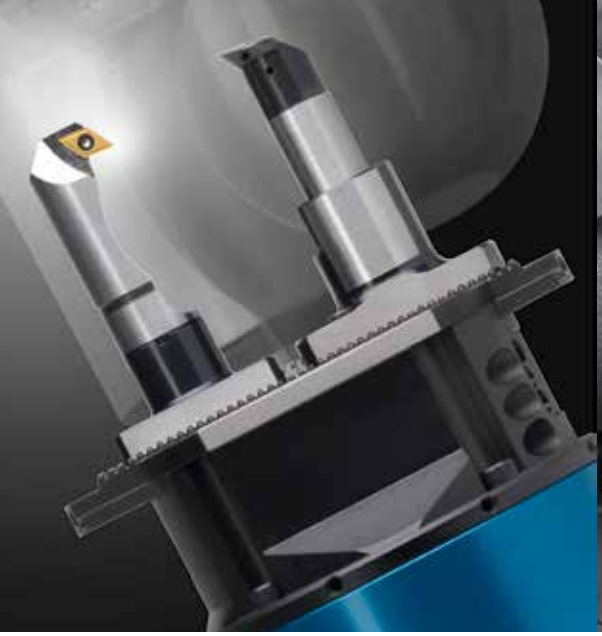
KOMET GROUP

KomTronic®
Draw bars tools

for machining centres

U-Axis system for economic turning contours on the machining centre
when working with a stationary workpiece

TOOLS+IDEAS®



KOMET KomTronic® U-Axis system
Replaces separate machining on a lathe

Tool-changeable NC axes for machining centres:

The freely programmable KomTronic® U-Axis system make any contour and turning operations possible on non-rotationally symmetrical parts.

Combined with custom-made front tools and the optimum selection of inserts, contours in bores and external machining operations can be successfully carried out. This allows a considerable reduction in production times, with better surface quality and greater accuracy of form.

Further savings in time and costs can also be achieved by reducing the number of tools previously required - for example, circular milling a complex internal contour with various form milling tools. The saving in form milling tools and tool changes this achieves also reduces production time and production costs.

Greatly reduced processing times and higher precision

KomTronic® U-Axis systems essentially consist of one compact facing head with single slide that is driven by a servo motor and threaded spindle.

The power supplied to the electronics and the drive is transmitted contact-free and inductively to the U-Axis system. Similarly, the data is exchanged inductively with the U-Axis system. A so-called stator is mounted on the spindle side. It is segment-shaped, which permits the U-Axis tools to be changed in and out automatically. The ring-shaped inductive transmission unit on the U-axis side ensures proper data and energy exchange in every angular position. Thanks to the freely programmable cutting edge that is dynamically adjustable during machining, the mechatronic U-Axis systems are automatically changeable NC-axes. Programming is carried out in the usual NC programming language with all its functions and is integrated into the machine control system.

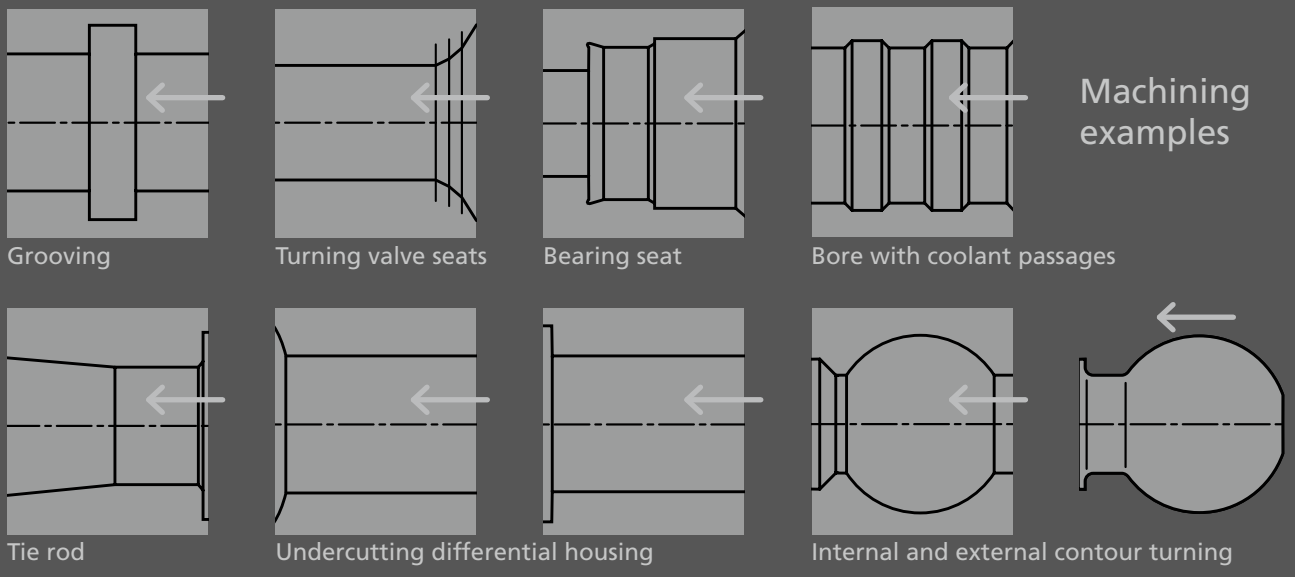
BENEFITS for you:

■ Lower investment costs
- Use of standard instead of special machines
- Reduction in number of tools
- No need for clamping devices for finish machining on turning machines

■ Reduced unit costs
- Complete machining on one machine
- Reduction in machining and throughput times
- Savings on tool changes
- Replacement of time consuming circular machining operations
- Reduced holding times
- High cutting capacity

■ Lower operating costs
- Complete machining on one machine without the workpiece being rotated
- Minimum power consumption because of U-Axis systems

We are also pleased to answer questions via e-mail at KomTronic@kometgroup.com.



KOMET KomTronic® – State of the Art
U-Axis system – Optional with linear encoder

Thanks to their low weight and minimal size and the relatively large adjustment path for the tool, the KOMET KomTronic® U-axis systems already represents the latest level of development. With a modular system, we are now offering a new supplemental direct encoder. In comparison with the normal indirect encoder, this offers significantly improved repeat accuracy, which also characterises the mechatronic tool systems by KOMET® as state-of-the-art products.

The mechatronic KomTronic® U-axis systems essentially consist of a compact facing head that is driven by a servo motor. The power and data are transmitted contact-free and inductively to the U axis head via a segment-shaped stator that is fitted to the spindle. This transmission occurs independently from the spindle speed. The mechatronic U-axis systems are therefore automatically exchangeable NC axes. The movement of the steel blade is interpolated with the Z axis. This enables contour machining and longitudinal turning on parts that are not rotationally symmetrical. Through the combined use of customised snap-on tools and optimally selected indexable inserts, it is possible to machine contours in bores as well as external contours.

The mechatronic tool systems enable a significant shortening of production times, better surface quality, and improved dimensional accuracy. In addition, fewer different tools are required and there is no need to procure moulding tools.

BENEFITS for you:

- Direct encoder
- Higher level of positioning accuracy for even more precise machining
- Immediate reaction to the machine control system
- Interferences to mechanical components, such as backlash, wear, heat cycle, etc., are taken into account
- Further improvement of repeat accuracy

1:1 position measurement on slider

Otherwise, the mechatronic tooling systems work with an indirect encoder. The new direct encoder also takes into account interferences to mechanical elements. Thanks to the direct encoder on the slider, the control can be used to react immediately. Although precision was already high, this still constitutes yet another significant improvement in repeat accuracy. The fact that this optional method of position measurement can be chosen by customers on request is another advantage of the consistent modular philosophy, a mindset which is applied to the standard range of KomTronic® U-axis systems.

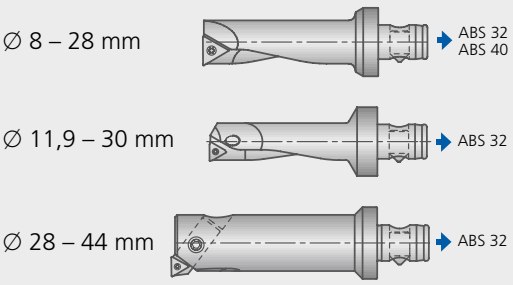
Direct positioning measuring system on slide

KOMET KomTronic®

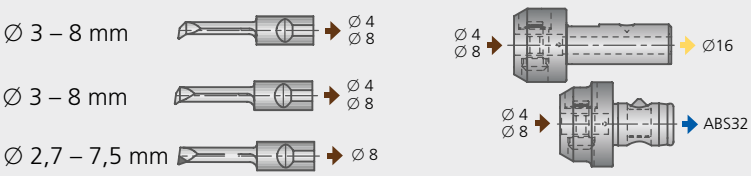
The functionality of the tool combinations depends on the L/D ratio, weight and cutting parameter.

Complete program
see catalogue
KomPass DRILLING

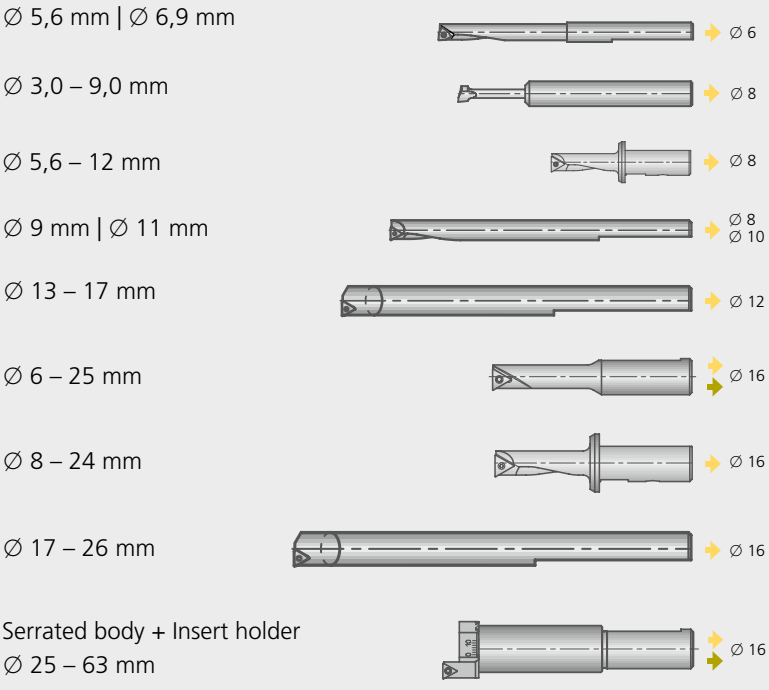
ABS® Boring bars



UniTurn® Copying tool | Boring tool | Adaptor



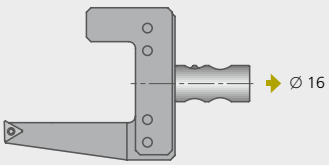
Boring bars | Adaptor



Serrated body + Insert holder
Ø 25 – 63 mm

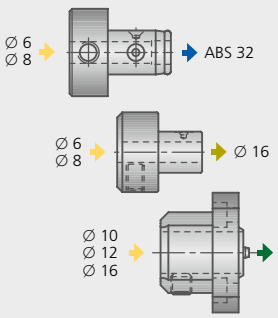
Insert holder
Ø 63 – 93 mm

Mounting bridge for external machining
Ø 5 – 70 mm

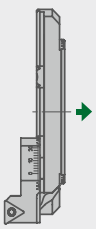


Key

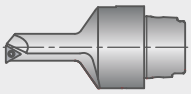
- ABS® | ABS® N connection
- Cylindrical connection
- Toothing
- HSK connection
- UniTurn® connection
- Front tool



