



Tools for Clamping between Centers

process oriented for turning, hard turning, grinding and milling

Process oriented clamping solutions

**with maximum torque transmission
and supreme accuracy**

NEIDLEIN- SPANNZEUGE GmbH

An innovative SME operating on a global scale: NEIDLEIN Spannzeuge GmbH provides products to optimise manufacturing processes and reduce production costs.

Our tools clamp work pieces between centres. **This pioneering concept creates work piece contours in a single set-up** – whether turning, hard turning, cylindrical grinding or milling, for example.

With our decades of experience – the company was founded in Stuttgart in 1951 – we produce for the national and international market. Our dedicated team develops and produces an extensive portfolio that includes both standard and custom-made products.



www.neidlein.de



A leading edge based on direct dialogue

One of the cornerstones of our policy has always been to provide consistent project-based support – you generally have the same contact partner from the initial enquiry right through to conception, design and delivery.

Close networking between design, production and sales means we make decisions fast. This means short delivery times and a high level of service quality – giving you the competitive advantage and leading edge needed for success.



flange adapter ZFE



dead center FNA and changeable center cone



face driver FSB



live center RN



face driver FFBR



carbide center pin DIN 807



face driver FSP



live center RNCS with carbide tip



reducing sleeves RH

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FSB



FFB



FSP

FOR TURNING AND HARD TURNING WITH DRIVE PINS



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Face Drivers

with appropriate changable parts and accessories



FFBR



FDNC

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Face Drivers FSB / SB



with drive pins and movable center pin

The entire surface of the workpiece can be tooled and finished by clamping with a maximum of torque transmission. NEIDLEIN face drivers are mechanical clamping systems which are suited **for turning as well as hard turning.**

Face drivers of type FSB / SB are power-operated by the thrust of the tailstock. Workpieces are clamped centrically using a movable center pin. This way different centerings can be adjusted, thus ensuring a constant datum-point at the end face of the workpieces.

Type FSB with flange retainer

Type FSB is mounted onto the machine spindle nose using a flange adapter.



Type SB with MK- or cylindrical retainer

Type SB with taper shank and extracting nut for fast mounting into the machine spindle.



NEIDLEIN face drivers FSB / SB with movable center pins ensure:

- a maximum of torque transmission, thus achieving high metal removing rates
- datum-point at the end face of the workpiece
stable datum-point in case of different centerings
- extended tool-life of driving devices and cutting tools
due to vibration-free running
- run-out deviation max.: 0.015 - 0.02 mm
- clamping force is triggered by tailstock
- fixed center pin/fixed datum-point
in clamped state
- compensating driving devices/ideal clamping
of the workpiece
- simple handling

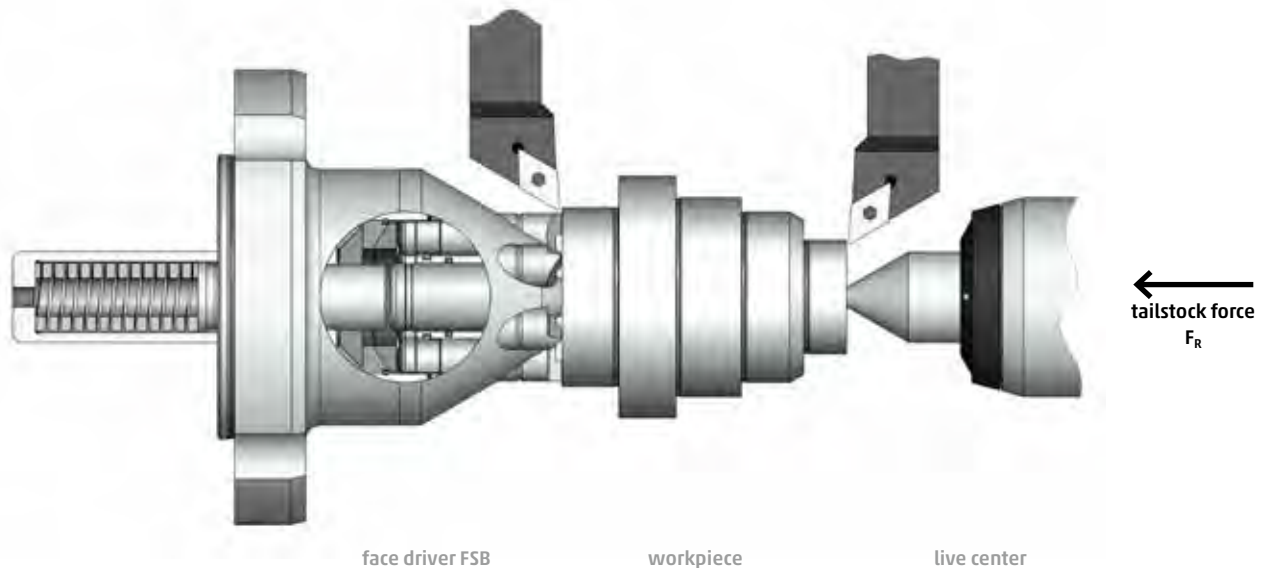
Clamping principle

The center pin located on the side of the tailstock pushes the workpiece against the movable center pin of the face driver. The center pin will draw back until the surface of the workpiece bears against the drive pins. In this state the clamping bolt is clamped over the power flow in order to ensure a fixed datum-point during the entire tooling process.

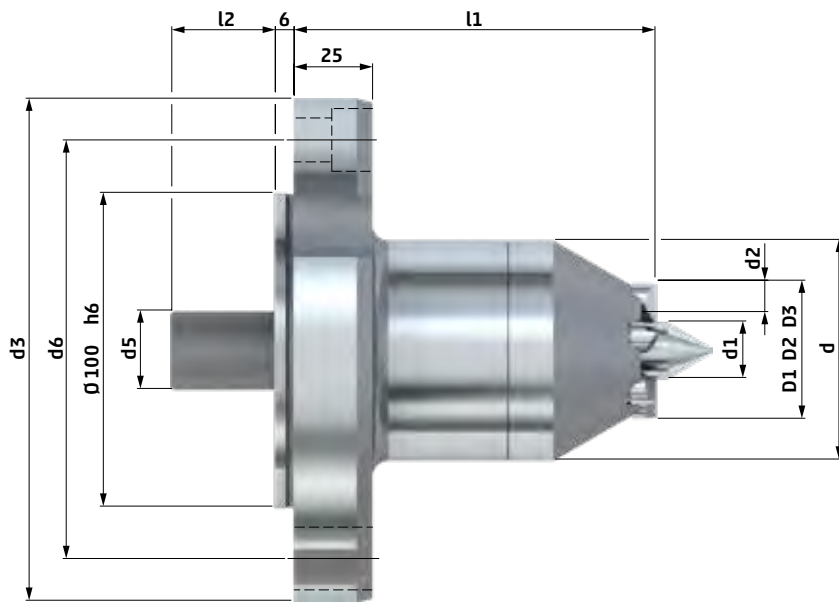
The drive pins are "floatingly", thus compensating for variations in workpiece, squareness and surface finish. The entire surface of the workpiece can now be finished in one single clamping. Please check page 15 - 16 for metal removing rates to be obtained as well as for the tailstock forces required. Compatible standard drive pins and center pins are listed on page 24 - 31.

We will be glad to design clamping devices suitable for your workpieces.

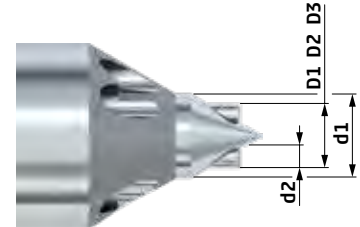
Type FSB with flange retainer



Technical data – type FSB face driver



type FSB 01/0



type FSB	d	d1	center Ø	d2	d3	d5	d6	l1	l2	drive pin	fastening screw		clamping Ø			cat. no.
											type	pcs	D1	D2	D3	
01	48	22	0 - 5	6	160	25	133.4	115	28	3	M12	3	8	11	17	730 12
0	48	22	0 - 3	8	160	25	133.4	115	28	3	M12	3	6	11	19	730 01
11	42	6	0 - 6	6	160	25	133.4	115	28	3	M12	3	11	14	20	730 11
1	48	8	0 - 8	8	160	25	133.4	115	28	3	M12	3	13	18	26	730 02
2	70	14	2 - 14	10	160	25	133.4	115	23	6	M12	3	26	31	36	730 03
3	70	18	2 - 18	10	160	25	133.4	115	33	6	M12	3	34	39	44	730 04
35	80	14	2 - 14	15	160	25	133.4	115	33	6	M12	3	29	39	49	730 09
4	90	24	3 - 24	15	160	32	133.4	115	72	6	M12	3	39	49	59	730 05
45	100	28	3 - 28	15	160	32	133.4	115	72	6	M12	3	49	59	69	730 10
5	132	35	6 - 35	20	160	45	133.4	115	164	6	M12	3	69	84	99	730 06
55	182	35	6 - 35	20	220	45	171.4	115	165	6	M16	3	110	125	140	730 08
6	212	35	6 - 35	20	250	45	210	115	165	6	M20	3	140	155	170	730 07
7	255	50	25 - 48	20	290	50	250	132	165	6	M20	6	180	195	210	730 13
75	302	50	25 - 48	20	348	50	310	132	165	6	M20	6	230	245	260	730 14
8	360	80	30 - 76	30	440	78	394	190	262	6	M20	6	270	290	310	730 16
85	410	80	30 - 76	30	490	78	444	190	262	6	M20	6	320	340	360	730 15

- All face drivers are supplied without drive pins. (drive pins see page 24 - 29)
- Types FSB 01/0 are supplied with center body, all other types without center pin. (center pins see page 30 - 31)
- Mounting elements for face drivers see page 92 - 97.
- For vertical use of the face driver the center pin and drive pins must be secured against falling out. (Special design)

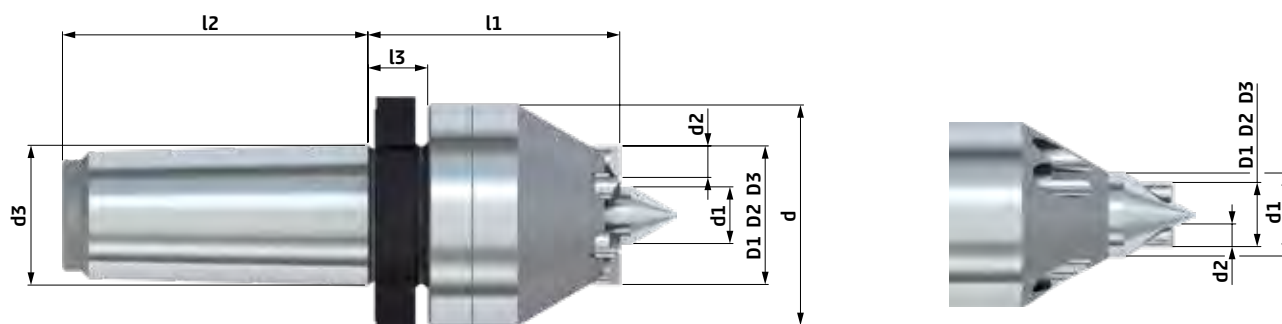
It is the purpose of a flange-adapter to provide stable connection to the machine spindle. We supply these flange adapters for various sizes of spindle noses either in standard size (DIN ISO 702-1 / DIN 55028) or for spindle noses specific to manufacturer of machine-tools. Thus face drivers of type FSB can be used on different machines. Driving devices and center pins can be exchanged front view on the machine without any effort.

Upon request and depending on the tooling direction of the machine the face driver can be equipped optionally with drive pins for counter-clockwise tooling (SR / tooling direction M3), for clockwise tooling (SL / tooling direction M4) or for both tooling directions (NV = bi-directional).

Apart from the clamping diameters listed in the table under D1, D2, D3 we can also supply intermediate dimensions upon request. We can as well make extra-large center pins or mushroom centers appropriate to oversized centerings in workpieces.

Technical data – type SB face driver

type SB 01/0



type SB	MK	d	d1	center Ø	d2	d3	l1	l2	l3	drive pin	clamping Ø			cat. no.
											D1	D2	D3	
01	3	48	22	0 - 5	6	M28 x 1.5	87	61	14	3	8	11	17	720 16
	4	48	22	0 - 5	6	M35 x 1.5	87	74	16	3	8	11	17	720 17
	5	48	22	0 - 5	6	M48 x 1.5	87	97	19	3	8	11	17	720 18
0	3	48	22	0 - 3	8	M28 x 1.5	87	61	14	3	6	11	19	720 01
	4	48	22	0 - 3	8	M35 x 1.5	87	74	16	3	6	11	19	720 02
	5	48	22	0 - 3	8	M48 x 1.5	87	97	19	3	6	11	19	720 03
11	3	42	6	0 - 6	6	M28 x 1.5	80	61	14	3	11	14	20	720 19
	4	42	6	0 - 6	6	M35 x 1.5	80	74	16	3	11	14	20	720 20
	5	42	6	0 - 6	6	M48 x 1.5	80	97	19	3	11	14	20	720 21
1	3	48	8	0 - 8	8	M28 x 1.5	80	61	14	3	13	18	26	720 04
	4	48	8	0 - 8	8	M35 x 1.5	80	74	16	3	13	18	26	720 05
	5	48	8	0 - 8	8	M48 x 1.5	80	97	19	3	13	18	26	720 06
2	4	70	14	2 - 14	10	M35 x 1.5	80	74	16	6	26	31	36	720 07
	5	70	14	2 - 14	10	M48 x 1.5	80	97	19	6	26	31	36	720 08
3	4	70	18	2 - 18	10	M35 x 1.5	80	74	16	6	34	39	44	720 09
	5	70	18	2 - 18	10	M48 x 1.5	80	97	19	6	34	39	44	720 10
4	5	90	24	3 - 24	15	M48 x 1.5	104	97	19	6	39	49	59	720 11
	6	90	24	3 - 24	15	M70 x 1.5	104	134	20	6	39	49	59	720 12
5	6	132	35	6 - 35	20	M70 x 1.5	135	134	20	6	69	84	99	720 13
55	6	182	35	6 - 35	20	M70 x 1.5	140	134	20	6	110	125	140	720 15
6	6	212	35	6 - 35	20	M70 x 1.5	140	134	20	6	140	155	170	720 14

- Face driver with cylindrical shank upon request.
- All face drivers are supplied without drive pins. (drive pins see page 24 - 29)
- Types SB 01/0 are supplied with center body, all other types without center pin. (center pins see page 30 - 31)
- Reducing sleeves for face drivers see page 100 - 101.

Type series SB with MK retainer is embedded directly in the machine spindle and removed by means of an extracting nut. Driving devices and center pins can be exchanged front view on the machine without any effort.

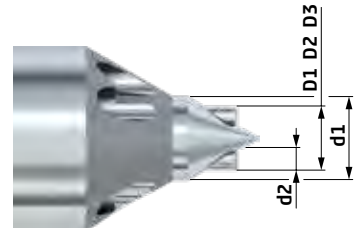
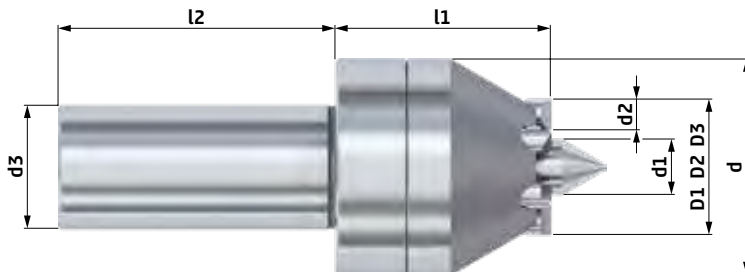
If necessary and depending on the tooling direction of the machine the face driver can be equipped optionally with drive pins for counter-clockwise tooling (SR/tooling direction M3), for

clockwise tooling (SL/tooling direction M4) or for both tooling directions (NV = bi-directional).

Apart from the clamping diameters listed in the table under D1, D2, D3 we also supply intermediate dimensions upon request. We also make extra-large center pins or mushroom centers appropriate to oversized centerings in workpieces.

Technical data – type SB face driver with cylindrical shank

Typ SB 01/0



type SB	cyl.	d	d1	center Ø	d2	d3	l1	l2	drive pin	clamping Ø			cat. no.
										D1	D2	D3	
01	25	48	22	0 - 5	6	25	71	90	3	8	11	17	725 01
0	25	48	22	0 - 3	8	25	71	90	3	6	11	19	725 02
11	25	42	6	0 - 6	6	25	70	90	3	11	14	20	725 03
1	32	48	8	0 - 8	8	32	70	90	3	13	18	26	725 05
2	32	70	14	2 - 14	10	32	70	90	6	26	31	36	725 06
3	32	70	18	2 - 18	10	32	70	90	6	34	39	44	725 07
	40	70	18	2 - 18	10	40	70	90	6	34	39	44	725 08

■ All face drivers are supplied without drive pins. (drive pins see page 24 - 29)

■ Types SB 01/0 are supplied with center body, all other types without center pin. (center pins see page 30 - 31)

Type series SB with cylindrical shank for clamping in a collet or in a chuck. Driving devices and center pins can be exchanged front view on the machine without any effort.

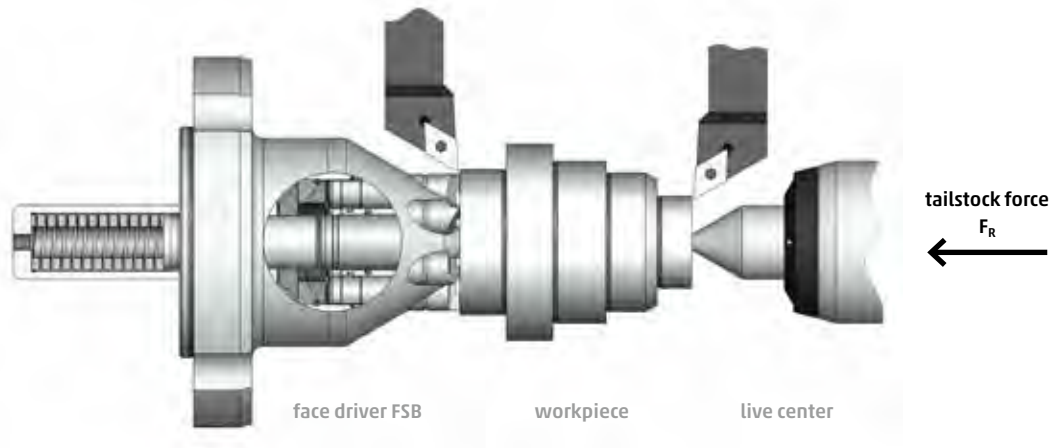
If necessary and depending on the tooling direction of the machine the face driver can be equipped optionally with drive pins for counter-clockwise tooling (SR/tooling direction M3), for clockwise tooling (SL/tooling direction M4) or for both tooling directions (NV = bi-directional).

Apart from the clamping diameters listed in the table under D1, D2, D3 we also supply intermediate dimensions upon request. We also make extra-large center pins or mushroom centers appropriate to oversized centerings in workpieces.

Face Drivers FSB / SB · Calculations

tailstock force / maximum chip cross section of metal removing

PRINCIPLE: The tailstock force pushes the workpiece against the movable center pin of the face driver. The center pin will draw back until the surface of the workpiece bears against the drive pins.



■ tailstock force F_R :

The force onto the face driver required for metal removing is calculated on the basis of the empirical formula:

$$F_R = [(q_{\max} \times 1000 \times \frac{D}{d}) + 1000] \times m$$

F_R	[N]	tailstock force
$q_{\max}$	[mm ²]	maximum of chip cross section for metal removing
D	[mm]	cutting diameter
d	[mm]	clamping diameter
m	[-]	material factor (see adjustment-chart below)

■ maximum chip cross section $q_{\max}$:

At a given tailstock force, maximum chip cross section is calculated as follows:

$$q_{\max} = \frac{\frac{F_R}{m} - 1000}{1000 \times \frac{D}{d}}$$

EXPLANATORY NOTES: The calculations refer to tooling against the face driver. In case of tooling against tailstock the calculated chip cross section is reduced by approx. 40%. The first chip, however, should always be machined toward the face driver, in order to achieve an ideal penetration of the drive pins. The ratio D/d should not exceed 2, otherwise it would work inefficiently.

Material factor m adjustment chart:

material factor m	1.4	1.2	1.1	1.0	0.8
Rm [N/mm²]	1000	800	700	600	400
examples	42CrMo4	16MnCr5 25CrMo4	C 15E (Ck 15) C 45E (Ck 45)	S355J0 35S20	S235J0

Chisel load of drive pins

Keep the chisel load within the following range:
250 - 350 N per mm chisel length

■ **the chisel load is calculated as follows:**

$$BS = \frac{F_R}{n \times s}$$

BS	[N / mm]	chisel load
F _R	[N]	tailstock force
n	[-]	number of drive pins
s	[mm]	chisel length

EXEMPLIFICATION: turning with FSB 3 face driver, 6 drive pins, respective length of chisel 4 mm, tailstock force 7200 N

$$BS = \frac{7200 \text{ N}}{6 \times 4 \text{ mm}} = 300 \frac{\text{N}}{\text{mm}}$$

CALCULATION EXAMPLE for type FSB / SB

Specific data of machine and workpiece:

maximum tailstock force: 10000 N
material of the workpiece: C15E
diameter of the workpiece,
side of face driver: Ø48 mm
turning diameter: Ø90 mm

Selection of face driver:

face driver FSB 3 / clamping Ø 44 mm
6 drive pins each 4 mm chisel length

■ **tailstock force F_R:**

In order to ensure sufficient entrainment (see chisel load of drive pins) a tailstock force of approx. 7200 N has to be supplied.

$$BS = \frac{F_R}{n \times s}$$

$$F_R = 300 \frac{\text{N}}{\text{mm}} \times 6 \times 4 \text{ mm} = 7200 \text{ N}$$

Determination of material factor m:

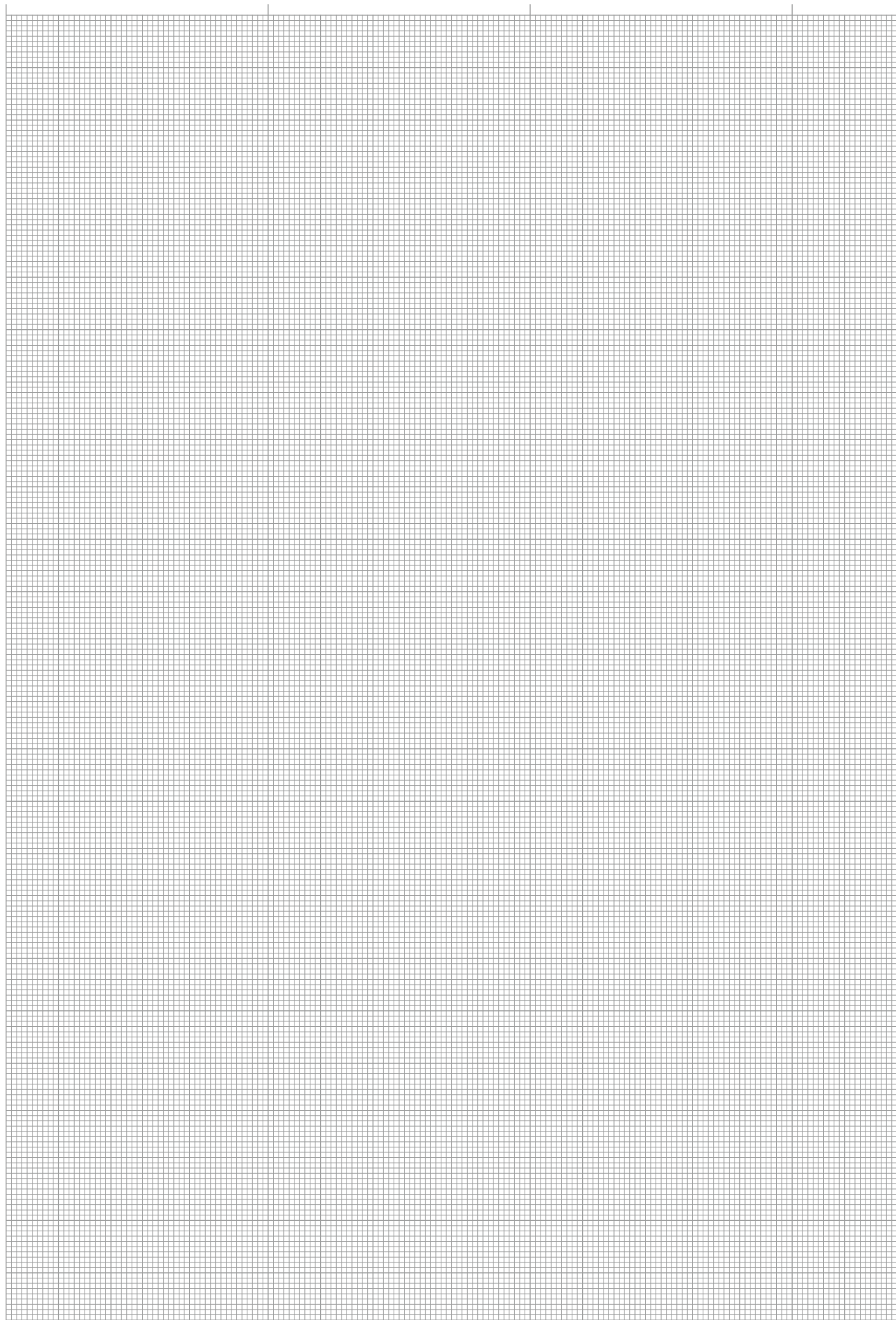
as per adjustment chart material factor: m (C15E) = 1.1

■ **maximum chip cross section q_{max}:**

The maximum chip cross section (at the ultimate turning-Ø) is calculated as follows:

$$q_{\max} = \frac{\frac{7200 \text{ N}}{1.1} - 1000}{1000 \times \frac{90 \text{ mm}}{44 \text{ mm}}} = 2.71 \text{ mm}^2$$

EXPLANATORY NOTES: This calculation refers to tooling against the face driver. The calculated chip cross section refers to the ultimate turning diameter. In case of further tooling towards the axis of rotation of the workpiece, even larger chip cross sections can be achieved (> formula), commensurate with turning diameter.



Face Drivers FFB / FFBH



with drive pins and fixed center pin for high true run accuracy

The entire surface of the workpiece can be completely machined with one single clamping and with a maximum of torque transmission. NEIDLEIN face drivers are mechanical clamping systems, suitable **for turning and hard turning** likewise.

