1602 E 0.78 SP LH or RH	0.78	1.50	6								
TNEX 1602 E 0.88 SP LH or RH	0.88	1.75	7-8								
TNEX 1602 E 1.10 SP LH or RH	1.10	2.20	9-17								
TNEX 1602 E 1.30 SP LH or RH	1.30	2.60	18-27								
TNEX 1602 E 1.60 SP LH or RH	1.60	3.20	28-35								
TNEX 1602 E 1.85 SP LH or RH	1.85	3.50	36-48								
TNEX 1602 E 2.15 SP LH or RH	2.15	3.50	50-63								
TNEX 1603 E 2.65 SP LH or RH	2.65	3.50	65-82								
TNEX 1603 E 3.15 SP LH or RH	3.15	3.50	85-100		3.20						
TNEX 1604 E 4.15 SP LH or RH	4.15	3.50	102-200		4.76						
LNEX 1605 E 5.15 SP LH or RH	5.15	7.00	205-300		5.60						



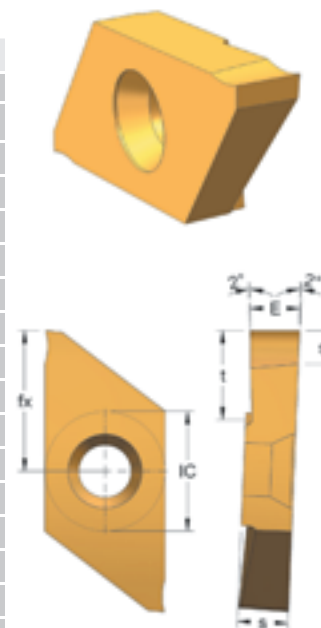
Right-hand version
as shown.
Left-hand version
as mirror image.

Ordering example: for right-hand version, width of cut: 0.88 (shaft-Ø: 7-8mm):
TNEX 1102 E 0.88 SP RH KTALS

Holders: for external machining see pages 16 to 23

Internal machining

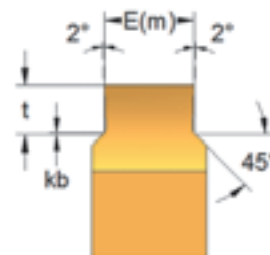
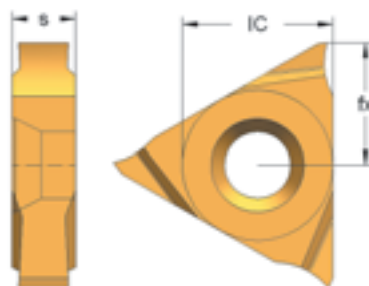
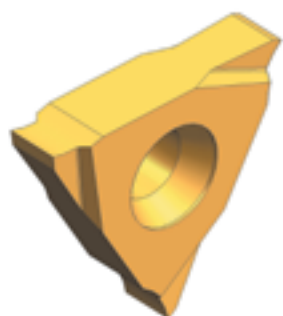
Designation	Dimensions					Cutting Material					
	E max	t	Bore	IC	s	P25M/K20M			PTALS/KTALS		
	-0.03	±0.015	Ø	±0.015	-0.02	10 pc.	20 pc.	50 pc.	10 pc.	20 pc.	50 pc.
LNEX 1102 E 1.10 SP LH or RH	1.10	2.20	20-22	6.35	2.50						
LNEX 1102 E 1.30 SP LH or RH	1.30	2.50	24-32								
LNEX 1102 E 1.60 SP LH or RH	1.60	3.20	34-38								
LNEX 1102 E 1.85 SP LH or RH	1.85	3.70	40-48								
LNEX 1102 E 2.15 SP LH or RH	2.15	4.30	50-63								
LNEX 1103 E 2.65 SP LH or RH	2.65	4.80	65-82								
LNEX 1103 E 3.15 SP LH or RH	3.15	4.80	85-100	9.52	3.20						
LNEX 1602 E 1.30 SP LH or RH	1.30	2.50	27-32		2.50						
LNEX 1602 E 1.60 SP LH or RH	1.60	3.20	24-38								
LNEX 1602 E 1.85 SP LH or RH	1.85	3.70	40-48								
LNEX 1602 E 2.15 SP LH or RH	2.15	4.30	50-63								
LNEX 1603 E 2.65 SP LH or RH	2.65	4.80	65-82								
LNEX 1603 E 3.15 SP LH or RH	3.15	4.80	85-100								
LNEX 1604 E 4.15 SP LH or RH	4.15	3.50	102-200		4.76						
LNEX 1605 E 5.15 SP LH or RH	5.15	7.00	205-300		5.60						



Left-hand version
(for right-hand internal
holder) as shown.
Right-hand version
as mirror image.

Ordering example: for left-hand version, width of cut: 3.15 (shaft Ø: 85-100mm):
LNEX 1603 E 3.15 SP LH K20M

Holders: for internal machining see pages 24 to 25



Right-hand version as shown.

Left-hand version as mirror image *

External machining

Designation	Dimensions						Cutting Material					
	E (m)	t	kb	Shaft Ø	IC	s	P25M/K20M			PTALS/KTALS		
	-0.05	±0.015	±0.015		±0.015	-0.02	10 pc.	20 pc.	50 pc.	10 pc.	20 pc.	50 pc.
TNEX 1102 ES 1.10-0.25 SP RH or LH	1.10	0.25	0.05	9-10	6.35	2.50						
TNEX 1102 ES 1.10-0.30 SP RH or LH	1.10	0.30	0.05	11-12								
TNEX 1102 ES 1.10-0.35 SP RH or LH	1.10	0.35	0.05	13-14								
TNEX 1102 ES 1.10-0.40 SP RH or LH	1.10	0.40	0.05	15								
TNEX 1102 ES 1.10-0.45 SP RH or LH	1.10	0.45	0.05	16-17								
TNEX 1102 ES 1.30-0.55 SP RH or LH	1.30	0.55	0.05	18-23								
TNEX 1102 ES 1.30-0.60 SP RH or LH	1.30	0.60	0.05	24-27								
TNEX 1102 ES 1.60-0.75 SP RH or LH	1.60	0.75	0.10	28-30								
TNEX 1102 ES 1.60-0.90 SP RH or LH	1.60	0.90	0.10	32-35								
TNEX 1102 ES 1.85-1.05 SP RH or LH	1.85	1.05	0.10	36-39								
TNEX 1102 ES 1.85-1.30 SP RH or LH	1.85	1.30	0.10	40-48								
TNEX 1103 ES 2.15-1.55 SP RH or LH	2.15	1.55	0.10	50-63			3.20					
TNEX 1103 ES 2.65-1.55 SP RH or LH	2.65	1.55	0.10	65-78								
TNEX 1103 ES 2.65-1.80 SP RH or LH	2.65	1.80	0.10	80-82								
TNEX 1602 ES 1.10-0.25 SP RH or LH	1.10	0.25	0.05	9-10	9.52	2.50						
TNEX 1602 ES 1.10-0.30 SP RH or LH	1.10	0.30	0.05	11-12								
TNEX 1602 ES 1.10-0.35 SP RH or LH	1.10	0.35	0.05	13-14								
TNEX 1602 ES 1.10-0.40 SP RH or LH	1.10	0.40	0.05	15								
TNEX 1602 ES 1.10-0.45 SP RH or LH	1.10	0.45	0.05	16-17								
TNEX 1602 ES 1.30-0.55 SP RH or LH	1.30	0.55	0.05	18-23								
TNEX 1602 ES 1.30-0.60 SP RH or LH	1.30	0.60	0.05	24-27								
TNEX 1602 ES 1.60-0.75 SP RH or LH	1.60	0.75	0.10	28-30								
TNEX 1602 ES 1.60-0.90 SP RH or LH	1.60	0.90	0.10	32-35								
TNEX 1602 ES 1.85-1.05 SP RH or LH	1.85	1.05	0.10	36-39								
TNEX 1602 ES 1.85-1.30 SP RH or LH	1.85	1.30	0.10	40-48								
TNEX 1603 ES 2.15-1.55 SP RH or LH	2.15	1.55	0.10	50-63			3.20					
TNEX 1603 ES 2.65-1.55 SP RH or LH	2.65	1.55	0.10	65-78								
TNEX 1603 ES 2.65-1.80 SP RH or LH	2.65	1.80	0.10	80-82								
TNEX 1604 ES 3.15-1.80 SP	3.15	1.80	0.10	85-100	4.76							
TNEX 1604 ES 4.15-2.05 SP	4.15	2.05	0.20	102-148								
TNEX 1604 ES 4.15-2.55 SP	4.15	2.55	0.20	150-200								
LNEX 1606 ES 5.15-3.55 SP	5.15	3.55	0.20	205-240		6.40						
LNEX 1606 ES 5.15-4.05 SP	5.15	4.05	0.20	250-300								

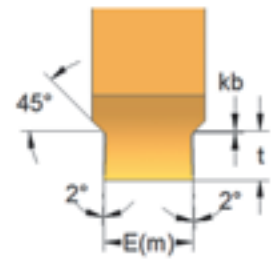
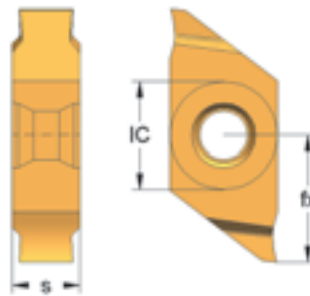
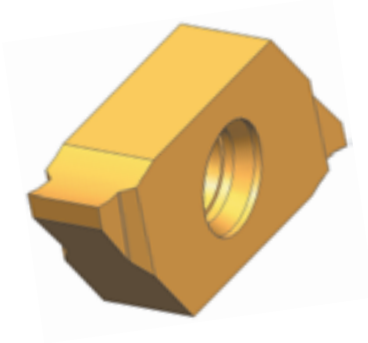
* inserts without the designation of RH or LH can be used for right-hand and left-hand applications due to a recess on both sides.

Ordering example: for right-hand version, width of cut: 1.60 mm and depth of cut: 0.9 mm:
TNEX 1602 ES 1.60-0.90 SP RH PTALS

Holders: for external machining see pages 16 to 23

Inserts, DIN 472

vertical, for circlip grooving with chamfered edges



Right-hand version as shown.
Left-hand version as mirror image *

Internal machining

Designation	Dimensions						Cutting Material					
	E (m)	t	kb	Bore Ø	IC	s	P25M/K20M			PTALS/KTALS		
	-0.05	±0.015	±0.015		±0.015	-0.02	10 pc.	20 pc.	50 pc.	10 pc.	20 pc.	50 pc.
LNEX 1102 ES 1.10-0.55 SP	1.10	0.55	0.05	20-22	6.35	2.50						
LNEX 1102 ES 1.30-0.65 SP	1.30	0.65	0.05	24-26								
LNEX 1102 ES 1.30-0.75 sp	1.30	0.75	0.05	27-30								
LNEX 1102 ES 1.30-0.90 SP	1.30	0.90	0.05	31-32								
LNEX 1102 ES 1.60-0.90 SP	1.60	0.90	0.10	34								
LNEX 1102 ES 1.60-1.05 SP	1.60	1.05	0.10	35-38								
LNEX 1102 ES 1.85-1.30 SP	1.85	1.30	0.10	40-48								
LNEX 1103 ES 2.15-1.55 SP	2.15	1.55	0.10	50-63		3.20						
LNEX 1103 ES 2.65-1.55 SP	2.65	1.55	0.10	65-78								
LNEX 1103 ES 2.65-1.80 sp	2.65	1.80	0.10	80-82		4.00						
LNEX 11T3 ES 3.15-1.80 SP	3.15	1.80	0.10	85-100								
LNEX 1602 ES 1.30-0.75 SP LH or RH	1.30	0.75	0.05	27-30	9.52	2.50						
LNEX 1602 ES 1.30-0.90 SP LH or RH	1.30	0.90	0.05	31-32								
LNEX 1602 ES 1.60-0.90 SP LH or RH	1.60	0.90	0.10	34								
LNEX 1602 ES 1.60-1.05 SP LH or RH	1.60	1.05	0.10	35-38								
LNEX 1602 ES 1.85-1.30 SP LH or RH	1.85	1.30	0.10	40-48								
LNEX 1603 ES 2.15-1.55 SP LH or RH	2.15	1.55	0.10	50-63		3.20						
LNEX 1603 ES 2.65-1.55 SP LH or RH	2.65	1.55	0.10	65-78								
LNEX 1603 ES 2.65-1.80 SP LH or RH	2.65	1.80	0.10	80-82								
LNEX 1604 ES 3.15-1.80 SP	3.15	1.80	0.10	85-100		4.76						
LNEX 1604 ES 4.15-2.05 SP	4.15	2.05	0.20	102-148								
LNEX 1604 ES 4.15-3.05 SP	4.15	3.05	0.20	150-200		6.40						
LNEX 1606 ES 5.15-3.05 SP	5.15	3.05	0.20	205-240								
LNEX 1606 ES 5.15-4.05 SP	5.15	4.05	0.20	250-300								

* inserts without the designation of RH or LH can be used for right-hand and left-hand applications due to a recess on both sides.

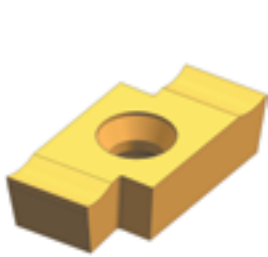
Ordering example: design for use of both sides of the cutting edge, width of cut: 4.15 mm and depth of cut: 3.05 mm:

LNEX 1604 ES 4.15-3.05 SP

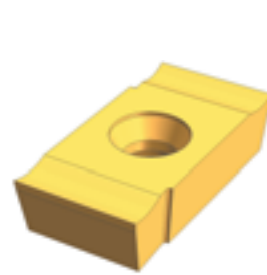
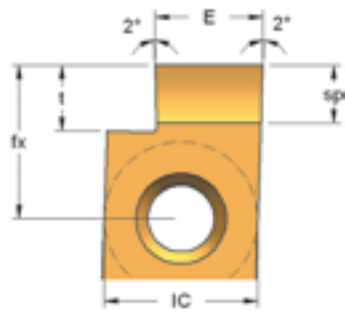
Holders: for internal machining see pages 24 to 25

Inserts

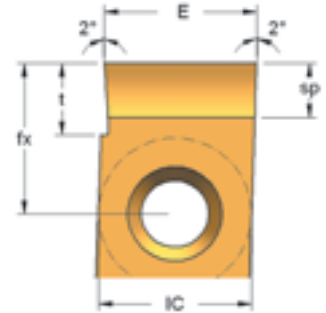
horizontal, for face grooving and profiling



with recess



full profile



Basic form: LAEX...

Left-hand version as shown.
Right-hand version as mirror image.
For face grooving applications it is essential that the outer grooving diameter is specified.

Designation	Dimensions					Cutting Material					
	E max -0.03	t max	IC ±0.015	fx -0.03	s -0.02	P25M/K20M			PTALS/KTALS		
						10 pc.	20 pc.	50 pc.	10 pc.	20 pc.	50 pc.
with recess											
LAEX 1203 E...SP RH or LH	4.30	3.00	6.35	6.35	3.20						
LAEX 15T3 E...SP RH or LH	5.40	3.80	7.94	7.94	4.00						
LAEX 1904 E...SP RH or LH	7.00	4.60	9.52	9.52	4.76						
LAEX 2506 E...SP RH or LH	9.00	5.80	12.70	12.70	6.35						
full profile											
LAEX 1203 VE...SP RH or LH	6.30	3.00	6.35	6.35	3.20						
LAEX 15T3 VE...SP RH or LH	7.90	3.80	7.94	7.94	4.00						
LAEX 1904 VE...SP RH or LH	9.48	4.60	9.52	9.52	4.76						
LAEX 2506 VE...SP RH or LH	12.65	5.80	12.70	12.70	6.35						

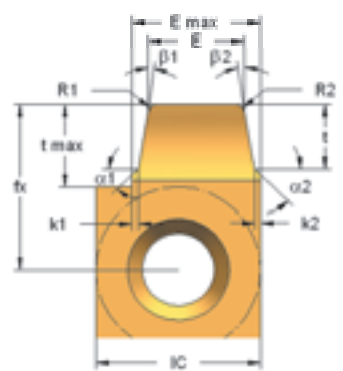
Ordering example: **LAEX 1904 VE 9.25 SP LH** (HM grade), for customised forms see pages 12 to 15

Holders: for internal machining see pages 26 to 27;

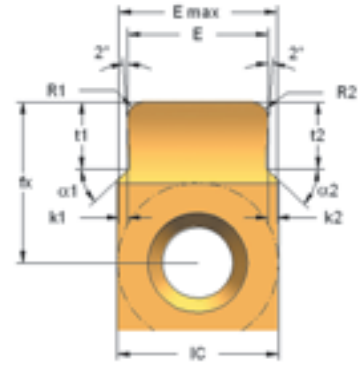
Holders: for face grooving and external machining see pages 28 to 29



with recess



full profile



Basic form: LNX...

Left-hand version as shown.
Right-hand version as mirror image.
For face grooving applications it is essential that the outer grooving diameter is specified.

Designation	Dimensions					Cutting Material					
	E max -0.03	t max	IC ±0.015	fx -0.03	s -0.02	P25M/K20M			PTALS/KTALS		
						10 pc.	20 pc.	50 pc.	10 pc.	20 pc.	50 pc.
with recess											
LNX 1203 XE *****	4.30	3.00	6.35	6.35	3.20	Prices on enquiry			Prices on enquiry		
LNX 15T3 XE *****	5.40	3.80	7.94	7.94	4.00						
LNX 1904 XE *****	7.00	4.60	9.52	9.52	4.76						
LNX 2506 XE *****	9.00	5.80	12.70	12.70	6.35						
full profile											
LNX 1203 XE *****	6.30	3.00	6.35	6.35	3.20	Prices on enquiry			Prices on enquiry		
LNX 15T3 XE *****	7.90	3.80	7.94	7.94	4.00						
LNX 1904 XE *****	9.48	4.60	9.52	9.52	4.76						
LNX 2506 XE *****	12.65	5.80	12.70	12.70	6.35						

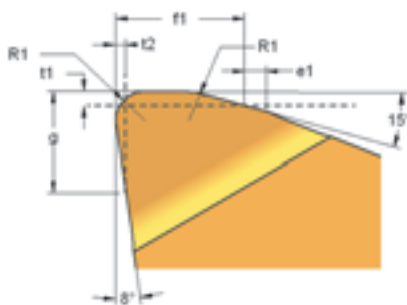
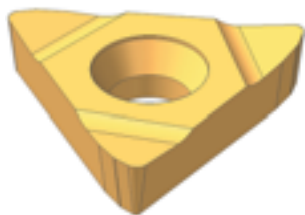
Ordering example: The order designation (incl. custom number) is fixed with the first order and forwarded.