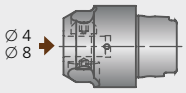
Bridge +
Insert holder
Ø 90 – 365 mm



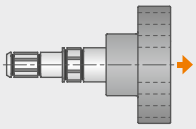
HSK Boring bars
▸ 16
∅ 8 – 14 mm



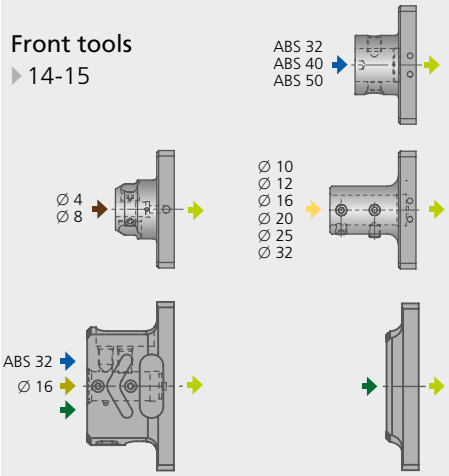
UniTurn®
Adaptor
▸ 16

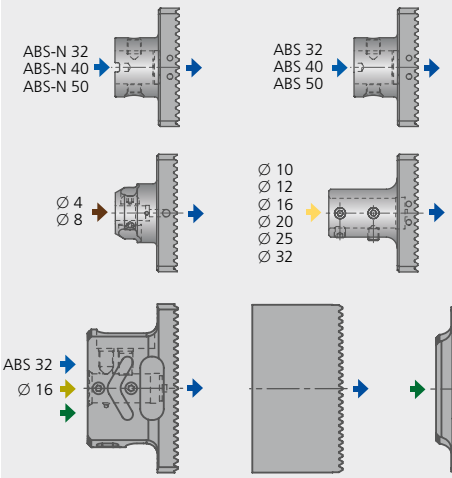


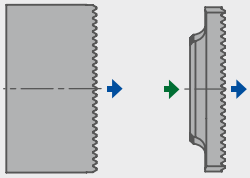
Honing tools



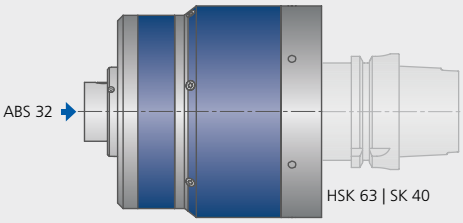
Front tools
▸ 14-15



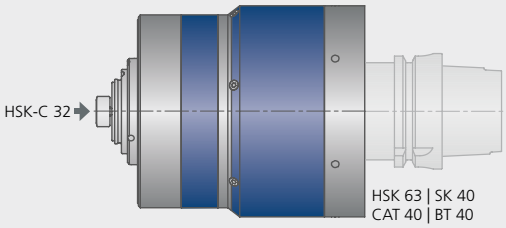




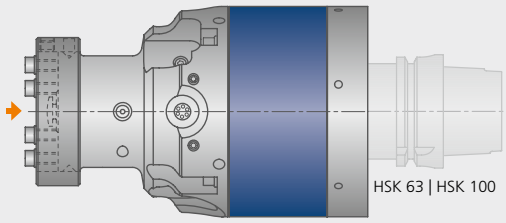
Semi-finished product
for customer-specific
tool configuration



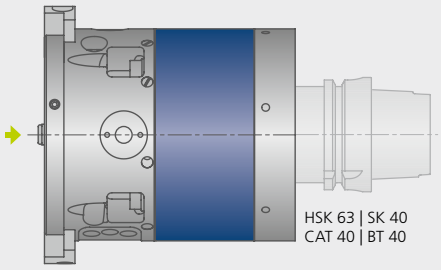
KomTronic®
HPS-115-EM-ABS32
▸ 6



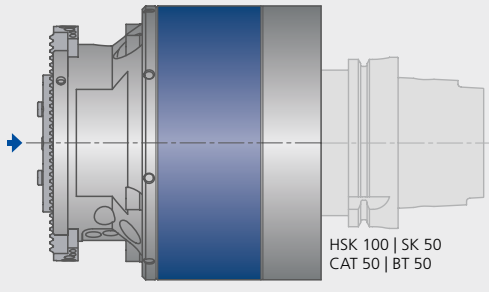
KomTronic®
HPS-115-UM-HSK32
▸ 7



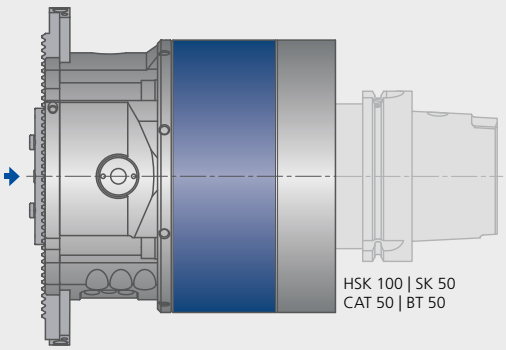
KomTronic®
HAS-115
HAS-160
▸ 13



KomTronic®
UAS-115-E-G-Z-22-2
UAS-115-EM-G-Z-22-2
UAS-115-E90-G-22-2
UAS-115-EM90-G-Z-22-2
▸ 8-9

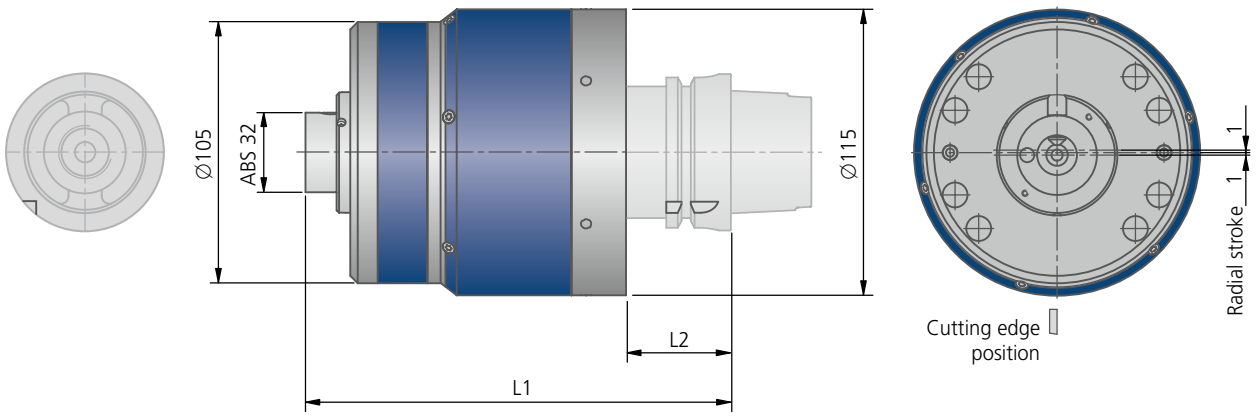


KomTronic®
UAS-160-E-Z-22-1
▸ 10



KomTronic®
UAS-160-E-Z-50-1
▸ 11

HPS-115-EM-ABS32



Technical data

- Stroke: 2 (±1) mm without imbalance correction
- Max. feed: within ± 0,5 mm stroke 100 mm/min above decreasing
- Max. spindle speed: 6000 rpm
- With internal coolant: 40 bar – MQL possible
- Compact design
- Increased accuracy by position sensor direct at the slide

Protection class: IP67
Operating modes: full NC axis for interpolation
See page 26 for more application details!

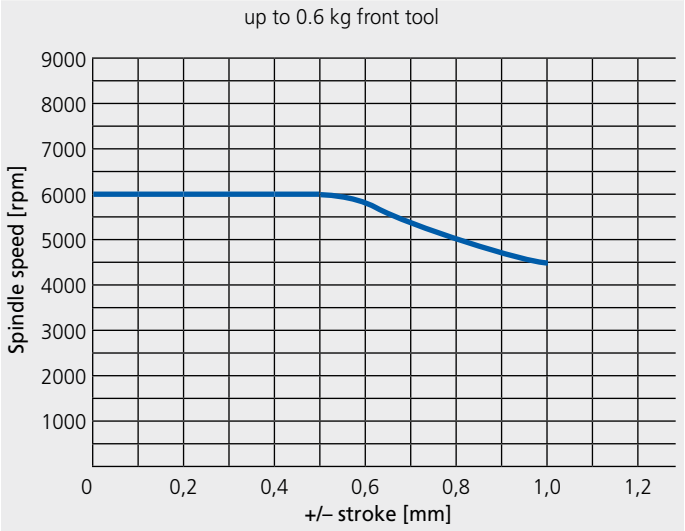
Adaption into machine tool control and spindle: page 18.

ABS® tools: catalogue "KomPass DRILLING"

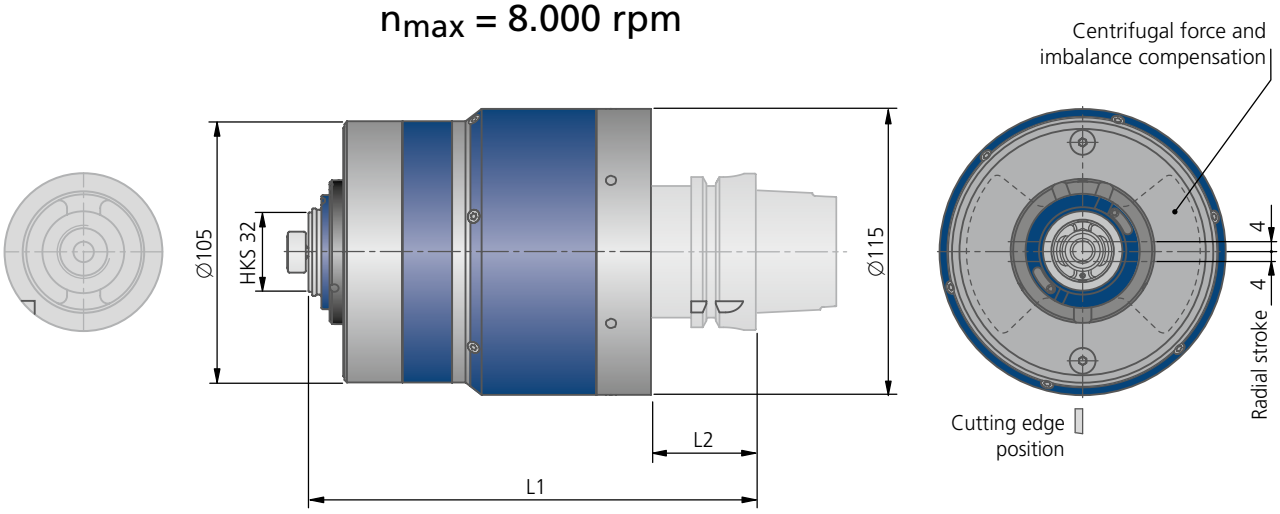
HPS-115-EM-ABS32					
Position sensor direct on slide					
Order No.	Article	Connec-tion	L1	L2	kg
E32 20012	HPS-115-HSK63-EM-ABS32-2-2	HSK 63	171	42	6,5
E32 22012	HPS-115-SK40-EM-ABS32-2-2	SK 40	164	35	6,6

Other interfaces available on request.