Face drivers of type FFB / FFBH are power-operated on the side of the machine spindle as well as the side of the tailstock. The workpieces are clamped centrically by the fixed center pin. This operation results in high true run-out accuracy.

Drive pins of type FFBH are hydraulically activated and compensated, thus achieving excellent true run-out accuracy.

Type FFB with flange retainer

Type FFB is mounted onto the machine spindle nose using flange-adapter, adjustable for true run-out.



Type FFBH with flange retainer

Type FFBH is mounted onto the machine spindle nose using flange-adapter adjustable for true run-out.



NEIDLEIN face drivers FFB / FFBH with fixed center pin ensure:

- maximum of torque transmission, thus achieving a high rate of metal removing
- datum-point location in the center of the workpiece ensures constant measures of length
- extended service life of drive pins and cutting tools due to vibration-free running
- run-out deviation max.: 0.002 - 0.01 mm
- fixed clamping location
- compensating driving devices/ideal clamping of the workpiece
- easy handling

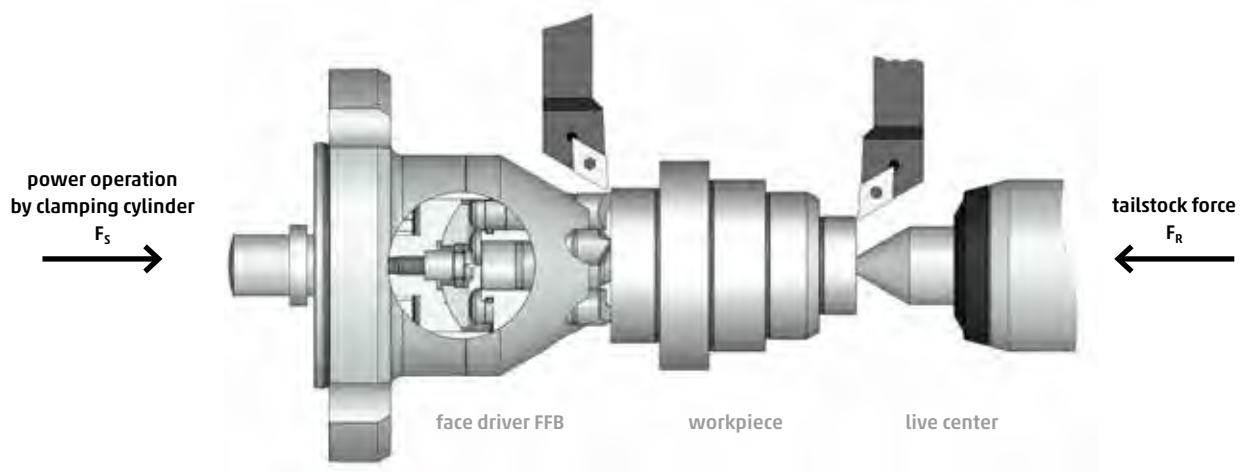
Clamping principle

The center pin located on the side of the tailstock pushes the workpiece against the fixed center pin of the face driver. The motion of the drive pins against the surface of the workpiece is initiated by the clamping cylinder mounted into the machine. The drive pins are "floatingly" suspended, thus compensating irregularities with regard to possible unevenness of the surface of workpieces. The datum-point of workpieces on the machines is determined by the size of the center hole. The entire surface of the workpiece can now be tooled in one single clamping.

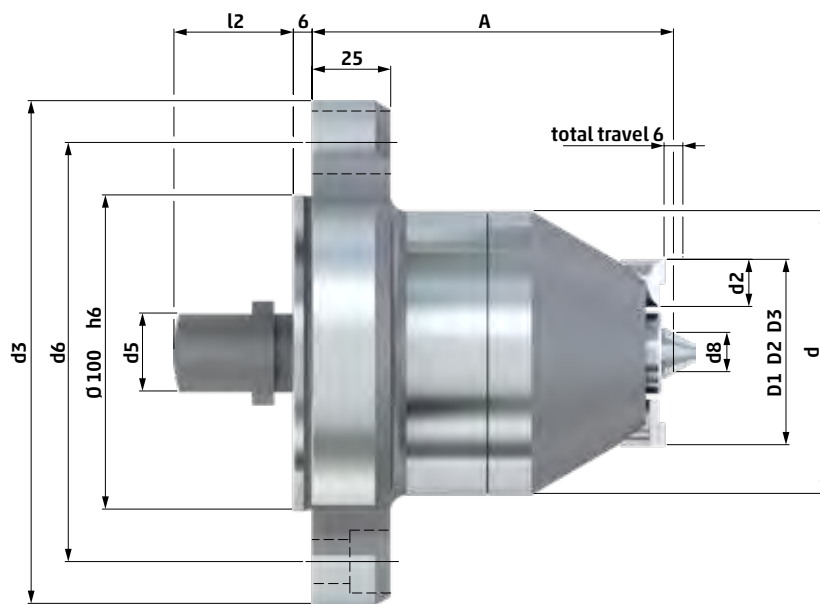
See page 22 - 23 with data for achievable removal of material and the thrust requested. The appropriate standard drive pins and center pins can be found on page 24 - 31.

We will be glad to design clamping devices suitable for your workpieces.

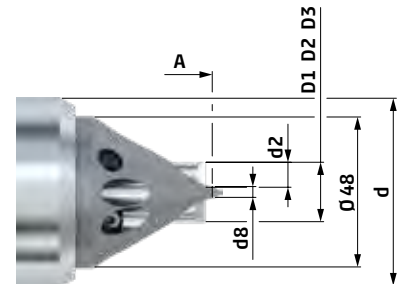
Type FFB / FFBH with flange retainer



Technical data – type FFB face drivers



type FFB 01/0



type FFB	d	center Ø	d2	d3	d5	d6	d8	A	l2	drive pin	fastening screw type	pcs	clamping Ø			cat. no.
													D1	D2	D3	
01	60	1 - 5	6	160	18	133.4	3.5	115	38	3	M12	3	8	11	17	731 01
0	60	1 - 3	8	160	18	133.4	3	115	38	3	M12	3	6	11	19	731 12
11	42	2 - 6.5	6	160	12	133.4	4.25	115	38	3	M12	3	11	14	20	731 11
1	48	4 - 8.5	8	160	18	133.4	6.25	115	38	3	M12	3	13	18	26	731 02
2	70	4 - 9	10	160	22	133.4	6.5	115	38	3	M12	3	26	31	36	731 03
3	70	6 - 11	10	160	22	133.4	8.5	115	38	3	M12	3	34	39	44	731 04
35	80	4 - 9	15	160	22	133.4	6.5	115	38	3	M12	3	29	39	49	731 13
4	90	10 - 15	15	160	25	133.4	12.5	115	38	5	M12	3	39	49	59	731 05
45	100	10 - 15	15	160	25	133.4	12.5	115	54	5	M12	3	49	59	69	731 06
5	132	10 - 15	20	160	25	133.4	12.5	115	54	5	M12	3	69	84	99	731 07
55	182	10 - 15	20	220	40	171.4	12.5	155	54	5	M16	3	110	125	140	731 08
6	220	10 - 15	20	250	40	210	12.5	171	54	5	M20	3	140	155	170	731 09

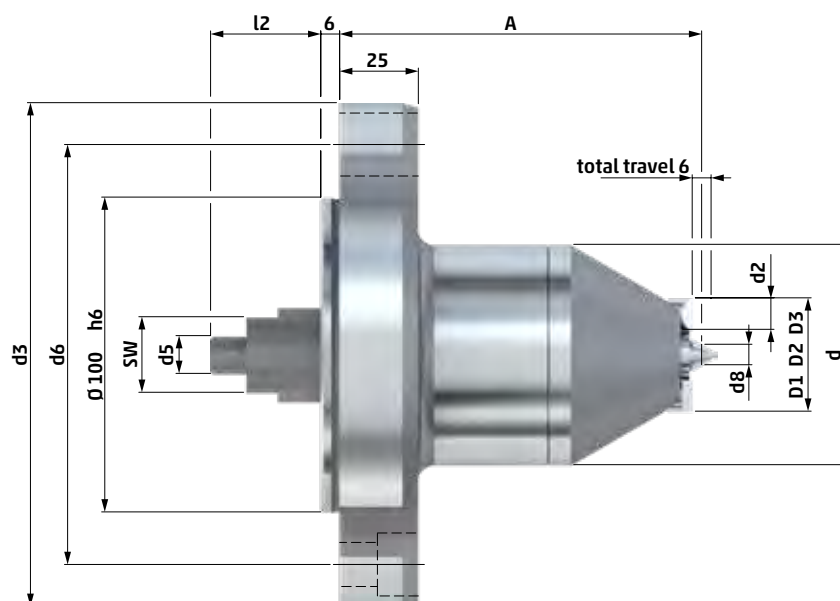
- All face drivers are supplied without drive pins. (drive pins see page 24 - 29)
- Types FFB 01/0 are supplied with center body, all other types without center pin. (center pin see page 30 - 31)
- The diameter d8 refers to the standard center pins. (see page 30 - 31)
- Further center pins for other center holes upon request.
- Mounting elements for face drivers see page 92 - 97.
- For vertical use of the face driver the center pin and drive pins must be secured against falling out. (Special design)

It is the purpose of an adjustable flange-adapter to provide stable connection to the machine spindle. We supply these flange adapters for various sizes of spindle noses in standard size (DIN ISO 702-1/DIN 55028) or for spindle noses specific to machine-tool manufacturer. Thus face drivers of type FFB can be used all-purpose on different machines. Driving devices and center pins can be exchanged front view on the machine without any effort.

Upon request and depending on the tooling direction of the machine, the face driver can be equipped optionally with drive pins for counter-clockwise tooling (SR/tooling direction M3), for clockwise tooling (SL/tooling direction M4) or for both tooling directions (NV = bi-directional).

Apart from the clamping diameters enlisted in the table under D1, D2, D3 we can also supply intermediate dimensions upon request. We can as well make extra-large center pins or mushroom centers appropriate to oversized centerings in workpieces.

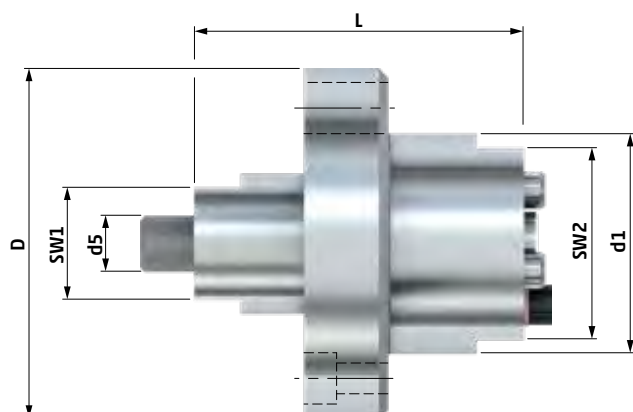
Technical data – type FFBH face drivers



type	d	center Ø	d2	d3	SW	d5	d6	d8	A	l2	drive pin	fastening screw		clamping Ø			cat. no.
FFBH												type	pcs	D1	D2	D3	
1	70	4 - 8.5	8	160	24	12	133.4	6.25	115	35	3	M12	3	13	18	26	631 02
2	70	4 - 9	10	160	24	12	133.4	6.5	115	35	3	M12	3	26	31	36	631 03
3	70	6 - 11	10	160	24	12	133.4	8.5	115	35	3	M12	3	34	39	44	631 04
4	90	10 - 15	15	160	34	12	133.4	12.5	132	35	5	M12	3	39	49	59	631 06
45	100	10 - 15	15	160	34	12	133.4	12.5	132	35	5	M12	3	49	59	69	631 07
5	132	10 - 15	20	160	34	12	133.4	12.5	149	35	5	M12	3	69	84	99	631 08

- All face drivers are supplied without drive pins and without center pins. (changeable parts see page 24 - 31)
- The diameter d8 refers to the standard center pins. (see page 30 - 31)
- Further center pins for other center holes upon request.
- Mounting elements for face drivers see page 92 - 97.
- For vertical use of the face driver the center pin and drive pins must be secured against falling out. (Special design)

Technical data– type FFBH hydraulic unit



type	SW1	d5	L	d1	SW2	D	cat. no.
FFBH							
1	24	12	70,5	47	41	75	631 02 HE
2	24	12	70,5	47	41	75	
3	24	12	70,5	47	41	75	
4	34	12	70,5	65	59	93	631 06 HE
45	34	12	70,5	65	59	93	
5	34	12	70,5	87	81	131	631 08 HE

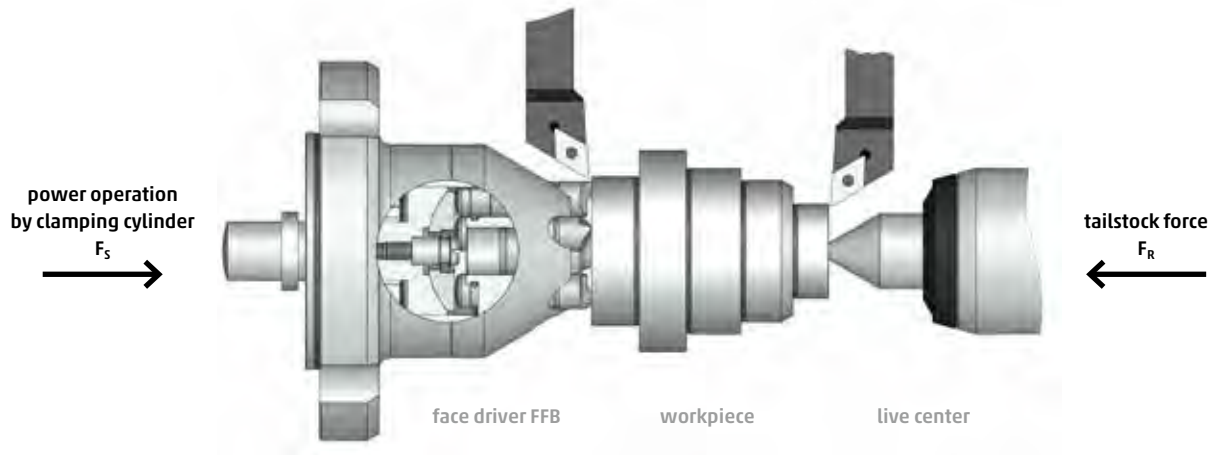
The general explanatory notes for this face driver FFBH can be obtained from the sheet "technical data – type FFB". For safe and smooth operation of face driver we recommend exchange of hydraulic unit after 1500 operating hours.

Furthermore, we offer the option for professional maintenance of the exchanged hydraulic units in our production plant.

Face Drivers FFB / FFBH · Calculations

force of clamping cylinder / maximum chip cross section

PRINCIPLE: The tailstock force pushes the workpiece against the fixed center pin of the face driver. The drive pins are activated by the clamping cylinder mounted into the machine.



■ force of clamping cylinder F_S :

The force onto the face driver required for metal removing is calculated on the basis of the empirical formula:

$$F_S = [(q_{max} \times 1100 \times \frac{D}{d}) + 1300] \times m$$

F_R	[N]	tailstock force
q_{max}	[mm ²]	maximum of chip cross section for metal removing
D	[mm]	cutting diameter
d	[mm]	clamping diameter
m	[-]	material factor (see adjustment-chart below)

■ maximum chip cross section q_{max} :

At a given force of clamping cylinder, the maximum chip cross section is calculated as follows:

$$q_{max} = \frac{\frac{F_S}{m} - 1300}{1100 \times \frac{D}{d}}$$

■ tailstock force F_R :

In case of tooling against the face driver the tailstock force has to be approx. 20 % more than the force of the clamping cylinder F_S .

In case of tooling against the tailstock, the tailstock should be approx. 40 - 50 % higher than the force of the clamping cylinder, if not, then the chip cross section should be reduced by approx. 30 %. (as there is an addition of force of clamping cylinder and cutting force).

EXPLANATORY NOTES: The first chip, however, should always be machined toward the face driver, in order to achieve an ideal penetration of the drive pins. The ratio D/d should not exceed 2, otherwise it would work inefficiently.

Material factor m adjustment chart:

material factor m	1.4	1.2	1.1	1.0	0.8
Rm [N/mm²]	1000	800	700	600	400
examples	42CrMo4	16MnCr5	C 15E (Ck 15)	S355J0	S235J0
		25CrMo4	C 45E (Ck 45)	35S20	

Chisel load of drive pins

Keep the chisel load within the following range:
250 - 350 N per mm chisel length

■ **the chisel load is calculated as follows:**

$$BS = \frac{F_s}{n \times s}$$

EXEMPLIFICATION: turning with FFB 3 face driver, 3 drive pins respective length of chisel 7 mm, force of clamping cylinder 6300 N

$$BS = \frac{4500 \text{ N}}{3 \times 5 \text{ mm}} = 300 \frac{\text{N}}{\text{mm}}$$

BS	[N/mm]	chisel load
F _s	[N]	force of clamping cylinder
n	[-]	number of drive pins
s	[mm]	chisel length

CALCULATION EXAMPLE for type FFB / FFBH

Specific data of machine and workpiece:

maximum force of clamping cylinder: 12000 N
material of the workpiece: 16MnCr5
diameter of the workpiece,
side of face driver: Ø 62 mm
tooling diameter: Ø 120 mm

Selection of face driver:

face driver FFB 4 / clamping Ø 59 mm
5 drive pins each 7.5 mm chisel length

■ **force of clamping cylinder F_s:**

In order to ensure sufficient entrainment (see chisel load of drive pins), a clamping cylinder force of approx. 11250 N is needed.

$$BS = \frac{F_s}{n \times s}$$

$$F_s = 300 \frac{\text{N}}{\text{mm}} \times 5 \times 7.5 \text{ mm} = 11250 \text{ N}$$

■ **maximum chip cross section q_{max}:**

The maximum chip cross section (at OD-Ø) is calculated as follows:

$$q_{\max} = \frac{\frac{11250 \text{ N}}{1.2} - 1300}{1100 \times \frac{120 \text{ mm}}{59 \text{ mm}}} = 3.61 \text{ mm}^2$$

Calculation of material factor m:

as per adjustment chart material factor: m (16MnCr5) = 1.2

EXPLANATORY NOTES: The calculated chip cross section refers to the extreme outer tooling diameter. In case of further tooling towards the axis of rotation of the workpiece, even larger chip cross sections can be achieved (» formula), commensurate with turning diameter.



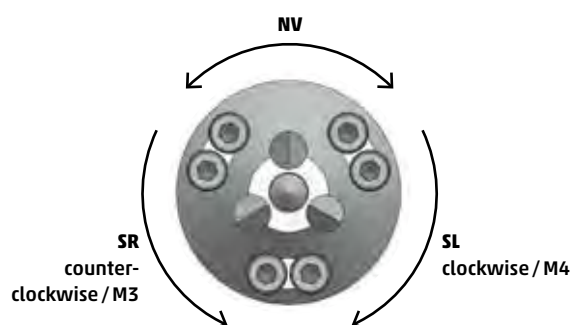
Drive Pins FSB / SB / FFB · Chisel SL / SR / NV

for torque transmission onto the workpiece
for soft / green tooling

Type FSB / SB / FFB · chisel SL / SR / NV

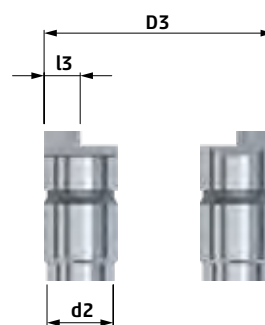
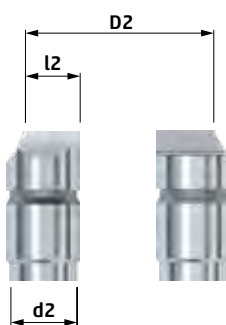
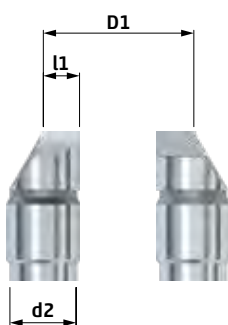


view from tailstock onto the face driver



Technical data – type FSB / SB / FFB · chisel SL / SR / NV

types 01, 11, 8 and 85 with chisel SL and SR are double chiselled



TYPE CHISEL SL
for tooling
direction M4

TYPE CHISEL SR
for tooling
direction M3

TYPE CHISEL NV
for tooling
direction M4 and M3

for type FSB / SB / FFB	d2	clamping Ø			chisel length			cat. no.	cat. no.	cat. no.
		D1	D2	D3	l1	l2	l3			
01	6	8			1.5			736 104	736 101	736 107
	6		11			3		736 105	736 102	736 108
	6			17			6	736 106	736 103	736 109
	6			17			3	736 106S	736 103S	736 109S
0	8	6			1.5			736 04	736 01	736 07
	8		11			4		736 05	736 02	736 08
	8			19			8	736 06	736 03	736 09
	8			19			4	736 06S	736 03S	736 09S
1	8	13			1.5			736 13	736 10	736 16
	8		18			4		736 14	736 11	736 17
	8			26			8	736 15	736 12	736 18
	8			26			4	736 15S	736 12S	736 18S

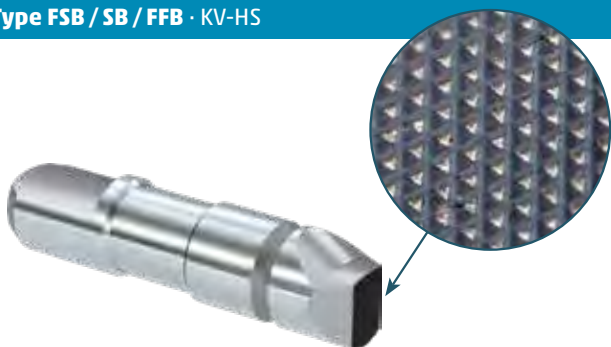
for type FSB / SB / FFB	d2	clamping Ø			chisel length			TYPE CHISEL SL for tooling direction M4	TYPE CHISEL SR for tooling direction M3	TYPE CHISEL NV for tooling direction M4 and M3
		D1	D2	D3	l1	l2	l3	cat. no.	cat. no.	cat. no.
11	6	11			1.5			736 76	736 73	736 79
	6		14			3		736 77	736 74	736 80
	6			20			6	736 78	736 75	736 81
	6			20			3	736 78S	736 75S	736 81S
2	10	26			5			736 22	736 19	736 25
	10		31			7.5		736 23	736 20	736 26
	10			36			10	736 24	736 21	736 27
	10			36			5	736 24S	736 21S	736 27S
3	10	34			5			736 31	736 28	736 34
	10		39			7.5		736 32	736 29	736 35
	10			44			10	736 33	736 30	736 36
	10			44			5	736 33S	736 30S	736 36S
35	15	29			5			736 85	736 82	736 88
	15		39			5		736 86	736 83	736 89
	15			49			5	736 87	736 84	736 90
	15			49			7.5	736 87S	736 84S	736 90S
4	15	39			5			736 40	736 37	736 43
	15		49			7.5		736 41	736 38	736 44
	15			59			7.5	736 42	736 39	736 45
	15			59			5	736 42S	736 39S	736 45S
45	15	49			5			736 94	736 91	736 97
	15		59			7.5		736 95	736 92	736 98
	15			69			7.5	736 96	736 93	736 99
	15			69			5	736 96S	736 93S	736 99S
5	20	69			5			736 49	736 46	736 52
	20		84			10		736 50	736 47	736 53
	20			99			10	736 51	736 48	736 54
	20			99			7.5	736 51S	736 48S	736 54S
55	20	110			5			736 58	736 55	736 61
	20		125			10		736 59	736 56	736 62
	20			140			10	736 60	736 57	736 63
	20			140			7.5	736 60S	736 57S	736 63S
6	20	140			5			736 67	736 64	736 70
	20		155			10		736 68	736 65	736 71
	20			170			10	736 69	736 66	736 72
	20			170			7.5	736 69S	736 66S	736 72S
7	20	180			5			736 114	736 111	736 117
	20		195			15		736 115	736 112	736 118
	20			210			20	736 116	736 113	736 119
75	20	230			5			736 344	736 341	736 347
	20		245			15		736 345	736 342	736 348
	20			260			20	736 346	736 343	736 349
8	20	270			10			736 373	736 370	736 376
	20		290			20		736 374	736 371	736 377
	20			310			30	736 375	736 372	736 378
85	30	320			10			736 364	736 361	736 367
	30		340			20		736 365	736 362	736 368
	30			360			30	736 366	736 363	736 369



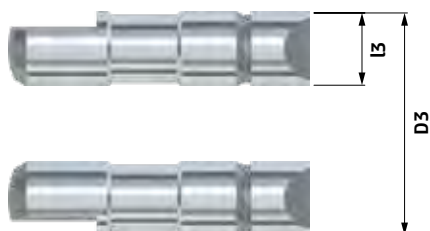
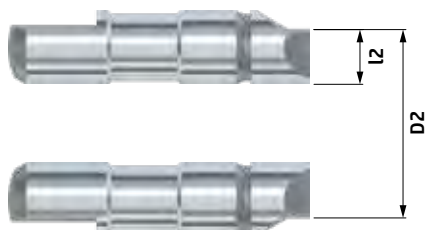
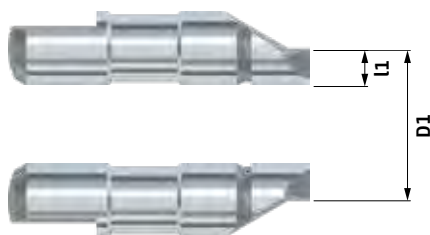
Drive Pins FSB / SB / FFB · KV-HS

cross serrated and coated for hard turning operation
for torque transmission onto the workpiece
for hard tooling

Type FSB / SB / FFB · KV-HS



Technical data – type FSB / SB / FFB · KV-HS



for type	clamping Ø			chisel length			cat. no.
FSB / SB / FFB	D1	D2	D3	l1	l2	l3	
01	8			1.5			736 200
		11			3		736 201
			17			6	736 202
0	6			1.5			736 203
		11			4		736 204
			19			8	736 205
1	13			1.5			736 209
		18			4		736 210
			26			8	736 211
11	11			1.5			736 206
		14			3		736 207
			20			6	736 208
2	26			5			736 212
		31			7.5		736 213
			36			10	736 214
3	34			5			736 215
		39			7.5		736 216
			44			10	736 217
35	29			5			736 218
		39			10		736 219
			49			15	736 220
4	39			5			736 221
		49			10		736 222
			59			15	736 223
45	49			5			736 224
		59			10		736 225
			69			15	736 226
5	69			5			736 227
		84			12.5		736 228
			99			20	736 229
55	110			5			736 230
		125			12.5		736 231
			140			20	736 232
6	140			5			736 233
		155			12.5		736 234
			170			20	736 235

■ Further clamping Ø of drive pins upon request.