Customised forms: see pages 12 to 15

Holders: for internal machining see pages 26 to 27;

Holders: for face grooving and external machining see pages 28 to 29

Inserts, DIN 509, E&F horizontal, for relief grooves



Attention:

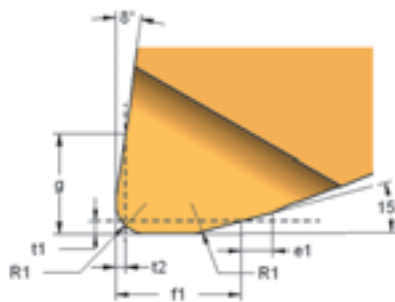
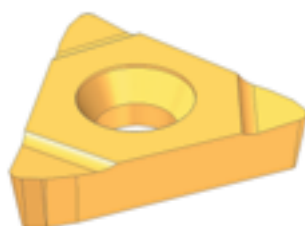
Form E only refers to face grooving on t1.
Form F refers to face grooving on t1 and then rounding along t2.

External machining

Designation	DIN 509 Name	Dimensions							Cutting Material					
		R	t1	f1	g	t2	IC ±0.015	s -0.02	P25M/K20M			PTALS/KTALS		
									10 pc.	20 pc.	50 pc.	10 pc.	20 pc.	50 pc.
TCEX 1102 E509 0.2 SP RH	E/F 0.2x0.1	0.20	0.10	1.00	0.90	0.10	6.35	2.50						
TCEX 1102 E509 0.4 SP RH	E/F 0.4x0.2	0.40	0.20	2.00	1.10	0.10								
TCEX 1603 E509 0.2 SP RH	E/F 0.2x0.12	0.60	0.10	2.00	1.00	0.10	9.52	3.20						
TCEX 1603 E509 0.4 SP RH	E/F 0.4x0.2	0.40	0.20	2.00	1.10	0.10								
TCEX 1603 E509 0.6 SP RH	E/F 0.6x0.2	0.60	0.20	2.00	1.40	0.10								
TCEX 1603 E509 0.6 SP RH	E/F 0.6x0.3	0.60	0.30	2.50	2.10	0.20								
TCEX 1603 E509 1.0 SP RH	E/F 1.0x0.4	1.00	0.40	4.00	3.20	0.30								
TCEX 1603 E509 1.6 SP RH	E/F 1.6x0.3	1.60	0.30	4.00	3.10	0.20								
TCEX 2204 E509 1.6 SP RH	E/F 1.6x0.3	1.60	0.30	4.00	3.10	0.20	12.70	4.76						
TCEX 2204 E509 2.5 SP RH	E/F 2.5x0.4	2.50	0.40	5.00	4.80	0.30								

Customised forms: see bottom of page 15

Holders: for external machining see top of page 30



Attention:

Form E only refers to face grooving on t1.
Form F refers to face grooving on t1 and then rounding along t2.

Internal machining

Designation	DIN 509 Name	Dimensions							Cutting Material					
		R	t1	f1	g	t2	IC ±0.015	s -0.02	P25M/K20M			PTALS/KTALS		
									10 pc.	20 pc.	50 pc.	10 pc.	20 pc.	50 pc.
TCEX 1603 E509 0.6 SP LH	E/F 0.6x0.2	0.60	0.20	2.00	1.40	0.10	9.52	3.20						
TCEX 1603 E509 0.6 SP LH	E/F 0.6x0.3	0.60	0.30	2.50	2.10	0.20								
TCEX 1603 E509 1.0 SP LH	E/F 1.0x0.4	1.00	0.40	4.00	3.20	0.30								
TCEX 1603 E509 1.6 SP LH	E/F 1.6x0.3	1.60	0.30	4.00	3.10	0.20								
TCEX 2204 E509 1.6 SP LH	E/F 1.6x0.3	1.60	0.30	4.00	3.10	0.20	12.70	4.76						
TCEX 2204 E509 2.5 SP LH	E/F 2.5x0.4	2.50	0.40	5.00	4.80	0.30								

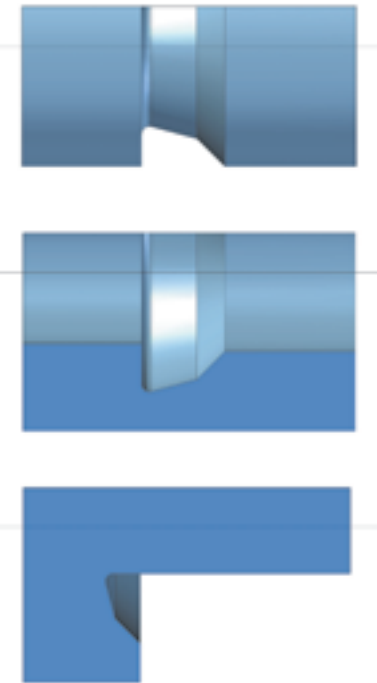
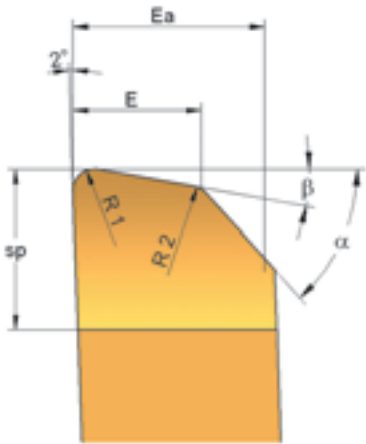
Customised forms: see bottom of page 15

Holders: for internal machining see bottom of page 30

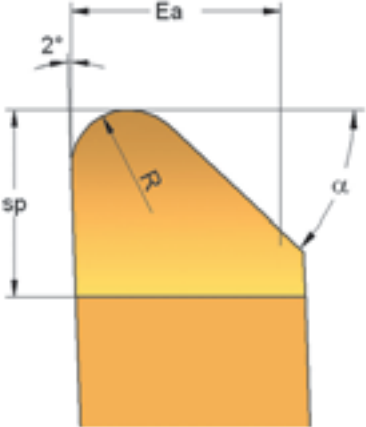
Form	Design	Enquiry and/or Order Specifications
	Grooving dimension E: always indicate the maximum dimension plus the minus tolerance value Grooving with radii and chamfers continuous face grooving Right-hand version as shown Left-hand version as mirror image	Width of cut E = _____ Depth of cut t = _____ Radii, R1 = _____ R2 = _____ for chamfers, f1 = _____ f2 = _____ Width of chip breaker sp = _____ Application, external . A = _____ internal . I = _____ face..... S = _____ Cutting direction, RH or LH = _____ Further specifications include: 1. Machining diameter 2. Maximum shank dimensions 3. Material grade, HM grade 4. Cutting speed

Form	Design	Enquiry and/or Order Specifications
	Grooving dimension E: always indicate the maximum dimension plus the minus tolerance value Threads, grinding and customised undercuts continuous face grooving as shown Right-hand version as mirror image	Width of cut E = _____ Depth of cut Ea = _____ Radii, R1 = _____ R2 = _____ for chamfers, f1 = _____ f2 = _____ Angle of recess α = _____ Width of chip breaker ..sp = _____ Application, external .. A = _____ internal .. I = _____ face S = _____ Cutting direction, RH or L = _____ Further specifications include: 1. Machining diameter 2. Maximum shank dimensions 3. Material grade, HM grade 4. Cutting speed

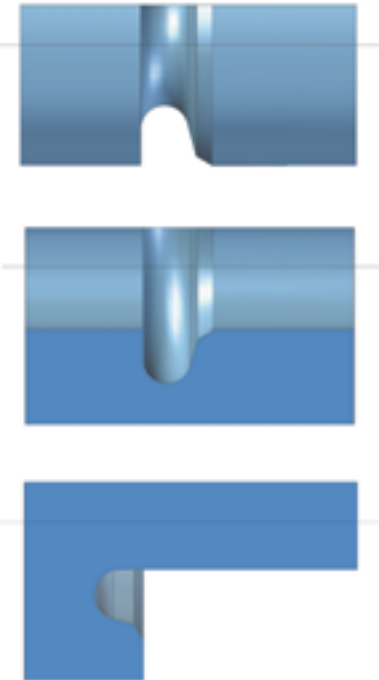
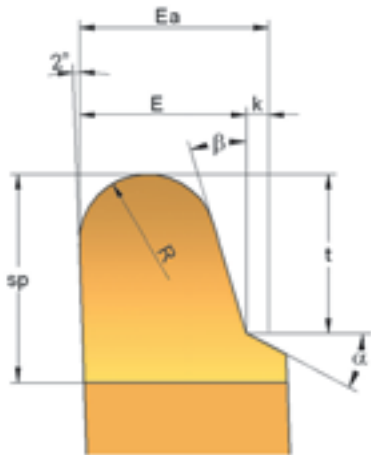
Grooving inserts, form A 3

Form	Design	Enquiry and/or Order Specifications
	 Grooving dimension E: always indicate the maximum dimension plus the minus tolerance value Threads, grinding and customised undercuts continuous face grooving as shown Right-hand version as shown Left-hand version as mirror image	Width of cut E = _____ Depth of cut Ea = _____ Radii, R1 = _____ R2 = _____ for chamfers, f1 = _____ f2 = _____ Angle of recess α = _____ β = _____ Width of chip breaker sp = _____ Application, external .. A = _____ internal .. I = _____ face S = _____ Cutting direction, RH or LH = _____ Further specifications include: 1. Machining diameter 2. Maximum shank dimensions 3. Material grade, HM grade 4. Cutting speed

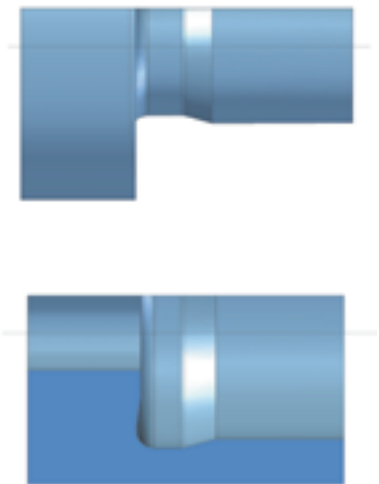
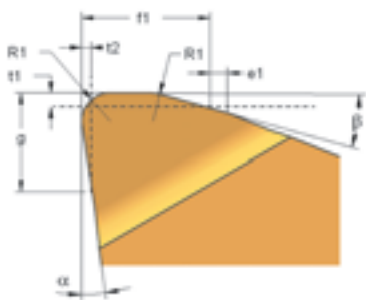
Grooving inserts, form A 4

Form	Design	Enquiry and/or Order Specifications
	 Grooving dimension E: always indicate the maximum dimension plus the minus tolerance value Threads, grinding and customised undercuts continuous face grooving as shown Right-hand version as shown Left-hand version as mirror image	Width of cut Ea = _____ Radius R = _____ Angle of recess α = _____ Width of chip breaker sp = _____ Application, external .. A = _____ internal .. I = _____ face S = _____ Cutting direction, RH or LH = _____ Further specifications include: 1. Machining diameter 2. Maximum shank dimensions 3. Material grade, HM grade 4. Cutting speed

Grooving inserts, form B 3

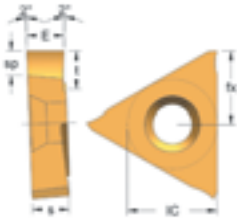
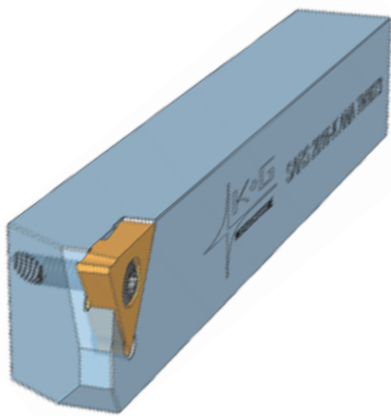
Form	Design	Enquiry and/or Order Specifications
	 Grooving dimension E: always indicate the maximum dimension plus the minus tolerance value Grooving with radii and chamfers continuous face grooving as shown Right-hand version as shown Left-hand version as mirror image	Width of cut E = _____ Depth of cut t = _____ Radius R = _____ Chamfered edge k = _____ Angle of recess α = _____ Width of chip breaker sp = _____ Application, external... A = _____ internal... I = _____ face..... S = _____ Cutting direction, RH or LH = _____ Further specifications include: 1. Machining diameter 2. Maximum shank dimensions 3. Material grade, HM grade 4. Cutting speed

Grooving inserts, form 509 (relief grooves in accordance with DIN 509)

Form	Design	Enquiry and/or Order Specifications
	 Specifications regarding this grooving form refer to grooves which deviate from DIN 509 and thus receive a custom number for the purposes of documentation and reproducibility. The angle α ($\alpha = 8^\circ$, see page 11) should not be changed, so that standard tool holders can be used.	Width of cut f1 = _____ Width of cut, radial t1 = _____ Depth of cut, axial t2 = _____ Radii, R1 = _____ R2 = _____ Angle..... α = _____ β = _____ Face cut g = _____ Chip breaker Yes/No = _____ Application, external.. A = _____ internal... I = _____ face..... S = _____ Cutting direction, RH or LH = _____ Further specifications include: 1. Machining diameter 2. Maximum shank dimensions 3. Material grade, HM grade 4. Cutting speed

External grooving holders, SARS... - ANA

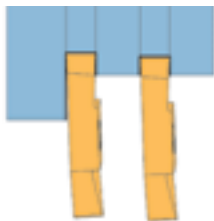
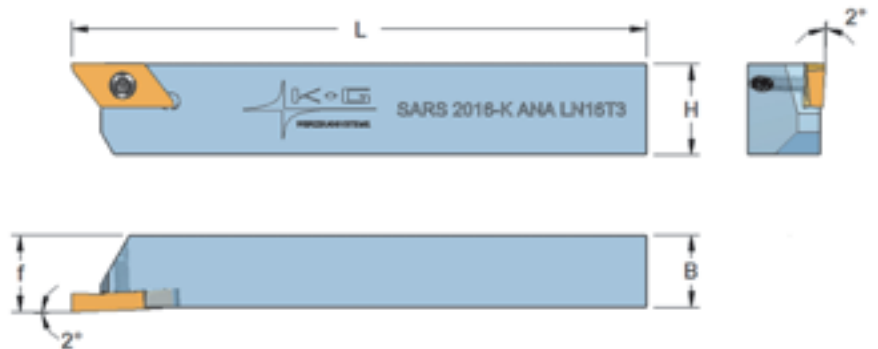
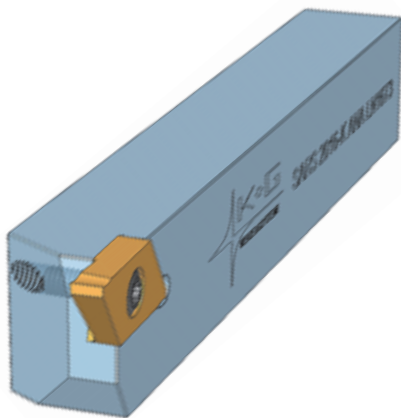
with direct insert seat, right-hand version



External Form,	ANA , RH	H	W	L	f	Screw*	Screwdriver	€/pc.
SARS 1212-J	ANA TN11**	12	12	110	12.4	TX 2.5/7	TX08	
SARS 1616-J	ANA TN11**	16	16	110	16.4			
SARS 2020-L	ANA TN11**	20	20	136.5	20.4	TX 3.5/11	TX15	
SARS 2020-L	ANA TN16**	20	20	137	20.8			
SARS 2525-M	ANA TN16**	25	25	147	20.8	TX 4.5/17	TX20	
SARS 2525 M	ANA TN22**	25	25	149.5	26			

* The insert screw length depends on the thickness (s) of the applied insert
(see table on page 32, under Insert Screw column)

Ordering example: **SARS 2020-L ANA TN16T3**

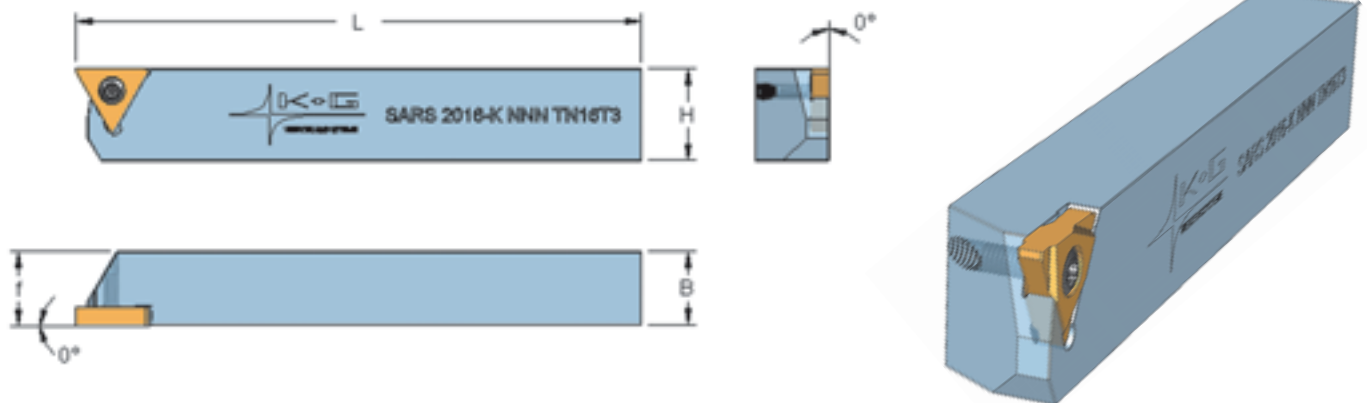


External Form,	ANA , RH	H	W	L	f	Screw*	Screwdriver	€/pc.
SARS 1212-J	ANA LN11**	12	12	112.5	12.6	TX 2.5/7	TX08	
SARS 1616-J	ANA LN11**	16	16	112.5	16.6			
SARS 2020-L	ANA LN11**	20	20	138.8	20.6	TX 3.5/11	TX15	
SARS 2020-L	ANA LN16**	20	20	140.8	21			
SARS 2525-M	ANA LN16**	25	25	150.8	26	TX 4.5/17	TX20	
SARS 2020-L	ANA LN24**	20	20	142.5	21.2			
SARS 2525-M	ANA LN24**	25	25	152.5	26.2			

*The insert screw length depends on the thickness (s) of the applied insert (see table on page 33, under Insert Screw column)