Max. stroke/spindle speed diagram



n_{max} = 8.000 rpm



Technical data

- Stroke: 8 (±4) mm
- Max. feed: within ± 2 mm stroke 400 mm/min above decreasing
- Max. spindle speed: 8000 rpm (> 6000 rpm duty = 40%)
- With internal coolant: 40 bar – MQL possible
- Compact design
- Increased accuracy by position sensor direct at the slide

Protection class: IP67
Operating modes: full NC axis for interpolation
See page 26 for more application details!

Adaption into machine tool control and spindle: **page 18.**

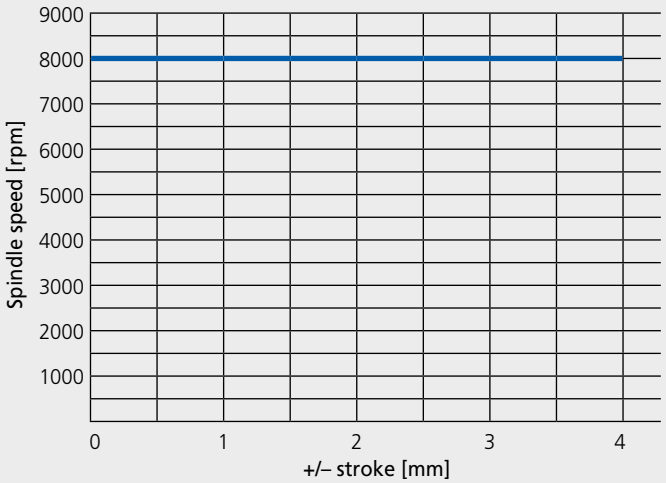
HSK tools: page 16.

HPS-115-UM-HSK32					
Position sensor direct on slide					
Order No.	Article	Connection	L1	L2	kg
E32 20022	HPS-115-HSK63-UM-HSK32-8-2	HSK 63	180	42	6,8
E32 22022	HPS-115-SK40-UM-HSK32-8-2	SK 40	173	35	6,9
E32 26022	HPS-115-BT40-UM-HSK32-8-2	BT 40	180	42	6,9

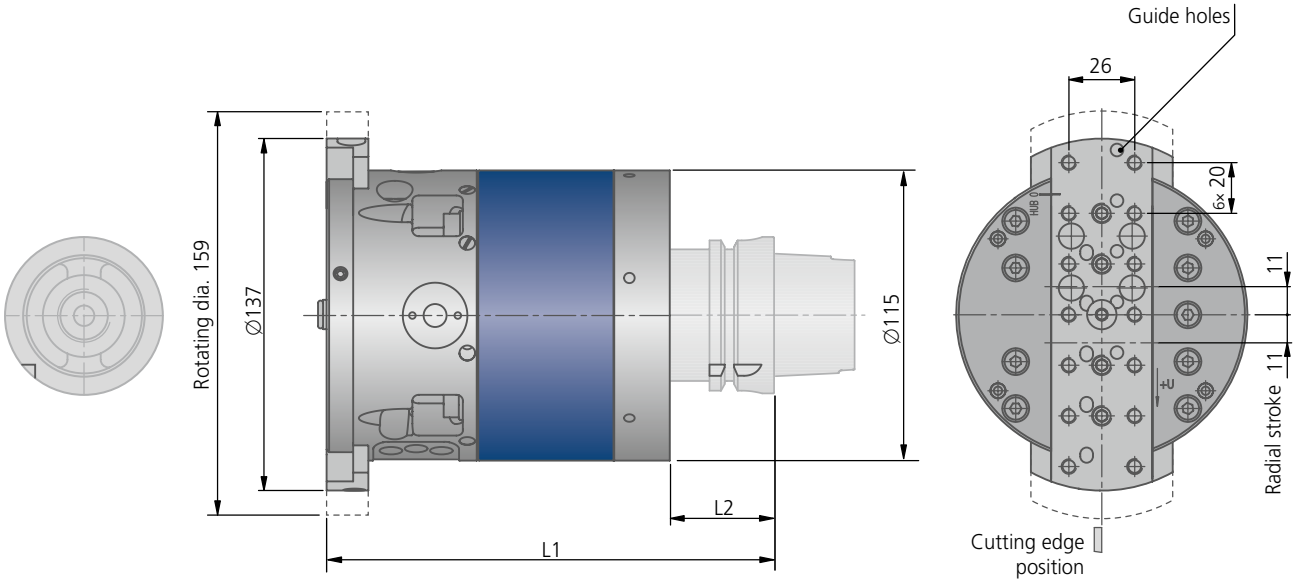
Other interfaces available on request.

Max. stroke/spindle speed diagram

up to 0.6 kg front tool with centrifugal force and imbalance compensation



UAS-115-E-G-22-2 | UAS-115-EM-G-22-2



UAS-115-E-G-22-2		UAS-115-EM-G-22-2					
		Position sensor direct on slide					
Order No.	Article	Order No.	Article	Connection	L1	L2	kg
E21 20110	UAS-115-HSK63-E-G-22-2	**E31 20110**	UAS-115-HSK63-EM-G-22-2	HSK 63	178	42	6,4
E21 22110	UAS-115-SK40-E-G-22-2	**E31 22110**	UAS-115-SK40-EM-G-22-2	SK 40	171	35	6,5
E21 24110	UAS-115-CAT40-E-G-22-2	**E31 24110**	UAS-115-CAT40-EM-G-22-2	CAT 40	171	35	6,8
E21 26110	UAS-115-BT40-E-G-22-2	**E31 26110**	UAS-115-BT40-EM-G-22-2	BT 40	178	42	6,7

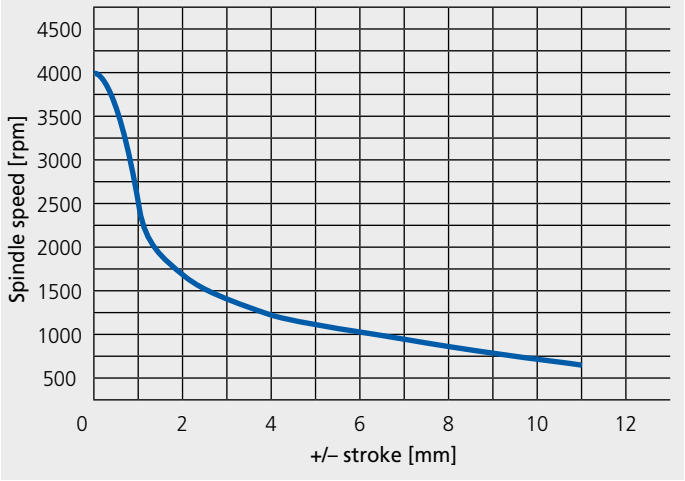
Technical data

- Stroke: 22 (±11) mm
- Max. feed: 350 mm/min
- Spindle speed: 750-4000 rpm, depending on slide position (see stroke/spindle speed diagram)
- With internal coolant: 40 bar
- Versions with other strokes on request

Protection class: IP67
Operating modes: full NC axis for interpolation
See page 26 for more application details!

Max. stroke/spindle speed diagram

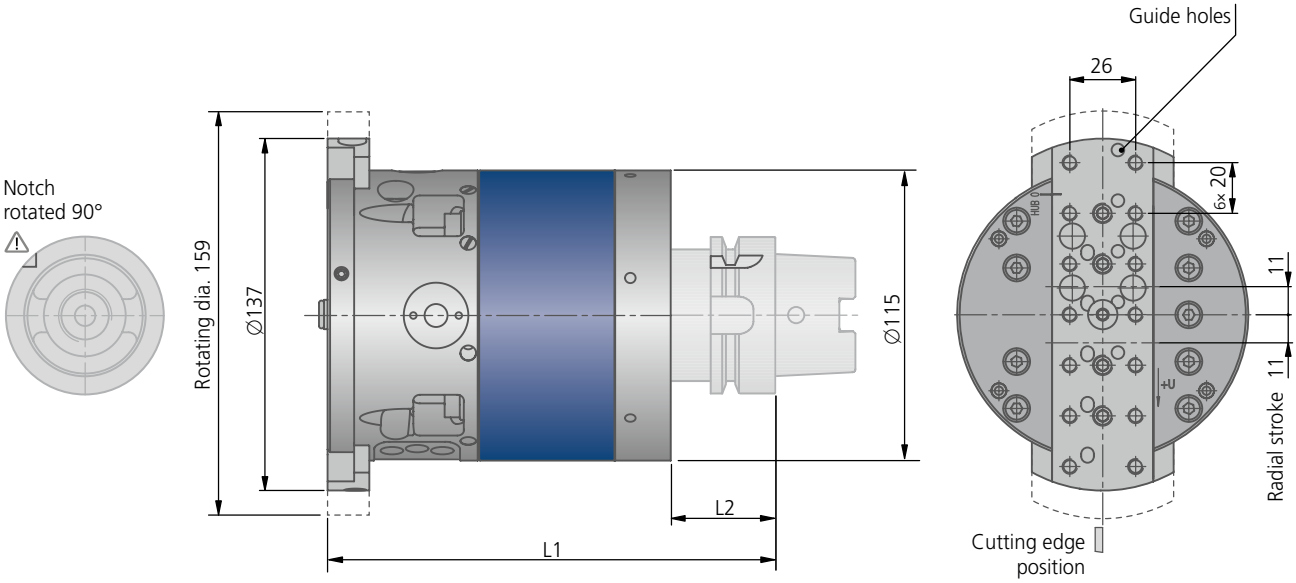
up to 1 kg front tool incl. adaptor



Adaption into machine tool control and spindle: page 18.
Front tools: page 14-15.

UAS-115-E90-G-22-2 | UAS-115-EM90-G-22-2

on request



UAS-115-E90-G-22-2		UAS-115-EM90-G-22-2					
		Position sensor direct on slide					
Order No.	Article	Order No.	Article	Connection	L1	L2	kg
E21 20120	UAS-115-HSK63-E90-G-22-2	**E31 20020**	UAS-115-HSK63-EM90-G-22-2	HSK63	178	42	6,4
E21 22120	UAS-115-SK40-E90-G-22-2	**E31 22020**	UAS-115-SK40-EM90-G-22-2	SK40	171	35	6,5
E21 24120	UAS-115-CAT40-E90-G-22-2	**E31 24020**	UAS-115-CAT40-EM90-G-22-2	CAT40	171	35	6,8
E21 26120	UAS-115-BT40-E90-G-22-2	**E31 26020**	UAS-115-BT40-EM90-G-22-2	BT40	178	42	6,7

Technical data

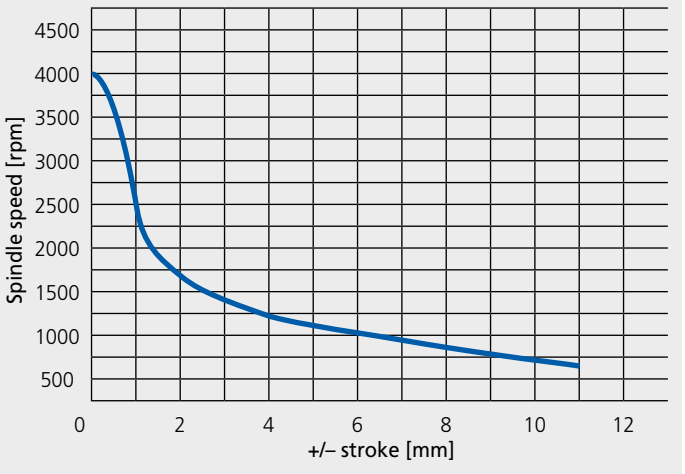
- Stroke: 22 (±11) mm
- Max. feed: 350 mm/min
- Spindle speed: 750-4000 rpm, depending on slide position (see stroke/spindle speed diagram)
- With internal coolant: 40 bar
- Versions with other strokes on request

Protection class: IP67
Operating modes: full NC axis for interpolation
See page 26 for more application details!