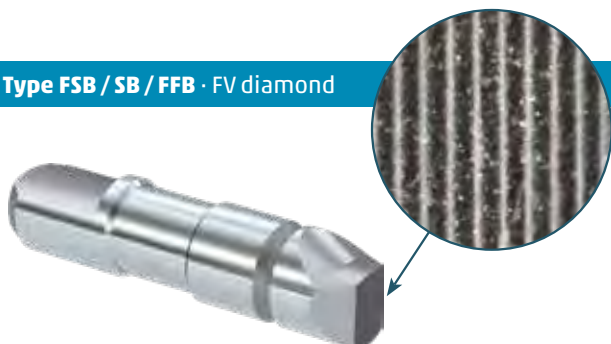


Drive Pins FSB / SB / FFB · FV Diamond

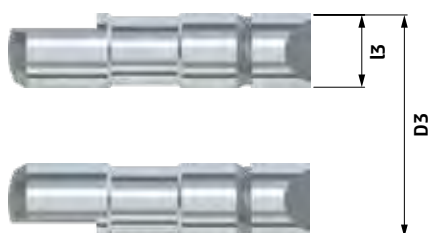
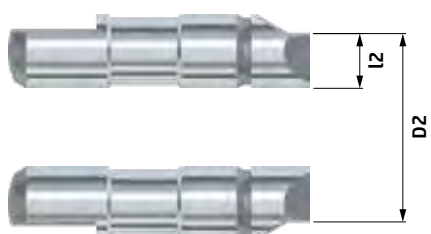
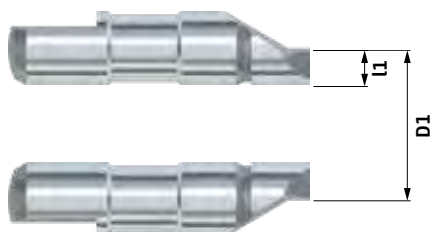
serrated and diamond embedded
for torque transmission onto the workpiece
for hard tooling

for higher friction coefficient and higher tool life of drive pin

Type FSB / SB / FFB · FV diamond



Technical data – type FSB / SB / FFB · FV diamond



for type	clamping Ø			chisel length			cat. no.
FSB / SB / FFB	D1	D2	D3	l1	l2	l3	
01	8			1.5			736 400
	11				3		736 401
			17			6	736 402
0	6			1.5			736 403
	11				4		736 404
			19			8	736 405
1	13			1.5			736 409
	18				4		736 410
			26			8	736 411
11	11			1.5			736 406
	14				3		736 407
			20			6	736 408
2	26			5			736 412
	31				7.5		736 413
			36			10	736 414
3	34			5			736 415
	39				7.5		736 416
			44			10	736 417
35	29			5			736 418
	39				10		736 419
			49			15	736 420
4	39			5			736 421
	49				10		736 422
			59			15	736 423
45	49			5			736 424
	59				10		736 425
			69			15	736 426
5	69			5			736 427
	84				12.5		736 428
			99			20	736 429
55	110			5			736 430
	125				12.5		736 431
			140			20	736 432
6	140			5			736 433
	155				12.5		736 434
			170			20	736 435

■ Further clamping Ø of drive pins upon request.



Drive Pins FSB / SB / FFB · Chisel Carbide

full carbide / carbide inserts

for torque transmission onto the workpiece

for tooling of high-tensile-strength materials

Type FSB / SB / FFB · chisel carbide

model B / SR



MODEL A



SL

SR

NV

MODEL B



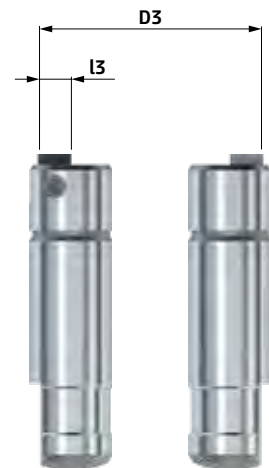
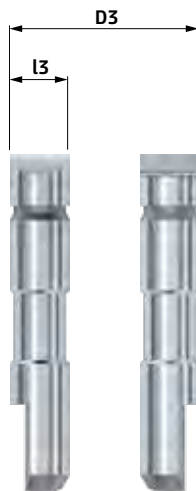
SL

SR

Technical data – type FSB / SB / FFB · chisel carbide

type 01 - 3 made of full carbide, model A

type 35 - 6 with carbide inserts, model B



MODEL A**TYPE CHISEL SL**
for tooling
direction M4**TYPE CHISEL SR**
for tooling
direction M3**TYPE CHISEL NV**
for tooling
direction M4 and M3

for type FSB / SB / FFB	clamping Ø D3	length l3	cat. no.	cat. no.	cat. no.
01	17	6	736 500	736 518	736 536
0	19	8	736 501	736 519	736 537
1	26	8	736 502	736 520	736 538
11	20	6	736 503	736 521	736 539
2	36	10	736 504	736 522	736 540
3	44	10	736 505	736 523	736 541

MODEL B

for type FSB / SB / FFB	clamping Ø		length l3	cat. no.	cat. no.
	D1	D3			
35	34	6	736 506	736 524	
		46	736 507	736 525	
4	44	6	736 508	736 526	
		56	736 509	736 527	
45	54	6	736 510	736 528	
		66	736 511	736 529	
5	75	6	736 512	736 530	
		95	736 513	736 531	
55	116	6	736 514	736 532	
		136	736 515	736 533	
6	146	6	736 516	736 534	
		166	736 517	736 535	

- Drive Pins are supplied with carbide insert.
- Further clamping-Ø of drive pins upon request.

Changeable inserts for type 35 - 6, model B

changeable parts	cat. no.
carbide insert	736 550
set screw for fastening of carbide insert	736 551



Center Pins FSB / SB

for face drivers **FSB / SB** with movable center pin

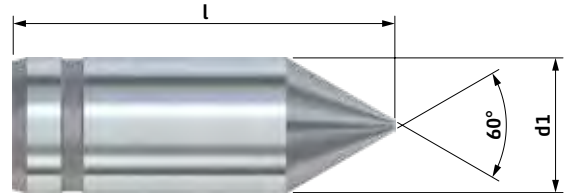
Type **FSB / SB** · center pin



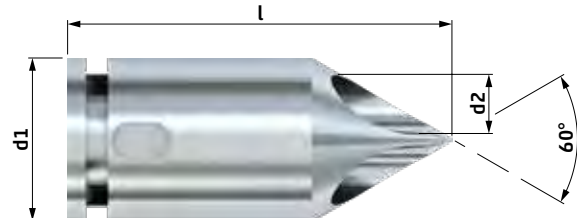
center body type **FSB / SB** 01 / 0



Technical data – type **FSB / SB** · center pin



center body type **FSB / SB** 01 / 0



for type FSB / SB	d1	center Ø	d2	l	cat. no.
01	22	0 - 5	6	52	735 101
0	22	0 - 3	8	52	735 01
11	6	0 - 6	-	53	735 11
1	8	0 - 8	-	53	735 02
2	14	2 - 14	-	47	735 03
3	18	2 - 18	-	51	735 04
35	14	2 - 14	-	47	735 09
4	24	3 - 24	-	70	735 05
45	28	3 - 28	-	74	735 10
5	35	6 - 35	-	96	735 06
55	35	6 - 35	-	96	735 08
6	35	6 - 35	-	96	735 07
7	50	25 - 48	-	100	735 301
75	50	25 - 48	-	100	735 401
8	80	30 - 76	-	135	735 601
85	80	30 - 76	-	135	735 501

■ Further center pins for other center holes upon request.

Center Pins FFB / FFBH

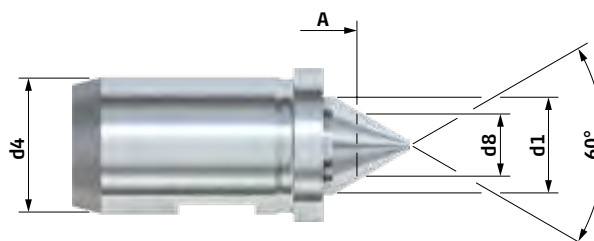
for face drivers FFB / FFBH with fixed center pin

Type FFB / FFBH · tool steel or carbide

Technical data - type FFB / FFBH · tool steel or carbide



with carbide insert

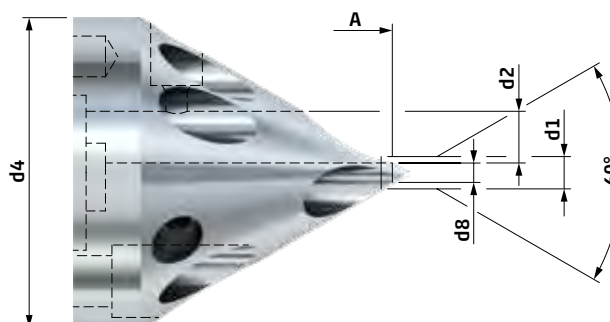


A overhang dimension of face driver to centre d8 (see page 20 - 21)

center body type FFB / FFBH 01 / 0



center body type FFB / FFBH 01 / 0



TYPE
TOOL STEEL

TYPE
CARBIDE

for type FFB / FFBH	d1	d2	d4	center Ø	d8	cat. no.
01	5	6	48	1 - 5	3.5	734 01
0	3	8	48	1 - 3	3	734 101
11	7.8	-	6	2 - 6.5	4.25	734 11
1	9.8	-	8	4 - 8.5	6.25	734 02
2	10	-	14	4 - 9	6.5	734 03
3	12	-	18	6 - 11	8.5	734 04
35	10	-	14	4 - 9	6.5	734 12
4	16	-	20	10 - 15	12.5	734 05
45	16	-	28	10 - 15	12.5	734 06
5	16	-	35	10 - 15	12.5	734 07
55	16	-	35	10 - 15	12.5	734 08
6	16	-	35	10 - 15	12.5	734 09

cat. no.
734 43
734 44
734 33
734 34
734 35
734 36
734 37
734 38
734 39
73440
734 41
734 42

- Further center pins for other center holes upon request.
- Center pins of type FFB / FFBH 01 / 0 (type carbide) are just carbide coated on the 60° centering.



Face driver FSBR / SBR

with drive pins and movable center body for soft workpieces with high true running accuracy

The entire surface of the workpiece can be tooled and finished by clamping with a maximum of torque transmission. NEIDLEIN face drivers of type FSBR / SBR are mechanical clamping systems which are suited **for turning (for grinding operation upon request)**.

Face drivers of type FSBR / SBR are power-operated by the thrust of the tailstock. Workpieces are clamped centrally using a movable center body. This way different centerings can be adjusted thus ensuring a constant datum-point at the end face of the workpieces.

Type FSBR with flange retainer

Type FSBR is mounted onto the machine spindle nose using a flange adapter.



Type SBR with MK- or cylindrical retainer

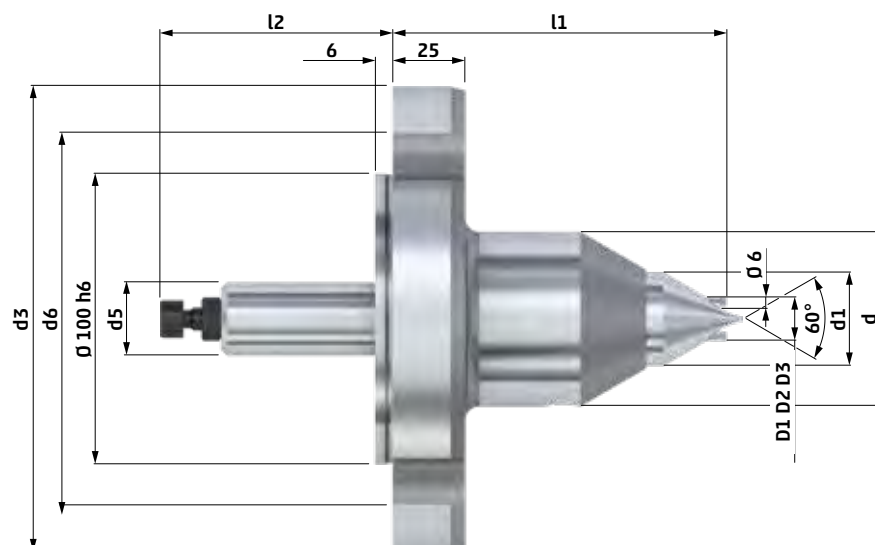
Type SBR with taper shank and extracting nut for fast mounting into the machine spindle.



NEIDLEIN face drivers FSBR / SBR with movable center body ensure:

- run-out deviation max.: 0.01-0.015 mm despite movable center body
- high process reliability at small workpieces
- datum-point at the end face of the workpiece
stable datum-point in case of different centerings
- secured drive pins and center body
- clamping force is triggered by tailstock
- fixed center pin / fixed datum-point in clamped state
- compensating driving devices / ideal clamping of the workpiece
- simple handling

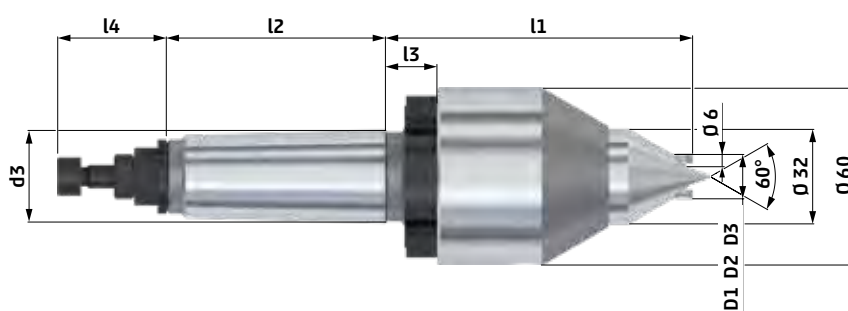
Technical data – type FSBR face driver



type FSBR	d	d1	center Ø	d3	d5	d6	l1	l2	drive pin	fastening screw type	pcs	clamping-Ø			cat. no.
												D1	D2	D3	
01	60	32	0 - 5	160	25	133.4	115	80	3	M12	3	7	11	17	730 30
0	60	32	0 - 3	160	25	133.4	115	80	3	M12	3	5	9	15	730 31

- All face drivers are supplied without drive pins. (drive pins see page 34)
- The center body is already installed.
- Mounting elements for face drivers see page 92 - 97.

Technical data – type SBR face driver



type SBR	MK	center Ø	d3	l1	l2	l3	l4	drive pin	clamping-Ø			cat. no.
									D1	D2	D3	
01	3	0 - 5	M28 x 1.5	113	61	16	35	3	7	11	17	720 30
	4	0 - 5	M35 x 1.5	104	74	17.5	37	3	7	11	17	720 31
	5	0 - 5	M48 x 1.5	104	97	19.5	37	3	7	11	17	720 32
0	3	0 - 3	M28 x 1.5	113	61	16	35	3	5	9	15	720 35
	4	0 - 3	M35 x 1.5	104	74	17.5	37	3	5	9	15	720 36
	5	0 - 3	M48 x 1.5	104	97	19.5	37	3	5	9	15	730 37

- Face driver with cylindrical shaft upon request.
- All face drivers are supplied without drive pins. (drive pins see page 34)
- The center body is already installed.
- Reducing sleeves for face drivers see page 100 - 101.



Drive Pins FSBR / SBR · Chisel SL / SR

for torque transmission onto the workpiece for soft / green tooling

For soft workpieces we apply drive pins made of hardened HSS comprising a chisel. They are characterized by high wear-resistance as well as maximum torque transmission.

Type FSBR / SBR Chisel SL/SR



SL

SR

Technical data - Typ FSBR / SBR drive pins

Form A



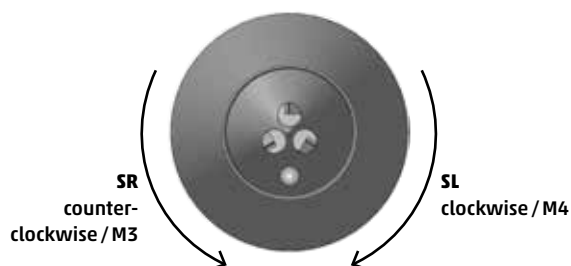
Form B



Form C



view from tailstock onto the face driver



for type	for clamping	model	l	TYPE CHISEL SL DIRECTION M4 cat. no.	TYPE CHISEL SR DIRECTION M3 cat. no.
FSBR SBR	D3	A	2	736 662	736 665
FSBR SBR	D2	B	2	736 661	736 664
FSBR SBR	D1	C	2	736 660	736 663

- Clamping diameter D1, D2, D3 see page 33.
- Further clamping Ø of drive pins upon request.

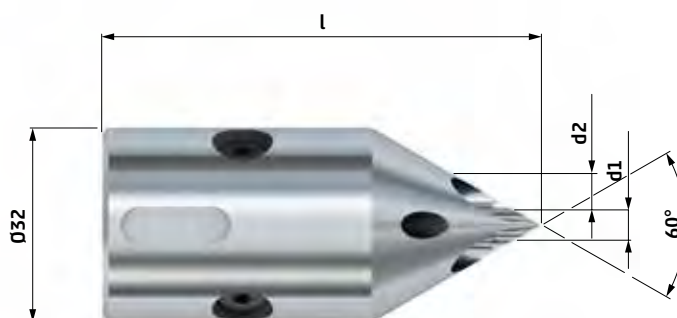
Center body FSBR / SBR

for face drivers FSBR / SBR with movable center pin

Type FSBR / SBR



Technical data - Type FSBR / SBR center body



for type FSBR / SBR	d1	center Ø	d2	l	cat. no.
01	5	0 - 5	6	72	735 20
0	3	0 - 3	6	72	735 21



Pipe Drivers NDG / AND

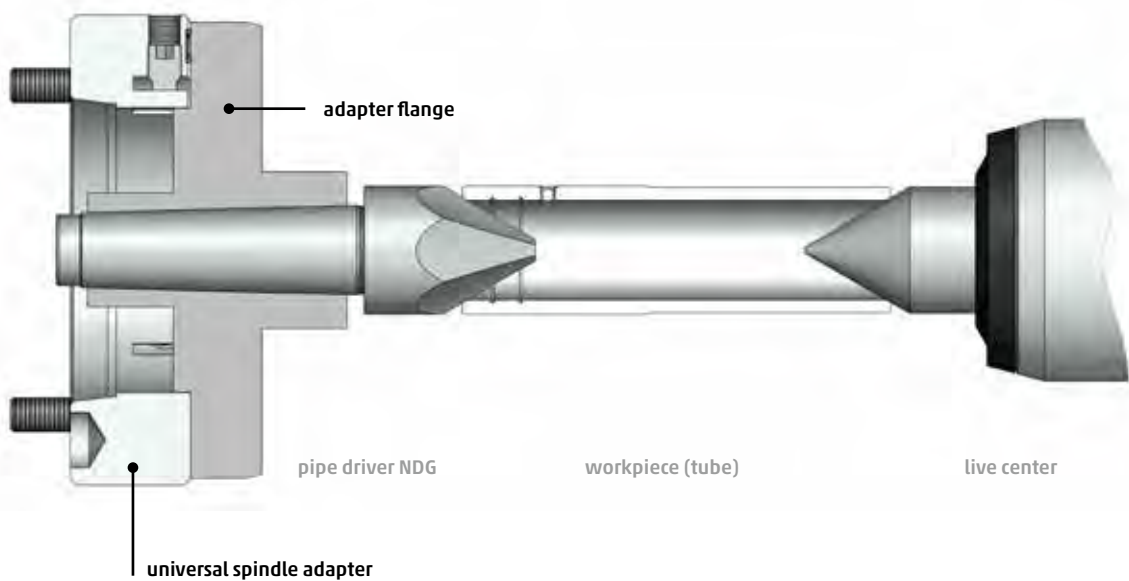
The entire outside surface of a tubular workpiece can be tooled with one single clamping and high torque transmission.

By means of a pipe driver, large clamping areas can be covered.

Type NDG pipe driver



Clamping principle

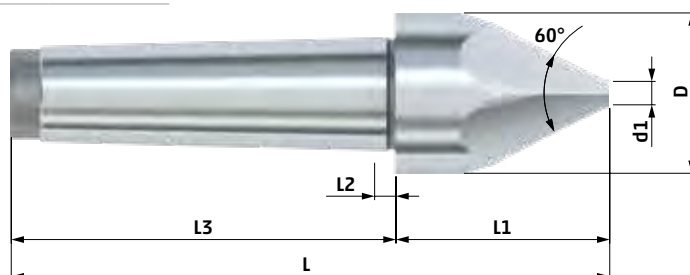


NEIDLEIN pipe drivers NDG and AND ensure:

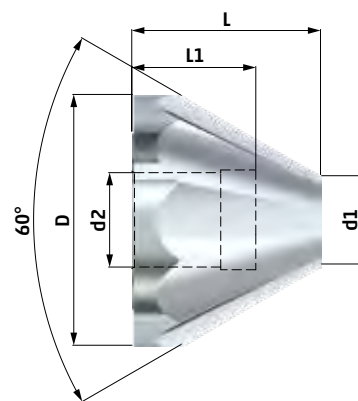
- high torque transmission, thus achieving a high rate of metal removing
- finishing of outer surface by clamping
» saving of time
- extended service life of driving chisels
- easy handling
- a large clamping area of tubular workpieces
2 - 155 mm bore-diameter

Technical data – type NDG pipe driver

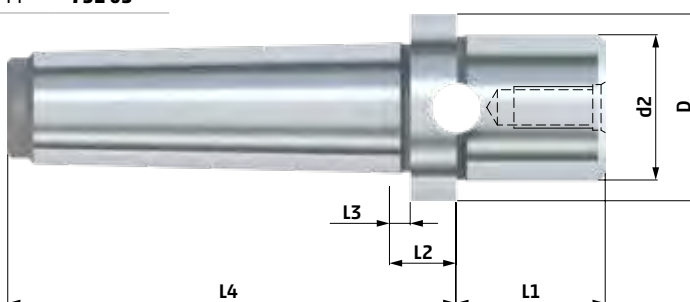
type NDG	morse taper	D	d1	L	L1	L2	L3	a	chisel pcs	for bore-Ø from to	cat. no.
0/15	2	18	0	100	31	4	68	60°	6	2 17	750 01
0/30	3	31	0	135	50	5	85	60°	6	2 30	750 02
10/40	3	45	8	145	60	5	85	60°	6	9 43	750 03
20/60	3	63	18	147	62	5	85	60°	8	19 60	750 04
10/40	4	45	8	168	60	6	108	60°	6	9 43	750 05
20/60	4	63	18	170	62	6	108	60°	8	19 60	750 06

**Technical data – type NDG drive cone exchangeable**

type NDG	D	d1	d2	L	L1	a	chisel pcs	for bore-Ø from to	cat. no.
35/90	93	32.8	35	70	46	60°	10	33 90	751 01
90/155	158	88	35	75	46	60°	10	88 155	751 02

**Technical data – type AND arbor**

type AND	morse taper	D	d2	L1	L2	L3	L4	cat. no.
35/4	4	46	35	36	16	5	108	752 01
35/5	5	44.5	35	36	16	5	130	752 02
35/6	6	64	35	36	16	5	144	752 03





Face Drivers FSP / FSPB / SP

with drive disk and movable center pin

The entire surface of the workpiece can be tooled and finished by clamping with a maximum of torque transmission.

NEIDLEIN face drivers of type FSP / FSPB / SP with drive disks are mechanical clamping systems which are suited **for soft/green as well as heavy tooling**. In application, they feature maximum flexibility and high robustness.

These face drivers are power-operated by the thrust of the tailstock. Workpieces are clamped centrally using a movable center pin. This way different centerings can be adjusted, thus ensuring a constant datum-point at the face end of the workpiece.

Type FSP with flange retainer for screw connection

Type FSP is mounted onto the machine spindle nose using a flange adapter.



Type FSPB with flange retainer for jaw clamping

Type FSPB is directly clamped with the chuck using soft jaws.



Type SP with MK retainer

Type SP with taper shank and extracting nut for fast mounting into the machine spindle.



NEIDLEIN face drivers FSP / FSPB / SP ensure:

- a maximum of torque transmission, thus achieving high metal removing rates
- datum-point at the face end of the workpiece, stable datum-point in case of different centerings
- compensating drive disk for uneven face sides
- high flexibility in the application, wide range of clamping diameters
- fixed center pin in clamped condition
» fixed clamping point
- run-out deviation max.: 0.015 - 0.02 mm
- adjustable spring force (depending on the weight of the workpiece)
- low setup costs due to fast change of drive disks and center pins
- cost efficient exchange of parts that are in contact with the workpiece (changeable carbide inserts)

Clamping principle

The center pin located on the side of the tailstock pushes the workpiece against the movable center pin of the face driver. The center pin will draw back until the surface of the workpiece bears against the drive disk.

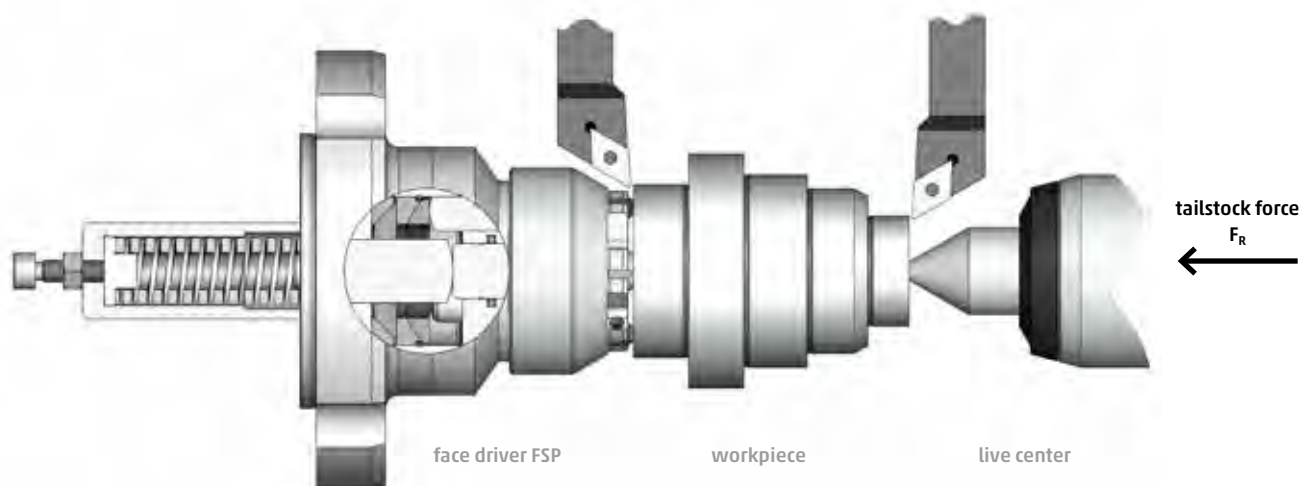
In this state the clamping bolt is clamped over the the power flow, in order to ensure a fixed datum-point throughout the entire tooling process.