Ordering example: **SARS 2520-M ANA LN1605**

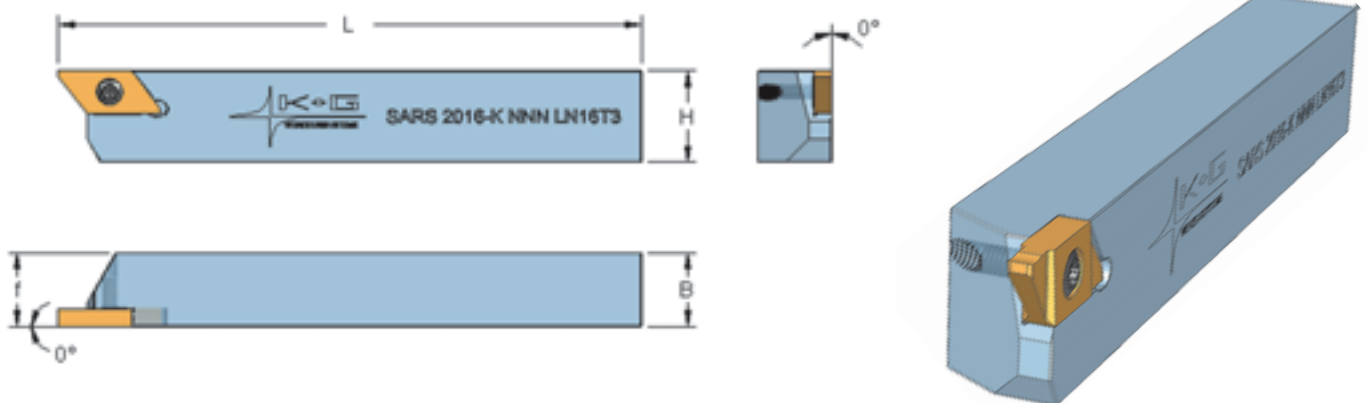
External grooving holders, SARS... - NNN with direct insert seat, right-hand version



External Form,	NNN, RH	H	W	L	f	Screw*	Screwdriver	€/pc.
SARS 1212-J	NNN TN11**	12	12	110	12.1	TX 2.5/7	TX08	
SARS 1616-J	NNN TN11**	16	16	110	16.1			
SARS 2020-L	NNN TN11**	20	20	136.5	20.1	TX 3.5/11	TX15	
SARS 2020-L	NNN TN16**	20	20	137	20.1			
SARS 2525-M	NNN TN16**	25	25	147	25.1	TX 4.5/17	TX20	
SARS 2525-M	NNN TN22**	25	25	149.5	25.2			

* The insert screw length depends on the thickness (s) of the applied insert
(see table on page 32, under Insert Screw column)

Ordering example: **SARS 2520-M NNN TN1608**



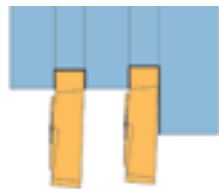
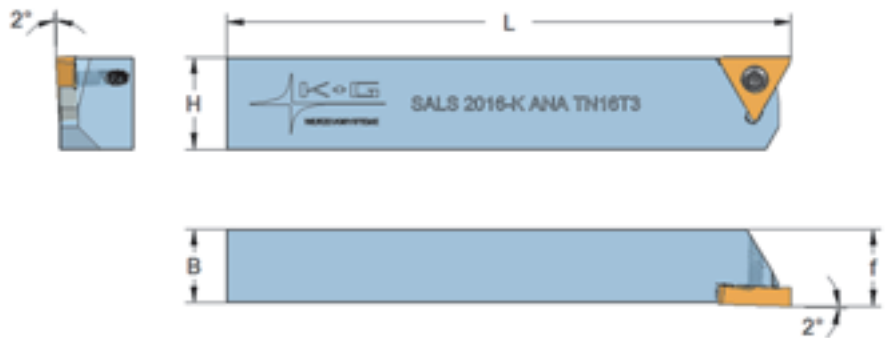
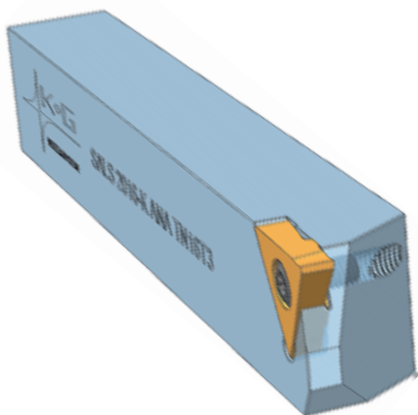
External Form,	NNN, RH	H	W	L	f	Screw*	Screwdriver	€/pc.
SARS 1212-J	NNN LN11**	12	12	112.5	12.1	TX 2.5/7	TX08	
SARS 1616-J	NNN LN11**	16	16	112.5	16.1			
SARS 2020-L	NNN LN11**	20	20	138.8	20.1	TX 3.5/11	TX15	
SARS 2020-L	NNN LN16**	20	20	140.8	20.1			
SARS 2525-M	NNN LN16**	25	25	150.8	25.1	TX 4.5/17	TX20	
SARS 2020-L	NNN LN24**	20	20	142.5	20.2			
SARS 2525-M	NNN LN24**	25	25	152.5	25.2			

* The insert screw length depends on the thickness (s) of the applied insert
(see table on page 33, under Insert Screw column)

Ordering example: **SARS 2016-K NNN LN16T3**

External grooving holders, SALS... - ANA

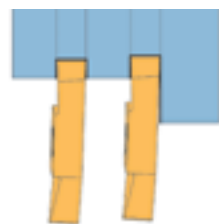
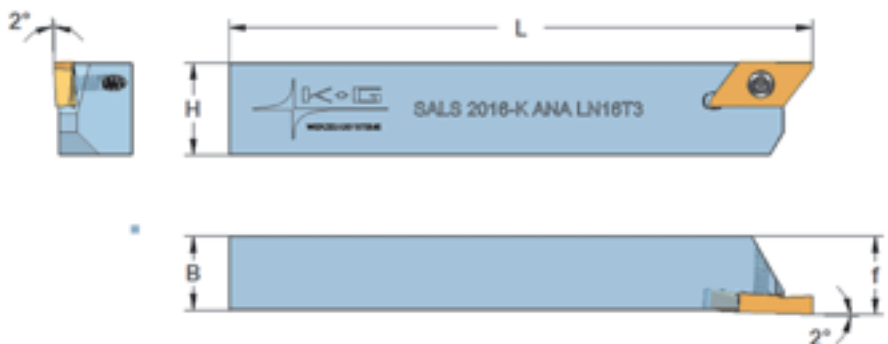
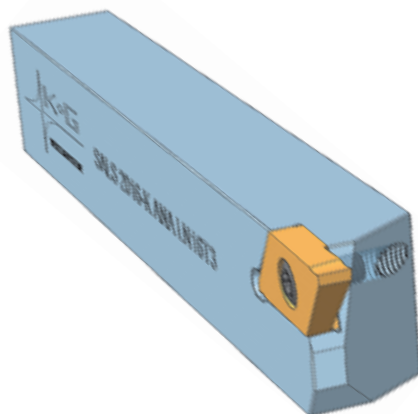
with direct insert seat, left-hand version



External Form, ANA, LH	H	W	L	f	Screw*	Screwdriver	€/pc.
SALS 1212-J ANA TN11**	12	12	110	12.4	TX 2.5/7	TX08	
SALS 1616-J ANA TN11**	16	16	110	16.4			
SALS 2020-L ANA TN11**	20	20	136.5	20.4	TX 3.5/11	TX15	
SALS 2020-L ANA TN16**	20	20	137	20.8			
SALS 2525-M ANA TN16**	25	25	147	25.8	TX 4.5/17	TX20	
SALS 2525 M ANA TN22**	25	25	149.5	26			

* The insert screw length depends on the thickness (s) of the applied insert
(see table on page 32, under Insert Screw column)

Ordering example: **SALS 2020-L ANA TN1604**

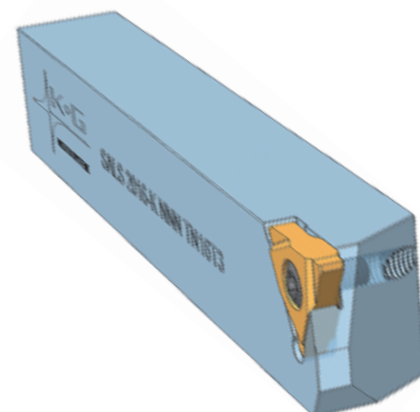


External Form, ANA, LH	H	W	L	f	Screw*	Screwdriver	€/pc.
SALS 1212-J ANA LN11**	12	12	112.5	12.6	TX 2.5/7	TX08	
SALS 1616-J ANA LN11**	16	16	112.5	16.6			
SALS 2020-L ANA LN11**	20	20	138.8	20.6	TX 3.5/11	TX15	
SALS 2020-L ANA LN16**	20	20	140.8	21			
SALS 2525-M ANA LN16**	25	25	150.8	26	TX 4.5/17	TX20	
SALS 2020-L ANA LN24**	20	20	142.5	21.2			
SALS 2525-M ANA LN24**	25	25	152.5	26.2			

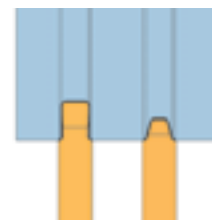
* The insert screw length depends on the thickness (s) of the applied insert
(see table on page 33, under Insert Screw column)

Ordering example: **SALS 2020-L ANA LN1608**

External grooving holders, SALS... - NNN with direct insert seat, left-hand version

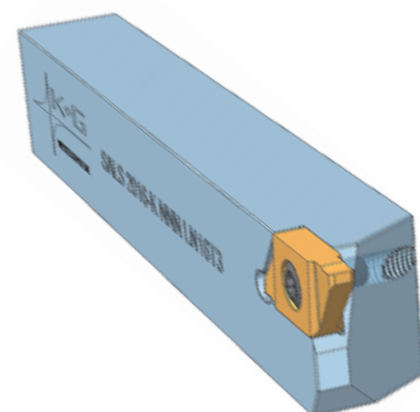
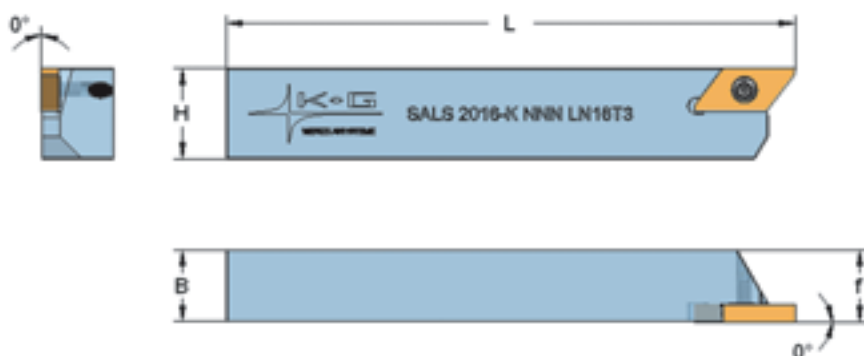


External Form, NNN, LH	H	W	L	f	Screw*	Screwdriver	€/pc.
SALS 1212-J NNN TN11**	12	12	110	12.1	TX 2.5/7	TX08	
SALS 1616-J NNN TN11**	16	16	110	16.1			
SALS 2020-L NNN TN11**	20	20	136.5	20.1	TX 3.5/11	TX15	
SALS 2020-L NNN TN16**	20	20	137	20.1			
SALS 2525-M NNN TN16**	25	25	147	25.1	TX 4.5/17	TX20	
SALS 2525-M NNN TN22**	25	25	149.5	25.2			

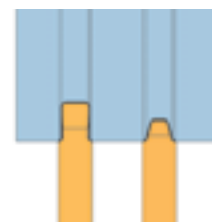


* The insert screw length depends on the thickness (s) of the applied insert (see table on page 32, under Insert Screw column)

Ordering example: **SALS 2020-L NNN TN1606**



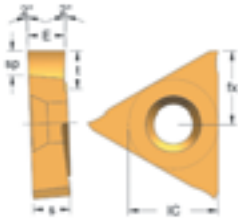
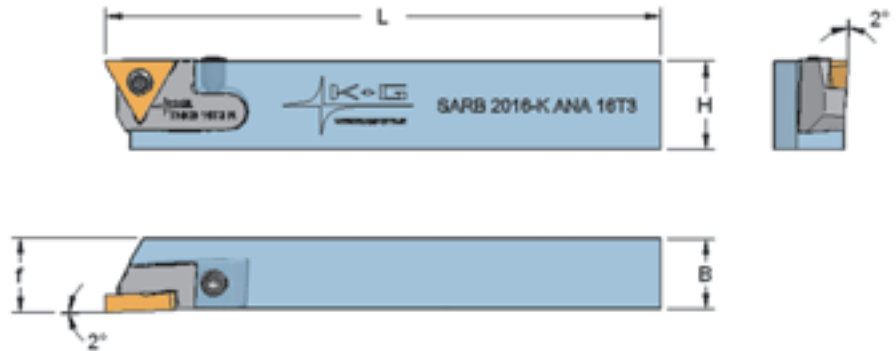
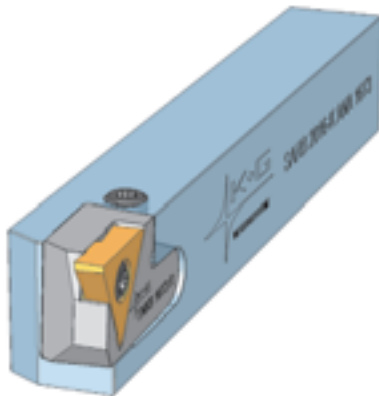
External Form, NNN, LH	H	W	L	f	Screw*	Screwdriver	€/pc.
SALS 1212-J NNN LN11**	12	12	112.5	12.1	TX 2.5/7	TX08	
SALS 1616-J NNN LN11**	16	16	112.5	16.1			
SALS 2020-L NNN LN11**	20	20	138.8	20.1	TX 3.5/11	TX15	
SALS 2020-L NNN LN16**	20	20	140.8	20.1			
SALS 2525-M NNN LN16**	25	25	150.8	25.1	TX 4.5/17	TX20	
SALS 2020-L NNN LN24**	20	20	142.5	20.2			
SALS 2525-M NNN LN24**	25	25	152.5	25.2			



* The insert screw length depends on the thickness (s) of the applied insert (see table on page 33, under Insert Screw column)

Ordering example: **SALS 2016-K NNN LN1605**

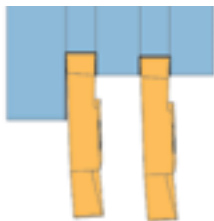
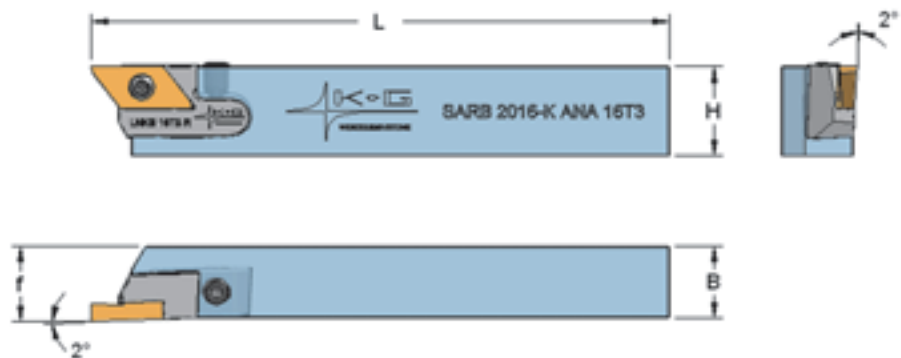
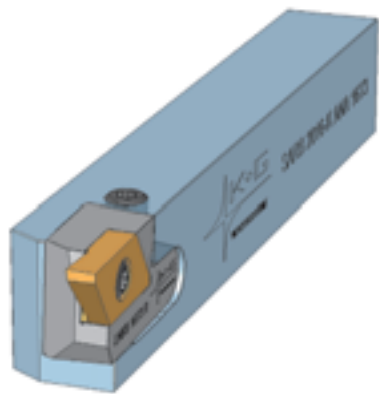
External grooving holders, SARB... - ANA with cartridge, right-hand version



External Form,	ANA , RH	H	W	L	f	Insert	Cartridge	€/pc.
SARB 1616-J	ANA 11**	16	16	112.5	16.6	TNEX 11**	TNKB 11** R	
SARB 2020-L	ANA 11**	20	20	139	20.8	TNEX 11**	TNKB 11** R	
SARB 2020-L	ANA 16**	20	20	140	20.8	TNEX 16**	TNKB 16** R	
SARB 2525-M	ANA 16**	25	25	150	25.8	TNEX 16**	TNKB 16** R	

Ordering example: **SARB 2520-M ANA 1606**, with cartridge **TNKB 1606 R** (see page 32)

Attention: Shaft cross-section 2016 can only be used up to an insert thickness of 4.76 mm

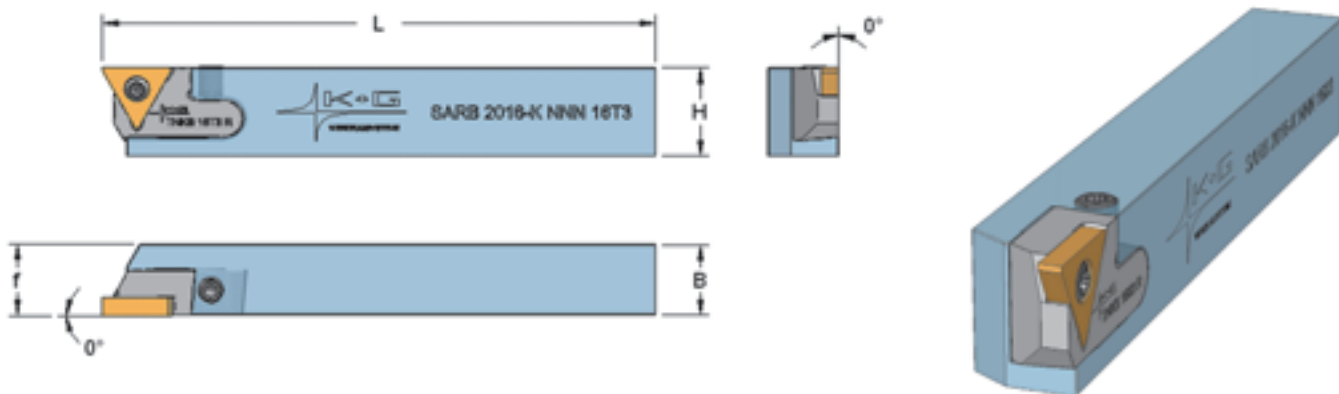


External Form,	ANA , RH	H	W	L	f	Insert	Cartridge	€/pc.
SARB 1616-J	ANA 11**	16	16	114.8	16.68	LNEX 11**	LNKB 11** R	
SARB 2020-L	ANA 11**	20	20	141.3	20.68	LNEX 11**	LNKB 11** R	
SARB 2020-L	ANA 16**	20	20	143.5	20.92	LNEX 16**	LNKB 16** R	
SARB 2525-M	ANA 16**	25	25	153.5	25.92	LNEX 16**	LNKB 16** R	
SARB 2525-M	ANA 24**	25	25	157.5	26.2	LNEX 24**	LNKB 24** R	