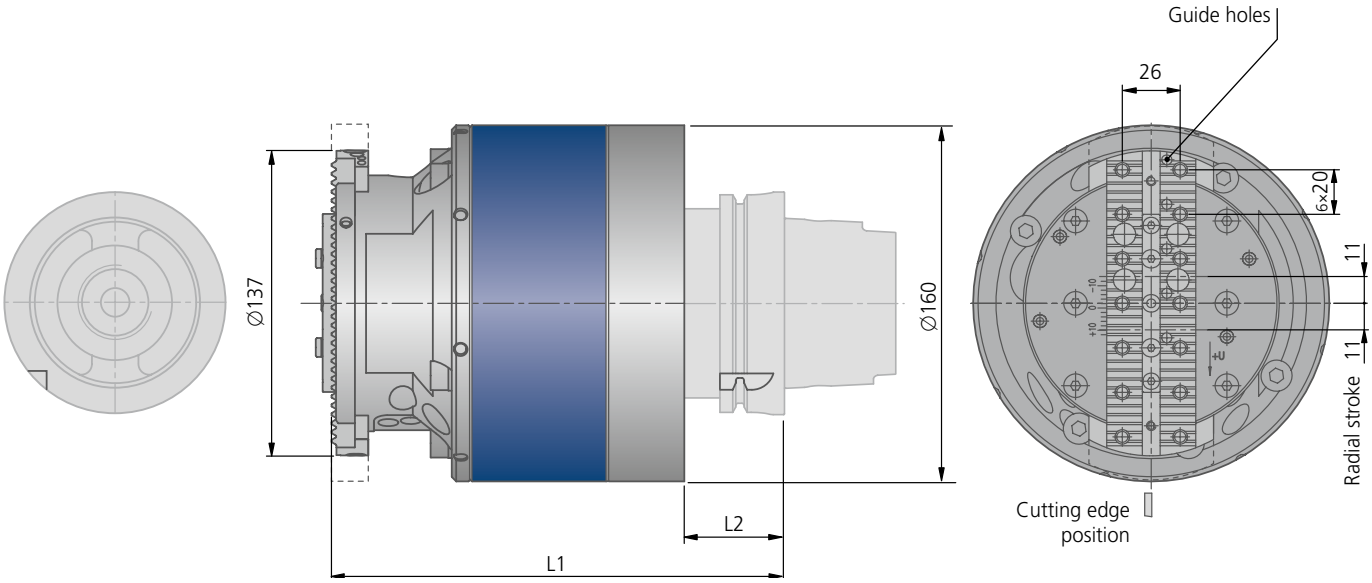
Adaption into machine tool control and spindle: page 18.
Front tools: page 14-15.

Max. stroke/spindle speed diagram

up to 1 kg front tool incl. adaptor



UAS-160-E-Z-22-1



Technical data

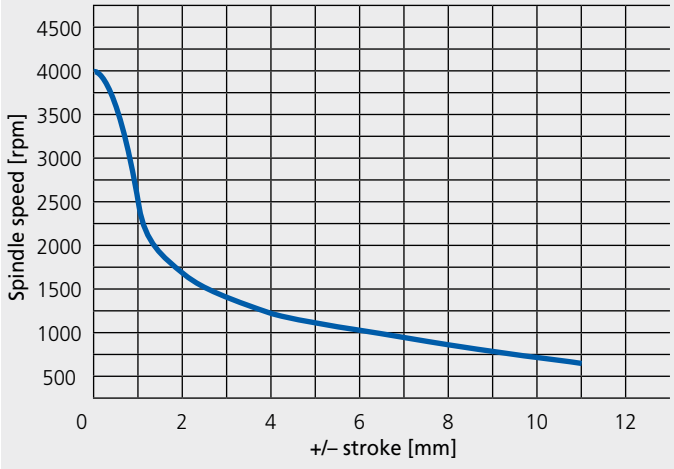
- Stroke: 22 (±11) mm
- Max. feed: 250 mm/min
- Spindle speed: 750–4000 rpm, depending on slide position (see stroke/spindle speed diagram)
- With internal coolant: 40 bar

UAS-160-E-Z-22-1					
Order No.	Article	Connec-tion	**L1**	**L2**	kg
E21 31010	UAS-160-HSK100-E-Z-22-1	HSK100	203,5	45	14,2
E21 33010	UAS-160-SK50-E-Z-22-1	SK50	193,5	35	14,6
E21 35010	UAS-160-CAT50-E-Z-22-1	CAT50	193,5	35	14,6
E21 37010	UAS-160-BT50-E-Z-22-1	BT50	211,5	53	15,7

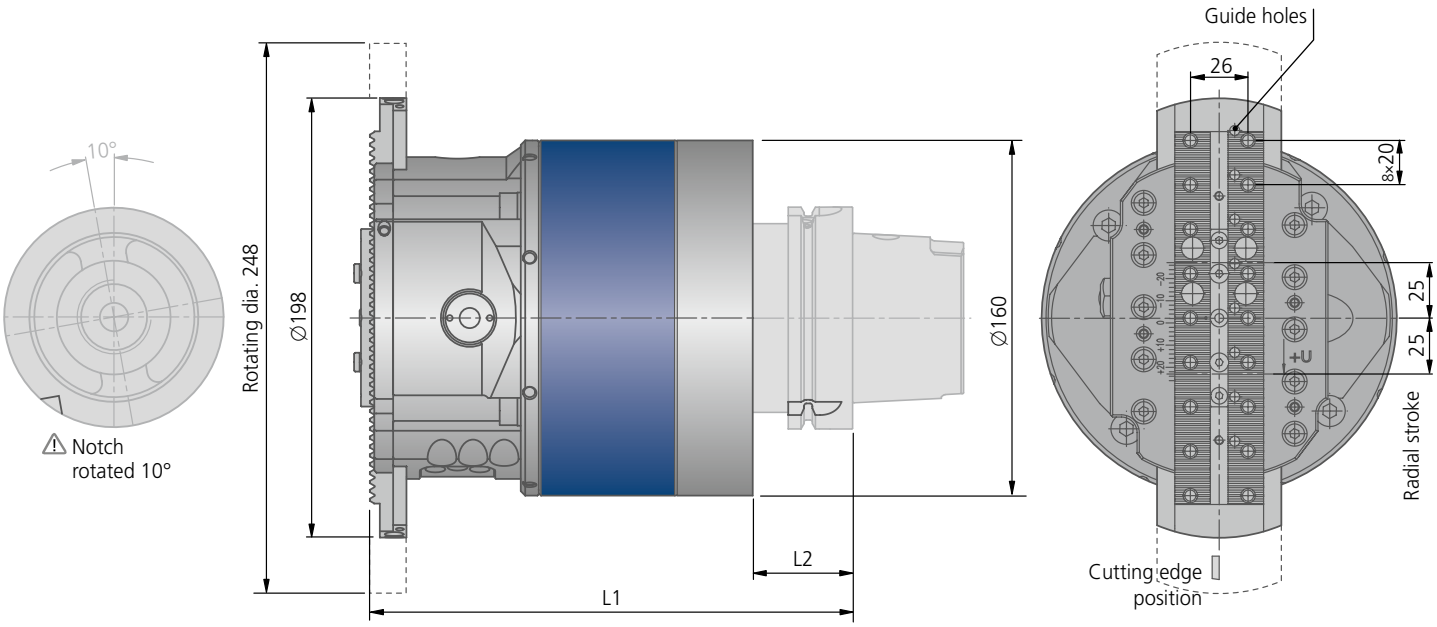
Protection class: IP67
Operating modes: full NC axis for interpolation
See page 26 for more application details!

Max. stroke/spindle speed diagram

up to 2,5 kg front tool incl. adaptor



Adaption into machine tool control and spindle:
page 19.
Front tools:
page 14-15.



Technical data

- Stroke: 50 (±25) mm
- Max. feed: 250 mm/min
- Spindle speed: 560–4000 rpm, depending on slide position (see stroke/spindle speed diagram)
- With internal coolant: 40 bar
- Versions with other strokes on request

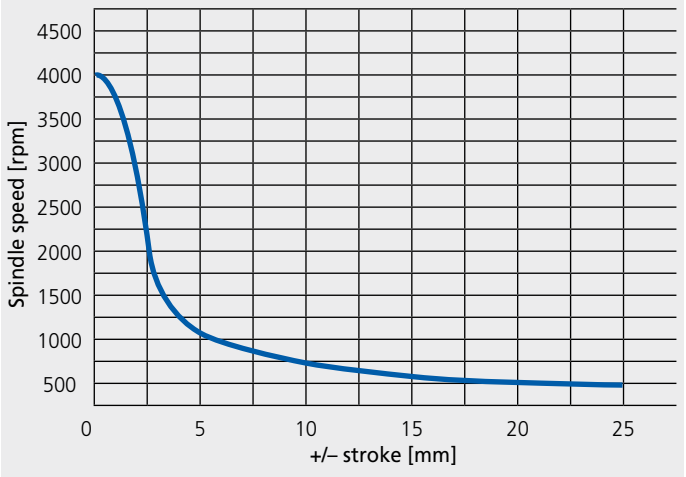
Protection class: IP67
Operating modes: full NC axis for interpolation
See page 26 for more application details!

Adaption into machine tool control and spindle: page 19.
Front tools: page 14-15.

UAS-160-E-Z-50-1					
Order No.	Article	Connec-tion	**L1**	**L2**	kg
E21 31020	UAS-160-HSK100-E-Z-50-1	HSK100	217,5	45	13,3
E21 33020	UAS-160-SK50-E-Z-50-1	SK50	207,5	35	13,7
E21 35020	UAS-160-CAT50-E-Z-50-1	CAT50	207,5	35	13,7
E21 37020	UAS-160-BT50-E-Z-50-1	BT50	225,5	53	14,8