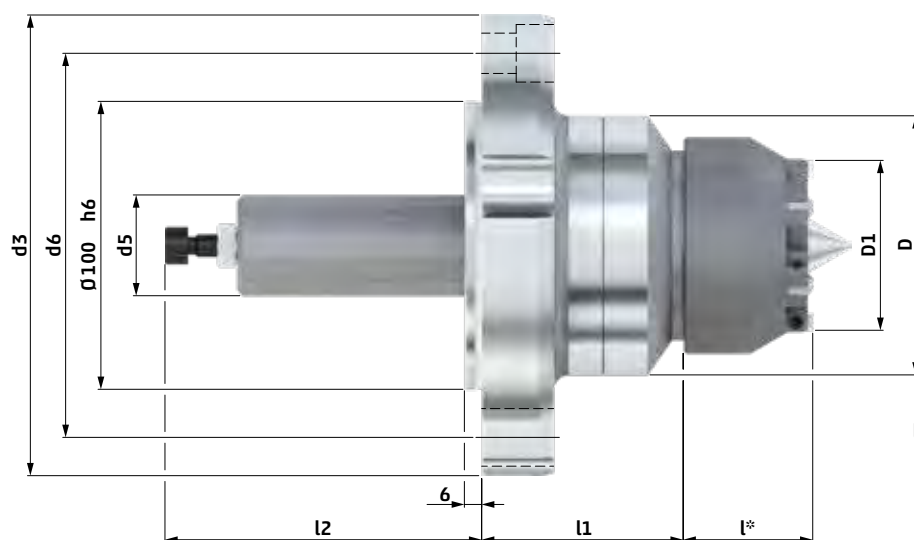
The drive disk is "floatingly" suspended, thus balancing out possible planarity defects of the contact surface of the workpiece.

The entire surface of the workpiece can now be tooled in one single clamping. See page 42 for data of achievable removal of material and the tailstock thrust requested.

You will find various sizes of face drivers with appropriate standard drive disks and center pins on the following pages.

In case you need special dimensions, we will be glad to design clamping devices suitable for your workpieces.

Type FSP with flange retainer

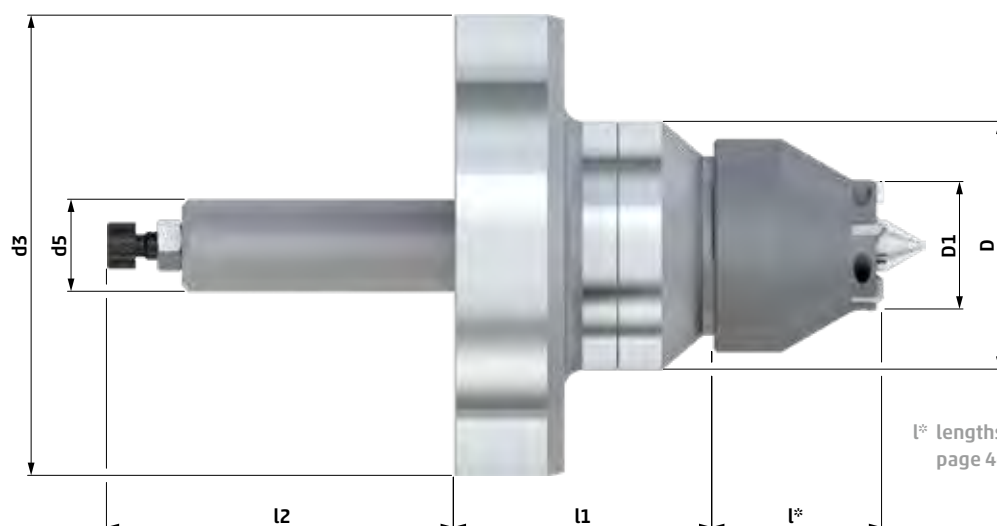
Technical data – type FSP face driver · for screw connection

l* lengths of drive disk see
page 44 - 45

type FSP	D	D1	d3	d5	d6	l1	l2	fixing screws type pcs	cat. no.
3	70	14 - 59	160	26	133,4	67	104	M12 3	632 01
4	90	31 - 125	160	35	133,4	70	110	M12 3	632 03
55	182	84 - 290	220	45	171,4	76	170	M16 3	632 05

■ All face drivers are provided without drive disk and without center pin. (changeable parts see page 44 - 47)

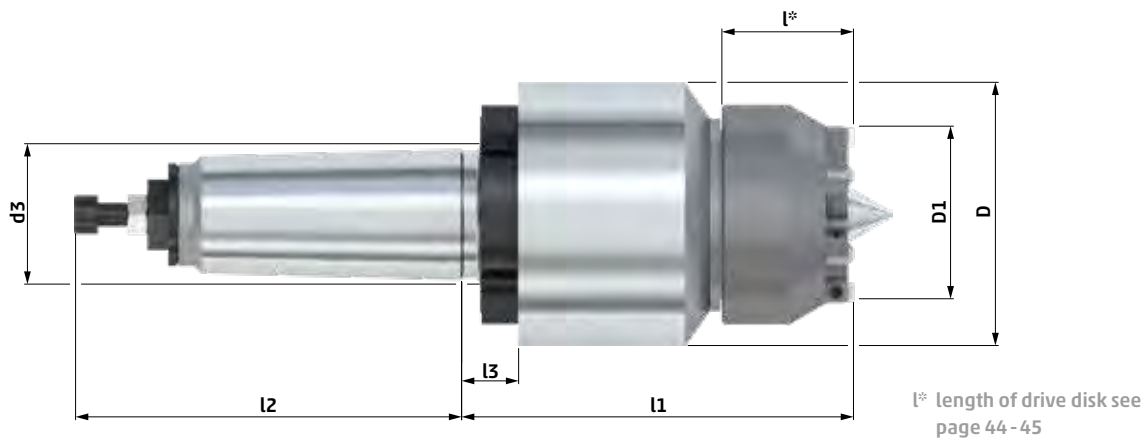
■ Mounting elements for face drivers see page 92 - 97.

Technical data – type FSPB face driver · for jaw clamping

l* lengths of drive disk see
page 44 - 45

type FSPB	D	D1	d3	d5	l1	l2	cat. no.
3	70	14 - 59	130	26	73	98	632 02
4	90	31 - 125	130	35	76	104	632 04

■ All face drivers are provided without drive disk and without center pin. (changeable parts see page 44 - 47)

Technical data – type SP face driver

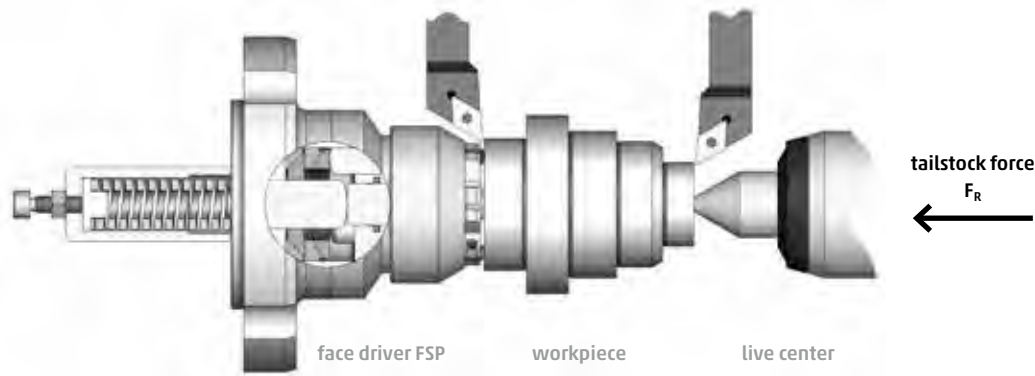
type SP	MK	D	D1	d3	l1	l2	l3	cat. no.
3	4	70	14 - 59	M35 x 1,5	125	106	17,5	632 60
	5	70	14 - 59	M48 x 1,5	125	129	19,5	632 61
4	5	90	31 - 125	M48 x 1,5	134	132	19,5	632 62
	6	90	31 - 125	M70 x 1,5	134	169	22	632 63

- All face drivers are provided without drive disk and without center pin. (changeable parts see page 44 - 47)
- Reducing sleeves for face drivers see page 100 - 101.
- Face driver with cylindrical shank upon request.

Face Drivers FSP / FSPB / SP · Calculations

max. chip cross section of metal removing

PRINCIPLE: The tailstock force pushes the workpiece against the movable center pin of the face driver. The center pin will draw back until the surface of the workpiece bears against the drive dik.



■ tailstock force F_R :

The force onto the face driver required for metal removing is calculated on the basis of the empirical formula:

$$F_R = [(q_{max} \times 1000 \times \frac{D}{d}) + 1000] \times m$$

F_R	[N]	tailstock force
q_{max}	[mm ²]	maximum of chip cross section for metal removing
D	[mm]	cutting diameter
d	[mm]	clamping diameter
m	[-]	material factor (see adjustment-chart below)
a	[mm]	depth of cut
f	[mm/1]	feed rate

■ maximum chip cross section q_{max} :

At a given tailstock force, maximum chip cross section is calculated as follows:

$$q_{max} = \frac{\frac{F_R}{m} - 1000}{1000 \times \frac{D}{d}}$$

■ depth of cut a :

$$a = \frac{q_{max}}{f}$$

NOTE FSPV / FSPBV / SPV:

When using the face driver type SPV/FSPV/FSPBV, the calculated machining chip cross section q_{max} must be reduced by 20%.

EXPLANATORY NOTES: The calculations refer to tooling against the face driver. In case of tooling against tailstock the calculated chip cross section is reduced by approx. 40%. The first chip, however, should always be machined toward the face driver, in order to achieve an ideal penetration of the carbide inserts. The ratio D/d should not exceed 2, otherwise it would work inefficiently.

Material factor m adjustment chart:

material factor m	1.4	1.2	1.1	1.0	0.8
Rm [N/mm²]	1000	800	700	600	400
examples	42CrMo4	16MnCr5	C 15E (Ck 15)	S355J0	S235J0
		25CrMo4	C 45E (Ck 45)	35S20	

Chisel load of the carbide inserts

Keep the chisel load within the following range:
250 - 350 N per mm chisel length

■ the chisel load is calculated as follows:

$$BS = \frac{F_R}{n \times s}$$

BS [N/mm] chisel load
F_R [N] tailstock force

EXEMPLIFICATION: turning with FSP 3 face driver, 5 carbide inserts, respective length of chisel 4 mm, tailstock force 6000 N

$$BS = \frac{6000 \text{ N}}{5 \times 4 \text{ mm}} = 300 \frac{\text{N}}{\text{mm}}$$

n [-] number of carbide inserts
s [mm] chisel length

CALCULATION EXAMPLE for type FSP / FSPB / SP

Specific data of machine and workpiece:

maximum tailstock force: 6000 N
material of the workpiece: 16MnCr5
diameter of the workpiece,
side of face driver: Ø 30 mm
turning diameter: Ø 50 mm

Selection of face driver:

face driver FSP 3 / clamping Ø 26 mm
5 carbide inserts, respective length of chisel 4 mm

■ tailstock force F_R:

In order to ensure sufficient entrainment (see chisel load of carbide inserts) a tailstock force of approx. 6000 N has to be supplied.

$$BS = \frac{F_S}{n \times s}$$

$$F_R = 300 \frac{\text{N}}{\text{mm}} \times 5 \times 4 \text{ mm} = 6000 \text{ N}$$

Determination of material factor m:

as per adjustment chart material factor: m (16MnCr5) = 1.2

■ maximum chip cross section q_{max}:

The maximum chip cross section (at the ultimate turning-Ø) is calculated as follows:

$$q_{\max} = \frac{\frac{6000 \text{ N}}{1.2} - 1000}{1000 \times \frac{50 \text{ mm}}{26 \text{ mm}}} = 2.08 \text{ mm}^2$$

EXPLANATORY NOTES: This calculation refers to tooling against the face driver. The calculated chip cross section refers to the ultimate turning diameter. In case of further tooling towards the axis of rotation of the workpiece, even larger chip cross sections can be achieved (» formula), commensurate with turning diameter.



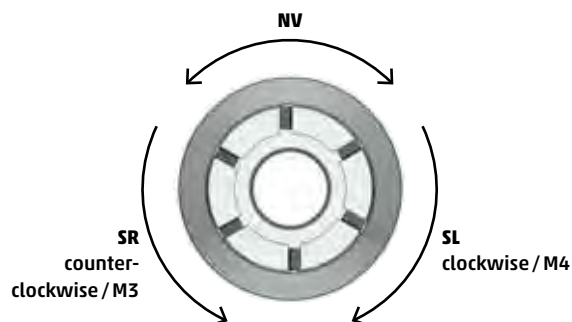
Drive Disks FSP / FSPB / SP · Chisel NV / SL / SR

**with changeable carbide inserts or made of tool steel
for torque transmission onto the workpiece
for the purpose of soft/green tooling**

Type FSP / FSPB / SP · chisel NV / SL / SR



view from tailstock onto the face driver



SL (carbide)

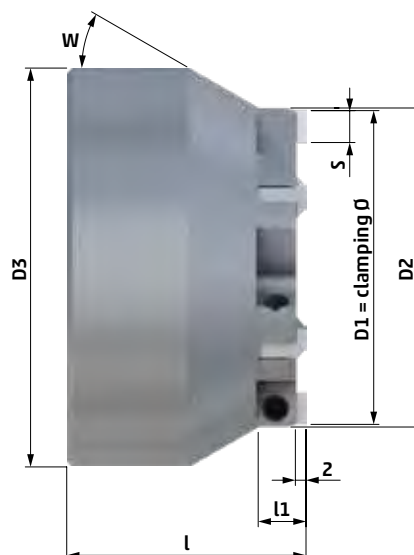


NV (tool steel)



SR (carbide)

Technical data - type FSP / FSPB / SP · chisel NV / SL / SR



TYPE CHISEL NV
for tooling
direction M4 and M3

for type FSP / FSPB / SP	D1	D2	D3	l	l1	W	number of chisels	S	F _R (N)	cat. no.
3	14	14	60	57	5	35°	6 (tool steel)	2.5	4500	738 02
	18	18	60	57	5	30°	6 (tool steel)	3	5400	738 03

TYPE CHISEL SL
for tooling
direction M4

TYPE CHISEL SR
for tooling
direction M3

for type FSP / FSPB / SP	D1	D2	D3	l	l1	W	number of chisels	S	F _R (N)	cat. no.	cat. no.
3	22	24	60	57	9	30°	5 (carbide)	4	6000	738 04	738 24
	26	28	60	53	9	30°	5 (carbide)	4	6000	738 05	738 25
	31	33	60	48	9	30°	6 (Carbide)	4	7200	738 06	738 26
	36	37	60	48	9	30°	5 (Carbide)	6	9000	738 07	738 27
	39	40	60	48	9	30°	5 (Carbide)	6	9000	738 08	738 28
	44	45	60	48	9	30°	6 (Carbide)	6	10800	738 09	738 29
	49	50	60	48	9	30°	6 (Carbide)	6	10800	738 10	738 30
	59	60	60	48			6 (Carbide)	6	10800	738 11	738 31
4	31	33	75	50	9	45°	6 (Carbide)	4	7200	738 40	738 60
	36	38	75	50	9	38°	6 (Carbide)	4	7200	738 41	738 61
	39	41	75	45	9	45°	6 (Carbide)	4	7200	738 42	738 62
	44	45	75	45	9	38°	6 (Carbide)	6	10800	738 43	738 63
	49	50	75	45	9	30°	6 (Carbide)	6	10800	738 44	738 64
	59	60	75	45	9	30°	6 (Carbide)	6	10800	738 45	738 65
	69	70	75	45	9	30°	6 (Carbide)	6	10800	738 46	738 66
	84	85	75	45	-	-	6 (Carbide)	6	10800	738 47	738 67
	99	100	75	45	-	-	6 (Carbide)	6	10800	738 48	738 68
	110	111	75	45	-	-	7 (Carbide)	6	12600	738 49	738 69
55	125	126	75	45	-	-	7 (Carbide)	6	12600	738 50	738 70
	84	85	160	69	9	45°	6 (Carbide)	6	10800	738 80	739 00
	99	100	160	69	9	38°	6 (Carbide)	6	10800	738 81	739 01
	110	111	160	69	9	30°	7 (Carbide)	6	12600	738 82	739 02
	125	126	160	69	9	30°	7 (Carbide)	6	12600	738 83	739 03
	140	141	160	69	9	30°	8 (Carbide)	6	14400	738 84	739 04
	155	156	160	69	9	30°	8 (Carbide)	6	14400	738 85	739 05
	170	171	160	69	-	-	8 (Carbide)	6	14400	738 86	739 06
	195	196	160	69	-	-	8 (Carbide)	6	14400	738 87	739 07
	230	231	160	69	-	-	7 (Carbide)	10	21000	738 88	739 08
55	260	261	160	69	-	-	8 (Carbide)	10	24000	738 89	739 09
	290	291	160	69	-	-	8 (Carbide)	10	24000	738 90	739 10

- All drive disks of type carbide will be provided with the respective carbide inserts.
- Additional clamping diameters of drive disks upon request.

Changeable inserts for drive disks **FSP / FSPB / SP**

Technical data – changeable inserts · drive disks **FSP / FSPB / SP**



CARBIDE INSERTS

for type FSP / FSPB / SP	machining direction	S	cat. no.
3	SL/SR	4	736 548
4			
3	SL/SR	6	736 550
4			
55			
55	SL/SR	10	736 552

SET SCREW

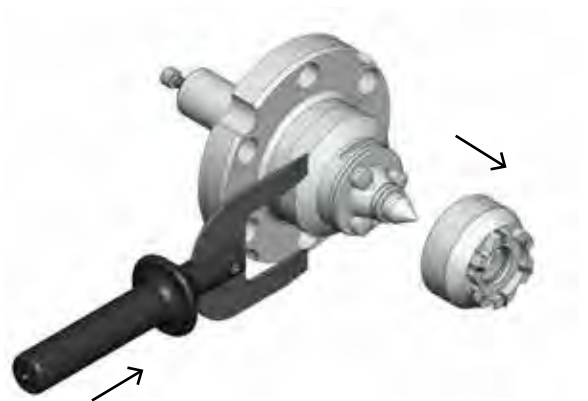
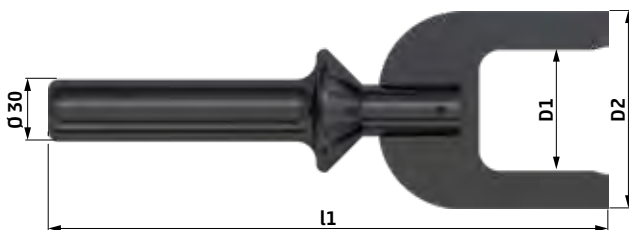
for fixing carbide inserts

for carbide inserts with S =	thread	cat. no.
4	M4	736 549
6	M5	736 551
10	M5	

Removal lever for drive disks **FSP / FSPB / SP**

In order to easily and quickly change the drive disks, the removal lever shown at right may be used.

Technical data – removal lever



The removal lever is placed laterally and easily inserted. Thus the drive disk can be loosened through a tilting movement.

for type FSP / FSPB / SP	D1	D2	l1	cat. no.
3	44.5	80	262	632 20
4	58.5	96	272	632 21
55	130.5	190	310	632 22

INFORMATION FOR CHANGING THE DRIVE DISKS

In order to exclude the risk of injury, we recommend to use suitable gloves for changing drive disks. We can provide a mounting aid upon request.

The drive disks can be pulled off head side. We recommend the use of a removal lever in order to reduce the force required and provide increased safety.

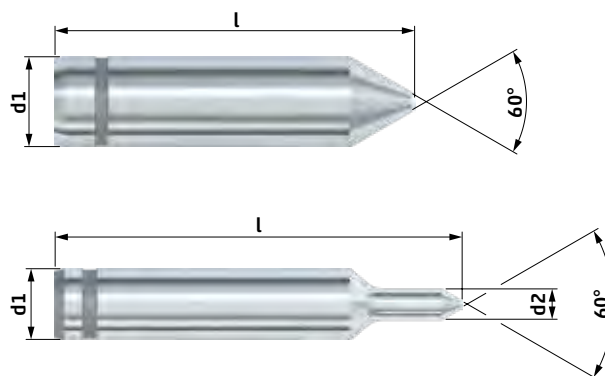
Center Pins FSP / FSPB / SP

for face drivers **FSP / FSPB / SP** with movable center pin

Type **FSP / FSPB / SP** · center pin



Technical data – type **FSP / FSPB / SP** · center pin



for type FSP / FSPB / SP	d1	center Ø	clamping Ø	d2	l	cat. no.
3	14	3 - 7	14	7	81.5	735 52
		3 - 10	18	10	84.5	735 53
		3 - 11	22	11	85.5	735 54
		3 - 10	26	-	81	735 55
		3 - 10	31 - 59	-	76	735 56
		7 - 14	31 - 59	-	78.5	735 57
4	20	3 - 13	31 - 36	-	80.5	735 70
		3 - 13	39 - 125	-	75.5	735 71
		10 - 20	39 - 125	-	80	735 72
55	35	10 - 20	84 - 290	-	113	735 80
		18 - 28	84 - 290	-	118	735 81
		25 - 35	84 - 290	-	123	735 82

■ Further center pins for other center holes upon request.



Face Drivers FSPV / FSPBV / SPV

with drive disk and movable center pin

The entire surface of the workpiece can be tooled and finished by clamping with a maximum of torque transmission.

NEIDLEIN face drivers of type FSPV / FSPBV / SPV with drive disks are mechanical clamping systems for **turn-milling processes**, which are suited for soft / green as well as heavy tooling. In application, they feature maximum flexibility and high robustness.

These face drivers are power-operated by the thrust of the tailstock. Workpieces are clamped centrally using a movable center pin. This way different centerings can be adjusted, thus ensuring a constant datum-point at the face end of the workpiece.

Type FSPV with flange retainer

Type FSPV is mounted onto the machine spindle nose using a flange adapter.



Type FSPBV with flange retainer for jaw clamping

Type FSPBV is directly clamped with the chuck using soft jaws soft jaws.



Type SPV with taper shank

Type SPV with taper shank and extracting nut for fast mounting into the machine spindle.



NEIDLEIN face drivers FSPV / FSPBV / SPV ensure:

- radial, almost backlash-free driving
- datum-point at the face end of the workpiece, stable datum-point in case of different centerings
- compensating drive disk for uneven face sides
- high flexibility in the application, wide range of clamping diameters
- run-out deviation max.: 0.015 - 0.02 mm
- adjustable spring force (depending on the weight of the workpiece)
- low setup costs due to fast change of drive disks and center pins
- cost efficient exchange of parts that are in contact with the workpiece (changeable carbide inserts)
- fixed center pin in clamped condition
» fixed clamping point

Clamping principle

The center pin located on the side of the tailstock pushes the workpiece against the movable center pin of the face driver. The center pin will draw back until the surface of the workpiece bears against the drive disk.

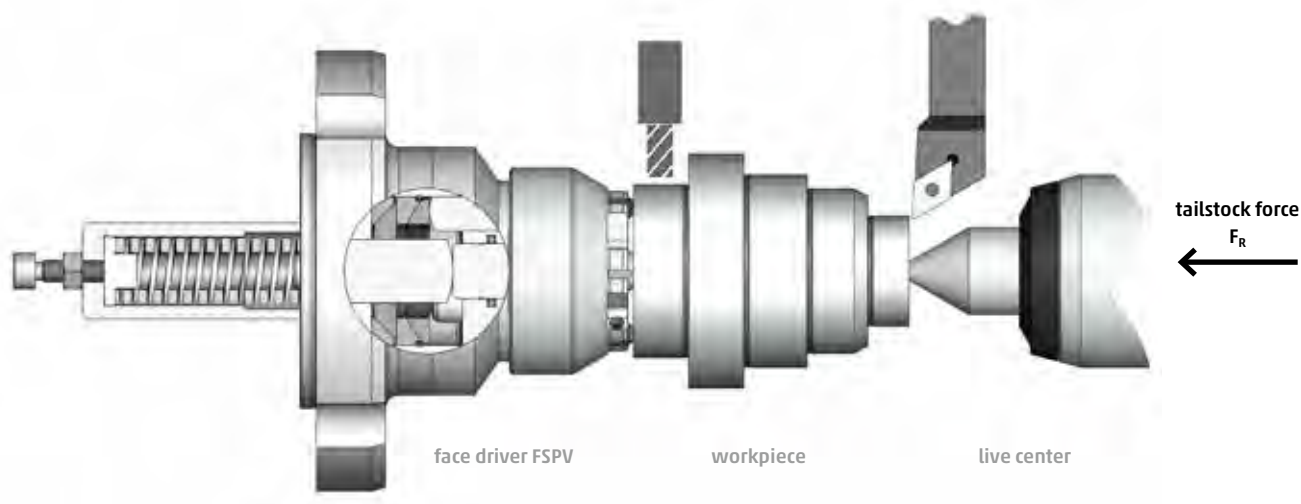
In this state the clamping bolt is clamped over the power flow, in order to ensure a fixed datum-point throughout the entire tooling process.