Ordering example: **SARB 2020-L ANA 1604**, with cartridge **LNKB 1604 R** (see page 33)

Attention: Shaft cross-section 2016 can only be used up to an insert thickness of 4.76 mm

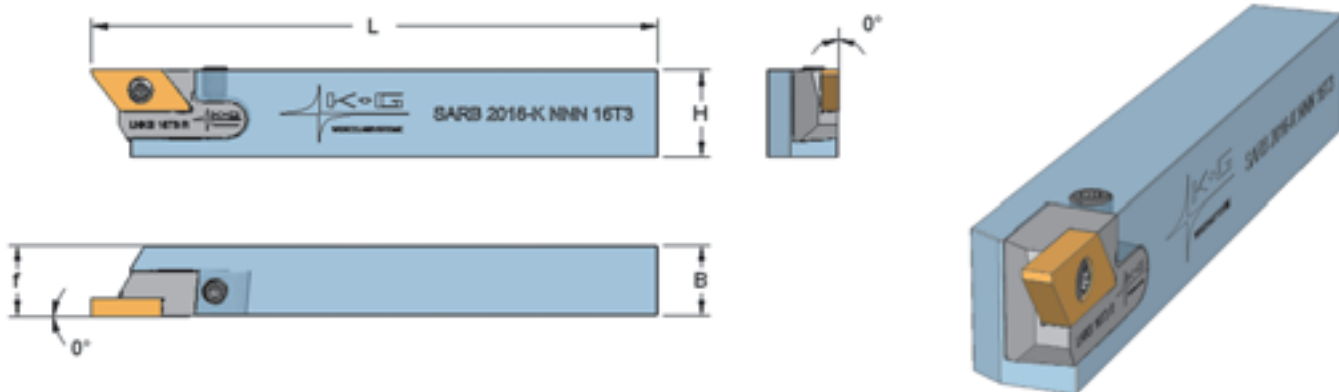
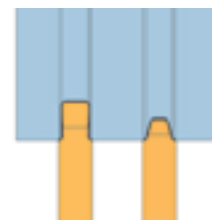
External grooving holders, SARB... - NNN with cartridge, right-hand version



External Form,	NNN, RH	H	W	L	f	Insert	Cartridge	€/pc.
SARB 1616-J NNN 11**		16	16	112.5	16.2	TNEX 11**	TNKB 11** R	
SARB 2020-L NNN 11**		20	20	139	20.2	TNEX 11**	TNKB 11** R	
SARB 2020-L NNN 16**		20	20	140	20.2	TNEX 16**	TNKB 16** R	
SARB 2525-M NNN 16**		25	25	150	25.2	TNEX 16**	TNKB 16** R	

Ordering example: **SARB 2020-L NNN 16T3**, with cartridge **TNKB 16T3 R** (see page 32)

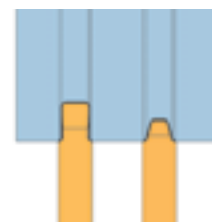
Attention: Shaft cross-section 2016 can only be used up to an insert thickness of 4.76 mm



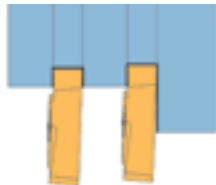
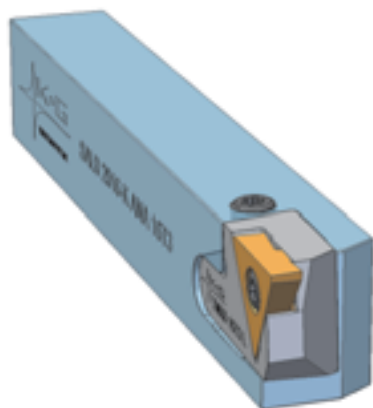
External Form,	NNN, RH	H	W	L	f	Insert	Cartridge	€/pc.
SARB 1616-J NNN 11**		16	16	114.8	16.2	LNEX 11**	LNKB 11** R	
SARB 2020-L NNN 11**		20	20	141.3	20.2	LNEX 11**	LNKB 11** R	
SARB 2020-L NNN 16**		20	20	143.5	20.2	LNEX 16**	LNKB 16** R	
SARB 2525-M NNN 16**		25	25	153.5	25.2	LNEX 16**	LNKB 16** R	
SARB 2525-M NNN 24**		25	25	157.5	25.2	LNEX 24**	LNKB 24** R	

Ordering example: **SARB 1616-J NNN 1103**, with cartridge **LNKB 1103 R** (see page 33)

Attention: Shaft cross-section 2016 can only be used up to an insert thickness of 4.76 mm



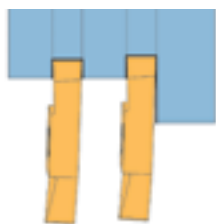
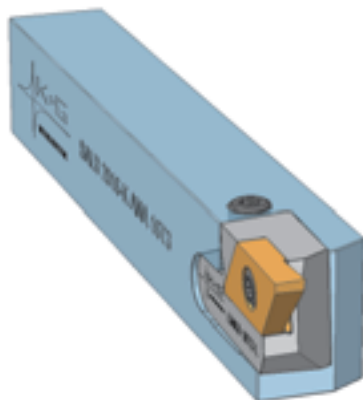
External grooving holders, SALB... - ANA with cartridge, left-hand version



External Form,	ANA, LH	H	W	L	f	Insert	Cartridge	€/pc.
SALB 1616-J	ANA 11**	16	16	112.5	16.6	TNEX 11**	TNKB 11** L	
SALB 2020-L	ANA 11**	20	20	139	20.8	TNEX 11**	TNKB 11** L	
SALB 2020-L	ANA 16**	20	20	140	20.8	TNEX 16**	TNKB 16** L	
SALB 2525-M	ANA 16**	25	25	150	25.8	TNEX 16**	TNKB 16** L	

Ordering example: **SALB 2520-M ANA 1606**, cartridge **TNKB 1606 L** (see page 32)

Attention: Shaft cross-section 2016 can only be used up to an insert thickness of 4.76 mm

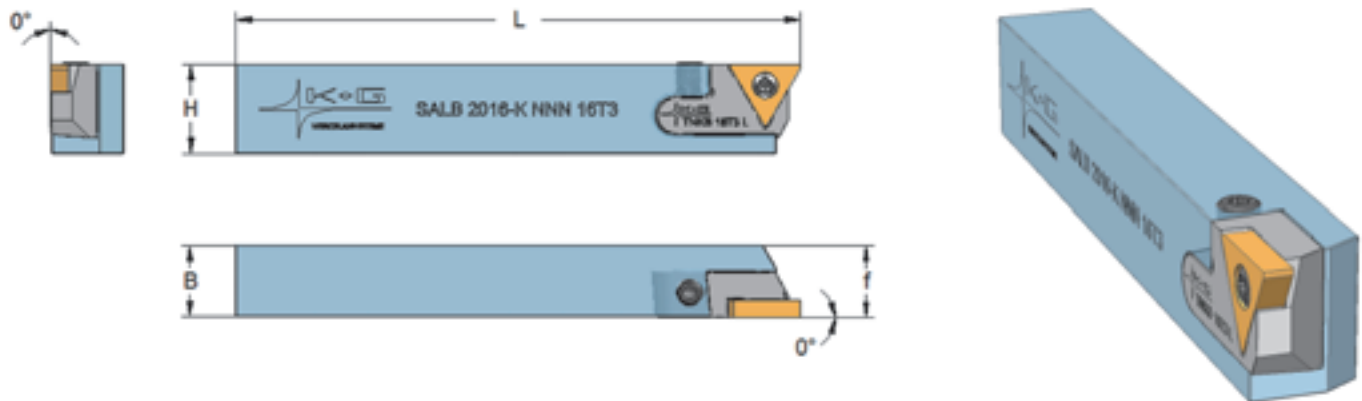


External Form,	ANA, LH	H	W	L	f	Insert	Cartridge	€/pc.
SALB 1616-J	ANA 11**	16	16	114.8	16.68	LNEX 11**	LNKB 11** L	
SALB 2020-L	ANA 11**	20	20	141.3	20.68	LNEX 11**	LNKB 11** L	
SALB 2020-L	ANA 16**	20	20	143.5	20.92	LNEX 16**	LNKB 16** L	
SALB 2525-M	ANA 16**	25	25	153.5	25.92	LNEX 16**	LNKB 16** L	
SALB 2525-M	ANA 24**	25	25	157.5	26.20	LNEX 24**	LNKB 24** L	

Ordering example: **SALB 2020-L ANA 1604**, cartridge **LNKB 1604 L** (see page 33)

Attention: Shaft cross-section 2016 can only be used up to an insert thickness of 4.76 mm

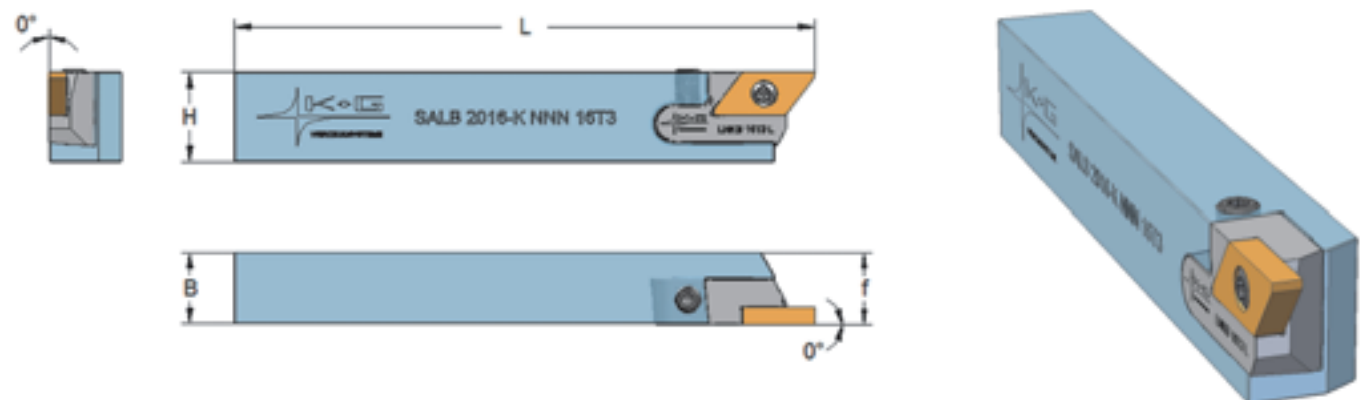
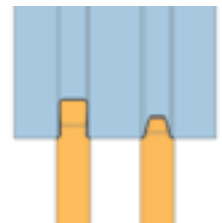
External grooving holders, SALB... - NNN with cartridge, left-hand version



External Form,	NNN, LH	H	W	L	f	Insert	Cartridge	€/pc.
SALB 1616-J	NNN 11**	16	16	112.5	16.2	TNEX 11**	TNKB 11** L	
SALB 2020-L	NNN 11**	20	20	139	20.2	TNEX 11**	TNKB 11** L	
SALB 2020-L	NNN 16**	20	20	140	20.2	TNEX 16**	TNKB 16** L	
SALB 2525-M	NNN 16**	25	25	150	25.2	TNEX 16**	TNKB 16** L	

Ordering example: **SALB 2020-L NNN 16T3**, cartridge **TNKB 16T3 R** (see page 32)

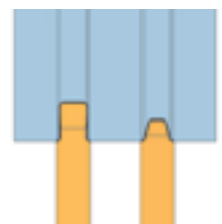
Attention: Shaft cross-section 2016 can only be used up to an insert thickness of 4.76 mm



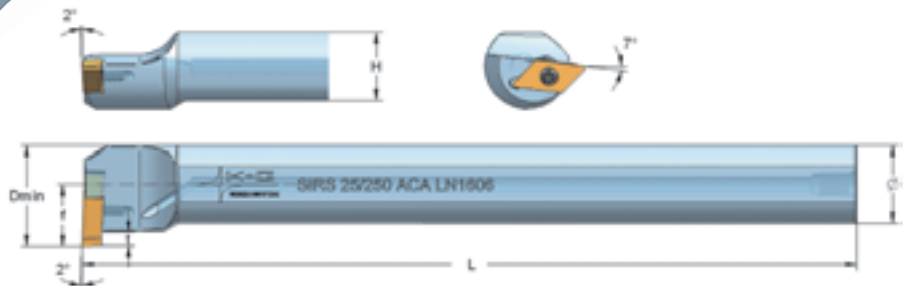
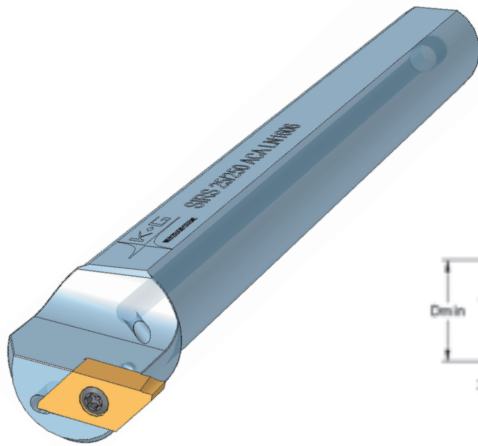
External Form,	NNN, LH	H	W	L	f	Insert	Cartridge	€/pc.
SALB 1616-J	NNN 11**	16	16	114.8	16.2	LNEX 11**	LNKB 11** L	
SALB 2020-L	NNN 16**	20	20	141.3	20.2	LNEX 11**	LNKB 11** L	
SALB 2020-L	NNN 16**	20	20	143.5	20.2	LNEX 16**	LNKB 16** L	
SALB 2525-M	NNN 16**	25	25	153.5	25.2	LNEX 16**	LNKB 16** L	
SALB 2525-M	NNN 24**	25	25	157.5	25.2	LNEX 24**	LNKB 24** L	

Ordering example: **SALB 1616-J NNN 1103**, cartridge **LNKB 1103 L** (see page 33)

Attention: Shaft cross-section 2016 can only be used up to an insert thickness of 4.76 mm



Internal grooving holders, SIRS... with direct insert seat



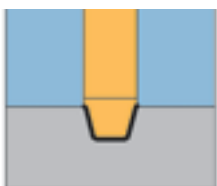
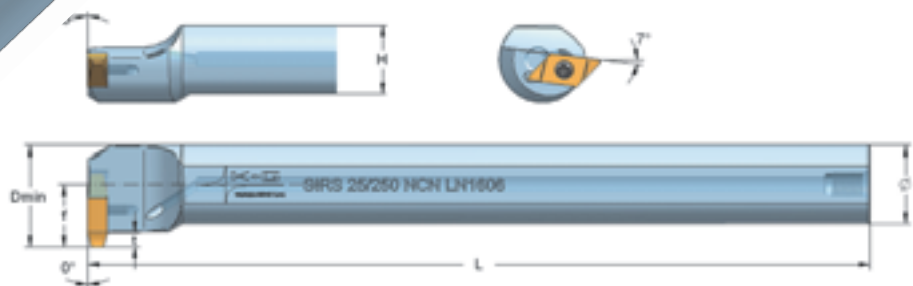
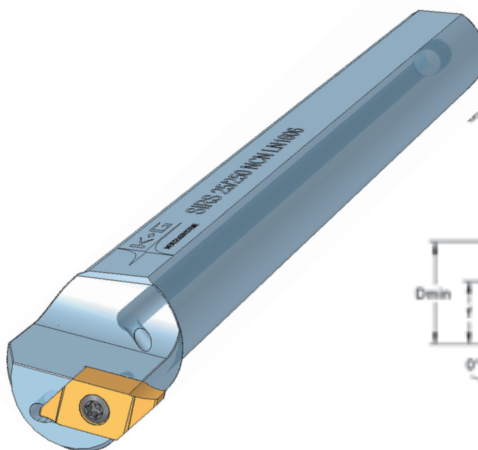
Right-hand version
as shown.
SIRS...
left-hand version
on request.

Internal Form, A*A, RH	Ø	H	L	Dmin	t	f	Screw	Screwdriver	€/pc.
SIRS 16/200 ACA LN11**	16	15	200.70	22.00	3.00	13.25	TX 2.5/7	TX08	
SIRS 20/220 ACA LN11**	20	18	220.70	27.00	3.30	16.00			
SIRS 20/220 ACA LN16**	20	18	220.80	29.00	4.50	18.00	TX 3.5/9	TX15	
SIRS 25/250 ACA LN16**	25	22	250.80	34.00	4.75	21.00			
SIRS 32/300 ACA LN16**	32	28	300.80	41.00	5.00	24.00	TX 4.5/17	TX20	
SIRS 32/300 ACA LN24**	32	28	301.20	42.00	6.00	25.00			
SIRS 40/320 ABA LN16**	40	35	320.80	49.00	5.00	28.20	TX 3.5/13	TX15	
SIRS 40/320 ABA LN24**	40	35	321.20	51.00	6.00	29.40	TX 4.5/17	TX20	

** see e.g., grooving inserts on page 7 for insert thickness (s)

Ordering example: **SIRS 20/220 ACA LN1605**

See page 34 for coolant connection accessories



Right-hand version
as shown.
SIRS...
left-hand version
on request.