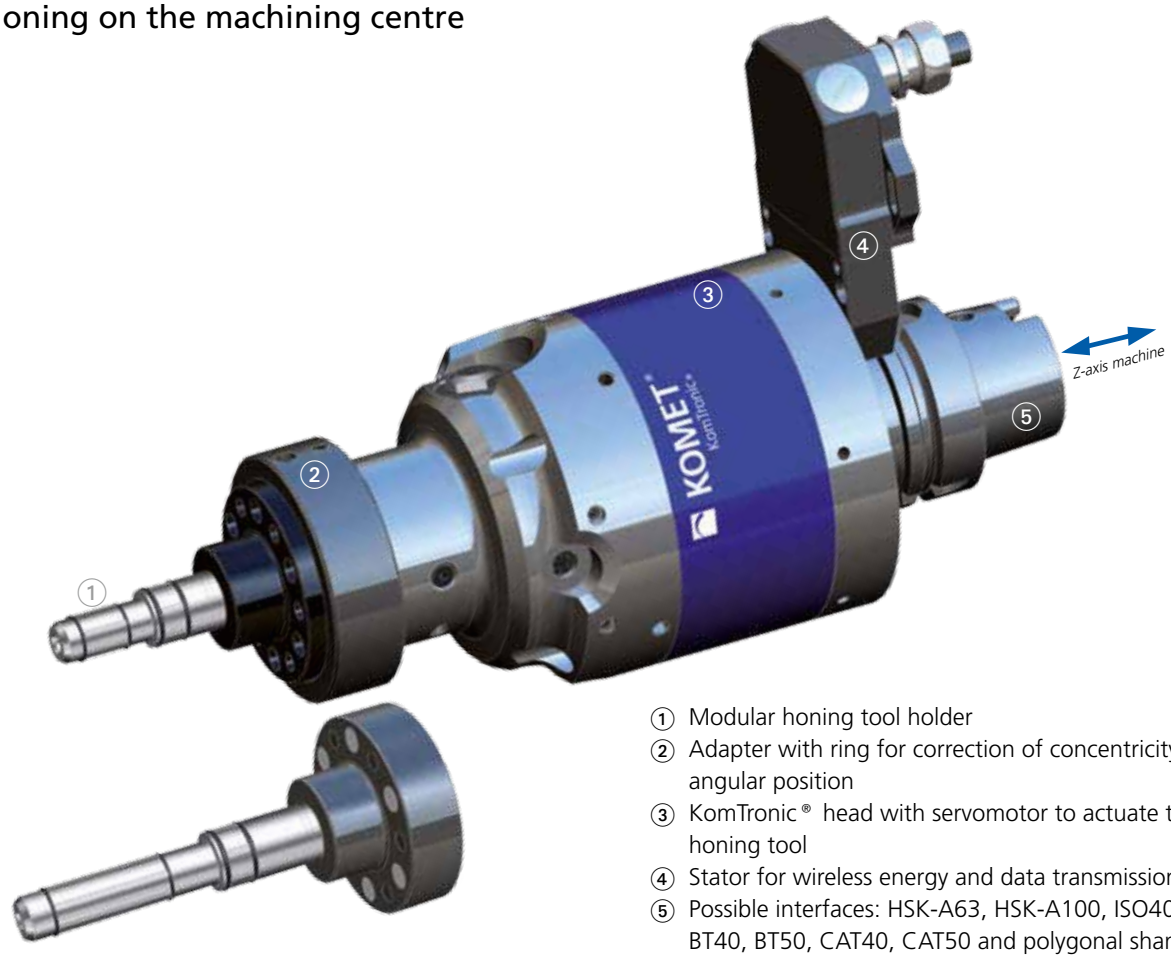
Max. stroke/spindle speed diagram

up to 1,8 kg front tool incl. adaptor



KOMET KomTronic®

Honing on the machining centre



① Modular honing tool holder
② Adapter with ring for correction of concentricity and angular position
③ KomTronic® head with servomotor to actuate the honing tool
④ Stator for wireless energy and data transmission
⑤ Possible interfaces: HSK-A63, HSK-A100, ISO40, ISO50, BT40, BT50, CAT40, CAT50 and polygonal shank taper

KomTronic® U-axis tools with Xstep® honing tools

This combination allows machining centres to be used for path-controlled honing, too. This has enormous economic and quality-related advantages.

Honing is a fine machining process for the high-precision machining of cylindrical or slightly out-of-round holes that must have optimum surface sliding properties. The material is removed with honing stones with an abrasive coating.

In order to do this extremely precisely, the honing stone retainer of the Xstep® honing tools, whose outer surface line reproduces the cylinder to be machined, are very finely adjusted mechanically to compensate for wear on the honing stone retainer and the required removal of material. The positioning measurement is determined by means of a measurement step following honing (post-process measurement), whereby the process itself is always terminated at the same end diameter and it is only necessary to compensate for the wearing of the honing stones.

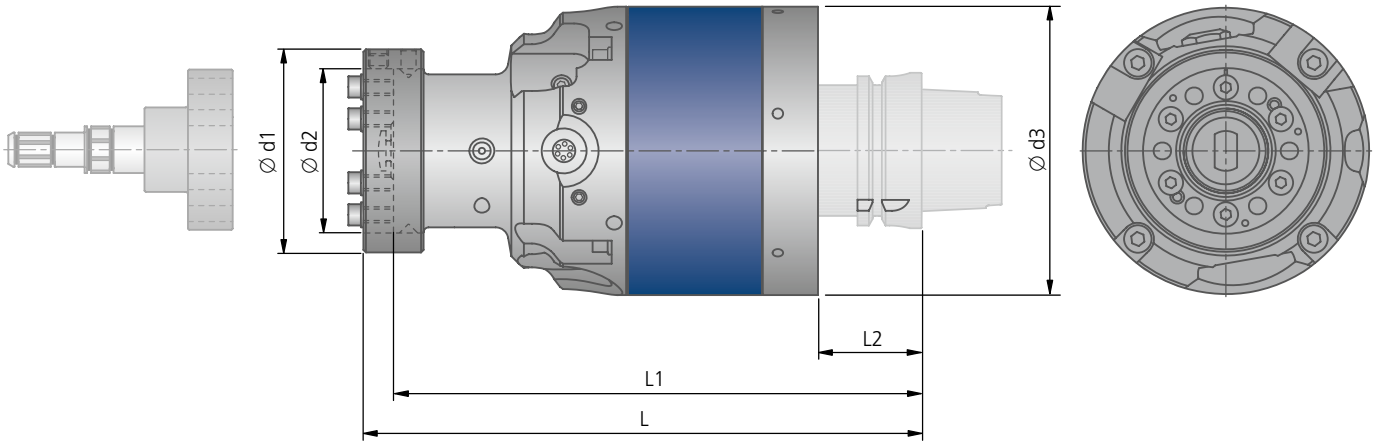
It must be possible to set the adjustment speed to best suit the process at hand with regard to surface quality, wear, and measurement precision. This is achieved by the precision small drives integrated into the KomTronic® drive units.

The rotation of the motor shaft is converted into a pull movement for the adjustment of the honing stones. The concentricity of the honing stones can be set directly on the honing tool holder.

The pre-machining of the diameter to be honed should also be very accurate in order to avoid empty strokes. Manually adjustable fine spindle tools from the KOMET® range can be used for this.

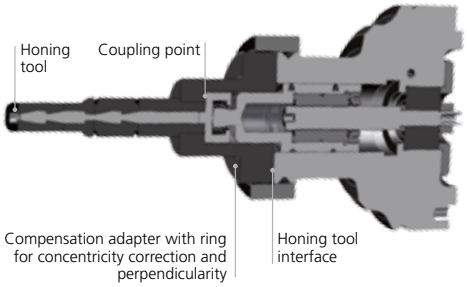
Examples: MicroKom® M040 or MicroKom *BluFlex*®. If tool adjustment is to be carried out automatically, a KomTronic® U-axis head can be used.

Patents have been registered both domestically and internationally



HAS-HSK									
Order No.	Article	Connec-tion	Ø d1	Ø d2	Ø d3	L	L1	L2	kg
XE13 01230	HAS-115-HSK63-DAH81 V3.0	HSK63	81	65	115	213	211	42	5,8
XE13 01210	HAS-160-HSK100-DAH81 V3.0	HSK100	81	65	160	253,5	236,5	45	12,5
XE13 01340	HAS-160-HSK100-DAH115 V3.0	HSK100	115	100	160	257,5	236,5	45	13,9

Possible interfaces: ISO40, ISO50, BT40, BT50, CAT40, CAT50 and polygonal shank taper.



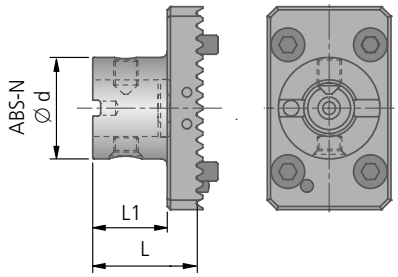
BENEFITS for you:

- Small and medium series can be finished and honed on the machining centre profitably
- Pre-machining and honing can take place in a single clamping operation: Only one clamping unit required, no loss of precision or time due to reclamping, short processing times (single set-up), smaller honing offsets required

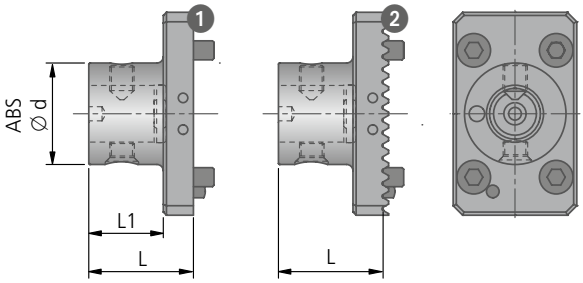
Adaption into machine tool control and spindle: page 18-19.

Front tools

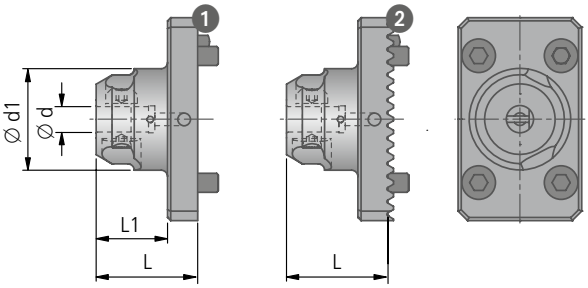
The front tool can be mounted directly onto the slide.
The following adaptors are available when using standard tools (others available on request).



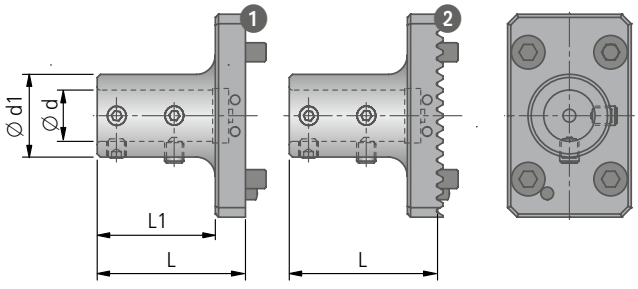
ABS® N Adaptor				
Order No.	ABS-N Ø d	L	L1	kg
P80 23030	32	33	23,5	0,28
P80 24030	40	37	27,5	0,37
P80 25030	50	42	28	0,64



ABS® Adaptor					
1 Order No.	2 Order No.	ABS Ø d	L	L1	kg
P80 23060	P80 23040	32	33	23,5	0,28
P80 24060	P80 24040	40	37	27,5	0,37
P80 25060	P80 25040	50	42	28	0,64



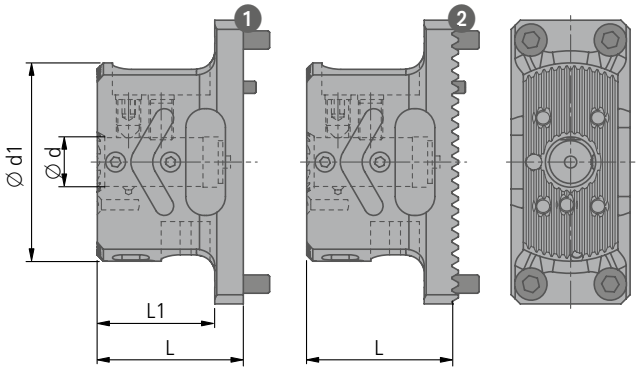
UniTurn® Adaptor						
1 Order No.	2 Order No.	Ø d	Ø d1	L	L1	kg
P81 22020	P81 22000	4	32	28	18,5	0,26
P81 22030	P81 22010	8	32	32	22,5	0,29



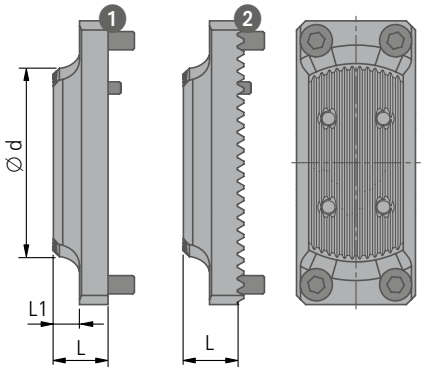
Cylindrical adaptor						
1 Order No.	2 Order No.	Ø d	Ø d1	L	L1	kg
P81 21070	P81 21050	10	17,8	36	26,5	0,22
P81 21080	P81 21060	12	21,8	36	26,5	0,23
P81 21090	P81 21011	16	25,8	46,5	37	0,27
P81 21100	P81 21021	20	33,8	46,5	37	0,38
P81 21110	P81 21031	25	38,8	46,5	56	0,53
P81 21120	P81 21041	32	47,8	49	58,5	0,67

Front tools

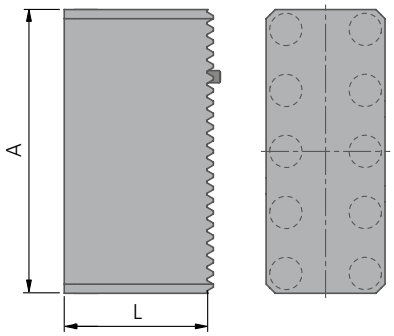
The front tool can be mounted directly onto the slide.
The following adaptors are available when using standard tools (others available on request).