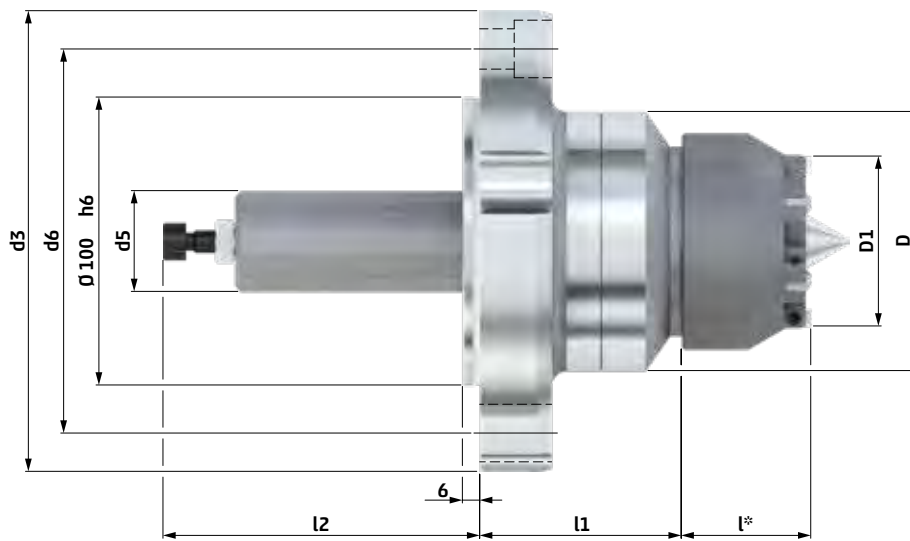
The drive disk is "floatingly" suspended, thus balancing out possible planarity defects of the contact surface of the workpiece.

The entire surface of the workpiece can now be tooled in one single clamping. See page 45 for data of achievable removal of material and the tailstock thrust requested.

You will find various sizes of face drivers with appropriate standard drive disks and center pins on the following pages.

In case you need special dimensions, we will be glad to design clamping devices suitable for your workpieces.

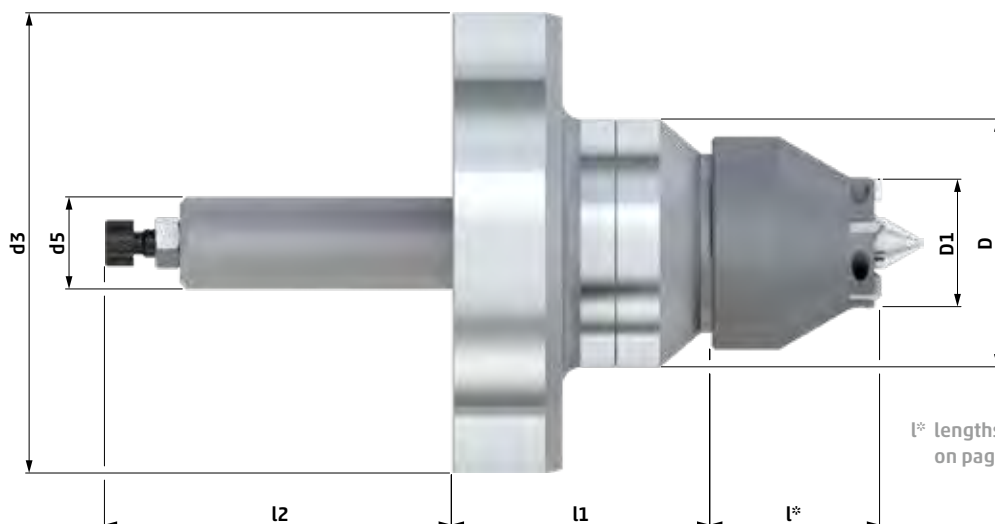
Type FSPV with flange retainer

Technical data – type FSPV face driver · for screw connection

l* lengths of drive disk see
on page 52 - 53

type FSPV	D	D1	d3	d5	d6	l1	l2	fixing screws type pcs	cat. no.
3	70	14 - 59	160	26	133.4	67	104	M12 3	632 11
4	90	31 - 125	160	35	133.4	70	110	M12 3	632 13
55	182	84 - 290	220	45	171.4	76	170	M16 3	632 15

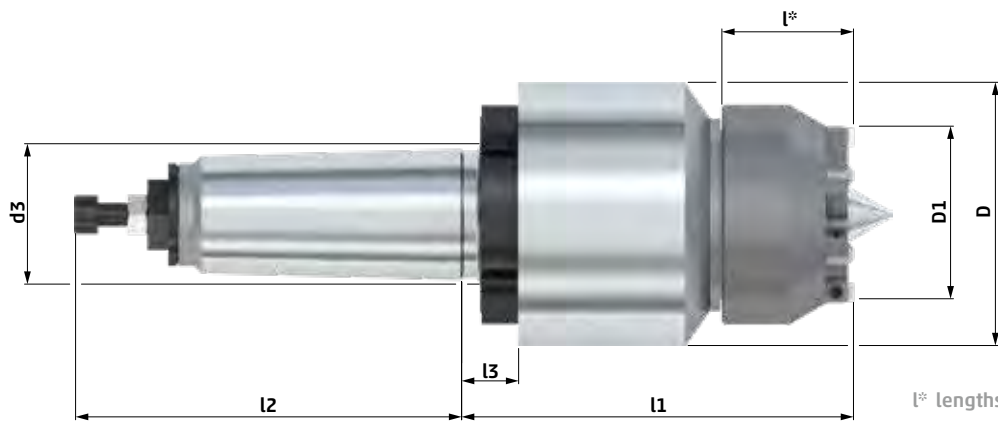
■ All face drivers are provided without drive disk and without center pin. (drive disks at page 52 - 53, center pins see page 55)

Technical data – type FSPBV face driver · for jaw clamping

l* lengths of drive disk see
on page 52 - 53

type FSPBV	D	D1	d3	d5	l1	l2	cat. no.
3	70	14 - 59	130	26	73	98	632 12
4	90	31 - 125	130	35	76	104	632 14

■ All face drivers are provided without drive disk and without center pin. (drive disks at page 52 - 53, center pins see page 55)

Technical data – type SPV face driver

l* lengths of drive disk see
on page 52 - 53

type SPV	MK	D	D1	d3	l1	l2	l3	cat. no.
3	4	70	14 - 59	M35 x 1.5	125	106	17.5	632 65
	5	70	14 - 59	M48 x 1.5	125	129	19.5	632 66
4	5	90	31 - 125	M48 x 1.5	134	132	19.5	632 67
	6	90	31 - 125	M70 x 1.5	134	169	22	632 68

- All face drivers are provided without drive disk and without center pin. (drive disks on page 52 - 53, center pins see page 55)
- Reducing sleeves for face drivers see page 100 - 101.



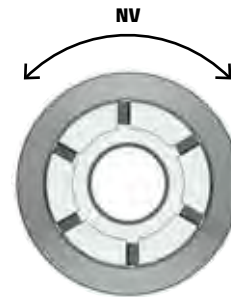
Drive disks FSPV / FSPBV / SPV · Chisel NV

**with changeable carbide inserts or made of tool steel
for torque transmission onto the workpiece
for the purpose of soft / green tooling**

Type FSPV / FSPBV / SPV · Chisel NV



view from tailstock onto the face driver



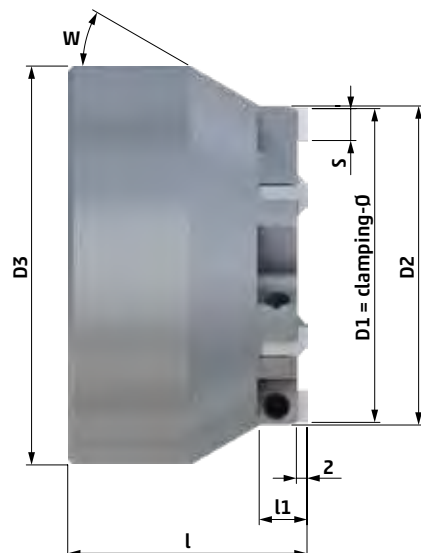
NV (tool steel)

D1 = 14 - 18 · type 3



NV (carbide)

Technical data – type FSPV / FSPBV / SPV · chisel NV



TYPE CHISEL NV

for tooling direction M4 and M3
(tool steel)

for type FSPV / FSPBV / SPV	D1	D2	D3	l	l1	W	number of chisels	S	F _R (N)	cat. no.
3	14	14	60	57	5	35°	6 (WkzStahl)	2,5	4500	739 22
	18	18	60	57	5	30°	6 (WkzStahl)	3	5400	739 23

TYPE CHISEL NV

for tooling direction M4 and M3
(carbide)

for type FSPV / FSPBV / SPV	D1	D2	D3	l	l1	W	number of chisels	S	F _R (N)	cat. no.
3	22	24	60	57	9	30°	5 (HM)	4	6000	739 24
	26	28	60	53	9	30°	5 (HM)	4	6000	739 25
	31	33	60	48	9	30°	6 (HM)	4	7200	739 26
	36	37	60	48	9	30°	5 (HM)	6	9000	739 27
	39	40	60	48	9	30°	5 (HM)	6	9000	739 28
	44	45	60	48	9	30°	6 (HM)	6	10800	739 29
	49	50	60	48	9	30°	6 (HM)	6	10800	739 30
	59	60	60	48	-	-	6 (HM)	6	10800	739 31
4	31	33	75	50	9	45°	6 (HM)	4	7200	739 40
	36	38	75	50	9	38°	6 (HM)	4	7200	739 41
	39	41	75	45	9	45°	6 (HM)	4	7200	739 42
	44	45	75	45	9	38°	6 (HM)	6	10800	739 43
	49	50	75	45	9	30°	6 (HM)	6	10800	739 44
	59	60	75	45	9	30°	6 (HM)	6	10800	739 45
	69	70	75	45	9	30°	6 (HM)	6	10800	739 46
	84	85	75	45	-	-	6 (HM)	6	10800	739 47
	99	100	75	45	-	-	6 (HM)	6	10800	739 48
	110	111	75	45	-	-	7 (HM)	6	12600	739 49
55	125	126	75	45	-	-	7 (HM)	6	12600	739 50
	84	85	160	69	9	45°	6 (HM)	6	10800	739 60
	99	100	160	69	9	38°	6 (HM)	6	10800	739 61
	110	111	160	69	9	30°	7 (HM)	6	12600	739 62
	125	126	160	69	9	30°	7 (HM)	6	12600	739 63
	140	141	160	69	9	30°	8 (HM)	6	14400	739 64
	155	156	160	69	9	30°	8 (HM)	6	14400	739 65
	170	171	160	69	-	-	8 (HM)	6	14400	739 66
	195	196	160	69	-	-	8 (HM)	6	14400	739 67
	230	231	160	69	-	-	7 (HM)	10	21000	739 68
55	260	261	160	69	-	-	8 (HM)	10	24000	739 69
	290	291	160	69	-	-	8 (HM)	10	24000	739 70

■ Additional clamping diameters of drive disks upon request.

Changeable inserts for drive disks **FSP(V) / FSPB(V) / SP(V)**

Technical data – changeable inserts · drive disks FSPV / FSPBV / SPV



CARBIDE INSERTS

for type FSPV / FSPBV / SPV	machining direction	S	Best-Nr.
3	NV	4	736 558
4			
3	NV	6	736 560
4			
55	NV	10	736 562
55			

SET SCREW

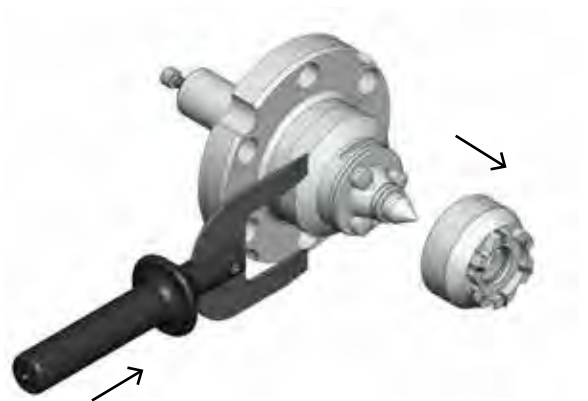
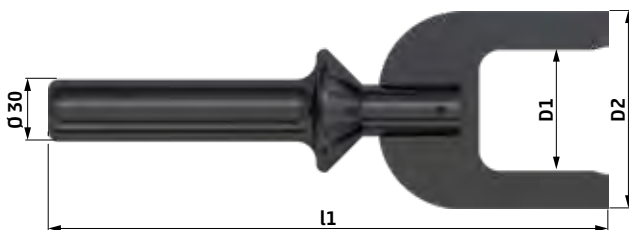
for fixing carbide inserts

for carbide inserts with S =	thread	cat. no.
4	M4	736 549
6	M5	736 551
10	M5	

Removal lever for drive disks **FSP(V) / FSPB(V) / SP(V)**

In order to easily and quickly change the drive disks, the removal lever shown at right may be used.

Technical data – removal lever



The removal lever is placed laterally and easily inserted. Thus the drive disk can be loosened through a tilting movement.

for type FSPV / FSPBV / SPV	D1	D2	l1	cat. no.
3	44.5	80	262	632 20
4	58.5	96	272	632 21
55	130.5	190	310	632 22

INFORMATION FOR CHANGING THE DRIVE DISKS

In order to exclude the risk of injury, we recommend to use suitable gloves for changing drive disks. We can provide a mounting aid upon request.

The drive disks can be pulled off head side. We recommend the use of a removal lever in order to reduce the force required and provide increased safety.

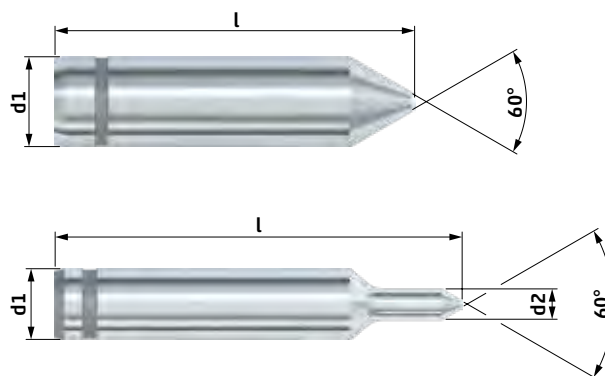
Center Pins FSP(V) / FSPB(V) / SP(V)

for face drivers **FSP(V) / FSPB(V) / SP(V)** with movable center pin

Type **FSP(V) / FSPB(V) / SP(V)** · center pin



Technical data – type **FSP(V) / FSPB(V) / SP(V)** · center pin



for type FSP(V) / FSPB(V) / SP(V)	d1	center Ø	clamping Ø	d2	l	cat. no.
3	14	3 - 7	14	7	81.5	735 52
		3 - 10	18	10	84.5	735 53
		3 - 11	22	11	85.5	735 54
		3 - 10	26	-	81	735 55
		3 - 10	31 - 59	-	76	735 56
		7 - 14	31 - 59	-	78.5	735 57
4	20	3 - 13	31 - 36	-	80.5	735 70
		3 - 13	39 - 125	-	75.5	735 71
		10 - 20	39 - 125	-	80	735 72
55	35	10 - 20	84 - 290	-	113	735 80
		18 - 28	84 - 290	-	118	735 81
		25 - 35	84 - 290	-	123	735 82

■ Further center pins for other center holes upon request.

Face Drivers FFP

with drive disk and fixed center pin for high true run accuracy



The entire surface of the workpiece can be tooled and finished by clamping with a maximum of torque transmission.

NEIDLEIN face drivers of type FFP with drive disks are mechanical clamping systems which are suited **for turning as well as for hard turning operations and can also be used for grinding operations.**

Face drivers of the type FFP are power operated on the side of the machine spindle as well as the side of the tailstock. The workpieces are clamped centrally by the fixed center pin. This operation results in high true run accuracy.

Type FFP with flange retainer for screw connection

The face driver FFP is designed for a direct mounting onto a spindle nose. **DIN 702-1 (55028)**



NEIDLEIN face drivers FFP ensure:

- a maximum of torque transmission, thus achieving a high cutting performance
- datum-point location in the center of the workpiece ensures constant measures of length
- compensating drive disk for uneven face sides
- high flexibility in the application, wide range of clamping diameters
- run-out deviation max.: 0.005 - 0.015 mm
- low setup costs due to fast change of drive disks and center pins
- cost efficient exchange of parts that are in contact with the workpiece (changeable carbide inserts)

Clamping principle

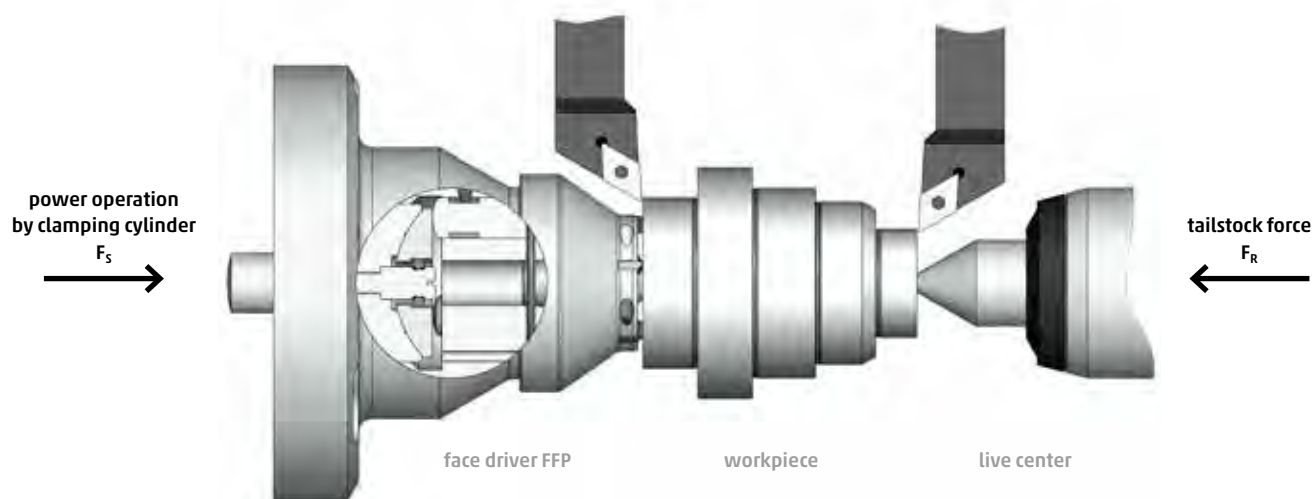
The center pin located on the side of the tailstock pushes the workpiece against the fixed center pin of the face driver. The motion of the drive disk against the workpiece face side is initiated by the clamping cylinder mounted into the machine. The drive disk is "floatingly" suspended, thus balancing out possible planarity defects of the contact surface of the workpiece. The datum-point of workpieces on the machine is determined by the size of the center hole.

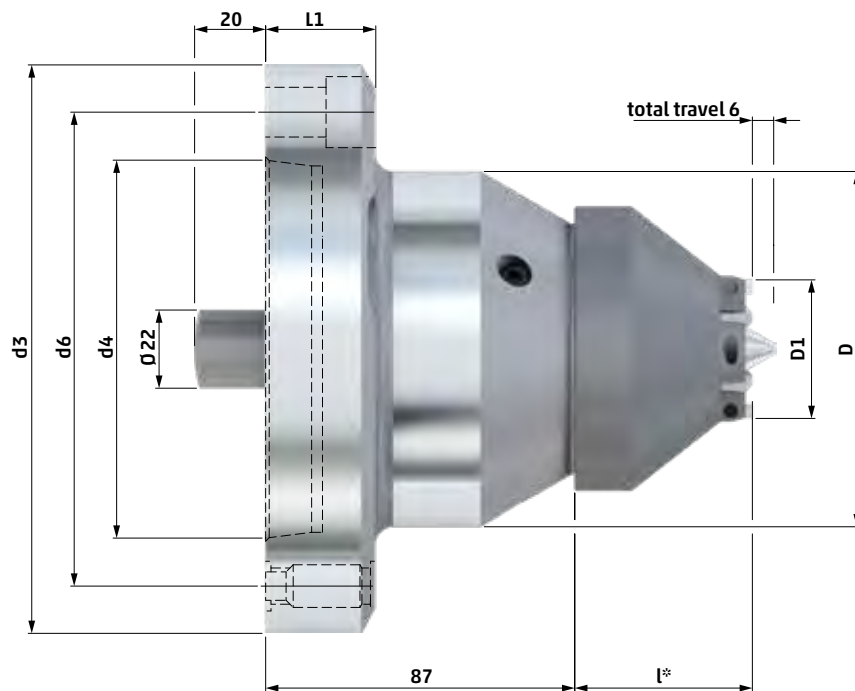
The entire surface of the workpiece can now be tooled in one single clamping. See page 59 for data of cutting performance and the clamping forces requested.

You will find various sizes of face drivers with appropriate standard drive disks and center pins on the following pages.

In case you need special dimensions, we will be glad to design clamping devices suitable for your workpiece.

Type FFP with flange retainer



Technical data – type FFP face driver · for screw connection

l* lengths of drive disk see
page 60 - 61, 63

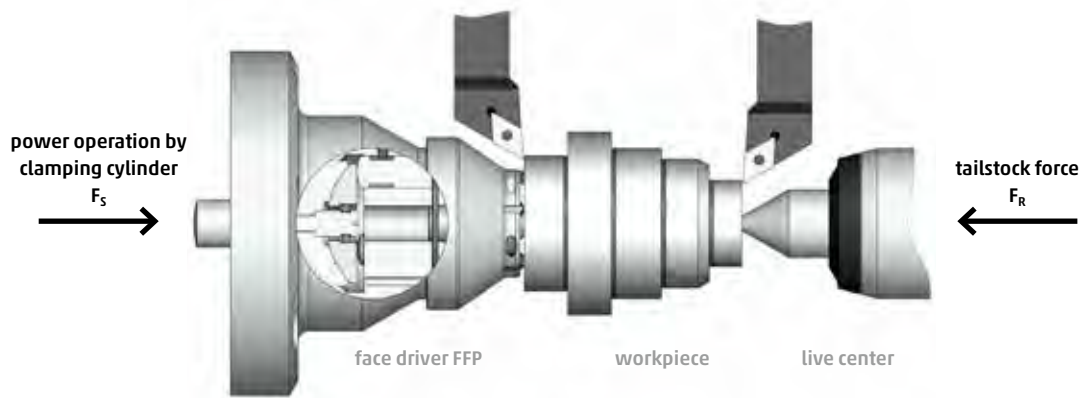
type FFP	D	D1	d3	d4	d6	L1	fixing screws		short taper size	cat. no.
							type	pcs		
3	80	14 - 59	130	82.563	104.8	31	M12	3	5	632 30
	90	14 - 59	160	106.375	133.4	31	M12	3	6	632 31
4	90	31 - 125	160	106.375	133.4	31	M12	3	6	632 32
	100	31 - 125	220	139.719	171.4	39	M16	3	8	632 33

■ All face drivers are provided without drive disk and without center pin. (changeable parts see page 60 - 65)

Face Drivers FFP · Calculations

max. chip cross section of metal removing

PRINCIPLE: The tailstock force pushes the workpiece against the fixed center pin of the face driver. The drive disk is actuated by the clamping cylinder mounted into the machine.



■ maximum chip cross section q_{max} :

At a given force of clamping cylinder, the maximum chip cross section is calculated as follows:

$$q_{max} = \frac{\frac{F_s}{m} - 1300}{1100 \times \frac{D}{d}}$$

■ depth of cut a :

$$a = \frac{q_{max}}{f}$$

F_s	[N]	force of clamping cylinder
q_{max}	[mm ²]	maximum of chip cross section for metal removing
D	[mm]	cutting diameter
d	[mm]	clamping diameter
m	[-]	material factor (see adjustment-chart below)
a	[mm]	depth of cut
f	[mm/1]	feed rate

■ tailstock force F_R :

In case of tooling against the face driver the tailstock force has to be approx. 20 % higher than the force of the clamping cylinder F_s .

In case of tooling against the tailstock, the tailstock should be approx. 40 - 50 % higher than the force of the clamping cylinder, if not, then the chip cross section should be reduced by approx. 30 %. (as there is an addition of force of clamping cylinder and cutting force)

EXPLANATORY NOTES: The first chip, however should always be machined towards the face driver, in order to achieve an ideal penetration of the carbide inserts. The ratio D/d should not exceed 2, otherwise it would work inefficiently.

Material factor m adjustment chart:

material factor m	1.4	1.2	1.1	1.0	0.8
Rm [N/mm ²]	1000	800	700	600	400
examples	42CrMo4	16MnCr5	C 15E (Ck 15)	S355J0	S235J0
		25CrMo4	C 45E (Ck 45)	35S20	

Chisel load of carbide inserts

Keep the chisel load within the following range: 250 - 350 N per mm chisel length

■ the chisel load is calculated as follows:

$$BS = \frac{F_s}{n \times s}$$

EXEMPLIFICATION: turning with FFP 3 face driver, 5 carbide inserts respective length of chisel 4 mm, clamping cylinder force 6000 N

$$BS = \frac{6000 \text{ N}}{5 \times 4 \text{ mm}} = 300 \frac{\text{N}}{\text{mm}}$$

BS [N/mm] chisel load
 F_s [N] clamping cylinder force

n [-] number of carbide inserts
 s [mm] chisel length



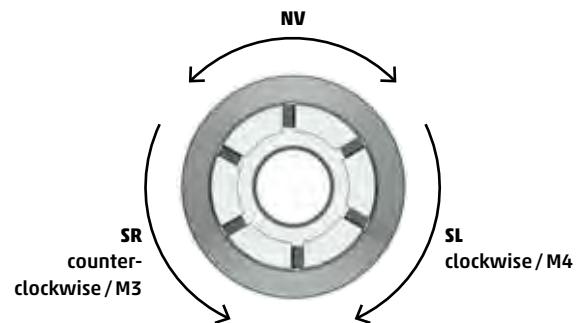
Drive Disks FFP · Chisel NV / SL / SR

**with changeable carbide inserts or made of tool steel
for torque transmission onto the workpiece for the purpose
of soft / green tooling**

Type FFP · chisel NV / SL / SR



view from tailstock onto the face driver



SL (carbide)

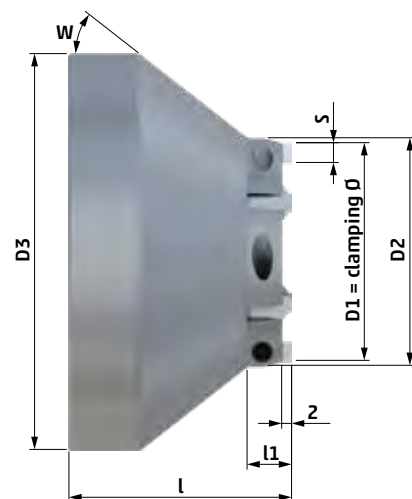


NV (tool steel)



SR (carbide)

Technical data - type FFP · chisel NV / SL / SR



TYPE CHISEL NV
for tooling
direction M4 and M3

for type FFP	D1	D2	D3	l	l1	W	number of chisels	S	F _s (N)	cat. no.
3	14	14	60	59	5	35°	6 (tool steel)	2,5	4500	740 02
	18	18	60	59	5	30°	6 (tool steel)	2,5	4500	740 03

TYPE CHISEL SL
for tooling
direction M4

TYPE CHISEL SR
for tooling
direction M3

for type FFP	D1	D2	D3	l	l1	W	number of chisels	S	F _s (N)	cat. no.	cat. no.
3	22	24	60	59	9	30°	4 carbide	4	4800	740 04	740 20
	26	28	60	53	9	30°	4 carbide	4	4800	740 05	740 21
	31	33	60	53	9	30°	5 carbide	4	6000	740 06	740 22
	36	37	60	45	9	30°	4 carbide	6	7200	740 07	740 23
	39	40	60	45	9	30°	4 carbide	6	7200	740 08	740 24
	44	45	60	45	9	30°	4 carbide	6	7200	740 09	740 25
	49	50	60	45	9	30°	5 carbide	6	9000	740 10	740 26
	59	60	60	45	-	-	5 carbide	6	9000	740 11	740 27
4	31	33	80	57	9	38°	5 carbide	4	6000	740 40	740 60
	36	38	80	57	9	35°	5 carbide	4	6000	740 41	740 61
	39	41	80	50	9	38°	6 carbide	4	7200	740 42	740 62
	44	45	80	45	9	38°	6 carbide	4	7200	740 43	740 63
	49	50	80	45	9	35°	5 carbide	6	9000	740 44	740 64
	59	60	80	45	9	30°	5 carbide	6	9000	740 45	740 65
	69	70	80	45	9	30°	6 carbide	6	10800	740 46	740 66
	84	85	80	45	9	-	6 carbide	6	10800	740 47	740 67
	99	100	80	45	-	-	6 carbide	6	10800	740 48	740 68
	110	111	80	45	-	-	7 carbide	6	12600	740 49	740 69
	125	126	80	45	-	-	7 carbide	6	12600	740 50	740 70

- All drive disks of type carbide will be provided with the respective carbide inserts.
- Additional clamping diameters of drive disks upon request.