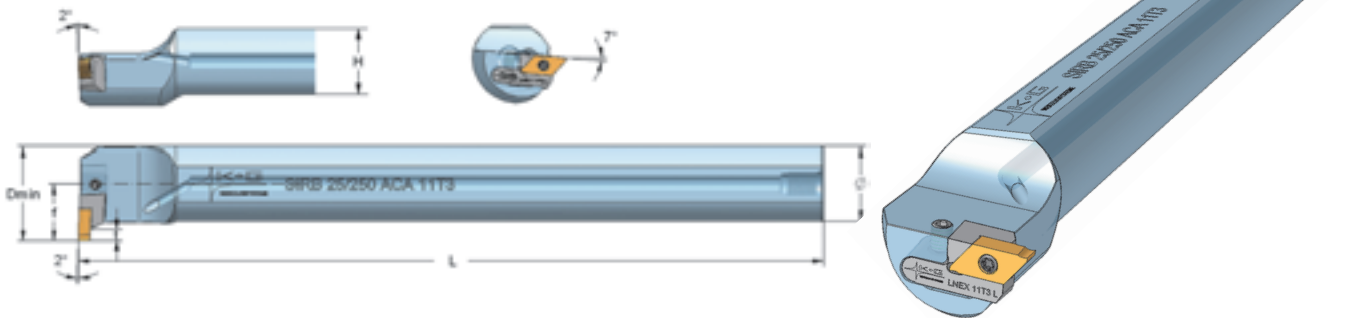
Internal Form, N*N, RH	Ø	H	L	Dmin	t	f	Screw	Screwdriver	€/pc.
SIRS 16/200 NCN LN11**	16	15	200	22.00	3.00	13.25	TX 2.5/7	TX08	
SIRS 20/220 NCN LN11**	20	18	220	27.00	3.30	16.00			
SIRS 20/220 NCN LN16**	20	18	220	29.00	4.50	18.00	TX 3.5/9	TX15	
SIRS 25/250 NCN LN16**	25	22	250	34.00	4.75	21.00			
SIRS 32/300 NCN LN16**	32	28	300	41.00	5.00	24.00	TX 4.5/17	TX20	
SIRS 32/300 NCN LN24**	32	28	300	42.00	6.00	25.00			
SIRS 40/320 NBN LN16**	40	35	320	49.00	5.00	28.20	TX 3.5/13	TX15	
SIRS 40/320 NBN LN24**	40	35	320	51.00	6.00	29.40	TX 4.5/17	TX20	

** => see e.g. page 9 for insert thickness (s)

Ordering example: **SIRS 20/220 NCN LN11T3**

See page 34 for coolant connection accessories

Internal grooving holders, SIRB... with cartridge

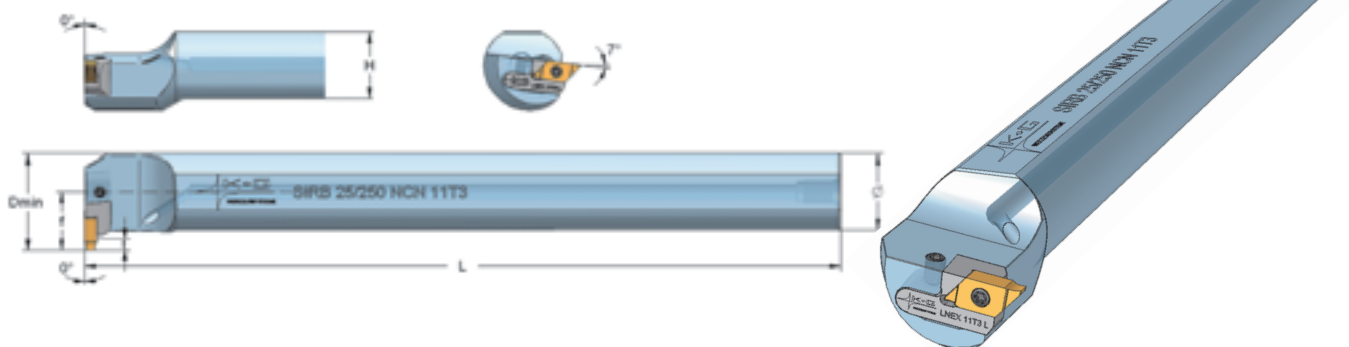


Internal Form, ACA, RH	Ø	H	L	Dmin	t	f	Insert	Cartridge	€/pc.
SIRB 20/220 ACA LN11**	20	18	220.80	29.00	3.20	18.00	LNEX 11**	LNKB 11** L	
SIRB 25/250 ACA LN11**	25	22	250.80	32.50	3.20	19.20	LNEX 11**	LNKB 11** L	
SIRB 32/300 ACA LN16**	32	28	301.00	42.50	3.75	25.50	LNEX 16**	LNKB 16** L	
SIRB 40/320 ACA LN16**	40	35	321.00	51.00	4.50	30.15	LNEX 16**	LNKB 16** L	
SIRB 40/320 ACA LN24**	40	35	322.00	54.50	8.00	33.60	LNEX 24**	LNKB 24** L	

Ordering example: **SIRB 20/220 ACA LN11T3**
See page 34 for coolant connection accessories

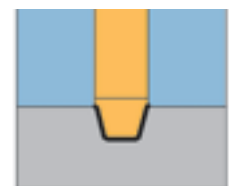


Right-hand version
as shown.
SILB...
left-hand version
on request.



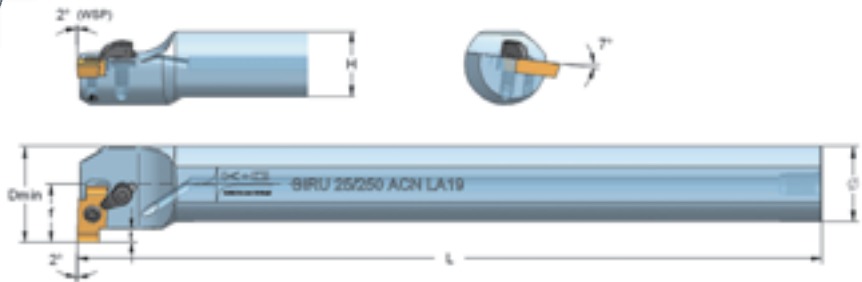
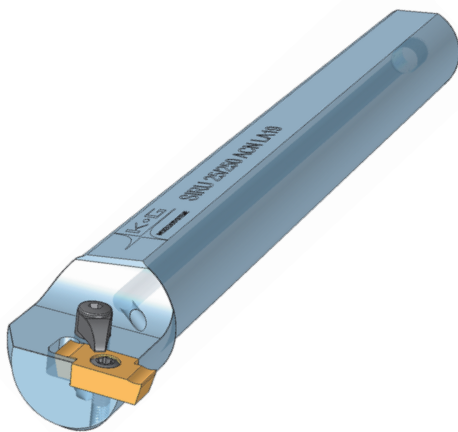
Internal Form, NCN, RH	Ø	H	L	Dmin	t	f	Insert	Cartridge	€/pc.
SIRB 20/220 NCN LN11**	20	18	220	29.00	3.20	18.00	LNEX 11**	LNKB 11** L	
SIRB 25/250 NCN LN11**	25	22	250	32.50	3.20	19.20	LNEX 11**	LNKB 11** L	
SIRB 32/300 NCN LN16**	32	28	300	42.50	3.75	25.50	LNEX 16**	LNKB 16** L	
SIRB 40/320 NCN LN16**	40	35	320	51.00	4.50	30.15	LNEX 16**	LNKB 16** L	
SIRB 40/320 NCN LN24**	40	35	320	54.50	8.00	33.60	LNEX 24**	LNKB 24** L	

Ordering example: **SIRB 32/300 NCN LN1608**
See page 34 for coolant connection accessories



Right-hand version
as shown.
SILB...
left-hand version
on request.

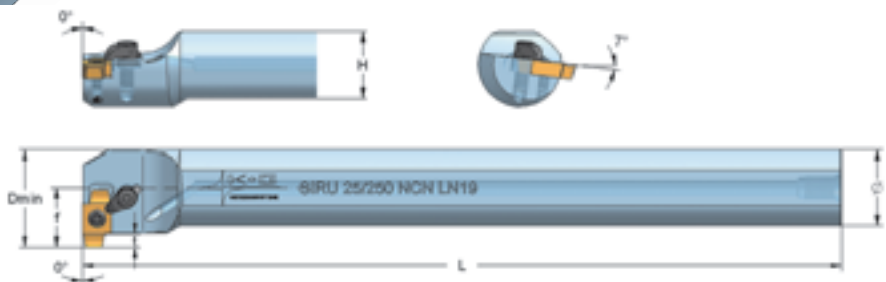
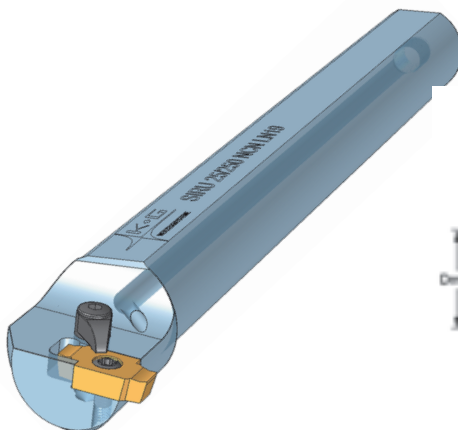
Internal grooving holders, SIRU... with direct insert seat



Right-hand version
as shown.
SILU...
left-hand version
on request.

Internal Form, A*N, RH	Ø	H	L	Dmin	t	f	Screw	Toe Dogs	Screwdriver	€/pc.
SIRU 16/200 ACN LA12	16	15	200.50	22.00	3.00	13.30	TX 2.5/7	SF 5/7	TX08	
SIRU 16/200 ACN LA15	16	15	200.65	23.00	3.70	14.10	TX 3/8.5			
SIRU 20/220 ACN LA12	20	18	220.50	26.50	3.00	15.80	TX 2.5/7			
SIRU 20/220 ACN LA15	20	18	220.65	27.40	3.70	16.60	TX 3/8.5			
SIRU 20/220 ACN LA19	20	18	220.80	28.20	4.50	17.40	TX 3.5/11			
SIRU 25/250 ACN LA15	25	22	250.65	32.50	3.70	19.10	TX 3/8.5	SF 6/11	TX08	
SIRU 25/250 ACN LA19	25	22	250.80	33.40	4.50	20.00	TX 3.5/9		TX15	
SIRU 25/250 ACN LA25	25	22	251.00	35.00	6.00	21.50	TX 4.5/12		TX20	
SIRU 32/300 ACN LA19	32	28	300.80	40.50	4.50	23.50	TX 3.5/9	SF 5/7	TX15	
SIRU 32/300 ACN LA25	32	28	301.00	42.00	6.00	25.00	TX 4.5/12	SF 6/11	TX20	
SIRU 40/320 ABN LA19	40	35	320.80	49.00	4.50	28.00	TX 3.5/9	SF 5/7	TX15	
SIRU 40/320 ABN LA25	40	35	321.00	50.50	6.00	29.60	TX 4.5/12	SF 6/11	TX20	

Ordering example: **SIRU 20/220 ACN LA19**
See page 34 for coolant connection accessories

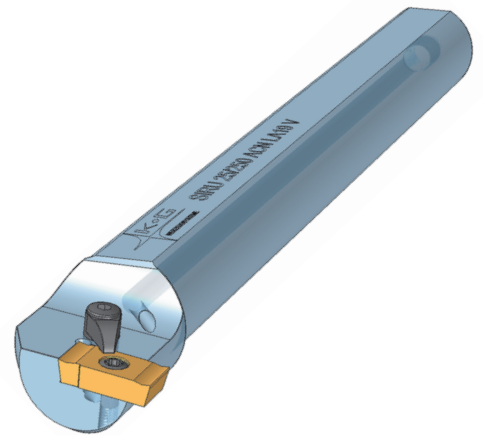
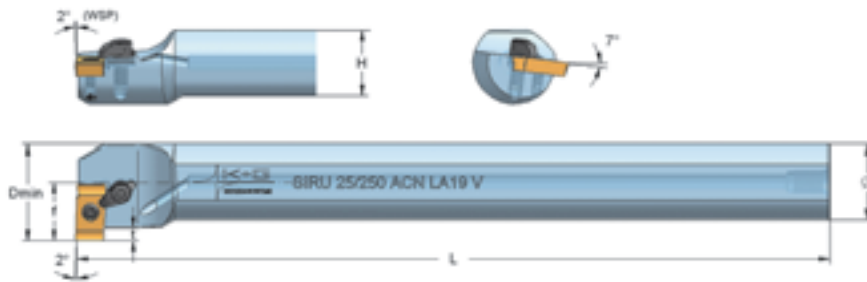


Right-hand version
as shown.
SILU...
left-hand version
on request.

Internal Form, N*N, RH	Ø	H	L	Dmin	t	f	Screw	Toe Dogs	Screwdriver	€/pc.
SIRU 16/200 NCN LN12	16	15	200	22.00	3.00	13.30	TX 2.5/7	SF 5/7	TX08	
SIRU 16/200 NCN LN15	16	15	200	23.00	3.70	14.10	TX 3/8.5			
SIRU 20/220 NCN LN12	20	18	220	26.50	3.00	15.80	TX 2.5/7			
SIRU 20/220 NCN LN15	20	18	220	27.40	3.70	16.60	TX 3/8.5			
SIRU 20/220 NCN LN19	20	18	220	28.20	4.50	17.40	TX 3.5/11			
SIRU 25/250 NCN LN15	25	22	250	32.50	3.70	19.10	TX 3/8.5	SF 6/11	TX08	
SIRU 25/250 NCN LN19	25	22	250	33.40	4.50	20.00	TX 3.5/9		TX15	
SIRU 25/250 NCN LN25	25	22	250	35.00	6.00	21.50	TX 4.5/12		TX20	
SIRU 32/300 NCN LN19	32	28	300	40.50	4.50	23.50	TX 3.5/9	SF 5/7	TX15	
SIRU 32/300 NCN LN25	32	28	300	42.00	6.00	25.00	TX 4.5/12	SF 6/11	TX20	
SIRU 40/320 NBN LN19	40	35	320	49.00	4.50	28.00	TX 3.5/9	SF 5/7	TX15	
SIRU 40/320 NBN LN25	40	35	320	50.50	6.00	29.60	TX 4.5/12	SF 6/11	TX20	

Ordering example: **SIRU 40/275 NBN LN25** (custom length: 275 mm)
See page 34 for coolant connection accessories

Internal grooving holders, SIRU... with direct insert seat, for full-profile inserts

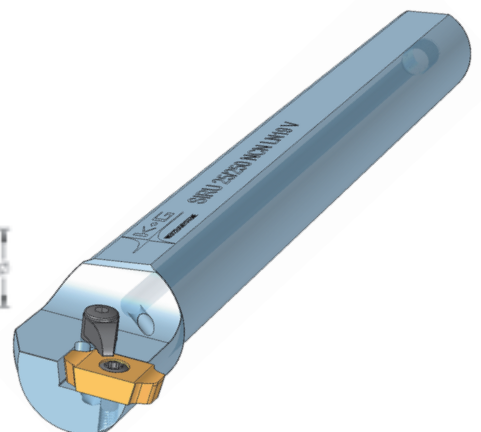
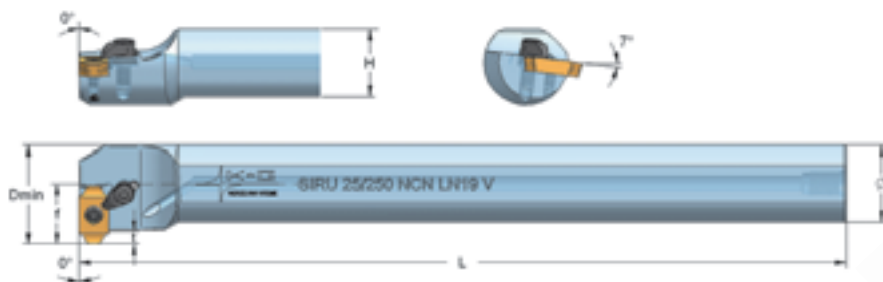


Internal Form, A*N, RH	Ø	H	L	Dmin	t	f	Screw	Toe Dogs	Screwdriver	€/pc.
SIRU 16/200 ACN LA12 V	16	15	200.50	22.00	3.00	13.30	TX 2.5/7	SF 5/7	TX08	
SIRU 16/200 ACN LA15 V	16	15	200.65	23.00	3.70	14.10	TX 3/8.5			
SIRU 20/220 ACN LA12 V	20	18	220.50	26.50	3.00	15.80	TX 2.5/7			
SIRU 20/220 ACN LA15 V	20	18	220.65	27.40	3.70	16.60	TX 3/8.5			
SIRU 20/220 ACN LA19 V	20	18	220.80	28.20	4.50	17.40	TX 3.5/11			
SIRU 25/250 ACN LA15 V	25	22	250.65	32.50	3.70	19.10	TX 3/8.5	SF 6/11	TX08	
SIRU 25/250 ACN LA19 V	25	22	250.80	33.40	4.50	20.00	TX 3.5/9		TX15	
SIRU 25/250 ACN LA25 V	25	22	251.00	35.00	6.00	21.50	TX 4.5/12		TX20	
SIRU 32/300 ACN LA19 V	32	28	300.80	40.50	4.50	23.50	TX 3.5/9	SF 5/7	TX15	
SIRU 32/300 ACN LA25 V	32	28	301.00	42.00	6.00	25.00	TX 4.5/12	SF 6/11	TX20	
SIRU 40/320 ABN LA19 V	40	35	320.80	49.00	4.50	28.00	TX 3.5/9	SF 5/7	TX15	
SIRU 40/320 ABN LA25 V	40	35	321.00	50.50	6.00	29.60	TX 4.5/12	SF 6/11	TX20	



Right-hand version
as shown.
SILU...
left-hand version
on request.

Ordering example: **SIRU 25/250 ACN LA19 V**
See page 34 for coolant connection accessories



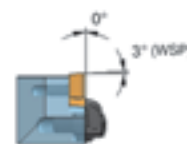
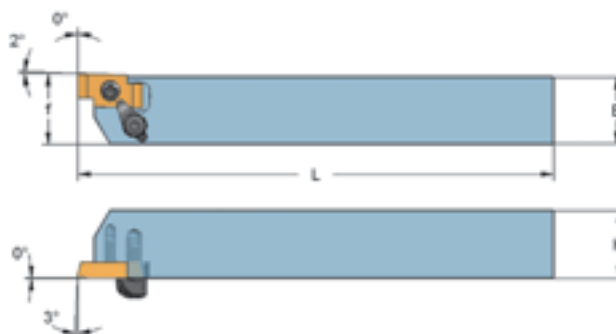
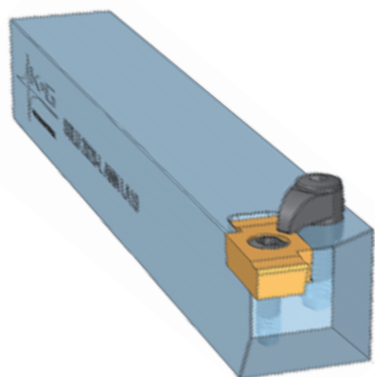
Internal Form, N*N, RH	Ø	H	L	Dmin	t	f	Screw	Toe Dogs	Screwdriver	€/pc.
SIRU 16/200 NCN LN12 V	16	15	200	22.00	3.00	13.30	TX 2.5/7	SF 5/7	TX08	
SIRU 16/200 NCN LN15 V	16	15	200	23.00	3.70	14.10	TX 3/8.5			
SIRU 20/220 NCN LN12 V	20	18	220	26.50	3.00	15.80	TX 2.5/7			
SIRU 20/220 NCN LN15 V	20	18	220	27.40	3.70	16.60	TX 3/8.5			
SIRU 20/220 NCN LN19 V	20	18	220	28.20	4.50	17.40	TX 3.5/11			
SIRU 25/250 NCN LN15 V	25	22	250	32.50	3.70	19.10	TX 3/8.5	SF 6/11	TX08	
SIRU 25/250 NCN LN19 V	25	22	250	33.40	4.50	20.00	TX 3.5/9		TX15	
SIRU 25/250 NCN LN25 V	25	22	250	35.00	6.00	21.50	TX 4.5/12		TX20	
SIRU 32/300 NCN LN19 V	32	28	300	40.50	4.50	23.50	TX 3.5/9	SF 5/7	TX15	
SIRU 32/300 NCN LN25 V	32	28	300	42.00	6.00	25.00	TX 4.5/12	SF 6/11	TX20	
SIRU 40/320 NBN LN19 V	40	35	320	49.00	4.50	28.00	TX 3.5/9	SF 5/7	TX15	
SIRU 40/320 NBN LN25 V	40	35	320	50.50	6.00	29.60	TX 4.5/12	SF 6/11	TX20	



Right-hand version
as shown.
SILU...
left-hand version
on request.