Universal adaptor						
1 Order No.	2 Order No.	Ø d	Ø d1	L	L1	kg
P81 29060	P81 29010	16 ABS32	65	48	38	0,56



Bridge adaptor					
1 Order No.	2 Order No.	Ø d1	L	L1	kg
P81 29070	P81 29020	65	18	8,49	0,36

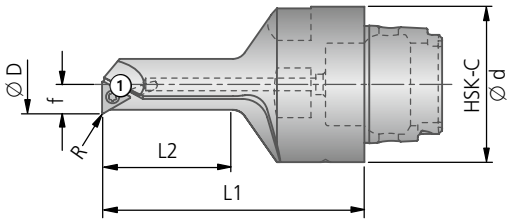


Semi-finished product		
Order No.	A	L
P81 29050	93	50

for customer-specific tool configuration

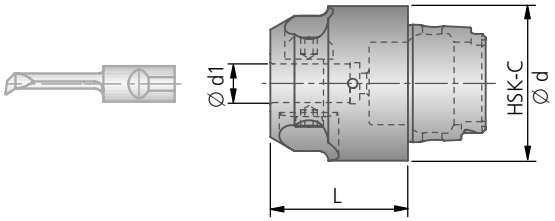
KOMET ®

Boring bar with HSK connection



Boring bar									Basic recommendation		
Ø D min.	Order No.	HSK-C Ød	L1	L2	f	R	kg	Clamping screw ① Order No. Article	Indexable insert Order No. ▽▽size	ISO Code	for workpiece material P M K N S H
8	B01 00000	32	56	27,05	3,95	0,2	0,15	N00 56021 S/M2×3,8-6IP 0,62 Nm	W57 04140.028430	TOGX 06T102EN-14 BK8430	
12	B01 00010	32	54	26,91	5,99	0,2	0,15		W30 04060.036110	TOHX 06T103EL-G06 BK6110	
14	B01 00020	32	54	29,64	7	0,2	0,15		W57 04120.0223	TOGX 06T102FN-12 K10	
									W30 04990.0240	TOGX 06T102TN CBN40	

UniTurn ® Adaptor with HSK connection



UniTurn ® Adaptor				
Order No.	HSK-C Ø d	Ø d1	L	kg
P81 29030	32	4	28	0,15
P81 29040	32	8	28	0,14

Complete machining in a closed process chain

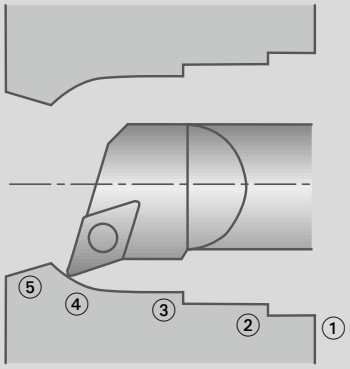
Turning and measuring on the machining centre

Complete machining:
- No switching to a turning machine
- Saving on tools, no special tools required
- Higher quality

Measuring of fits:
- Precision measurement using a direct measuring system in a barrel gauge or calliper
- Automatic test cut possible

BENEFITS for you:
- **Saving time**
- **Saving on tools**
- **Increase in quality**
- **Automatic wear compensation**

Nothing new for programming ...

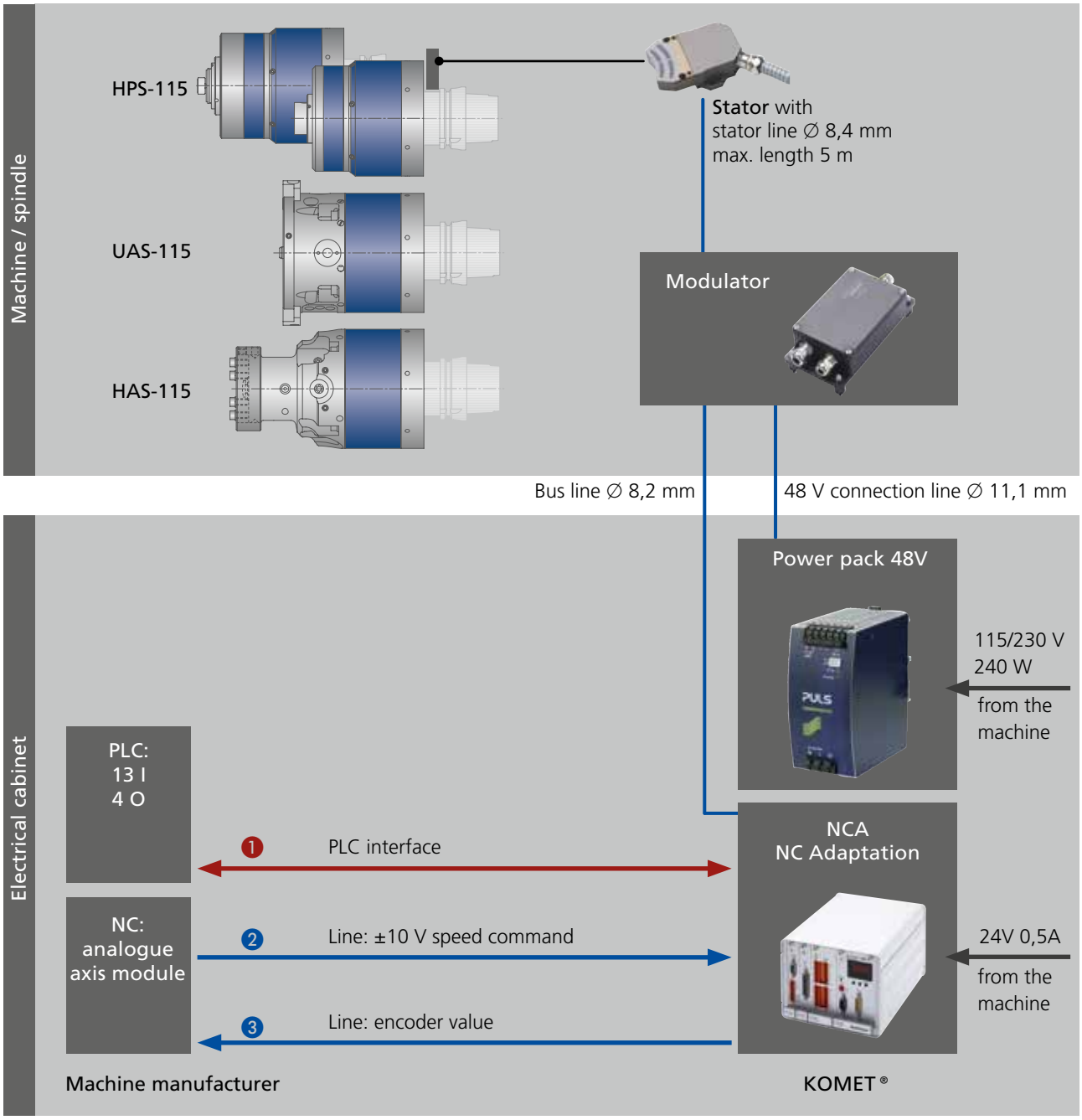


G0 U15		
G1 Z0		
G1 U14.5 Z-0.5	①	Chamfer
G1 Z-6		
G1 U14	②	Level
G1 U13.75 Z-6.25	②	Chamfer
G1 Z-17		
G1 U13.5	③	Level
G1 Z-25		
G3 Z-34.18 U9.9 E13.5	④	Radius
G1 Z-42 U12	⑤	Incline
G0 U9.75		
G0 Z10		

Integration of the KomTronic® U-Axis system into different machine control systems

Control system | Manufacturer	
SINUMERIK® 840 C	SIEMENS
SINUMERIK® 840 D powerline	
SINUMERIK® 840 D(i) solution line	
Fanuc 15i | 16i | 18i | 21i | 150i | 160i | 180i | 210i	FANUC
Fanuc 30i | 31i | 32i | 300i | 310i | 310is | 320i	
Heidenhain TNC® 426 | TNC® 430	HEIDENHAIN
Heidenhain iTNC® 530 | iTNC® 530 HSCI | TNC® 64°	
MillPlus	
INDRAMAT MTC-200 V18	INDRAMAT
INDRAMAT MTX	
Mazatrol Matrix | SmoothX	MAZAK

Adaption into machine tool control and spindle



1 PLC connection

13 inputs and 4 outputs are required on the PLC. 3 M-commands are required for selecting u-axis functions.