Changeable inserts for drive disks FFP

Technical data – changeable inserts · drive disks FFP



CARBIDE INSERTS

for type FFP	machining direction	S	cat. no.
3	SL/SR	4	736 548
4			
3	SL/SR	6	736 550
4			

SET SCREW

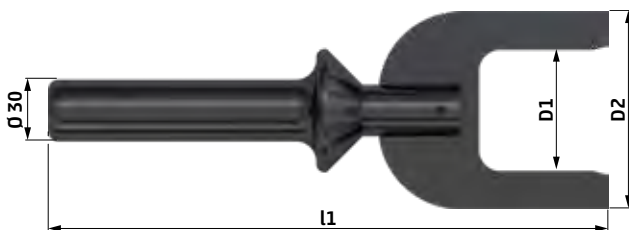
for fixing carbide inserts

for carbide inserts with S =	thread	cat. no.
4	M4	736 549
6	M5	736 551

Removal lever for drive disks FFP

In order to easily and quickly change the drive disks, the removal lever shown at right may be used.

Technical data – removal lever



The removal lever is placed laterally inserted. By a tilting movement the drive disk can be loosened.

for type FFP	D1	D2	l1	cat. no.
3	51	80	275	632 40
4	71	100	285	632 41

INFORMATION FOR CHANGING THE DRIVE DISKS

In order to exclude the risk of injury, we recommend to use suitable gloves for changing drive disks. We can provide a mounting aid upon request.

The drive disks can be pulled off head side. We recommend the use of a removal lever in order to reduce the force required and provide increased safety.

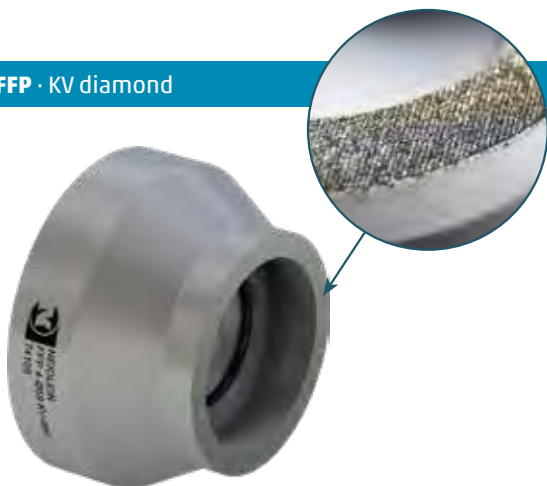
Drive Disks FFP · KV Diamond

**cross serrated and diamond embedded
for torque transmission onto the workpiece
at hard turning and grinding operations**

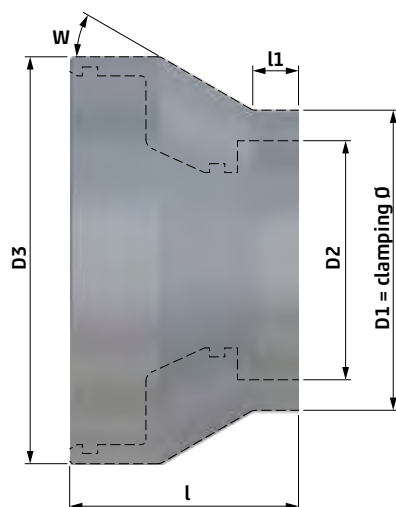
This drive disks have a very high friction coefficient and can be used for both directions of rotation.



Type FFP · KV diamond



Technical data – type FFP · KV diamond



■ A [mm²]



for type	D1	D2	D3	l	l1	W	A	cat. no.
FFP							[mm ²]	
3	14	9	60	59	5	35°	90	740 82
	18	13	60	59	5	30°	120	740 83
	22	13	60	59	9	30°	250	740 84
	26	17	60	53	9	30°	300	740 85
	31	22	60	53	9	30°	370	740 86
	36	24	60	45	9	30°	450	740 87
	39	30	60	45	9	30°	490	740 88
	44	35	60	45	9	30°	560	740 89
	49	39	60	45	9	30°	690	740 90
	59	47	60	45	9		1000	740 91
4	31	22	80	57	9	38°	370	741 00
	36	27	80	57	9	35°	450	741 01
	39	30	80	50	9	38°	490	741 02
	44	35	80	45	9	38°	560	741 03
	49	39	80	45	9	35°	690	741 04
	59	47	80	45	9	30°	1000	741 05
	69	57	80	45	9	30°	1190	741 06
	84	72	80	45	-	-	1470	741 07
	99	87	80	45	-	-	1750	741 08
	110	98	80	45	-	-	1960	741 09
	125	113	80	45	-	-	2240	741 10

■ Additional clamping diameters of drive disks upon request.

■ **F_S – clamping cylinder force:**

The clamping cylinder force F_S is dependent on the the diamond coated surface (A) of the drive disks.

PLEASE NOTE: surface load max. 150 N / mm²

EXAMPLE: If A = 55 mm², the max. clamping cylinder force is $F_S = 8250$ N

Center Pins FFP

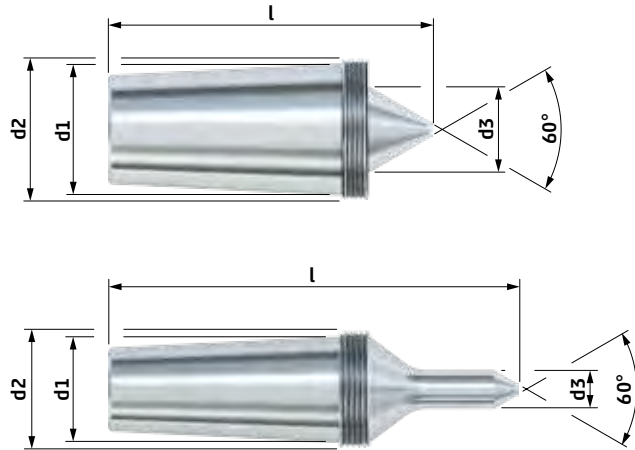
for face drivers FFP with taper shank dead center

Type FFP · tool steel or carbide

Technical data – type FFP · tool steel or carbide

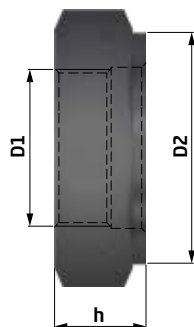


with carbide
insert



		TYPE TOOL STEEL						TYPE CARBIDE	
for type FFP	d1	d2	center Ø	clamping Ø	d3	l	cat. no.	cat. no.	
3	14	M16 x 1.5	3.35	14	7	55	734 52	734 62	
	14	M16 x 1.5	4.25	18 - 22	11	56	734 53	734 63	
	14	M16 x 1.5	5.3	26 - 31	14	50.5	734 54	734 64	
	14	M16 x 1.5	6.7	36 - 59	11.3	44	734 55	734 65	
	14	M16 x 1.5	8.5	36 - 59	13.2	45	734 56	734 66	
	14	M16 x 1.5	10.6	36 - 59	14	46	734 57	734 67	
4	20	M22 x 1.5	5.3	31 - 36	20	59	734 70	734 80	
	20	M22 x 1.5	6.7	39	17.1	53	734 71	734 81	
	20	M22 x 1.5	8.5	44 - 125	13.2	55	734 72	734 82	
	20	M22 x 1.5	10.6	44 - 125	15.2	51	734 73	734 83	
	20	M22 x 1.5	13.2	44 - 125	17.8	53	734 74	734 84	

■ Further center pins for other center holes upon request.

Extracting nuts for center pin FFP**Type FFP** · extracting nuts**Technical data – type FFP** · extracting nuts

for type FFP	d2	d1	s	h	cat. no.
3	M16 x 1.5	20	22	10	930 05
4	M22 x 1.5	30	30	10	930 06



Face Drivers FFPV

with drive disk and fixed center pin for high true run accuracy

The entire surface of the workpiece can be tooled and finished by clamping with a maximum of torque transmission.

NEIDLEIN face drivers of type FFP with drive disks are mechanical clamping systems which are suited for **turn- milling** as well as for hard turn- milling processes.

Face drivers of the type FFP are power operated on the side of the machine spindle as well as the side of the tailstock. The workpieces are clamped centrally by the fixed center pin. This operation results in high true run accuracy.

Type FFPV with flange retainer for screw connection

The face driver FFPV is designed for a direct mounting onto a spindle nose, DIN 702-1 (55028)



NEIDLEIN face drivers FFPV ensure:

- radial, almost backlash-free driving
- datum-point location in the center of the workpiece ensures constant measures of length
- compensating drive disk for uneven face sides
- high flexibility in the application, wide range of clamping diameters
- run-out deviation max.: 0.005 - 0.015 mm
- low setup costs due to fast change of drive disks and center pins
- cost efficient exchange of parts that are in contact with the workpiece (changeable carbide inserts)

Clamping principle

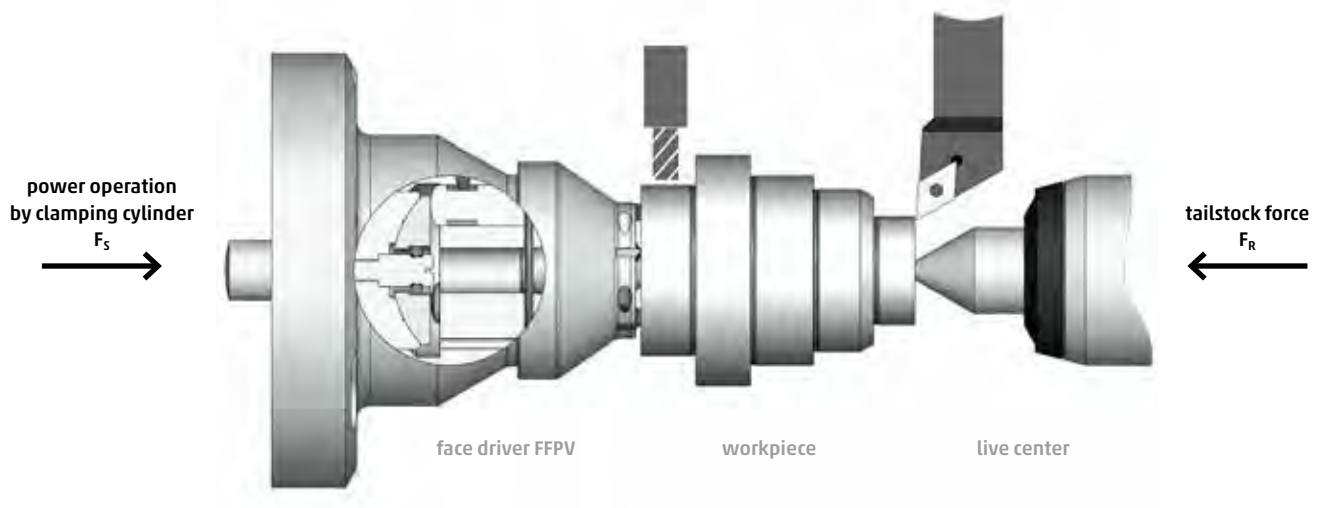
The center pin located on the side of the tailstock pushes the workpiece against the fixed center pin of the face driver. The motion of the drive disk against the workpiece face side is initiated by the clamping cylinder mounted into the machine. The drive disk is "floatingly" suspended, thus balancing out possible planarity defects of the contact surface of the workpiece. The datum-point of workpieces on the machine is determined by the size of the center hole.

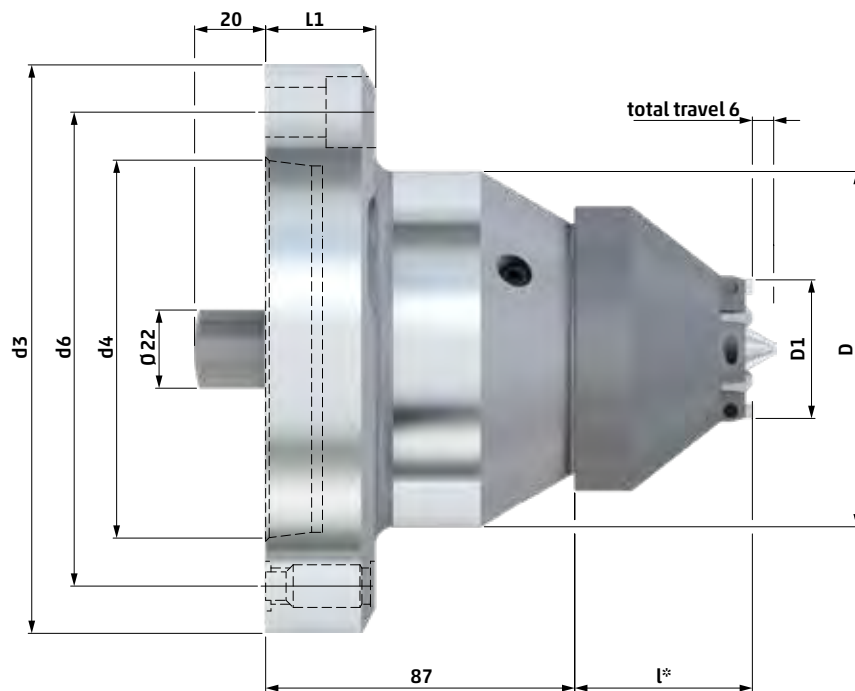
The entire surface of the workpiece can now be tooled in one single clamping. See page 69 for data of cutting performance and the clamping forces requested.

You will find various sizes of face drivers with appropriate standard drive disks and center pins on the following pages.

In case you need special dimensions, we will be glad to design clamping devices suitable for your workpiece.

Type FFPV with flange retainer



Technical data – type FFPV face driver · for screw connection


l* length of drive disks at
page 70 - 71

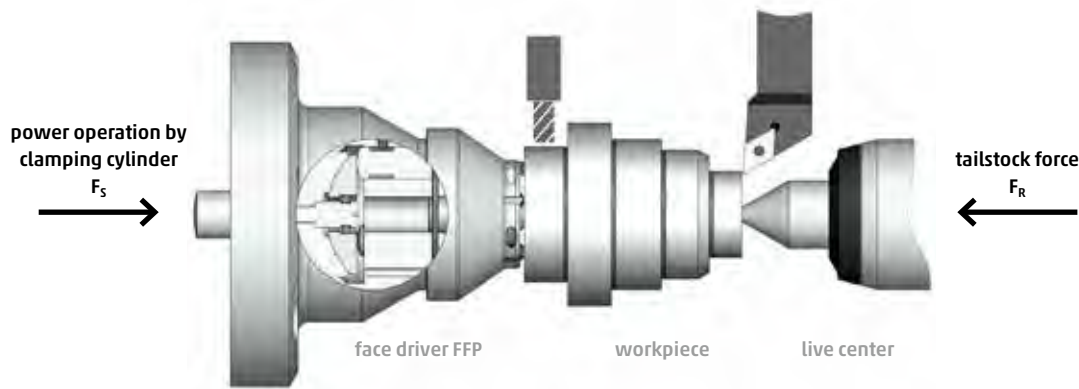
type FFPV	D	D1	d3	d4	d6	L1	fixing screws		short taper size	cat. no.
							type	pcs		
3	80	14 - 59	130	82.563	104.8	31	M12	3	5	632 50
	90	14 - 59	160	106.375	133.4	31	M12	3	6	632 51
4	90	31 - 125	160	106.375	133.4	31	M12	3	6	632 52
	100	31 - 125	220	139.719	171.4	39	M16	3	8	632 53

- All face drivers are provided without drive disk and without center pin.
(drive disks on page 70 - 71, center pins see page 73)

Face Drivers FFPV · Calculations

max. chip cross section of metal removing

PRINCIPLE: The tailstock force pushes the workpiece against the fixed center pin of the face driver. The drive disk is actuated by the clamping cylinder mounted into the machine.



■ maximum chip cross section q_{max} :

At a given force of clamping cylinder, the maximum chip cross section is calculated as follows:

$$q_{max} = \frac{\frac{F_s}{m} - 1300}{1100 \times \frac{D}{d}}$$

NOTE FFPV:

When using the face driver type FFPV, the calculated machining chip cross section q_{max} must be reduced by 20%.

■ depth of cut a :

$$a = \frac{q_{max}}{f}$$

F_s	[N]	force of clamping cylinder
q_{max}	[mm ²]	maximum of chip cross section for metal removing
D	[mm]	cutting diameter
d	[mm]	clamping diameter
m	[-]	material factor (see adjustment-chart below)
a	[mm]	depth of cut
f	[mm/1]	feed rate

■ tailstock force F_R :

In case of tooling against the face driver the tailstock force has to be approx. 20 % higher than the force of the clamping cylinder F_s . In case of tooling against the tailstock, the tailstock should be approx. 40 - 50 % higher than the force of the clamping cylinder, if not, then the chip cross section should be reduced by approx. 30 %. (as there is an addition of force of clamping cylinder and cutting force)

EXPLANATORY NOTES: The first chip, however should always be machined towards the face driver, in order to achieve an ideal penetration of the carbide inserts. The ratio D/d should not exceed 2, otherwise it would work inefficiently.

Material factor m adjustment chart:

material factor m	1.4	1.2	1.1	1.0	0.8
Rm [N/mm ²]	1000	800	700	600	400
examples	42CrMo4	16MnCr5	C 15E (Ck 15)	S355J0	S235J0
		25CrMo4	C 45E (Ck 45)	35S20	

Chisel load of carbide inserts

Keep the chisel load within the following range: 250 - 350 N per mm chisel length

■ the chisel load is calculated as follows:

$$BS = \frac{F_s}{n \times s}$$

BS	[N/mm]	chisel load
F_s	[N]	clamping cylinder force

EXEMPLIFICATION: turning with FFPV 3 face driver, 5 carbide inserts respective length of chisel 4 mm, clamping cylinder force 6000 N

$$BS = \frac{6000 \text{ N}}{5 \times 4 \text{ mm}} = 300 \frac{\text{N}}{\text{mm}}$$

n	[-]	number of carbide inserts
s	[mm]	chisel length

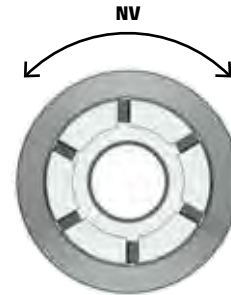
Drive disks FFPV · Chisel NV

with changeable carbide inserts or made of tool steel for torque transmission onto the workpiece for the purpose of soft / green tooling

Type FFPV · chisel NV



view from tailstock onto the face driver

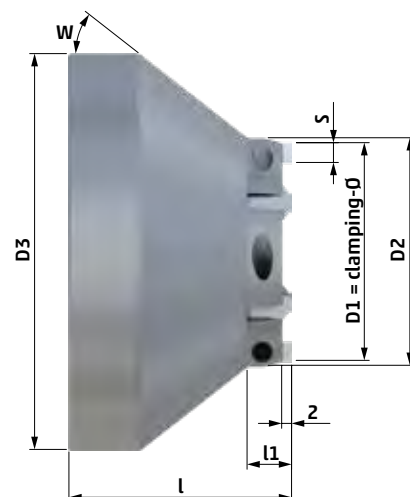


NV (tool steel)
D1 = 14 - 18 · type 3



NV (carbide)

Technical data - type FFPV · chisel NV



TYPE CHISEL NV

for tooling direction M4 and M3
(tool steel)

for type FFPV	D1	D2	D3	l	l1	W	number of chisels	S	F _s (N)	cat. no.
3	14	14	60	59	5	35°	6 (tool steel)	2.5	4500	741 22
	18	18	60	59	5	30°	6 (tool steel)	2.5	4500	741 23

TYPE CHISEL NV

for tooling direction M4 and M3
(carbide)

for type FFPV	D1	D2	D3	l	l1	W	number of chisels	S	F _s (N)	cat. no.
3	22	24	60	59	9	30°	4 (carbide)	4	4800	741 24
	26	28	60	53	9	30°	4 (carbide)	4	4800	741 25
	31	33	60	53	9	30°	5 (carbide)	4	6000	741 26
	36	37	60	45	9	30°	4 (carbide)	6	7200	741 27
	39	40	60	45	9	30°	4 (carbide)	6	7200	741 28
	44	45	60	45	9	30°	4 (carbide)	6	7200	741 29
	49	50	60	45	9	30°	5 (carbide)	6	9000	741 30
	59	60	60	45	-	-	5 (carbide)	6	9000	741 31
4	31	33	80	57	9	38°	5 (carbide)	4	6000	741 40
	36	38	80	57	9	35°	5 (carbide)	4	6000	741 41
	39	41	80	50	9	38°	6 (carbide)	4	7200	741 42
	44	45	80	45	9	38°	6 (carbide)	4	7200	741 43
	49	50	80	45	9	35°	5 (carbide)	6	9000	741 44
	59	60	80	45	9	30°	5 (carbide)	6	9000	741 45
	69	70	80	45	9	30°	6 (carbide)	6	10800	741 46
	84	85	80	45	9	-	6 (carbide)	6	10800	741 47
	99	100	80	45	-	-	6 (carbide)	6	10800	741 48
	110	111	80	45	-	-	7 (carbide)	6	12600	741 49
	125	126	80	45	-	-	7 (carbide)	6	12600	741 50

■ Additional clamping diameters of drive disks upon request.

Changeable inserts for drive disks FFP / FFP(V)

Technical data- changeable inserts · drive disks FFPV



CARBIDE INSERTS

for type FFP / FFPV	machining direction	S	cat. no.
3	NV	4	736 558
4			
3	NV	6	736 560
4			

SET SCREW

for fixing carbide inserts

for carbide inserts with S =	thread	cat. no.
4	M4	736 549
6	M5	736 551

Removal lever for drive disks FFP(V)

In order to easily and quickly change the drive disks, the removal lever shown at right may be used.

Technical data - removal lever



The removal lever is placed laterally inserted.
By a tilting movement the drive disk can be loosened.

for type FFP / FFPV	D1	D2	l1	cat. no.
3	51	80	275	632 40
4	71	100	285	632 41

INFORMATION FOR CHANGING THE DRIVE DISKS

In order to exclude the risk of injury, we recommend to use suitable gloves for changing drive disks. We can provide a mounting aid upon request.

The drive disks can be pulled off head side. We recommend the use of a removal lever in order to reduce the force required and provide increased safety.

Center Pins FFP / FFP(V)

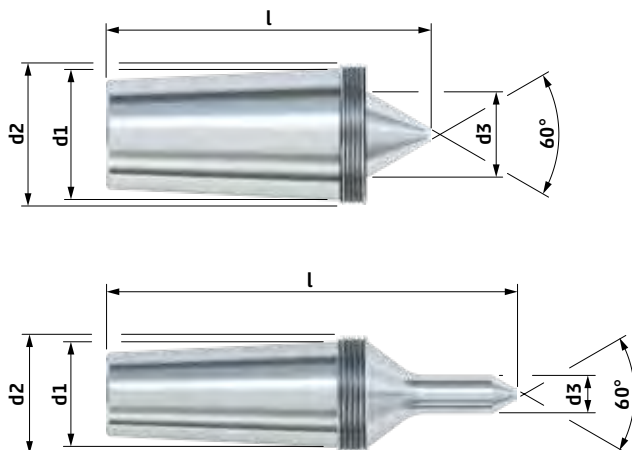
for face drivers FFP / FFP(V) with taper shank dead center

Type FFP / FFP(V) · tool steel or carbide

Technical data – type FFP / FFP(V) · tool steel or carbide



with carbide insert



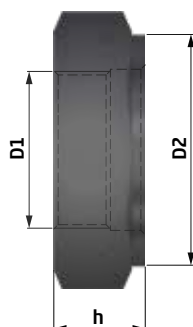
							TYPE TOOL STEEL	TYPE CARBIDE
for type	d1	d2	center Ø	clamping Ø	d3	l	cat. no.	cat. no.
FFP / FFP(V)								
3	14	M16 x 1.5	3.35	14	7	55	734 52	734 62
	14	M16 x 1.5	4.25	18 - 22	11	56	734 53	734 63
	14	M16 x 1.5	5.3	26 - 31	14	50.5	734 54	734 64
	14	M16 x 1.5	6.7	36 - 59	11.3	44	734 55	734 65
	14	M16 x 1.5	8.5	36 - 59	13.2	45	734 56	734 66
	14	M16 x 1.5	10.6	36 - 59	14	46	734 57	734 67
4	20	M22 x 1.5	5.3	31 - 36	20	59	734 70	734 80
	20	M22 x 1.5	6.7	39	17.1	53	734 71	734 81
	20	M22 x 1.5	8.5	44 - 125	13.2	55	734 72	734 82
	20	M22 x 1.5	10.6	44 - 125	15.2	51	734 73	734 83
	20	M22 x 1.5	13.2	44 - 125	17.8	53	734 74	734 84

■ Further center pins for other center holes upon request.