Ordering example: **SIRU 20/220 NCN LN19 V**
See page 34 for coolant connection accessories

Face grooving holders, SSLU... with direct insert seat, for inserts with recesses

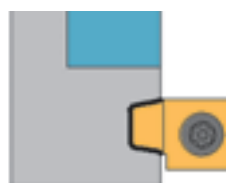
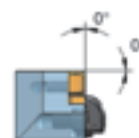
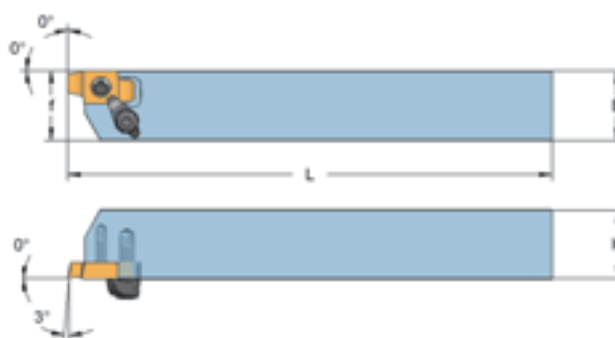
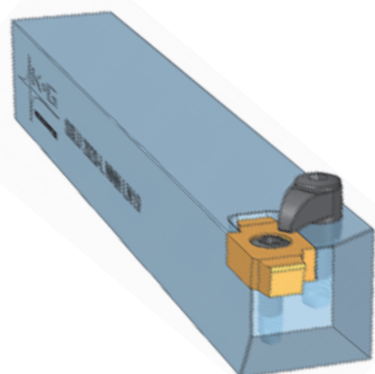


Left-hand version
as shown.
SSRU... right-hand
version on request.

Face Form, ANN, LH	H	W	L	f	Screw	Toe Dogs	Screwdriver	€/pc.
SSLU 1616-J ANN LA12	16	16	111.30	16.50	TX 2.5/7	SF 5/7	TX08	
SSLU 2020-L ANN LA12	20	20	137.80	20.50	TX 3/8.5			
SSLU 2020-L ANN LA15	20	20	138.70	20.65	TX 3.5/11		TX15	
SSLU 2020-L ANN LA19	20	20	139.50	20.80	TX 4.5/12			
SSLU 2525-M ANN LA19	25	25	149.50	25.80				
SSLU 2525-M ANN LA25	25	25	151.00	26.00				

Ordering example: **SSLU 2020-L ANN LA15**

The depth of the cut depends on the applied insert (see page 10)



Left-hand version
as shown.
SSRU... right-hand
version on request.

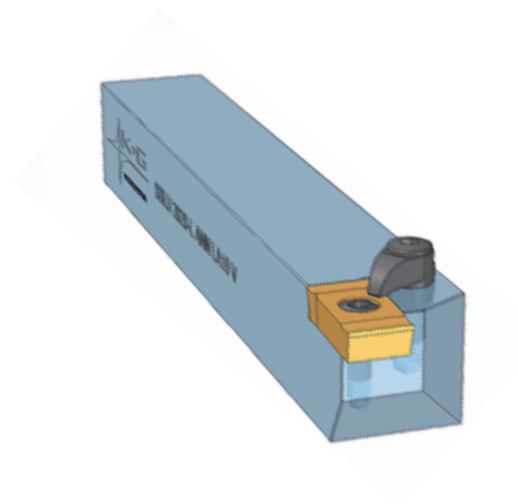
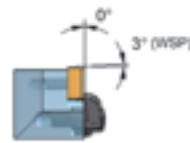
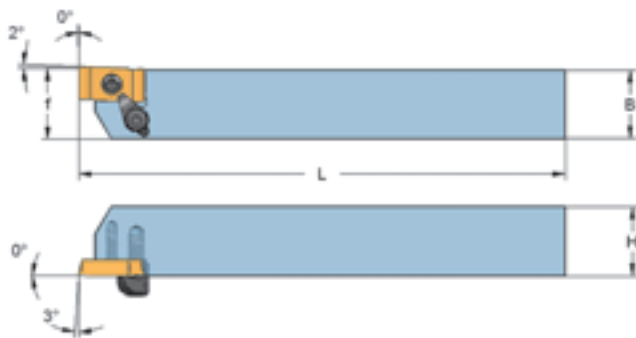
Face Form, NNN, LH	H	W	L	f	Screw	Toe Dogs	Screwdriver	€/pc.
SSLU 1616-J NNN LN12	16	16	111.30	16.00	TX 2.5/7	SF 5/7	TX08	
SSLU 2020-L NNN LN12	20	20	137.80	20.00	TX 3/8.5			
SSLU 2020-L NNN LN15	20	20	138.70	20.00	TX 3.5/11		TX15	
SSLU 2020-L NNN LN19	20	20	139.50	20.00	TX 4.5/12			
SSLU 2525-M NNN LN19	25	25	149.50	25.00				
SSLU 2525-M NNN LN25	25	25	151.00	25.00				

Ordering example: **SSLU 2525-M NNN LN25**

The depth of the cut depends on the applied insert (see page 10)

Face grooving holders, SSLU...

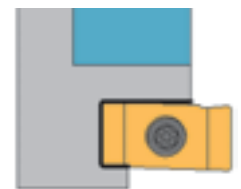
with direct insert seat, for full-profile inserts



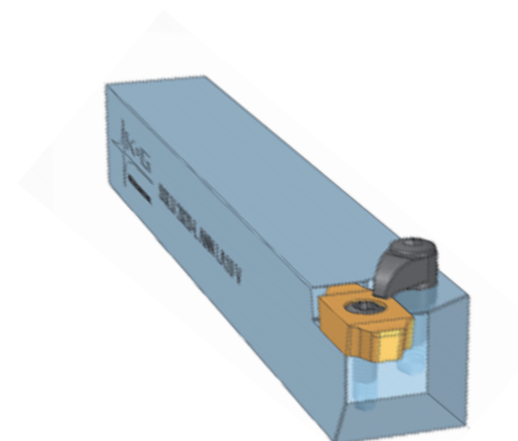
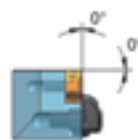
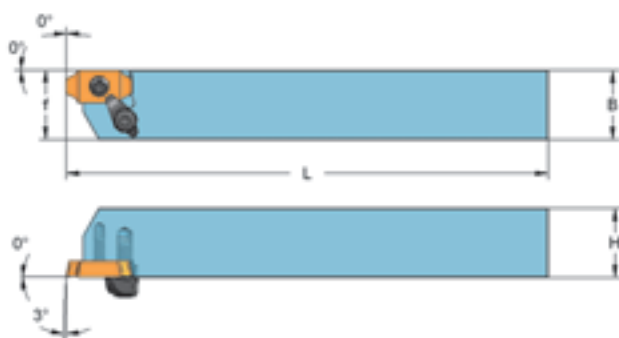
Face Form, ANN, LH V	H	W	L	f	Screw	Toe Dogs	Screwdriver	€/pc.
SSLU 1616-J ANN LA12 V	16	16	111.30	16.50	TX 2.5/7	SF 5/7	TX08	
SSLU 2020-L ANN LA12 V	20	20	137.80	20.50	TX 3/8.5			
SSLU 2020-L ANN LA15 V	20	20	138.70	20.65	TX 3.5/11		TX15	
SSLU 2020-L ANN LA19 V	20	20	139.50	20.80	TX 4.5/12			
SSLU 2525-M ANN LA19 V	25	25	149.50	25.80			TX20	
SSLU 2525-M ANN LA25 V	25	25	151.00	26.00				

Ordering example: **SSLU 1616-J ANN LA15 V**

The depth of the cut depends on the applied insert (see page 10)



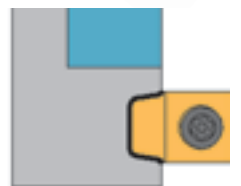
Left-hand version as shown.
SSRU... right-hand version on request.



Face Form, NNN, LH V	H	W	L	f	Screw	Toe Dogs	Screwdriver	€/pc.
SSLU 1616-J NNN LN12 V	16	16	111.30	16.00	TX 2.5/7	SF 5/7	TX08	
SSLU 2020-L NNN LN12 V	20	20	137.80	20.00	TX 3/8.5			
SSLU 2020-L NNN LN15 V	20	20	138.70	20.00	TX 3.5/11		TX15	
SSLU 2020-L NNN LN19 V	20	20	139.50	20.00	TX 4.5/12			
SSLU 2525-M NNN LN19 V	25	25	149.50	25.00			TX20	
SSLU 2525-M NNN LN25 V	25	25	151.00	25.00				

Ordering example: **SSLU 2525-M NNN LN25 V**

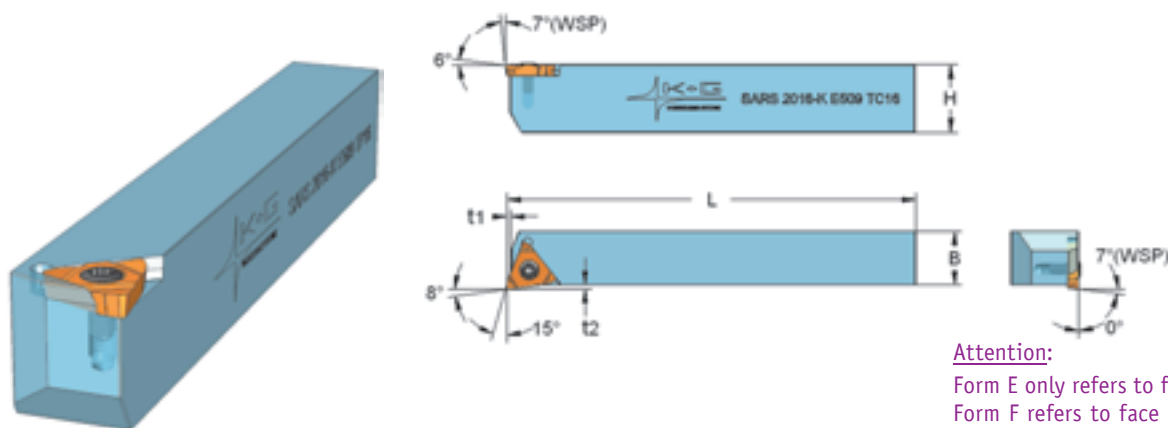
The depth of the cut depends on the applied insert (see page 10)



Left-hand version as shown.
SSRU... right-hand version on request.

External grooving holders, SARS... E509

for relief grooves in accordance with DIN 509, Forms E and F



Right-hand version as shown.
SALS... left-hand version on request.

Attention:

Form E only refers to face grooving on t1.
Form F refers to face grooving on t1 and then rounding along t2.

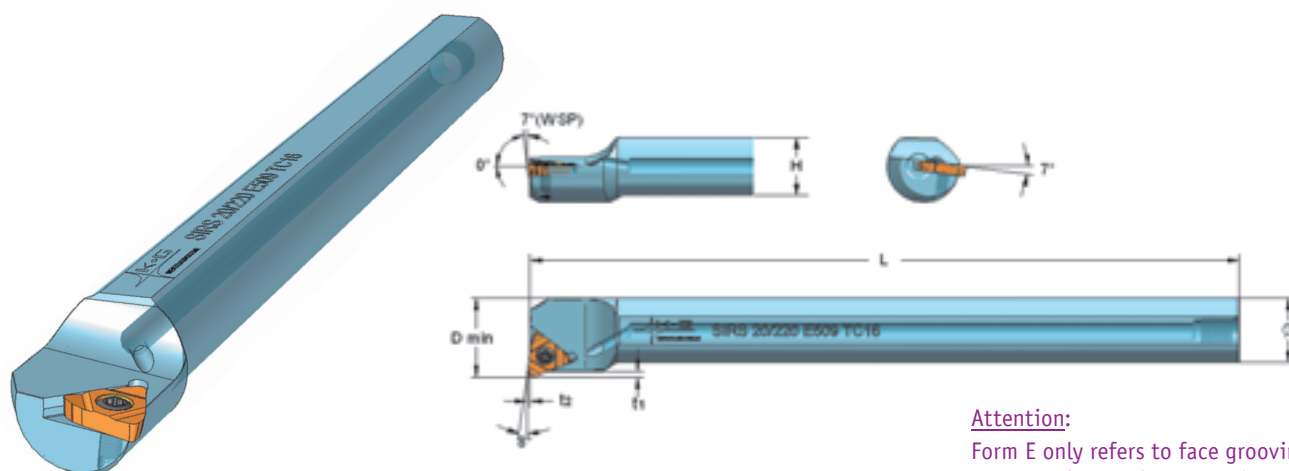
External Relief Grooves	H	W	L	fmax*	t1max*	t2max*	Screw	Screwdriver	€/pc.
SARS 1616-J E509 TC11	16	16	108	16.6	0.5	0.3	TX 2.5/7	TX08	
SARS 1616-J E509 TC16	16	16	108	17.2	0.7	0.5			
SARS 2020-L E509 TC16	20	20	135	21.2	0.7	0.5			
SARS 2525-M E509 TC16	25	25	145	26.2	0.7	0.5	TX 3.5/9	TX15	
SARS 2020-L E509 TC22	20	20	135	21.6	0.8	0.6			
SARS 2525-M E509 TC22	25	25	145	26.6	0.8	0.6			

* in accordance with DIN 509

Ordering example: SARS 2020-L E509 TC16

Internal grooving holders, SIRS... E509

for relief grooves in accordance with DIN 509



Right-hand version as shown.
SILS... left-hand version on request.

Attention:

Form E only refers to face grooving on t1.
Form F refers to face grooving on t1 and then rounding along t2.

Internal Relief Grooves	Ø	H	L	D min	t1max*	t2max*	Screw	Screwdriver	€/pc.
SIRS 20/220 E509 TC16	20	18	220.00	25.00	0.70	0.50	TX 3.5/9	TX15	
SIRS 25/250 E509 TC16	25	22	250.00	29.50	0.70	0.50			
SIRS 25/250 E509 TC22	25	22	250.00	30.00	0.80	0.60			
SIRS 32/300 E509 TC22	32	28	300.00	37.00	0.80	0.60	TX 4.5/12	TX20	
SIRS 40/320 E509 TC22	40	35	320.00	46.00	0.80	0.60			

* in accordance with DIN 509

Ordering example: SIRS 25/250 E509 TC22

See page 34 for coolant connection accessories

Tool Holder Ordering System

K+G Factory Standard

Square shank ordering example:

①	②	③	④	⑤a	⑤b	⑤c	⑥a	⑥b	⑥c	⑦a	⑦b	⑧	⑨
S	A	R	S	2525	-	M	A	N	A	T	N	16	08

Round shank ordering example:

①	②	③	④	⑤a	⑤b	⑤c	⑥a	⑥b	⑥c	⑦a	⑦b	⑧	⑨
S	I	R	U	32	/	300	N	C	N	L	N	25	06

① Type of cutting operation

A	Parting off	H	Reaming
D	Turning	P	Package holding – multiple grooving
F	Milling	S	Grooving
G	Thread cutting		

② Machining operation

A	External
I	Internal
S	Face

③ Cutting direction

L	Left-hand
R	Right-hand
N	Neutral

④ Workholding system

B	Cartridge
C	Toe dogs
S	TORX bolt
U	Toe dogs plus TORX bolt (optional)
X	Custom design

⑤a Shank cross-section dimensions

*	Square shank: length x width
	Round shank: diameter
	* Please enter value(s).

⑤b Shank cross-section types

-	Square shank
/	Round shank

⑤c Shank length

A	32	F	80	L	140	R	200	W	450
B	40	G	90	M	150	S	250	X	SOND
C	50	H	100	N	160	T	300	Y	500
D	60	J	110	P	170	U	350		
E	70	K	125	Q	180	V	400		

Square shank (-): enter the letter for the corresponding length.
Round shank (/): enter the numerical value for the corresponding length.

⑥a Work angle χ (CHI)

B	95°	H	88°	E	60°
A	92°	R	75°	M	50°
N	90°	S	63°	D	45°



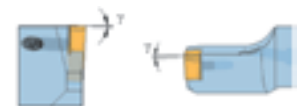
⑥b Tilt angle λ (LAMBDA)

N	0°	A	3°	B	5°
C	7°	Z	10°		



⑥c Tilt angle γ (GAMMA) lead angle for thread cutting

N	0°	T	4°	V	8°
L	1°	B	5°	W	9°
A	2°	S	6°	Z	10°
M	3°	C	7°	H	-2°



⑦a Form of insert

*	Form	ISO standard
	* Please enter value(s).	

⑦b Clearance angle of insert

*	Clearance angle	ISO standard
	* Please enter value(s).	

⑧ Length of insert cutting edge

*	Length of cutting edge	ISO standard
	* Please enter value(s).	

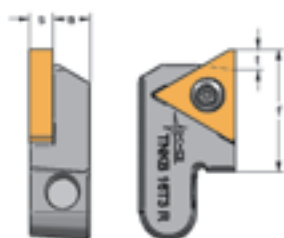
⑨ Insert thickness

*	Insert thickness (only if required)	ISO standard
	For cartridge holders: cartridge size	
	* Please enter value(s).	

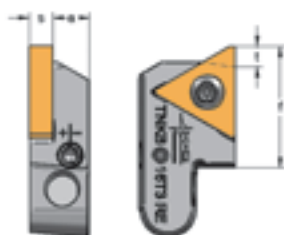
The positions ⑥a to ⑨ are designated by custom numbers (XH xxxx.xxx) in case of design-specific customised holders.