2 Nominal value requirement

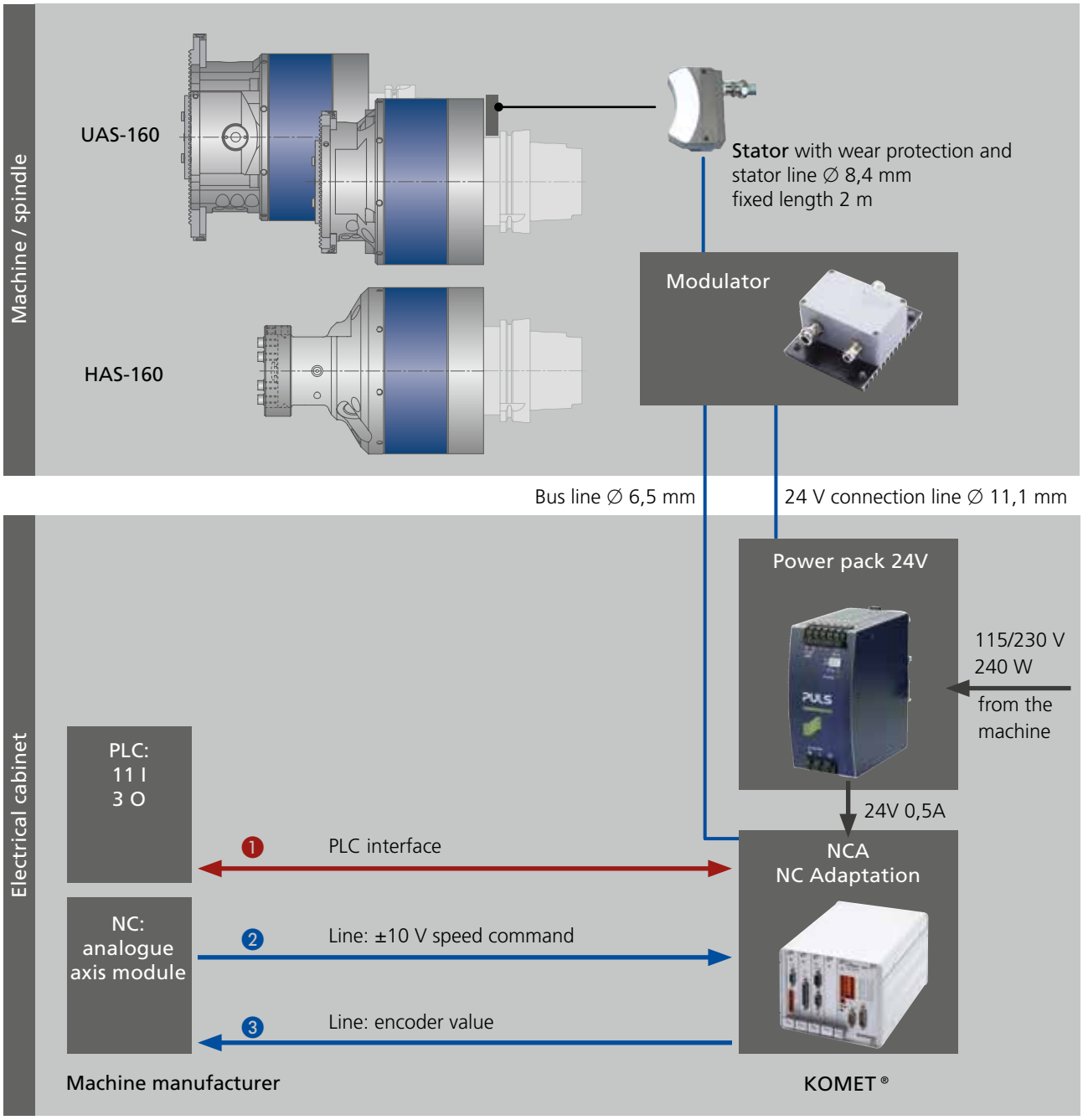
±10 V nominal speed value from analogue axis module of NC control to the KOMET® NCA.

3 Incremental actual position value

The current position is transmitted from the KOMET® NCA to the analogue axis module for the NC control. The following signal forms are available:

- TTL level (5 V) in acc. with RS 422, interpolated, square signal form
- 1 Vpp (1 V peak to peak), sine signal form

The KomTronic® u-axis system does not need a power unit on the NC control.



1 PLC connection

11 inputs and 3 outputs are required on the PLC. 3 M-commands are required for selecting u-axis functions.

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±10 V nominal speed value from analogue axis module of NC control to the KOMET® NCA.

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- TTL level (5 V) in acc. with RS 422, interpolated, square signal form
- 1 Vpp (1 V peak to peak), sine signal form

The KomTronic® u-axis system does not need a power unit on the NC control.

KOMET KomTronic® U-Axis system

Machining examples

Workpiece: differential housing

BENEFITS for you:
- Flexibility
- Saves on expensive blanking
- Replaces separate machining on a lathe and thus eliminates the need for a clamping device
- Increase in quality

Machining: turning an inside radius

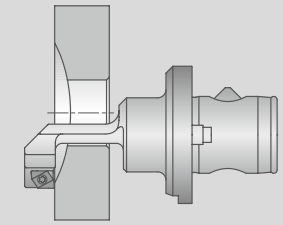
Cutting speed	v_c	= 80 m/min
Feed	f	= 0,1 mm/rev.
Cutting width 1st cut	a_p	= 1,5 mm
2nd cut	a_p	= 0,2 mm

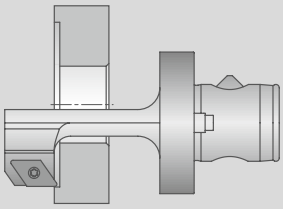
Radial stroke 10 mm

Machining: rear planing

Cutting speed	v_c	= 80 m/min
Feed	f	= 0,12 mm/rev.
Cutting width	a_p	= 0,3 mm

Radial stroke 14,5 mm





Workpiece: joint plate

Machining: taper machining with radius contour

BENEFITS for you:
- Reduced processing time
- Reduced tool costs
- Reduced production time
- Higher quality and process reliability

Material: Titan

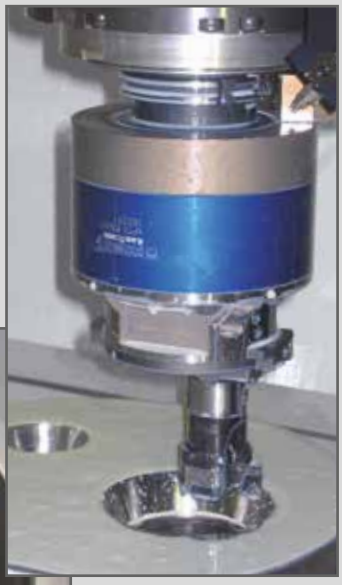
Cutting speed
v_c= 50 m/min

Feed
f = 0,05 mm/rev.

Workpieces can be completely machined with high precision and cycle time savings utilising these options for turning, undercutting, chamfering and generation of NC controlled contours.

Workpiece: control block

Machining: turning an inside taper



BENEFITS for you:
- Replaces separate machining on a lathe and thus eliminates the need for a clamping device
- Reduced production times
- Increase in quality

The material Inconel 625 was applied to a tapered hole and machined in 2 cuts.

Cutting speed	v_c = 30 m/min
Feed	f = 0,08 mm/rev.
1st cut	a_p = 2,5 mm
2nd cut	a_p = 0,5 mm

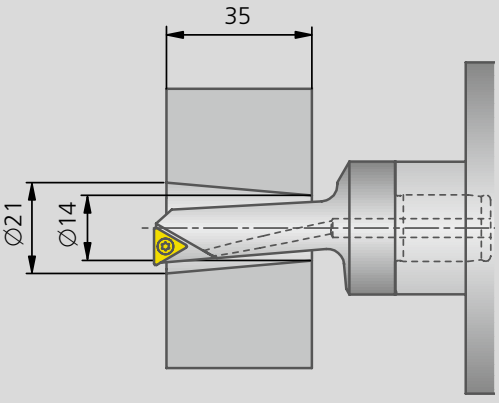
Tapered seal for high coolant pressure

Workpiece: wheelmount

Machining: reverse taper machining

BENEFITS for you:
- Complete machining on one machine
- Replaces separate machining on a lathe and thus eliminates the need for a clamping device
- Reduced processing times
- Increase in quality

Cutting speed	v_c = 150 m/min
Feed	f = 0,08 mm/rev.
Taper angle	α = 9,5°$_{-0,05°}$
Material:	Cast aluminum



KOMET KomTronic® U-Axis system

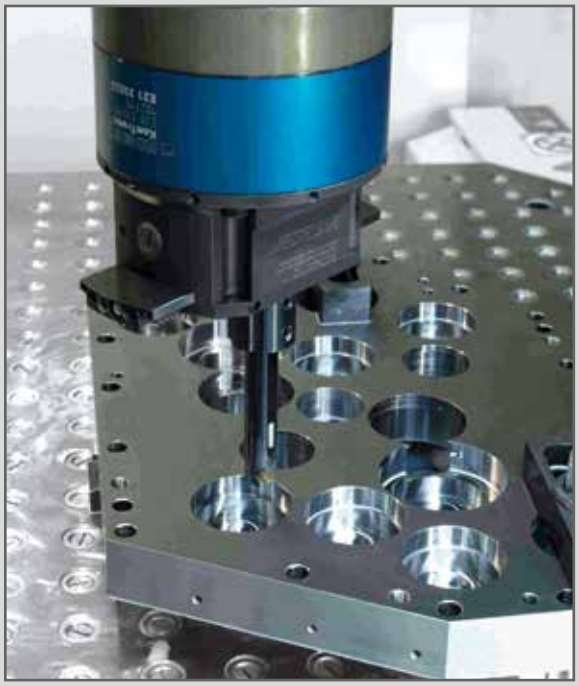
Machining examples

Workpiece: bearing plate

Machining: turning a bearing plate

BENEFITS for you:
- Reduced processing time
- Reduced tool change time
- Reduced tool costs
- Complete machining
- Flexibility
- Higher precision and process reliability

Material 42CrMo4
Variable diameter



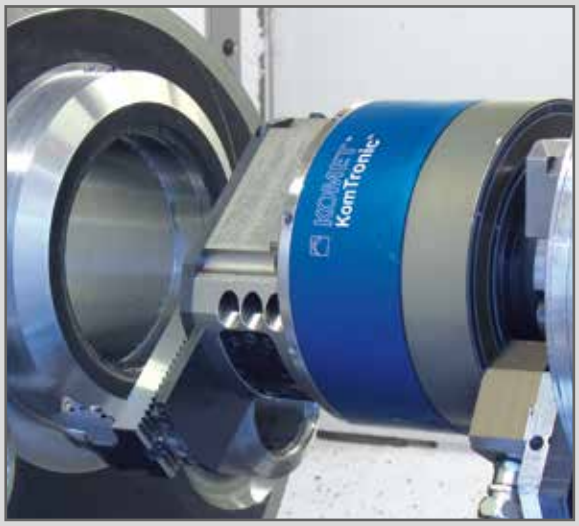
Workpiece: control block

Machining: complete machining on one turning/milling centre

BENEFITS for you:
- Reduced production time
- Reduced tool costs
- Flexibility
- Increase in quality

Material 42CrMo4

Workpiece: control block



Machining: turning an outer contour

BENEFITS for you:
- Complete machining on one machining centre
- Replaces separate machining on a lathe and thus eliminates the need for a clamping device
- Reduced production times
- Increase in quality

Material: Inconel

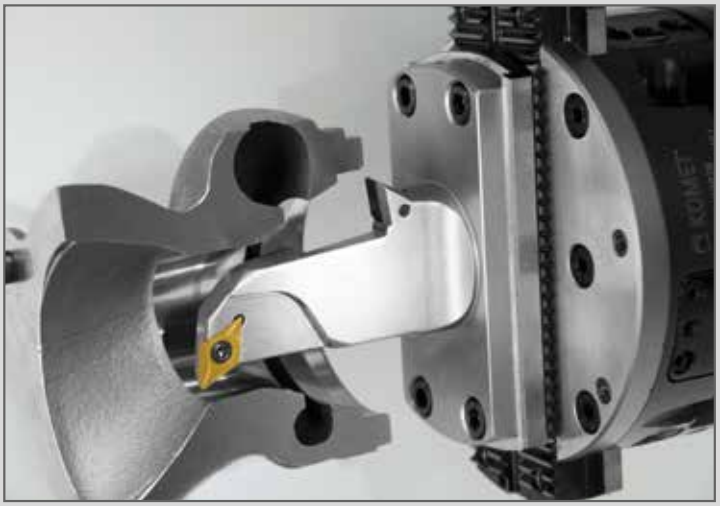
Workpieces can be completely machined with high precision and cycle time savings utilising these options for turning, undercutting, chamfering and generation of NC controlled contours.