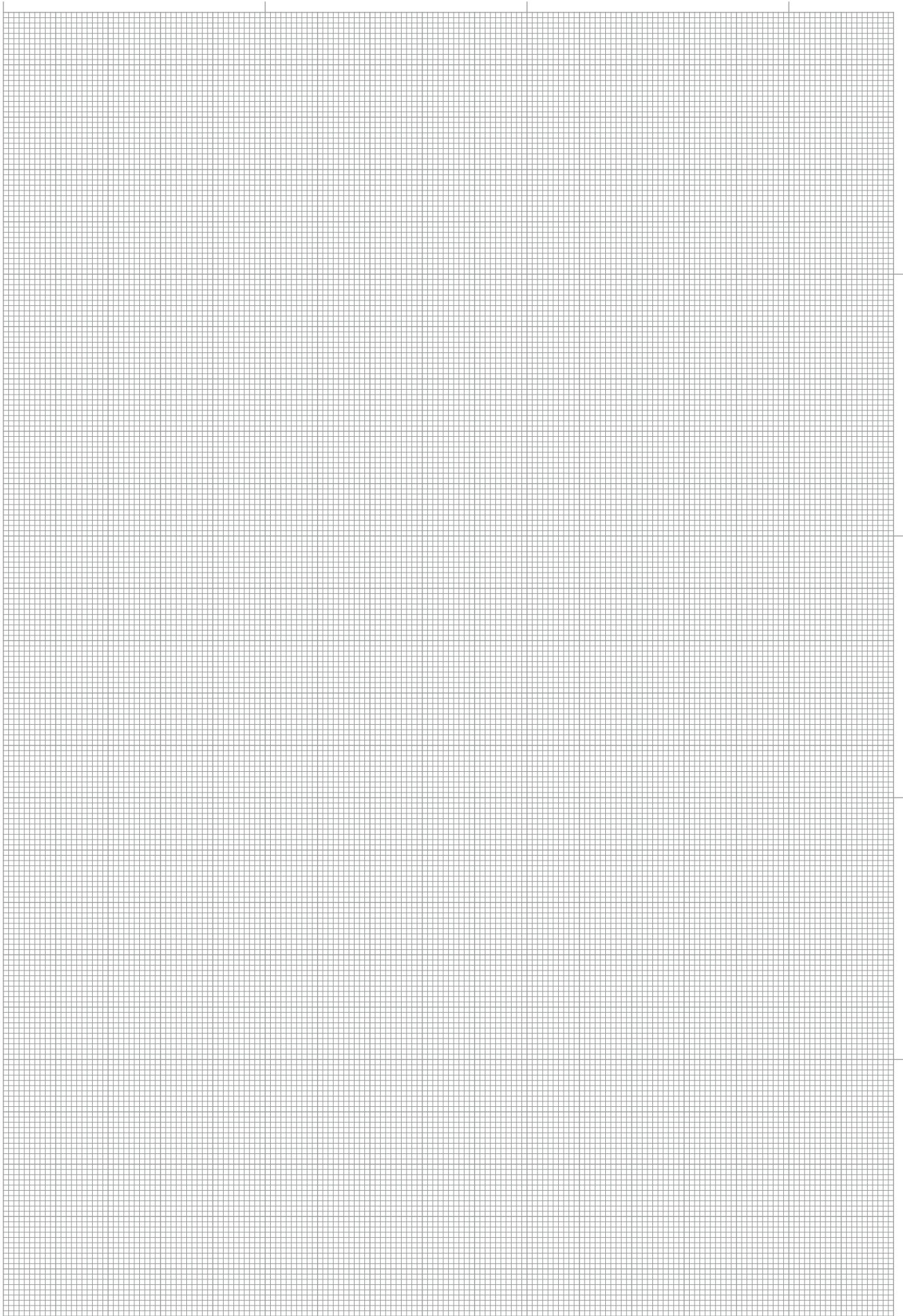
Extracting nuts for center pin FFP / FFPV

Type FFP / FFPV · extracting nuts

Technical data – type FFP / FFPV · extracting nuts



for type FFP / FFPV	d2	d1	s	h	cat. no.
3	M16 x 1.5	20	22	10	930 05
4	M22 x 1.5	30	30	10	930 06





Face Drivers FFBR / FBSR

with drive pins and fixed center pin

The complete surface of both, hardened and soft workpieces, can be finish-ground with one single clamping.

Face drivers types FFBR/FBSR are power-operated on the side of the spindle. The workpieces are clamped centrally using a dead center pin, this way a high true running accuracy is achieved.

Type FFBR with flange retainer

There are two retainer designs for adapting the face drivers onto the machine spindle – either for adaption onto a flange adapter with 140 in diameter or for direct mounting onto a spindle nose DIN 702-1 size 6 (DIN 55026/28).



Type FBSR with morse taper retainer

Like face driver FFBR, but including morse taper shank and extracting nut. Adjustment true by using set screws inside shank for highest true running accuracy.



NEIDLEIN face drivers FFBR / FBSR ensure:

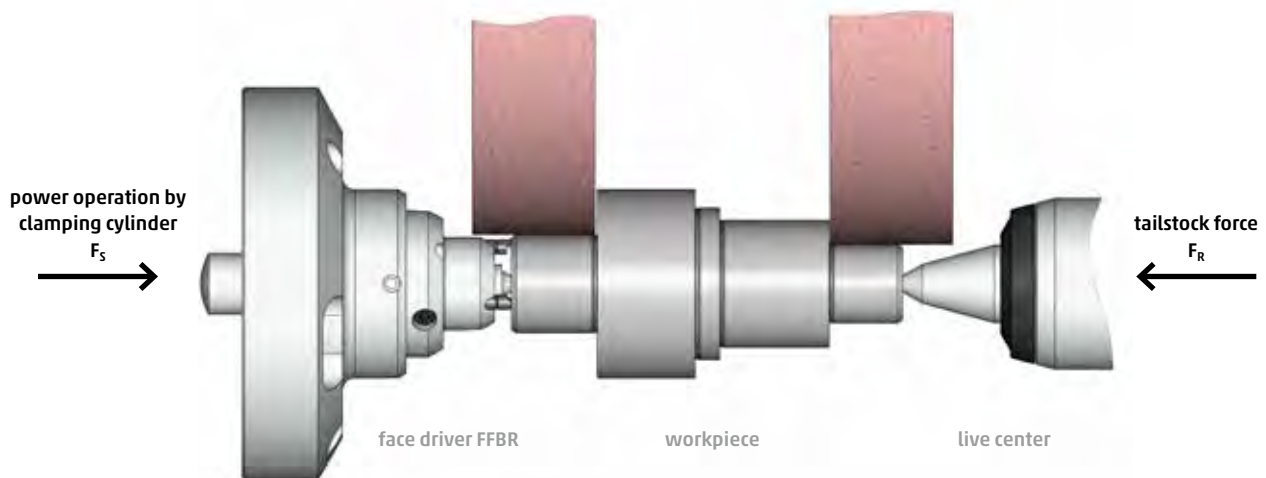
- datum-point located in the center of the workpiece
- run-out deviation max.: 0.002 - 0.003 mm
- compensating drive components
- retractable drive pins for secure loading and unloading of the workpiece
- adjustment true at face drivers for highest run-out requirements

Clamping principle

The center pin located on the side of the tailstock pushes the workpiece against the fixed center pin of the face driver. The motion of the drive pins against the surface of the workpiece is initiated by the clamping cylinder mounted into the machine. The drive pins are "floatingly" suspended, thus compensating

irregularities with regard to possible unevenness of the surface of workpieces. The datum-point of workpieces on the machines is determined by the size of the center hole. The entire surface of workpiece can now be tooled in one single clamping.

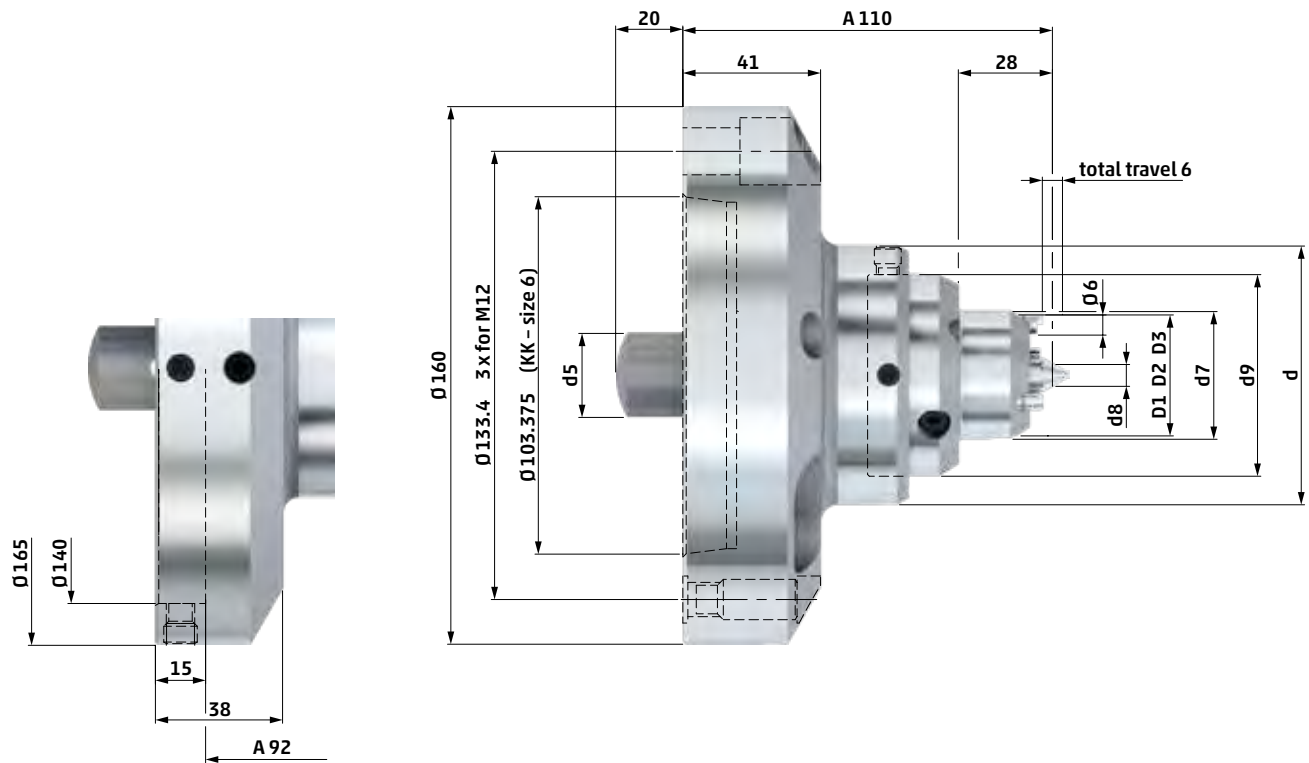
Typ FFBR with flange retainer



Technical data – type FFBR face driver

type cylindrical retainer $\varnothing 140$ mm
on flange adapter

type short taper retainer DIN 702-1 size 6
directly onto the machine spindle



**TYPE CYLINDRICAL
RETAINER $\varnothing 140$ mm**

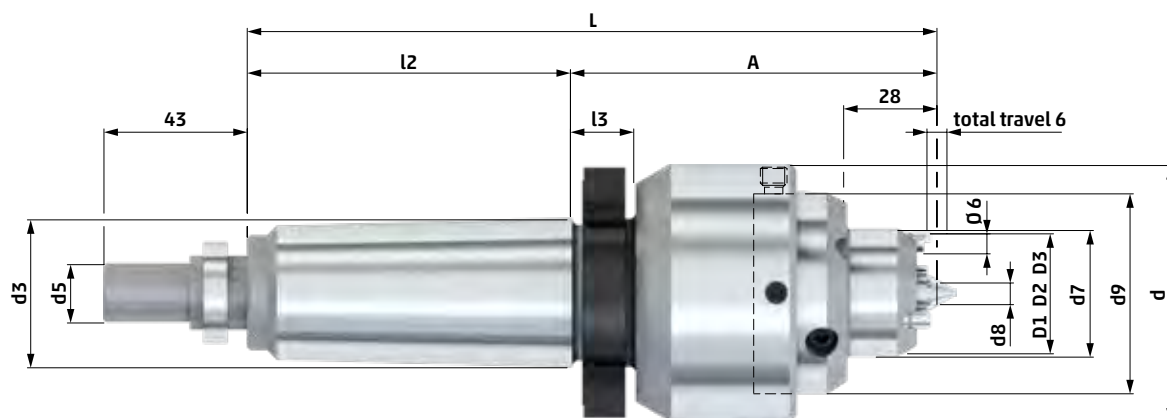
**TYPE SHORT TAPER
RETAINER SIZE 6**

type FFBR	d	center $\varnothing$	d5	d7	d8	d9	clamping $\varnothing$			cat. no.
							D1	D2	D3	
0	65	1 - 3	18	16	1.5	48	6	9	15	726 31
01	65	1 - 5	18	18	3	48	8	11	17	726 32
11	65	2 - 6.5	18	21	4.25	48	11	14	20	726 33
1	65	4 - 8.5	18	25	6.25	48	15	18	24	726 34
2	77	4 - 9	25	38	6.5	60	27	30	36	726 35
3	85	6 - 11	25	46	8.5	68	35	38	44	726 36
4	110	10 - 15	25	62	12.5	83	50	53	59	726 37

cat. no.
726 01
726 02
726 03
726 04
726 05
726 06
726 07

- Face drivers without changeable parts (types 0/01 include center body). Center pins, center bodies and drive pins see page 80 - 81.
- All face drivers for grinding are designed for 3 drive pins only.
- Diameter d8 refers to standard center pins. (see page 81)
- Further center pins for other center holes upon request.

Technical data – type FBSR face driver



type FBSR	MK	d	center Ø	d3	d5	d7	d8	d9	L	l2	l3	clamping Ø			cat. no.
												D1	D2	D3	
0	4	65	1 - 3	M35 x 1.5	11.5	16	1.5	48	183	73	16	6	9	15	726 51
01	4	65	1 - 5	M35 x 1.5	11.5	18	3	48	183	73	16	8	11	17	726 52
11	4	65	2 - 6.5	M35 x 1.5	11.5	21	4.25	48	183	73	16	11	14	20	726 53
1	4	65	4 - 8.5	M35 x 1.5	11.5	25	6.25	48	183	73	16	15	18	24	726 54
	5	65	4 - 8.5	M48 x 1.5	17.5	25	6.25	48	207	97	19	15	18	24	726 55
2	4	77	4 - 9	M35 x 1.5	11.5	38	6.5	60	183	73	16	27	30	36	726 56
	5	77	4 - 9	M48 x 1.5	17.5	38	6.5	60	207	97	19	27	30	36	726 57
3	4	85	6 - 11	M35 x 1.5	11.5	46	8.5	68	183	73	16	35	38	44	726 58
	5	85	6 - 11	M48 x 1.5	17.5	46	8.5	68	207	97	19	35	38	44	726 59
4	4	100	10 - 15	M35 x 1.5	11.5	62	12.5	85	183	73	16	50	53	59	726 60
	5	100	10 - 15	M48 x 1.5	17.5	62	12.5	85	207	97	19	50	53	59	726 61

- Face drivers without changeable parts (types 0/01 include center body). Center pins, center bodies and drive pins see page 80 - 81.
- All face drivers for grinding are designed for 3 drive pins only.
- Diameter d8 refers to standard center pins. (see page 81)
- Further center pins for other center holes upon request.



Drive Pins FFBR / FBSR · Chisel SR · Diamond

**for torque transmission onto the workpiece
by grinding soft and hardened workpieces**

For soft workpieces we apply drive pins made of hardened HSS comprising a chisel. They are characterized by high wear-resistance as well as maximum torque transmission.

For hardened workpieces we apply drive pins that are diamond coated. They are characterized by a high friction-coefficient.

Type FFBR / FBSR · chisel SR · diamond



Technical data – type FFBR / FBSR · chisel SR · diamond

model A



model B

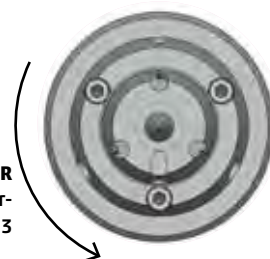


model C



view from tailstock
onto the face driver

SR
counter-
clockwise / M3



TYPE CHISEL SR

for type	for clamping	model	l	cat. no.
FFBR FBSR	D1	C	1.5	736 651
FFBR FBSR	D2	B	2	736 652
FFBR FBSR	D3	A	2	736 653

TYPE DIAMOND COATING

l	cat. no.
1.5	736 654
3	736 655
3	736 656

- Clamping diameter D1, D2, D3 see pages 78 - 79.
- Further clamping Ø of drive pins upon request.

Center Pins FFBR / FBSR

for face drivers FFBR / FBSR with fixed center pin

For maximum stability and run-out requirements the center pins are produced with narrow tolerances and are fixed safely via set screw and plane surface inside the face driver.

For a large batch of hardened workpieces we recommend the construction comprising carbide insert. Center heads of type 0 / 01 consist of 60°-taper tip that are carbide coated.

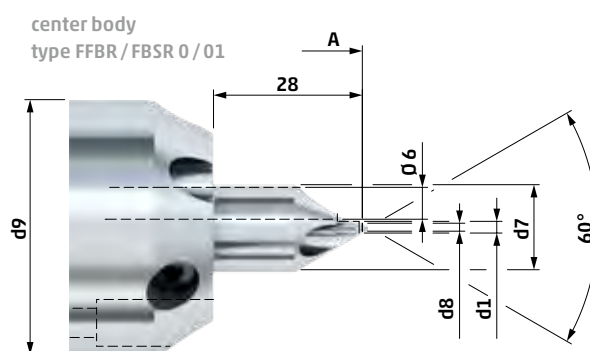
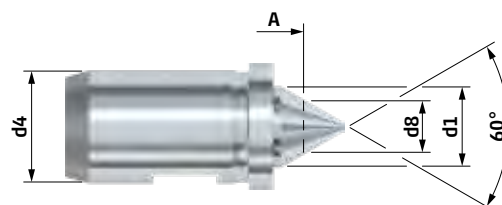
Due to the accurate assembly between center pin and head of face driver we ensure highly accurate replacement.

Type FFBR / FBSR · tool steel or carbide



with carbide insert

Technical data – type FFBR / FBSR · tool steel or carbide



A overhang dimension of face driver to centre d8 (see page 78 - 79)

for type FFBR / FBSR	d1	d4	center Ø	d7	d8	d9	cat. no.
0	3	-	1 - 3	16	1.5	48	734 15
01	5	-	1 - 5	18	3	48	734 16
11	7.8	6	2 - 6.5	-	4.25	-	734 11
1	9.8	8	4 - 8.5	-	6.25	-	734 02
2	10	14	4 - 9	-	6.5	-	734 03
3	12	18	6 - 11	-	8.5	-	734 04
4	16	20	10 - 15	-	12.5	-	734 05

TYPE CARBIDE

cat. no.
734 31
734 32
734 33
734 34
734 35
734 36
734 38

- Further center pins for other center holes upon request.
- At type FFBR/FBSR 0/01 (type carbide) the 60° tip is carbide coated.



Face Drivers FFB / FFBH

with drive pins and fixed center pin

The entire surface of the workpiece can be finished with one single clamping and with a maximum of torque transmission. NEIDLEIN face drivers are clamping systems, which are equally suitable **for grinding soft and hard workpieces**.

Face drivers of types FFB / FFBH are power-operated on the side of the spindle.

Originally conceived for turning, face drivers of type FFB / FFBH provide a multitude of possible applications for grinding. Without retraction of drive pins and with NEIDLEIN retainer Ø 100 type FFB / FFBH provides an alternative to face drivers of type FFBH/FBSR, especially when machining large-size workpieces.

When FFBH is used, the compensation of drive pins is implemented hydraulically, thus achieving excellent true runout results.

Type FFB with flange retainer

Type FFB is adapted onto the machine spindle using an adjustable flange adapter.



Type FFBH with flange retainer

Type FFBH is adapted onto the machine spindle using an adjustable flange adapter.

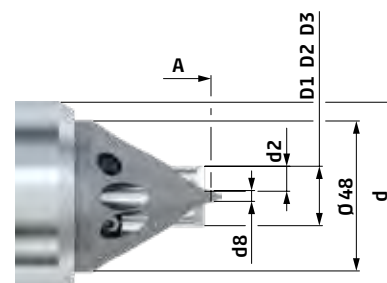
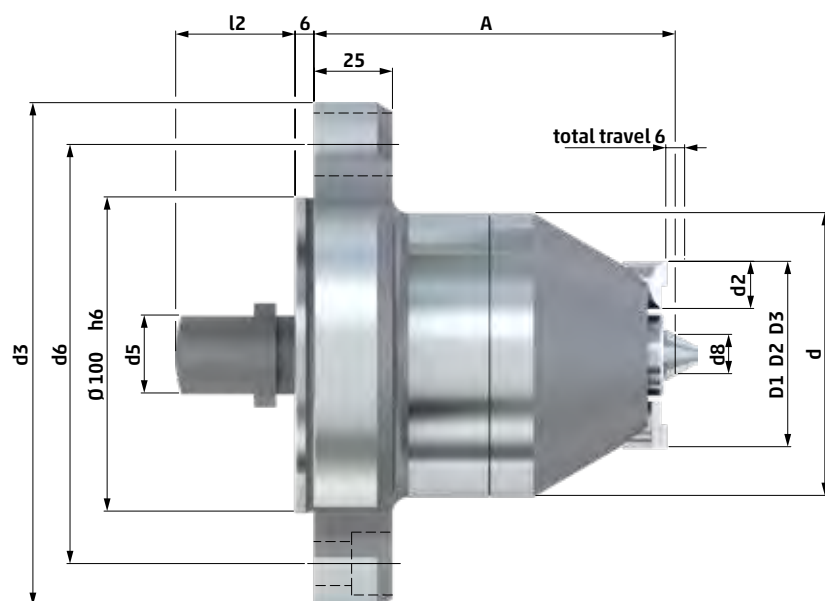


NEIDLEIN face drivers FFB / FFBH ensure:

- datum-point located in the center of the workpiece
- run-out deviation max.: 0.002 - 0.01 mm
- adjustment true via adjustable flange adapter for highest run-out requirements
- compensating drive components / optimal clamping of the workpiece
- easy handling
- face driver type FFBH comprises a hydraulic unit which is exchangeable as a cartridge

Technical data – type FFB face driver

type FFB 01/0



type FFB	d	center Ø	d2	d3	d5	d6	d8	A	l2	drive pins	clamping screws		clamping Ø			cat. no.
											type	pcs	D1	D2	D3	
01	60	1 - 5	6	160	18	133.4	3.5	115	38	3	M12	3	8	11	17	731 01
0	60	1 - 3	8	160	18	133.4	3	115	38	3	M12	3	6	11	19	731 12
11	42	2 - 6.5	6	160	12	133.4	4.25	115	38	3	M12	3	11	14	20	731 11
1	48	4 - 8.5	8	160	18	133.4	6.25	115	38	3	M12	3	13	18	26	731 02
2	70	4 - 9	10	160	22	133.4	6.5	115	38	3	M12	3	26	31	36	731 03
3	70	6 - 11	10	160	22	133.4	8.5	115	38	3	M12	3	34	39	44	731 04
35	80	4 - 9	15	160	22	133.4	6.5	115	38	3	M12	3	29	39	49	731 13
4	90	10 - 15	15	160	25	133.4	12.5	115	38	5	M12	3	39	49	59	731 05
45	100	10 - 15	15	160	25	133.4	12.5	115	54	5	M12	3	49	59	69	731 06
5	132	10 - 15	20	160	25	133.4	12.5	115	54	5	M12	3	69	84	99	731 07
55	182	10 - 15	20	220	40	171.4	12.5	155	54	5	M16	3	110	125	140	731 08
6	220	10 - 15	20	250	40	210	12.5	171	54	5	M20	3	140	155	170	731 09

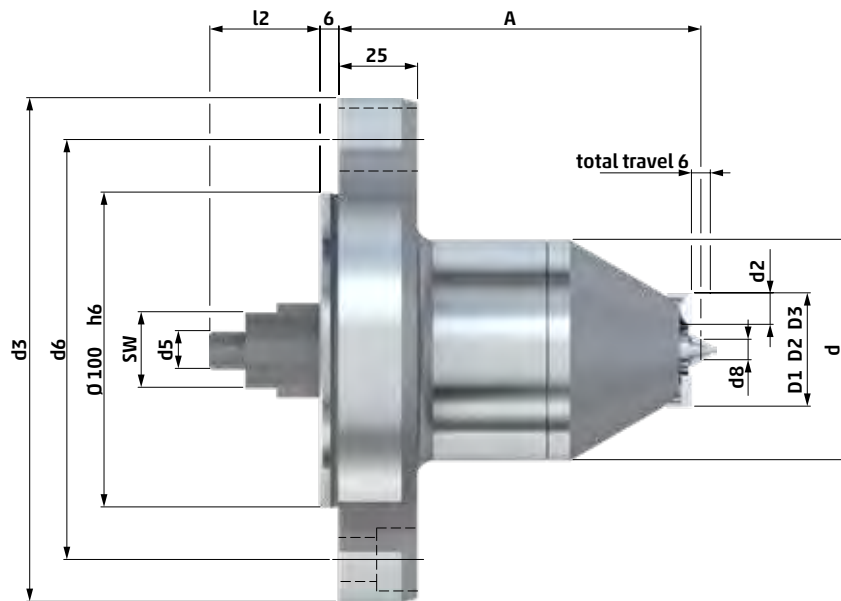
- All face drivers are supplied without drive pins. (drive pins see page 86 - 87)
- Types FFB 01/0 are supplied with center body, all other types without center pin. (center pin see page 85)
- Diameter d8 refers to standard center pins. (see page 85)
- Further center pins for other center holes upon request.
- Mounting elements for face drivers see page 92 - 97.

A stable assembly on the machine spindle is implemented using an adjustable flange adapter. We supply these flange adapters for various sizes of spindle heads in standardized size (DIN ISO 702-1/DIN 702-1) or for vendor-specific spindle heads in particular. Thus face drivers of range FFB can be assembled universally on various machines. Driving components and center pin are easily exchanged from the front part of the machine.

As required, the face driver can be equipped with either drive pins comprising a chisel for machining soft workpieces, or with diamond coated drive pins for machining hardened workpieces.