Cartridges and incorporated parts for K+G-holders, form TNKB

Right-hand version



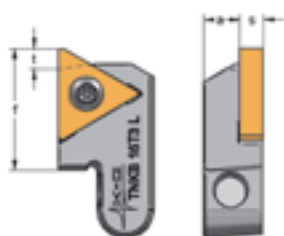
Right-hand version (R)



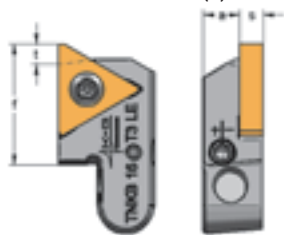
Right-hand version can be adjusted. The eccentric bolt can be used to adjust variable cartridges by $\pm 0,2$ mm. (RH)

Designation	Suitable for Insert	s -0.02	a +0.01	f +0.01	t +0.10	Insert Screw	Ball Screw	Eccentric Bolt	Screw as per DIN 915	€/pc.
TNKB 1102 R	TNEX 1102 R	2.50	4.50	14.00	2.50	TX 2.5/5.5	TNK M4	-	-	
1103 R	1103 R	3.20				TX 2.5/7				
TNKB 1602 R	TNEX 1602 R	2.50	6.30	21.00	3.50	TX 3.5/7	TNK M6F	-	-	
1603 R	1603 R	3.20				TX 3.5/7				
16T3 R	16T3 R	4.00				TX 3.5/9				
1604 R	1604 R	4.76				TX 3.5/9				
1605 R	1605 R	5.60				TX 3.5/9				
1606 R	1606 R	6.40				TX 3.5/11				
1608 R	1608 R	8.00				TX 3.5/13				
TNKB 1602 RH	TNEX 1602 R	2.50	6.30	21.00	3.50	TX 3.5/7	TNK M6F	BS16	M3x3	
1603 RH	1603 R	3.20				TX 3.5/7			M3x4	
16T3 RH	16T3 R	4.00				TX 3.5/9			M3x6	
1604 RH	1604 R	4.76				TX 3.5/9				
1605 RH	1605 R	5.60				TX 3.5/9				
1606 RH	1606 R	6.40				TX 3.5/11				
1608 RH	1608 R	8.00				TX 3.5/13				

Left-hand version



Left-hand version (L)



Left-hand version can be adjusted. The eccentric bolt can be used to adjust variable cartridges by $\pm 0,2$ mm. (LH)

Designation	Suitable for Insert	s -0.02	a +0.01	f +0.01	t +0.10	Insert Screw	Ball Screw	Eccentric Bolt	Screw as per DIN 915	€/pc.
TNKB 1102 L	TNEX 1102 L	2.50	4.50	14.00	2.50	TX 2.5/5.5	TNK M4	-	-	
1103 L	1103 L	3.20				TX 2.5/7				
TNKB 1602 L	TNEX 1602 L	2.50	6.30	21.00	3.50	TX 3.5/7	TNK M6F	-	-	
1603 L	1603 L	3.20				TX 3.5/7				
16T3 L	16T3 L	4.00				TX 3.5/9				
1604 L	1604 L	4.76				TX 3.5/9				
1605 L	1605 L	5.60				TX 3.5/9				
1606 L	1606 L	6.40				TX 3.5/11				
1608 L	1608 L	8.00				TX 3.5/13				
TNKB 1602 LH	TNEX 1602 L	2.50	6.30	21.00	3.50	TX 3.5/7	TNK M6F	BS16	M3x3	
1603 LH	1603 L	3.20				TX 3.5/7			M3x4	
16T3 LH	16T3 L	4.00				TX 3.5/9			M3x6	
1604 LH	1604 L	4.76				TX 3.5/9				
1605 LH	1605 L	5.60				TX 3.5/9				
1606 LH	1606 L	6.40				TX 3.5/11				
1608 LH	1608 L	8.00				TX 3.5/13				

Ordering example: **TNKB 16T3 LH** for a left-hand, adjustable cartridge.

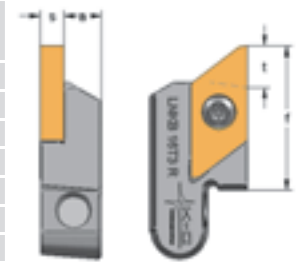
Cartridges are always delivered with the corresponding TORX bolts.

TNKB and LNK of the same size and cutting direction fit into the same cartridge seat.

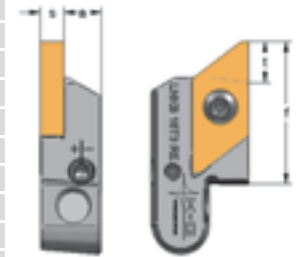
Cartridges and incorporated parts for K+G-holders, form LNKB

Right-hand version

Designation	Suitable for Insert	s -0.02	a +0.01	f +0.01	t +0.10	Insert Screw	Ball Screw	Eccen- tric Bolt	Screw as per DIN 915	€/pc.
LNKB 1102 R	LNEX 1102 R	2.50				TX 2.5/5.5				
1103 R	1103 R	3.20	4.50	16.00	4.30	TX 2.5/7	TNK M4	-	-	
11T3 R	11T3 R	4.00				TX 2.5/7				
LNKB 1602 R	LNEX 1602 R	2.50				TX 3.5/7				
1603 R	1603 R	3.20				TX 3.5/7				
16T3 R	16T3 R	4.00				TX 3.5/9				
1604 R	1604 R	4.76	6.30	25.00	6.50	TX 3.5/9	TNK M6F	-	-	
1605 R	1605 R	5.60				TX 3.5/9				
1606 R	1606 R	6.40				TX 3.5/11				
1607 R	1607 R	7.20				TX 3.5/13				
1608 R	1608 R	8.00				TX 3.5/13				
LNKB 1602 RH	LNEX 1602 R	2.50				TX 3.5/7			M3x3	
1603 RH	1603 R	3.20				TX 3.5/7				
16T3 RH	16T3 R	4.00				TX 3.5/9			M3x4	
1604 RH	1604 R	4.76	6.30	25.00	6.50	TX 3.5/9	TNK M6F	BS16		
1605 RH	1605 R	5.60				TX 3.5/9				
1606 RH	1606 R	6.40				TX 3.5/11			M3x6	
1607 RH	1607 R	7.20				TX 3.5/13				
1608 RH	1608 R	8.00				TX 3.5/13				
LNKB 2404 R	LNEX 2404 R	4.76				TX4.5/10.5				
2405 R	2405 R	5.60				TX4.5/10.5				
2406 R	2406 R	6.40				TX4.5/12				
2407 R	2407 R	7.20				TX4.5/12				
2408 R	2408 R	8.00	6.00	33.00	11.50	TX4.5/12	TNK M8F	-	-	
2409 R	2409 R	9.52				TX4.5/15				
2411 R	2411 R	11.00				TX4.5/15				
2412 R	2412 R	12.70				TX4.5/17				



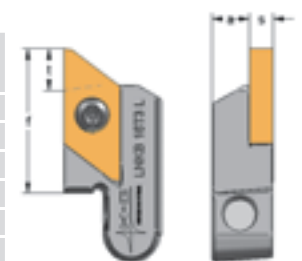
Right-hand version (R)



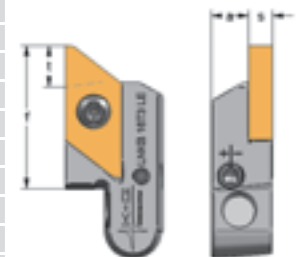
Right-hand version can be adjusted. The eccentric bolt can be used to adjust variable cartridges by $\pm 0,2$ mm. (RH)

Left-hand version

Designation	Suitable for Insert	s -0.02	a +0.01	f +0.01	t +0.10	Insert Screw	Ball Screw	Eccen- tric Bolt	Screw as per DIN 915	€/pc.
LNKB 1102 L	LNEX 1102 L	2.50				TX 2.5/5.5				
1103 L	1103 L	3.20	4.50	16.00	4.30	TX 2.5/7	TNK M4	-	-	
11T3 L	11T3 L	4.00				TX 2.5/7				
LNKB 1602 L	LNEX 1602 L	2.50				TX 3.5/7				
1603 L	1603 L	3.20				TX 3.5/7				
16T3 L	16T3 L	4.00				TX 3.5/9				
1604 L	1604 L	4.76	6.30	25.00	6.50	TX 3.5/9	TNK M6F	-	-	
1605 L	1605 L	5.60				TX 3.5/9				
1606 L	1606 L	6.40				TX 3.5/11				
1608 L	1608 L	7.20				TX 3.5/13				
1608 L	1608 L	8.00				TX 3.5/13				
LNKB 1602 LH	LNEX 1602 L	2.50				TX 3.5/7			M3x3	
1603 LH	1603 L	3.20				TX 3.5/7				
16T3 LH	16T3 L	4.00				TX 3.5/9			M3x4	
1604 LH	1604 L	4.76	6.30	25.00	6.50	TX 3.5/9	TNK M6F	BS16		
1605 LH	1605 L	5.60				TX 3.5/9				
1606 LH	1606 L	6.40				TX 3.5/11			M3x6	
1607 LH	1607 L	7.20				TX 3.5/13				
1608 LH	1608 L	8.00				TX 3.5/13				
LNKB 2404 L	LNEX 2404 L	4.76				TX4.5/10.5				
2405 L	2405 L	5.60				TX4.5/10.5				
2406 L	2406 L	6.40				TX4.5/12				
2407 L	2407 L	7.20				TX4.5/12				
2408 L	2408 L	8.00	6.00	33.00	11.50	TX4.5/12	TNK M8F	-	-	
2409 L	2409 L	9.52				TX4.5/15				
2411 L	2411 L	11.00				TX4.5/15				
2412 L	2412 L	12.70				TX4.5/17				



Left-hand version (L)



Left-hand version can be set. The eccentric bolt can be used to adjust variable cartridges by $\pm 0,2$ mm. (LH)

Ordering example: **LNKB 16T3 LH** for a left-hand, adjustable cartridge.

Cartridges are always delivered with the corresponding TORX bolts.

TNKB and LNKB of the same size and cutting direction fit into the same cartridge seat.

Accessories and replacement parts for K+G holders

Seal washer



Designation	Boring Bar	Length l	ØD	€/pc.
DS 16	SI** 16/**	6.00	16.00	
DS 20	SI** 20/**		20.00	
DS 25	SI** 25/**		25.00	
DS 32	SI** 32/**		32.00	
DS 40	SI** 40/**		40.00	

Hollow screw



Designation		Thread	Screwdriver	€/pc.
HS M8x1	all seal washers	M8x1	SW 13	

Hose connection



Designation	all boring bars	Thread	Screwdriver	€/pc.
NP M8x1-6	Hose, NWØ 6	M8x1	SW13	

Threaded fitting



Designation	all boring bars	Thread	Screwdriver	€/pc.
VS M8x1-6	Tube Ø 6	M8x1	SW11	

Coupling connector



Designation		Thread	Screwdriver	€/pc.
KST M8x1	all boring bars	M8x1	SW13	

Quick-release coupling



Designation		Thread	Screwdriver	€/pc.
KPL M10x1	at coupling connector	M10x1	SW14	

Screwdriver



Designation	TORX bolts	€/pc.
TX 08	M2.5-M3.0	
TX 10	M3.0	
TX 15	M3.5	
TX 20	M4.5-M5.0	

Torque driver with straight handle (w/o Torx driver blade)



Designation	TORX bolts	Thread	€/pc.
DMS 1.5Nm	TX 08	M2.5	
DMS 2.5Nm	TX 08-M3.0	M3.0	
DMS 4.0Nm	TX 15	M3.5	

Torque driver with gun-type handle (w/o Torx bit)



Designation	TORX bolts	Thread	€/pc.
DMSP 6.0Nm	TX 15 - M6F / TX 20 - M4.5	M6x0.75 / M4.5	
DMSP 6.5Nm	TX 20 - M5.0	M5.0	

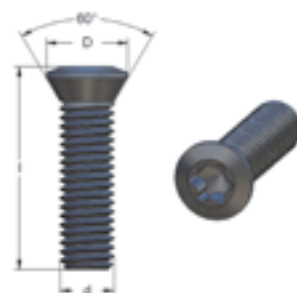
TORX driver blades and bits for torque drivers

Designation	Torque driver	Thread	€/pc.
TX 08/174	DMS (max. 2.5Nm)	M2.5 / M3.0	
TX 15/175	DMS (max. 4.0Nm)	M3.5	
TX 15/50	DMSP (max. 6.0Nm)	M6x0.75	
TX 20/50	DMSP (max. 6.5Nm)	M4.5 / M5.0	

Accessories and replacement parts for K+G holders

TORX bolt

Designation	Fits Insert	l	D	d	Screwdriver	Nm	€/pc.
TX 2.5/5.5	IC 6.35	5.5	3.5	M 2.5	TX 08	1.8	
TX 2.5/7		7.0					
TX 3.0/7	IC 7.94	7.0	4.2	M 3.0	TX 08	2.5	
TX 3.0/9		9.0					
TX 3.5/7	IC 9.52	7.0	5.5	M 3.5	TX 15	4.0	
TX 3.5/9		9.0					
TX 3.5/11		11.0					
TX 3.5/13		13.0					
TX 4.5/10.5	IC 12.0-12.7	10.0	6.8	M 4.5	TX 20	6.0	
TX 4.5/12		12.0					
TX 4.5/15		14.0					
TX 4.5/17		17.0					



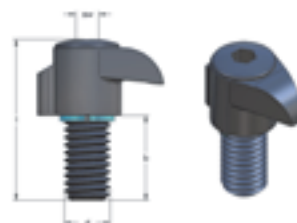
Ball screw

Designation	Fits Cartridge	l	d	Screwdriver	Nm	€/pc.
TNK M4	TN-LNKB 11** RH&LH	4.5	M4.0	TX 08	2.5	
TNK M6F	TN-LNKB 16**RH&LH	7.5	M6x0.75	TX 15	6.5	
TNK M8F	LNKB 24** RH&LH	9.0	M8x1	TX 20	7.0	



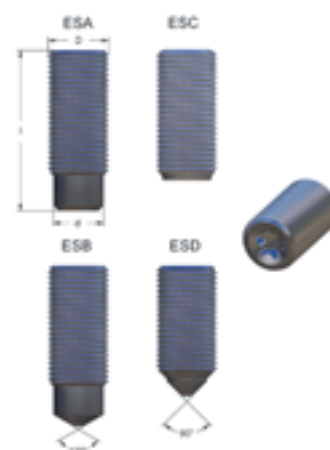
Toe dogs

Designation	Fits Insert	l	b	Thread	Screwdriver	€/pc.
SF 5/5	IC 6.35	13.0	4.8	M 5	SW 2.5	
SF 5/7		15.2	7.0			
SF 6/6	IC 9.52	16.2	6.3	M 6	SW3.0	
SF 6/11		21.1	11.2			
SF 8/9	IC 12.7	21.8	9.3	M 8	SW 4.0	
SF 8/14		26.8	14.3			



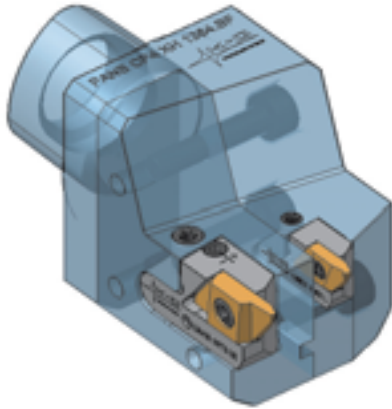
Set screw

Designation	l	D	d	Screwdriver	€/pc.
ESA 6.05/16	16	M6x0.5	5	TX 15	
ESB 6.05/10	10	M6x0.5	-	TX 15	
ESB 6.05/13	13				
ESB 6.05/16	16				
ESC 6.05/10	10	M6x0.5	6	TX 15	
ESC 6.05/13	13				
ESD 6.05/13	13	M6x0.5	-	TX 15	
ESD 6.05/16	16				



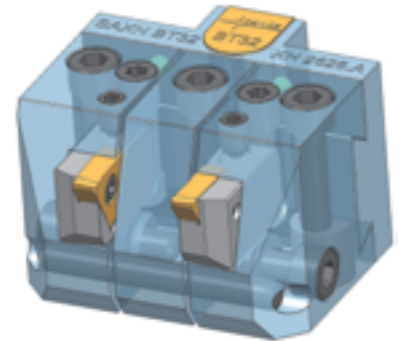
Further designs are available on request.

Examples of customised holders



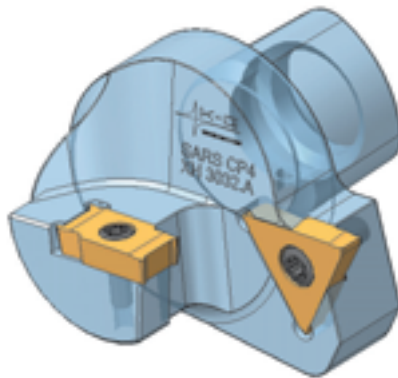
Undercut and threading of synchroniser rings

Left-hand tool adjustable by ± 0.2 mm.
Right-hand tool, thread, 0.6 mm pitch diameter. Tool adapter: CAPTO 4.



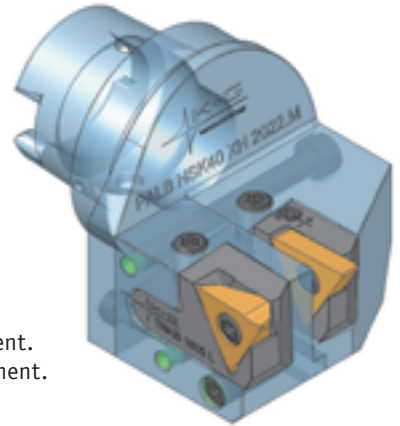
External grooving of sliding sleeves

Axial adjustment: ± 1.0 mm (no play),
pre-loaded via Belleville springs; radial
adjustment: ± 0.8 mm (via eccentric bolt).
Firmly fixed in place after presetting procedure.
BT32 blocktool tool adapter.



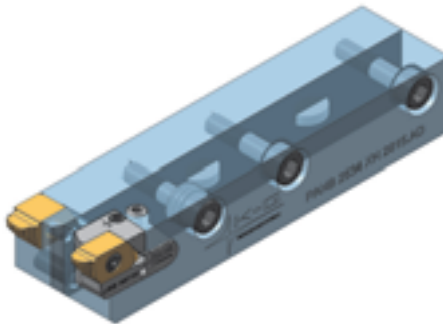
Face turning and profile grooving

These are precision manufactured because
adjustment on enveloping bodies is
not possible. Tool adapter: CAPTO 4.



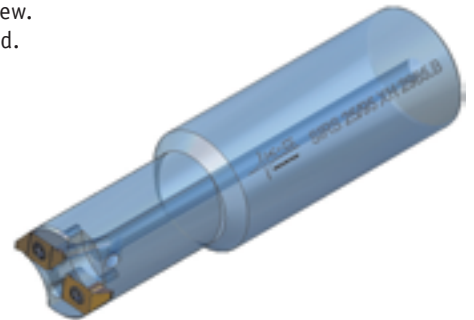
Drive shaft double grooving

Left-hand cartridge: ± 0.2 mm, axial adjustment.
Right-hand cartridge: ± 0.2 mm radial adjustment.