Patents have been registered both domestically and internationally

Workpiece: Turbocharger

BENEFITS for you:

- Complete machining on one machine
- Reduced processing time
- Reduced tool costs
- Reduced additional costs
- Flexibility
- Increase in quality



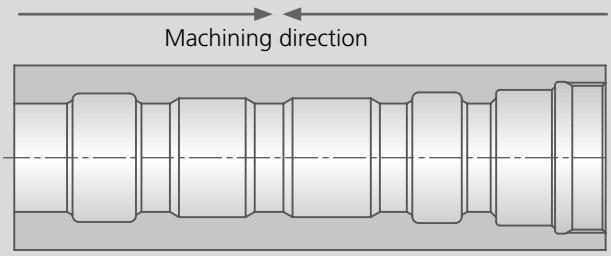
Workpiece: Valve housing

BENEFITS for you:

- Contour-finish machining with a single tool
- Optimum cutting speed thanks to higher rpm, made possible by balance compensation
- High accuracy using a direct measuring system on the slide
- Easy contour modifications possible using NC program

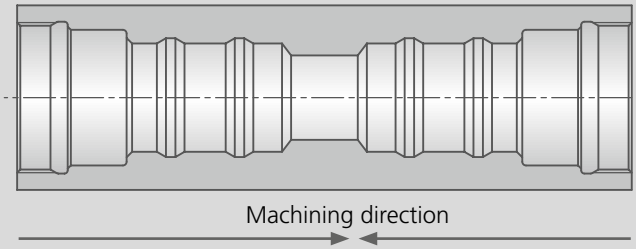
Material: aluminium

Feed f = 0.04 mm/rev
Spindle speed n = 5800 min^{-1}
Cutting speed v_c = 220 m/min
Cutting width a_p = 0.4 mm



Material: die-cast aluminium

Feed f = 0.05 mm/rev
Spindle speed **n = 8000 min^{-1}**
Cutting speed v_c = 240 m/min
Cutting width a_p = 0.3 mm



KOMET KomTronic® U-Axis system

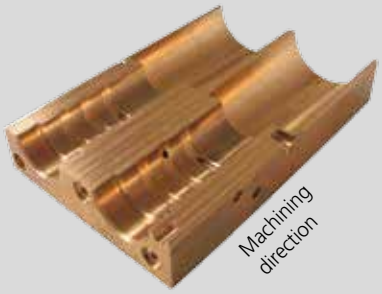
Machining examples

Workpiece: hydraulic cylinder

Machining: springing valves
Boring inner contours and recesses with
2 U-axis systems

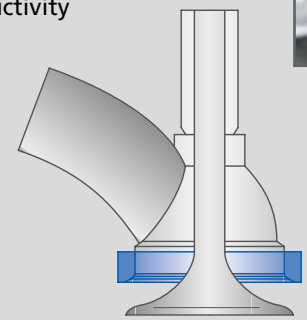
BENEFITS for you:
- Reduced processing times
- Reduced tool change times
- Reduced tool costs
- Reduced additional costs
- Flexibility

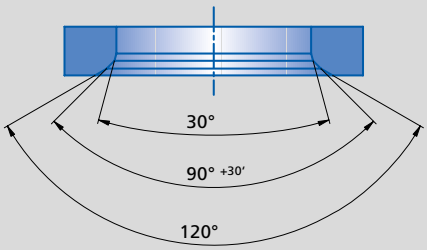
Feed
f = 0,1–0,15 mm/rev.
Spindle speed
n = 2000 min^{-1}



Valve seat machining

BENEFITS for you:
- Machining on standard machines instead of special purpose machinery
- Prototype production, engine reconditioning
- Turning contours in a large range, in one large operation
- Increase in quality
- Increase in productivity

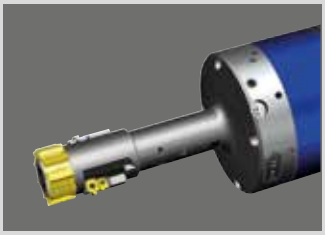


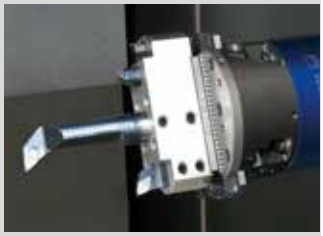


YOUR job – OUR solution

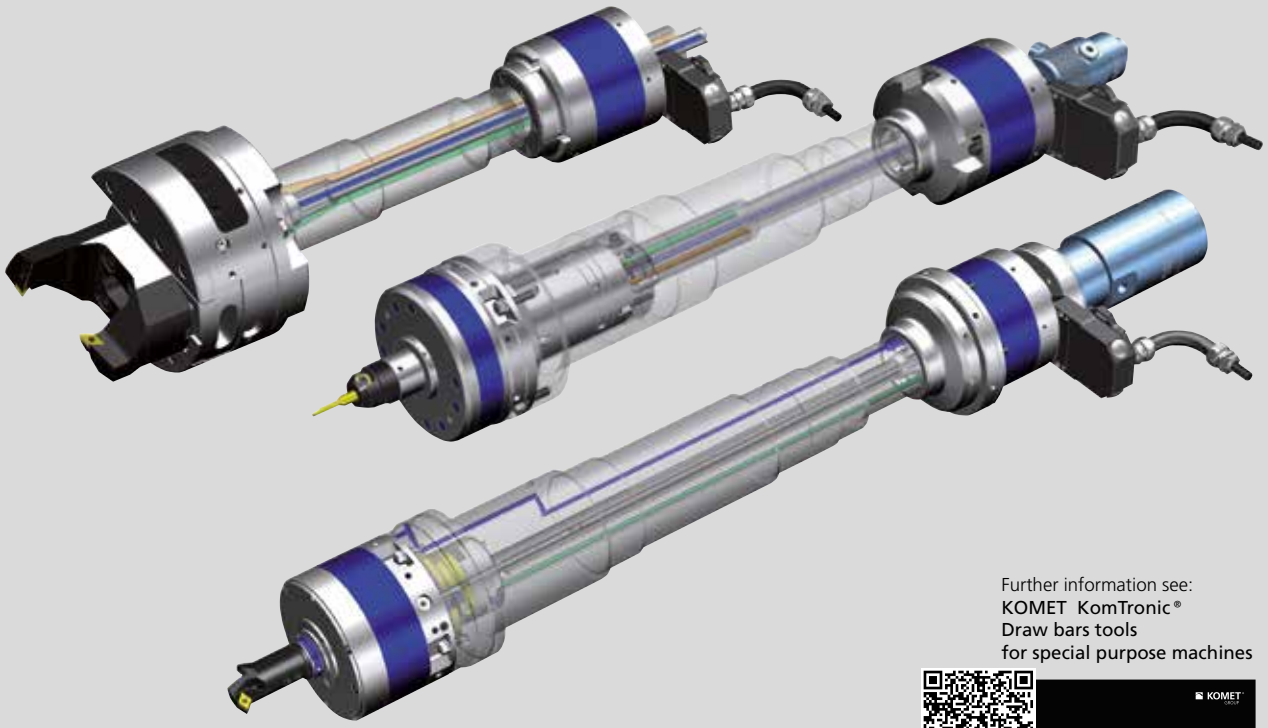

Fine boring


Honing


Reaming and grooving


Interpolation recess turning

Facing heads with integrated measuring system and KomTronic® U-axis systems for spindle integration



Further information see:
KOMET KomTronic®
Draw bars tools
for special purpose machines

Produce turning contours economically when working with a stationary workpiece

Based on decades of experience producing facing heads for special purpose machines, KOMET® is expanding its product range to include KomTronic® systems for spindle integration for different installation and usage requirements for facing heads.

- Facing heads with direct encoder on the slide
- KomTronic® systems for spindle integration with own drive

KomTronic® U-axis system integrated in the spindle

Valve seat machining with Serdi machine

KOMET KomTronic®

Installation support

In order to ensure that the KomTronic® U-Axis system is correctly incorporated into the machine and is able to carry out the required functions, the customer must provide clarification and comply with the necessary requirements:

1. Fitting the stator for non-contact power and data transmission to the KomTronic® U-Axis system. Care should be taken to ensure that no conflict occurs with other parts of the machine, the tool changer or similar units. KOMET's obligations do not include provision of the adaptor element for the stator unit.

2. The customer will supply the inputs and outputs required for the KomTronic® U-Axis system on the machine side. The analogue axis unit required for operation with the U-Axis must be provided and configured for the machine control system by the customer.

3. The customer must carry out the necessary software adjustments for the machine sequence control before the installation.

4. Function clarification: Process requirements must be met with reference to machine and processing concept. For example cycle times and machining data must be clarified. The tool changer must be designed for the tool weight and the tool must fit into the tool magazine.

KOMET® will provide the necessary assistance for clarification of the tasks as stated.

Usage and safety notes

The application details given depend on the environmental and application conditions (e.g. machine, ambient temperature, lubricant/coolant used and machining result required): they are based on the correct application conditions, correct use and compliance with the spindle speed limits given for the tools.

Service indicator on the facing head

Duration of use as a service indicator

KOMET® draw bar tools are used in highly productive, high-quality machines. They should therefore be serviced before excessive wear leads to production defects. In many cases, it is difficult to establish how long precision tools have been in use if they have not been in use continually. This in turn makes it impossible to draw conclusions about possible wear, which prevents operators from determining maintenance intervals in advance.

Maintenance prevents malfunctions

The KomTronic® service indicator can be used to read the period of use and displacement travelled directly on the tool. This enables the KOMET® draw bar tools to be maintained at clearly defined intervals. Ultimately, this increases the quality of the component to be machined and the reliability of your draw bar tool.

BENEFITS for you:

- An increase in production reliability through maintenance intervals that can be scheduled
- A reduction in costs thanks to timely maintenance of wear parts
- Avoidance of losses in quality
- It also avoids a backlog of repairs building up and prevents sporadic high costs due to of repairs and replacement
- The ability to plan costs effectively increases productivity and ensures maximum transparency

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KOMET GROUP

☐ Enquiry	Company	
☐ Order Order No.:	Address	
	Contact	
Quantity required	Tel.	Fax
	Date	Signature

Requirements for successful project planning for KomTronic® u-axis systems:
Before detailed clarification of the machining task the following questions on the machine and NC control system need to be answered positively.

1. Questions relating to machine

- Can the NC control be fitted with an analogue servo interface ?
- Is the machine manufacturer prepared to adapt the machine ?
  The customer normally needs to ask machine manufacturer to adapt the machine. There will be additional costs for the work carried out by the machine manufacturer. Depending on the age of machines which are already installed, machine manufacturers may not be prepared to carry this out.
- Stator: is there sufficient space on the spindle to fit this ? Check cable length limit 2 m or 5 m. Can tools be automatically changed without colliding with the stator ? Stator holder must be provided by the customer/ machine manufacturer.
- Automatic tool changer: is the changeover weight sufficient ?
  Normally for HSK 100/ISO 50 – machines 25 kg no problem. For HSK 63/ISO 40 machines the changeover weight is sometimes not sufficient. For some applications the changeover speed needs to be reduced.
  Does the tool fit into the magazine ? Normally adjacent spaces need to be kept free.

Machine	
Spindle connection:	Control system:
Manufacturer:	Control type:
Type:	Control No.:
Machine No.:	Year of machine construction:
Max. change weight::	Maximum permissible tool length?:

2. Questions relating to part being machined

- Is the stroke sufficient for the operation ?
  Range of parts ? If parts of different sixes are to be machined, will the stroke be sufficient for all the parts ?
- Maximum spindle speed ?
  On KomTronic® tool change systems with a single slide, the speed must be reduced as the slide is extended.
  Rule of thumb for spindle speed: 2500 / √ stroke. See stroke – spindle speed diagram for tool heads.
- Permissible tool weight and length ?
  No figures defined as yet. These will be calculated by our engineers or trial department.

Parts to be machined	
Surface quality required:	Cpk value:
Tolerances:	Stroke:
Cycle time:	Affecting cycle time?

Machine preparation: See "Requirements for u-axis Installations" and "Conditions"

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