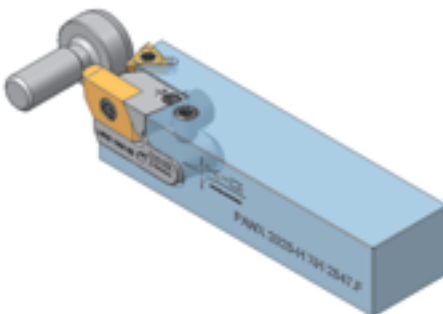
Double grooving in two-part square shank using profile inserts

Radial adjustment via eccentric bolt; axial
adjustment possible with fine adjustment screw.
Belleville springs provide the required preload.



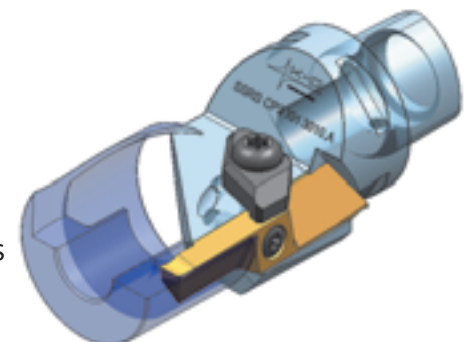
Internal double grooving with transverse procedure

Round shank with interior coolant
supply.



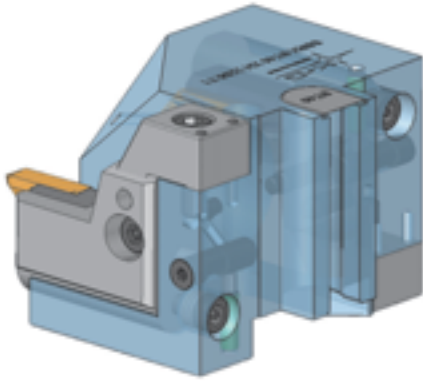
Profiling and angles

Radial adjustment of ± 0.2 mm possible
via eccentric bolt. Cartridge fitting
position is HNH, meaning it is slanted
to the inside for face undercuts.



Deep grooving of needle bushes

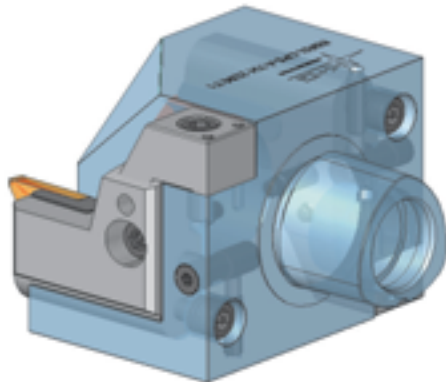
Coolant is supplied via tool holder
for CAPTO 3 tool adapter.



On this page we provide an overview of various tool adapters.

BLOCKTOOL (BT)

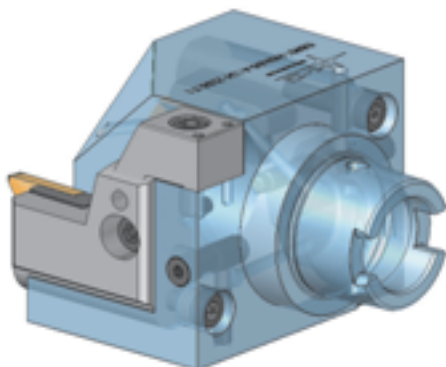
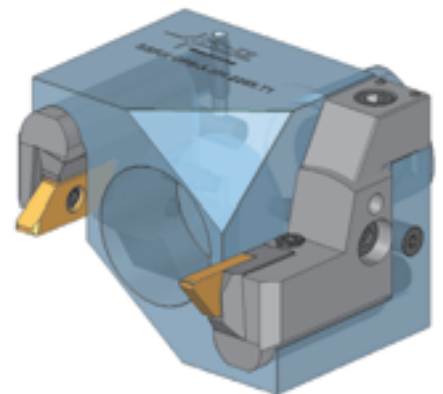
Provides a solid, non-positive connection.
The coolant is supplied, if needed, from below via the recess.
This system is used predominantly on multi-spindle lathes.
Available in sizes **BT32** and **BT40**.



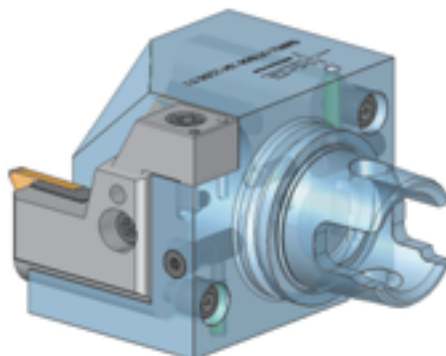
CAPTO

(shown without gripper groove in this case)
CAPTO is the only connection that ensures precise reproducibility of the radial fitting position.
Available in sizes **CP3**, **CP4** and **CP5**.

The figure on the right-hand side shows the front of the double grooving head. Axial adjustment of ± 0.25 mm of each head is possible using the eccentric bolts. Radial adjustment of ± 0.25 mm is possible by adjusting the swivel parts using the ESA 6.05 fine adjustment screws. Central coolant supply via adapter.



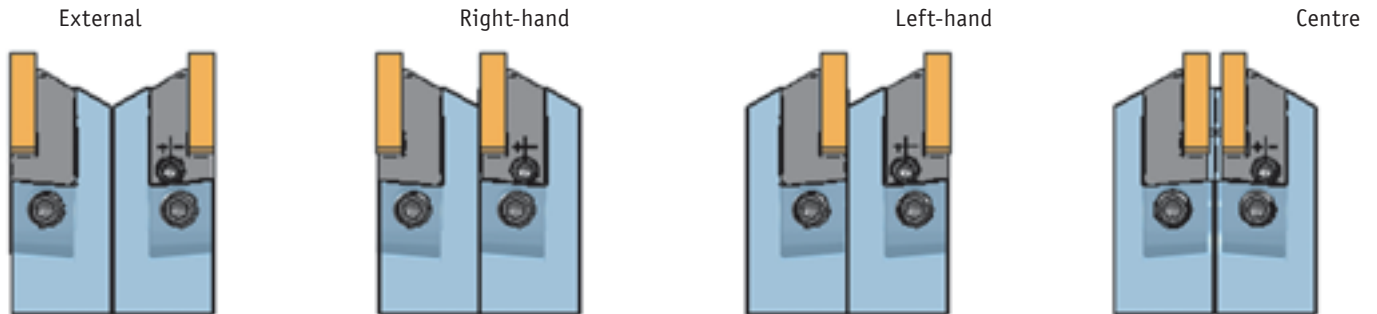
The figure on the left-hand side shows the **HSK** adaptation, which has come to the fore due to its availability.
Available in sizes **HSK30**, **HSK40**, **HSK50**, **HSK63** and **HSK80**.



The **UTS** (or **KM**) (cylindrical shank) adaptation is shown at the lower left-hand side. It also provides for an extremely secure connection between the tool and the tool holder.
Available in sizes **UTS30**, **UTS40**, **UTS50** and **UTS63**.

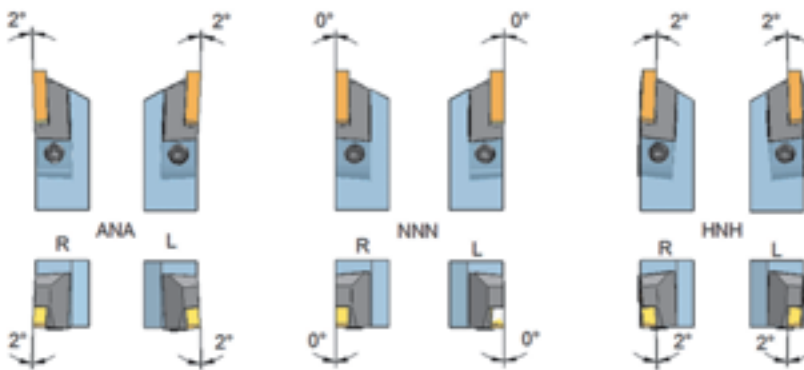
Semis are available for most of the adapters mentioned above; in many cases these have been tailor-made for K+G.

Cartridge arrangement



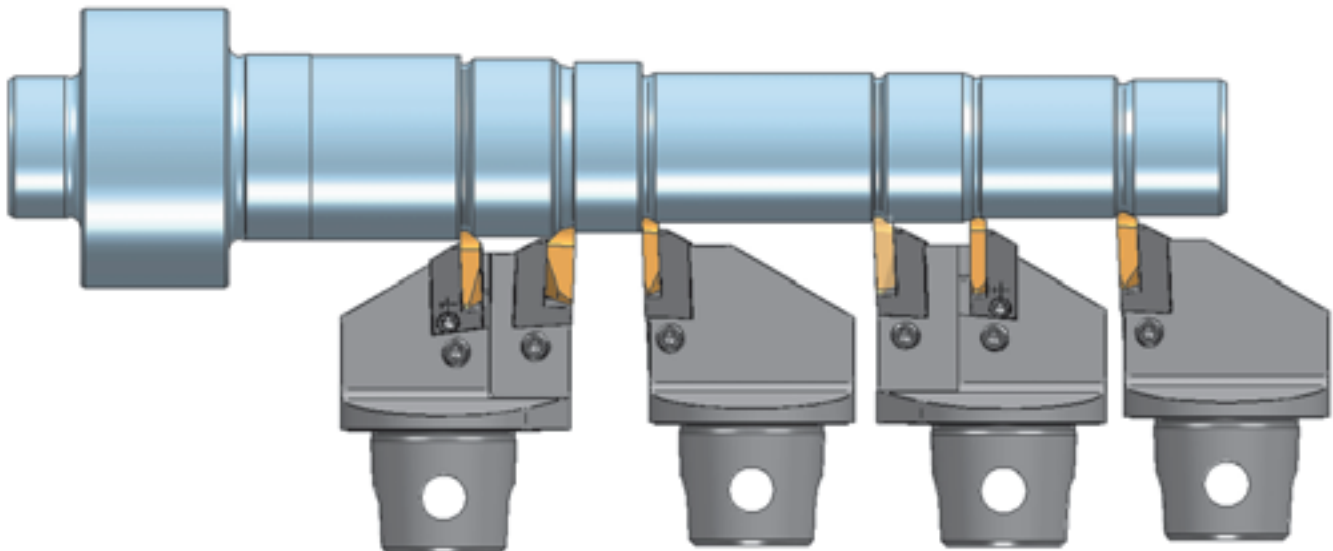
Please note: The adjustment cartridge should always rest on the adapter part in case of double holders.

Cartridge fitting position (freely combinable)



Drive shaft grooving using two double grooving holders

As seen from the top, the loose part which can be axially adjusted is located on the right-hand side; the adjustment cartridge in the adapter part is UTS40 in this case.



Indexable inserts of the same basic shape and design can be combined in terms of pricing to benefit from the following quantity discounts:

min. 100 pcs. = 5% | min. 200 pcs. = 7% | min. 300 pcs. = 10% | min. 500 pcs. = 15%

We will gladly inform you on the prices for tool holders and differing designs on request.
All dimensions in mm

General Terms and Conditions of Business

1. Conclusion of Contract / Content of Contract

These General Terms and Conditions of Sale shall apply to any and all contracts, present and future, with companies for deliveries of goods and other services. Customer's terms and conditions of purchase will not be accepted even if we have not raised express objection to them upon their receipt. The minimum order value per contract shall be EUR 100.00 net, excluding VAT. A handling fee of EUR 10.00 will be charged otherwise. 10 is the minimum order for each type of insert of the same design, size and type of carbide. Excess and shortfall deliveries of as much as 10% of the ordered quantity are permissible.

2. Order Confirmation

The placement of an order shall be deemed tacit acceptance of the Terms and Conditions. Deviating terms and conditions on Customer's order forms will not be accepted even if the order is accepted; objection is hereby expressly raised to their application. Subsidiary agreements shall not be legally binding unless confirmed in writing. The invoice shall serve in lieu of the order confirmation if the latter is not sent separately in advance.

3. Design

Special designs of indexable inserts and carrier tools and interconnection systems will be designed and manufactured in offer and delivery according to best technical knowledge. Any and all warranties of function and lifetime are excluded – however, legal warranty rights shall not be affected (Clause 6). Our offer drawing or the drawing with the most recent revision date shall be binding for dimensions and tolerances. The tolerance limits determined by our production procedures shall apply. Offer drawings will, upon placement of an order, be assigned a special number in the order confirmation or invoice; this special number shall be referred to in any further orders and shall be the sole criterion for clear identification.

4. Delivery

Delivery periods shall commence on the date of the order confirmation. They are non-binding and are only approximate. In the event of non-compliance with delivery dates, the Customer shall not be entitled to damage compensation. Partial deliveries are permissible. Unforeseen hindrances to the delivery causing major difficulty in performing the delivery or make it impossible and which are not merely temporary, such as delayed receipt of materials, operational disruption, strike, force majeure, etc., shall entitle us to postpone the delivery for the duration of the hindrance or to cancel the contract. If and when the Seller is accountable for the failure to comply with periods and deadlines which have been promised as binding or is in default, the Buyer shall have a claim to default compensation in the amount of 0.5% for each and every full week of default, limited, however, to 5% in the aggregate, of the invoice value of the consignments and services affected by the default. Any further claims are excluded unless the default is the consequence of gross negligence as a minimum on the part of the Seller. Blanket agreements shall have a maximum term of one year. Any quantities for which release orders have not been given shall be EUR 250.00. Lower release quantities are not permitted. The drawings with the modification status at the point in time of the order shall be authoritative. Retroactive modifications shall be made at the Buyer's expense.

5. Transfer of Risks/Packaging and Shipping Costs

Unless otherwise expressly agreed, the Buyer shall collect the goods at our place of business. The risk of accidental loss or deterioration shall be transferred to the Buyer when the goods are surrendered to him. Goods shall be shipped only at the Buyer's express request. In this case, the risk of accidental loss or deterioration shall be transferred to the Buyer when the goods are surrendered to the shipping agent. The Buyer shall bear the costs of packaging and shipping from the site of our branch business, unless these costs exceed a reasonable ratio to the value of the delivered objects.

6. Complaint of Defects/Material Defects/Liability

Complaints of defects must be submitted to us in writing within 8 days. We will recognise them solely to the extent that they are related to the scope of delivery

or services which we have confirmed. The risk of grinding technique and material type or coating type, the usability of any and all processed, converted or subsequently processed plates and workpieces shall be borne by the Customer. In the event of a legitimate complaint of defects which has been submitted in due time, we may, at our discretion, remedy the defect or deliver goods which are free of defects (subsequent performance). If subsequent performance fails or is refused, the Customer may, after the expiration of a reasonable period which he has set, cancel the contract or reduce the purchase price. If the Customer does not immediately give us the opportunity to determine the material defect, if in particular he does not immediately upon request make available the goods about which complaint has been made or samples thereof, any and all rights related to the material defect shall lapse. We will be liable in accordance with legal provisions in cases of intent or gross negligence on our part or on the part of one of our representatives or vicarious agents. In all other cases, we will be liable solely pursuant to the Product Liability Act, owing to injury to life, body or health or owing to culpable breach of essential contractual obligations. However, the damage compensation claim for breach of essential contractual obligations shall be limited to the foreseeable loss or damage typical of the contract, provided that none of the exceptional cases described in Sentence 2 of this Clause are present. However, liability for loss or damage to the Customer's legal goods caused by the object of the delivery, e.g., damage to other objects, shall be excluded completely. This provision shall not apply in cases of intent or gross negligence or of liability owing to injury to life, body or health. These regulations shall also extend to damage compensation in addition to performance and damage compensation in lieu of performance, irrespective of the legal reason, in particular owing to defects, the breach of obligations from the debt relationship or actions in tort. They shall also apply to the claim for reimbursement of fruitless expenditures. However, the liability for default shall be regulated pursuant to Clause 4; the liability for impossibility shall not be affected. The above regulations do not entail a change in the burden of proof to the Customer's disadvantage.

7. Payment

The invoice amount shall be paid without deductions within 30 days of the invoice date, irrespective of any complaints of defects. Request will be made for payment of any cash discounts which may be deducted. It is prohibited for the Buyer to retain payment related to any counterclaims. The Customer is permitted to set off only those claims which are undisputed or which have been finally determined by a court of law. The first dunning notice for default of payment will be a reminder at no charge. Each further dunning notice shall be subject to a charge and will contain a dunning fee of EUR 10.00. In the event of default of payment, we are entitled, without prejudice for the assertion of further loss, to charge default interest of 5% above the current basic interest rate (Section 247 BGB (German Civil Code)). We will not be obligated to perform any further deliveries pursuant to any current contracts until invoice amounts which are due, including default interest, have been paid.

8. Retention of Title

We retain title to any and all goods and services which we have delivered until payment of all of our claims from the business relationship has been effected, even if the purchase price for specially designated claims has been paid. This retention of title shall also apply to any goods for which we have merely processed the raw materials which have been provided to us.

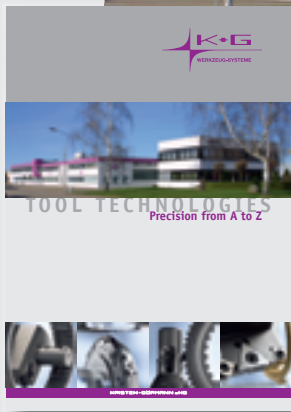
9. Proper Law/Place of Performance/Jurisdiction

Proper law governing any and all legal relationships between us and our Customer shall be the law of Germany. Place of performance shall be 77871 Renchen. Place of jurisdiction for both Parties shall be 77704 Oberkirch.

10. Partial Invalidity

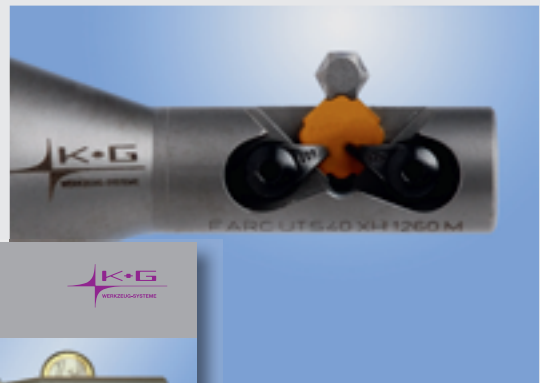
If individual provisions of the supply contract, in whole or in part, should prove to be legally ineffective or impossible to perform, the effectiveness of the remaining provisions shall not be affected thereby.

Request our Brochures.



Precision from A to Z

Find out who we are and what we're good at and how we can assist you with solutions tailored to your requirements, and see why so many of our customers have been delighted with our services. Explore our know-how, our philosophy and our bandwidth of individual services, and all our production divisions, which fully meet all technical requirements.



Bit Manufacture

Bit and driver blade profiles must be adapted in their versatility, individually and precisely, to meet the requirements of the market and production machines used for their manufacture. There are also several synchronised and rotary machining applications in this area, for which a few examples are presented in the Bit Brochure.

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