Apart from the clamping diameters listed above D1, D2, D3, we can also provide alternative sizes upon request. We are also able to manufacture larger center pins or mushroom centers for oversize centering.

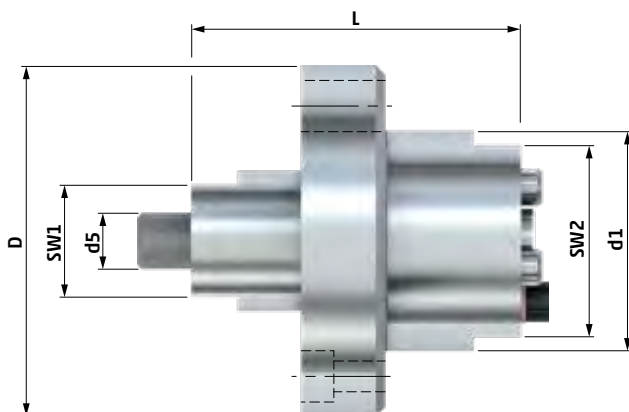
Technical data – type FFBH face driver



type	d	center Ø	d2	d3	SW	d5	d6	d8	A	l2	drive pins	clamping screws	clamping Ø			cat. no.
FFBH												type pcs	D1	D2	D3	
1	70	4 - 8.5	8	160	24	12	133.4	6.25	115	35	3	M12 3	13	18	26	631 02
2	70	4 - 9	10	160	24	12	133.4	6.5	115	35	3	M12 3	26	31	36	631 03
3	70	6 - 11	10	160	24	12	133.4	8.5	115	35	3	M12 3	34	39	44	631 04
4	90	10 - 15	15	160	34	12	133.4	12.5	132	35	5	M12 3	39	49	59	631 06
45	100	10 - 15	15	160	34	12	133.4	12.5	132	35	5	M12 3	49	59	69	631 07
5	132	10 - 15	20	160	34	12	133.4	12.5	149	35	5	M12 3	69	84	99	631 08

- All face drivers are supplied without drive pins and without center pins. (changeable parts see page 85 - 87)
- The diameter d8 refers to the standard center pins. (see page 85)
- Further center pins for other center holes upon request.
- Mounting elements for face drivers see page 92 - 97.

Technical data – type FFBH hydraulic unit



type	SW1	d5	L	d1	SW2	D	cat. no.
FFBH							
1	24	12	70.5	47	41	75	631 02 HE
2	24	12	70.5	47	41	75	
3	24	12	70.5	47	41	75	
4	34	12	70.5	65	59	93	631 06 HE
45	34	12	70.5	65	59	93	
5	34	12	70.5	87	81	131	631 08 HE

The general explanatory notes for this face driver FFBH can be obtained from the sheet "technical data – type FFB". For safe and smooth operation of face driver we recommend exchange of hydraulic unit after 1500 operating hours.

Furthermore, we offer the option for professional maintenance of the exchanged hydraulic units in our production plant.

Center Pins FFB / FFBH

for face drivers FFB / FFBH with fixed center pin

For maximum stability and run-out requirements the center pins are produced with narrow tolerances and are fixed safely via set screw and plane surface inside the face driver.

For a large batch of hardened workpieces we recommend the construction comprising carbide insert. Center heads of type 0 / 01 consist of 60°-taper tip that are carbide coated.

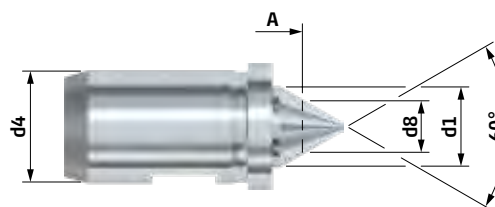
Due to the accurate assembly between center pin and head of face driver we ensure highly accurate replacement.

Type FFB / FFBH · tool steel or carbide

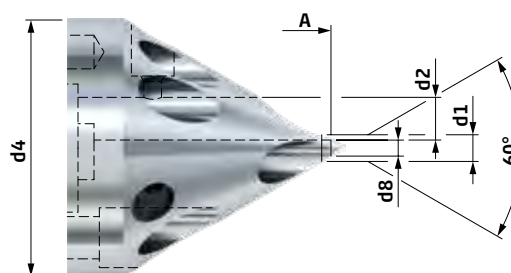


with carbide insert

Technical data – type FFB / FFBH · tool steel or carbide



center body type FFB / FFBH 01 / 0



A overhang dimension of face driver to centre d8 (see page 83 - 84)

TYPE TOOL STEEL

for type FFB / FFBH	d1	d2	d4	center Ø	d8	cat. no.
01	5	6	48	1 - 5	3.5	734 01
0	3	8	48	1 - 3	3	734 101
11	7.8	-	6	2 - 6.5	4.25	734 11
1	9.8	-	8	4 - 8.5	6.25	734 02
2	10	-	14	4 - 9	6.5	734 03
3	12	-	18	6 - 11	8.5	734 04
35	10	-	14	4 - 9	6.5	734 12
4	16	-	20	10 - 15	12.5	734 05
45	16	-	28	10 - 15	12.5	734 06
5	16	-	35	10 - 15	12.5	734 07
55	16	-	35	10 - 15	12.5	734 08
6	16	-	35	10 - 15	12.5	734 09

TYPE CARBIDE

cat. no.
734 43
734 44
734 33
734 34
734 35
734 36
734 37
734 38
734 39
73440
734 41
734 42

- Further center pins for other center holes upon request.
- At type FFB/FFBH 0/01 (type carbide) the 60° tip is carbide coated.



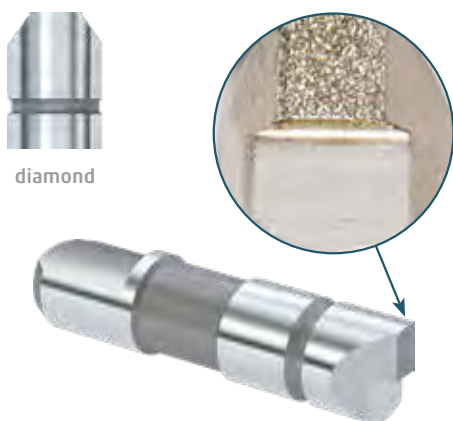
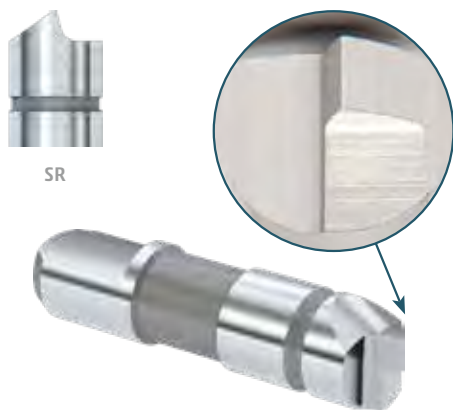
Drive Pins FFB / FFBH · Chisel SR · Diamond

for torque transmission onto the workpiece when grinding soft and hardened workpieces

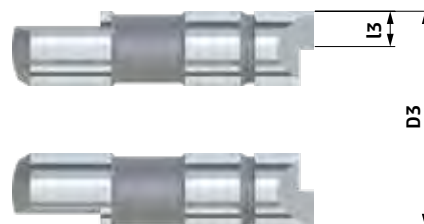
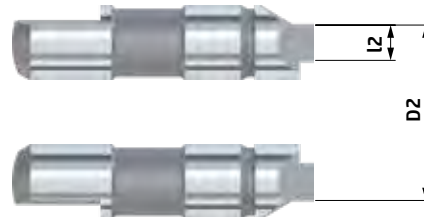
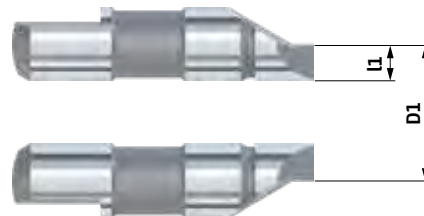
Drive pins made of hardened HSS with chisel are used **for grinding soft workpieces**. These are characterized by a high resistance to wear and tear and a maximum torque transmission.

Diamond coated drive pins are applied **for grinding hardened workpieces**. These are characterized by a high resistance to wear and tear, a maximum of torque transmission and by a high friction-coefficient.

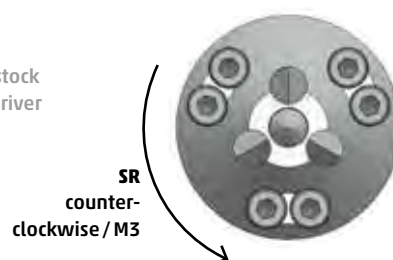
Type FFB / FFBH · chisel SR · diamond



Technical data – type FFB / FFBH · chisel SR · diamond



view from tailstock
onto the face driver



TYPE
CHISEL SR

for type FFB / FFBH	d	clamping Ø			chisel length			cat. no.
		D1	D2	D3	l1	l2	l3	
01	6	8			1.5			736 600
	6		11			2		736 601
	6			17			2	736 602
0	8	6			1.5			736 603
	8		11			2		736 604
	8			19			2	736 605
11	6	11			1.5			736 606
	6		14			2		736 607
	6			20			2	736 608
1	8	13			1.5			736 609
	8		18			2		736 610
	8			26			2	736 611
2	10	26			3			736 612
	10		31			3		736 613
	10			36			3	736 614
3	10	34			3			736 615
	10		39			3		736 616
	10			44			3	736 617
35	15	29			3			736 618
	15		39			3		736 619
	15			49			3	736 620
4	15	39			3			736 621
	15		49			3		736 622
	15			59			3	736 623
45	15	49			3			736 624
	15		59			3		736 625
	15			69			3	736 626
5	20	69			4			736 627
	20		84			4		736 628
	20			99			4	736 629
55	20	110			4			736 630
	20		125			4		736 631
	20			140			4	736 632
6	20	140			4			736 633
	20		155			4		736 634
	20			170			4	736 635

TYPE
DIAMOND COATING

chisel length			cat. no.
l1	l2	l3	
1.5			736 300
	3		736 301
		3	736 302
1.5			736 303
	4		736 304
		4	736 305
1.5			736 306
	3		736 307
		3	736 308
1.5			736 309
	4		736 310
		4	736 311
5			736 312
	5		736 313
		5	736 314
5			736 315
	5		736 316
		5	736 317
5			736 318
	5		736 319
		5	736 320
5			736 321
	5		736 322
		5	736 323
5			736 324
	5		736 325
		5	736 326
5			736 327
	7.5		736 328
		7.5	736 329
5			736 330
	7.5		736 331
		7.5	736 332
5			736 333
	7.5		736 334
		7.5	736 335

■ Further clamping Ø of drive pins upon request.



Face Drivers FDNC

with drive heads and movable center pin

Face drivers for clamping workpieces **for milling** free from backlash for gear hobbing, keyway milling and other surfaces.

Type FDNC with flange retainer

Type FDNC is mounted onto the machine spindle nose using a flange adapter.

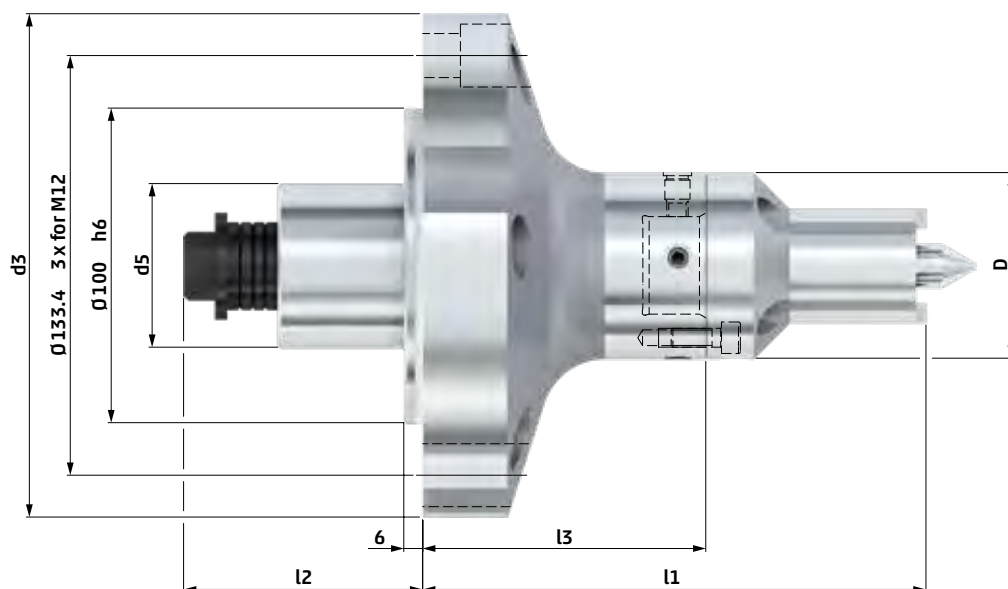
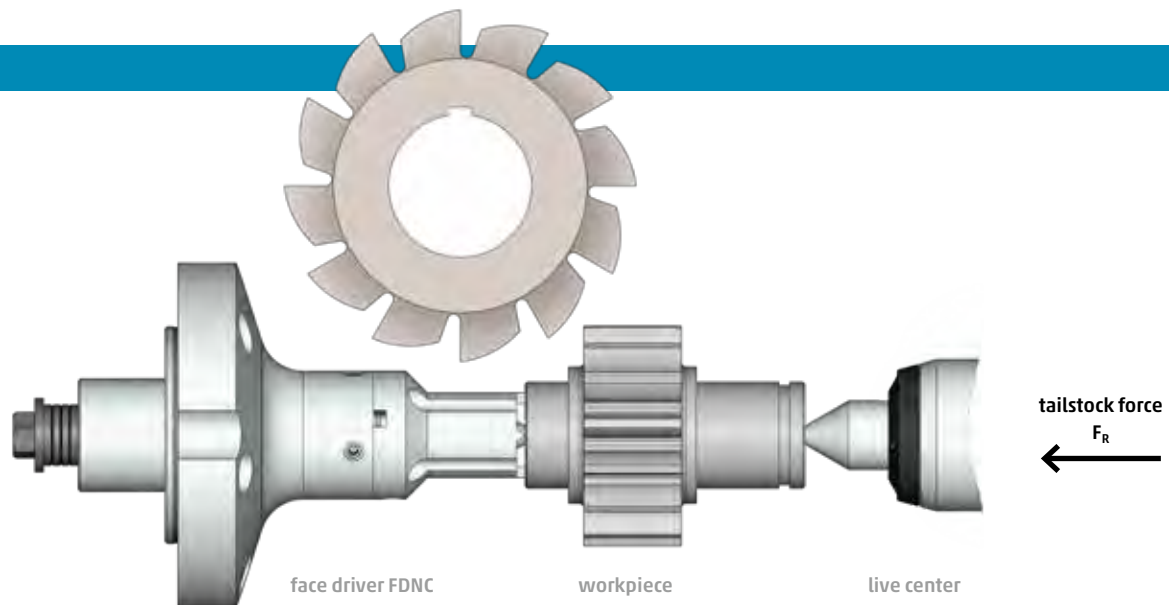


NEIDLEIN face drivers FDNC ensure:

- machining free from backlash due to fixed driving elements
- stability and mounting of high transverse thrust using adjustable, spring-loaded center pins
- constant datum point on the end face of the workpiece
- adjustment of dissimilar bore holes
- adjustment true at drive head for high true running accuracy
- tapered design for optimum tool path

Clamping principle

The workpiece is pushed by the tailstock force against the moving center pin, which moves back until the workpiece face side is in contact with the drive head.



type	D	d3	d5	l1	l2	l3	cat. no.
FDNC							
11-4	59	160	52	160	77	90	732 01

■ Mounting elements for face drivers see page 92 - 97.



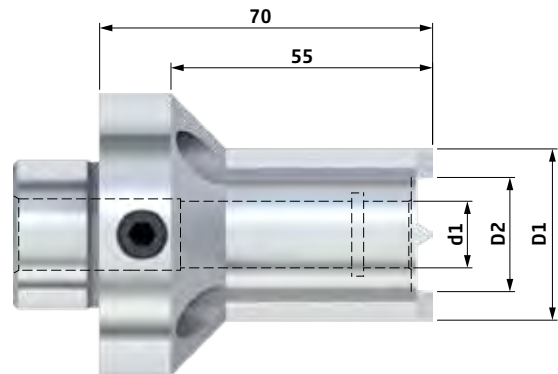
Drive Heads FDNC

changeable drive heads for basic body FDNC

Type FDNC · drive head



Technical data – type FDNC · drive head



for type FDNC	D1	D2	d1	cat. no.
11.11	11	7	6	737 01
11.14	14	9	6	737 02
11.18	18	12	6	737 03
1.22	22	14	8	737 04
1.26	26	18	8	737 05
2.30	30	20	14	737 06
2.36	36	24	14	737 07
3.39	39	29	18	737 08
3.44	44	34	18	737 09
4.49	49	39	24	737 10
4.59	59	49	24	737 11

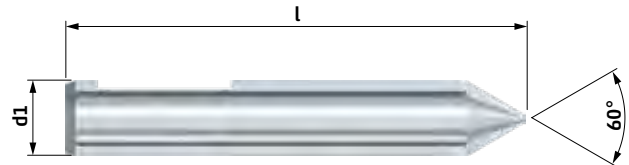
■ Additional dimensions for drive heads upon request.

Center Pins FDNC

**changeable center pins for basic body
and drive heads FDNC**

Type FDNC · center pin

Technical data – type FDNC · center pin



for type FDNC	d1	l	center Ø	cat. no.
11	6	78	1 - 6	733 01
1	8	80	1 - 8	733 02
2	14	86	1 - 14	733 03
3	18	89	3 - 18	733 04
4.1	24	89	3 - 18	733 05
4.2	24	96	16 - 24	733 06

■ Further center pins for other center holes upon request.



ZF

Mounting Elements

with appropriate accessories
for mounting of clamping tools on machine tools



ZFE



RF



RH

Flange Adapters ZF	94
Flange Adapters ZFE (adjustable)	96
Reducing Adapters RF	98
Reducing Sleeves RH	100

Flange Adapters ZF

according to DIN ISO 702-1 (DIN 55028)
for mounting of face drivers type FSB / FSP / FDNC

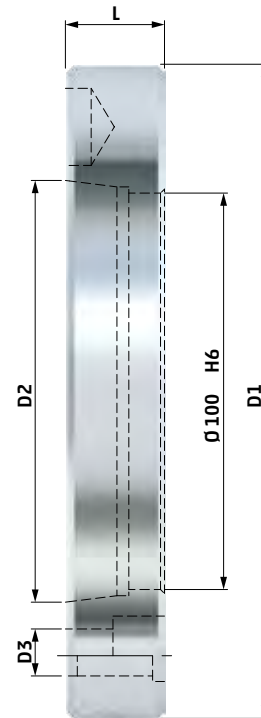
The flange adapter is used for direct mounting of **face driver type with movable center pin** on machine tool spindle noses DIN ISO 702-1 (DIN 55026).

Our flange adapters are made of non-hardened steel. This helps to protect the spindle nose and serves for a better damping property.

Type ZF with short taper



Technical data- type ZF with short taper



type ZF	spindle size	D1	D2	D3 for	L	for face drivers FSB	cat. no.
5	5	160	82.563	M10	25	01 - 5	742 02
6	6	165	106.375	M12	25	01 - 5	742 04
8	8	220	139.719	M16	60	01 - 55	742 062
11	11	280	196.869	M20	60	01 - 6	742 082

- Adapters are supplied with mounting screws to suit the machine tool spindle nose.
- Other sizes and special adapters are available upon request.
- Hardened flange adapters are available upon request.

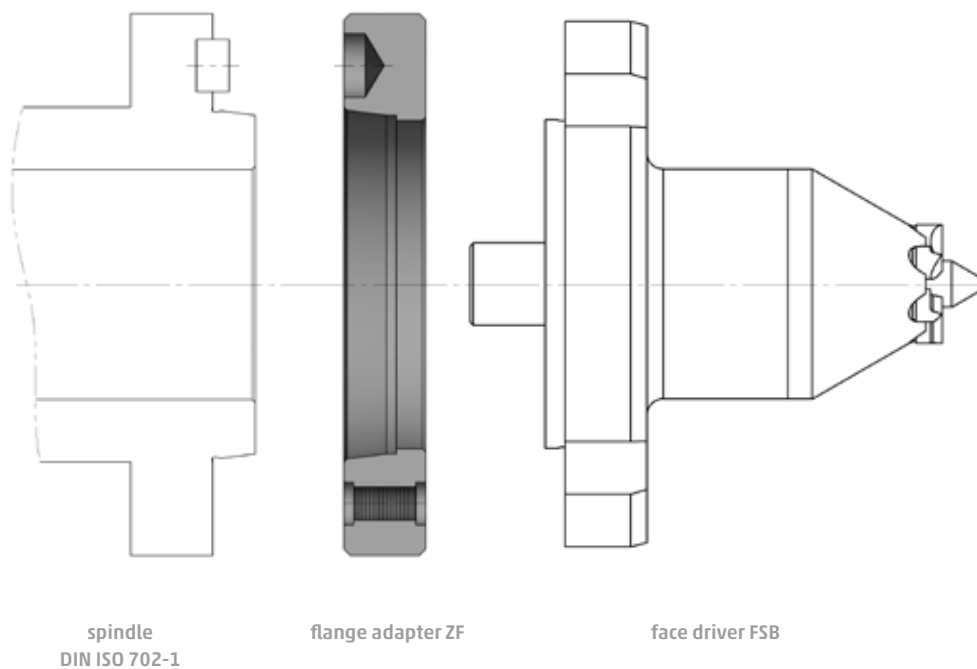
Clamping principle

Face drivers with movable center pin and all other face drivers with retainer Ø 100 are mounted onto the machine tool spindle via flange adapter ZF.

Because of the exactly fitting of the mounting diameter Ø 100 it is possible to adapt the face driver without adjusting the run out.

For increased run out requirements the face driver should be adjusted in the flange adapter.

Type **ZF** with short taper



Flange Adapters ZFE (adjustable)

according to DIN ISO 702-1 (DIN 55028)

**for mounting face drivers type FFB / FFBH
und reducing sleeves type RF**

The flange adapter is used for direct mounting of **face driver type FFB and FFBH** with adjustment true. Adaption on machine tool spindle noses DIN ISO 702-1 (DIN 55026).

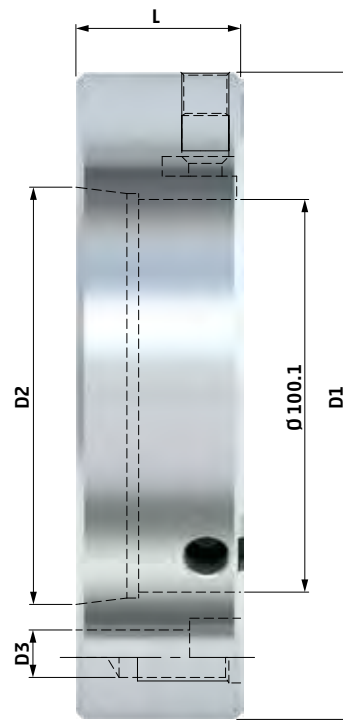
Our flange adapters are made of non-hardened steel. This helps to protect the spindle nose and serves for a better damping property.

Type ZFE with short taper

for adjustment at high run out requirements



Technical data – type ZFE with short taper



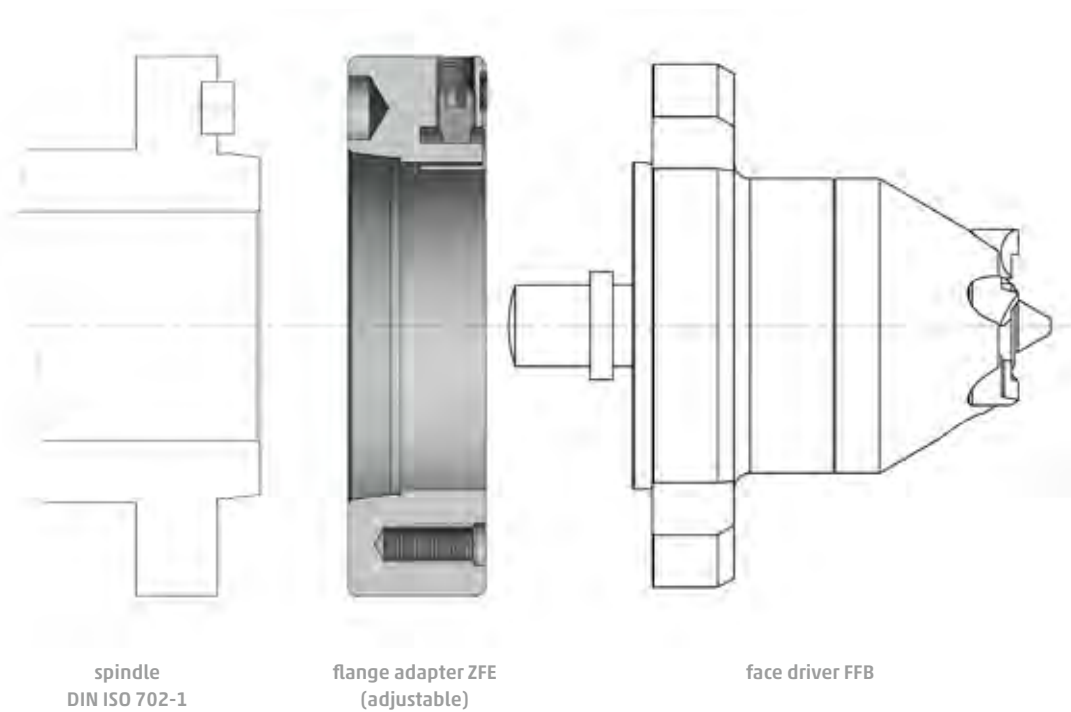
type ZFE	spindle size	D1	D2	D3 for	L	for face drivers FFB / FFBH	cat. no.
5	5	160	82.563	M10	40	01 - 5	742 12
6	6	165	106.375	M12	42	01 - 5	742 14
8	8	220	139.719	M16	42	01 - 55	742 16
11	11	280	196.869	M20	60	01 - 6	742 18

- Adapters are supplied with mounting screws to suit the machine tool spindle nose.
- Other sizes and special adapters are available upon request.
- Hardened flange adapters are available upon request.

Clamping principle

Face drivers of the type FFB / FFBH and all other face drivers with retainer $\varnothing 100$ which need a very precise run out adjustment are mounted onto the machine tool spindle via flange adapter ZFE.

Type ZFE with short taper



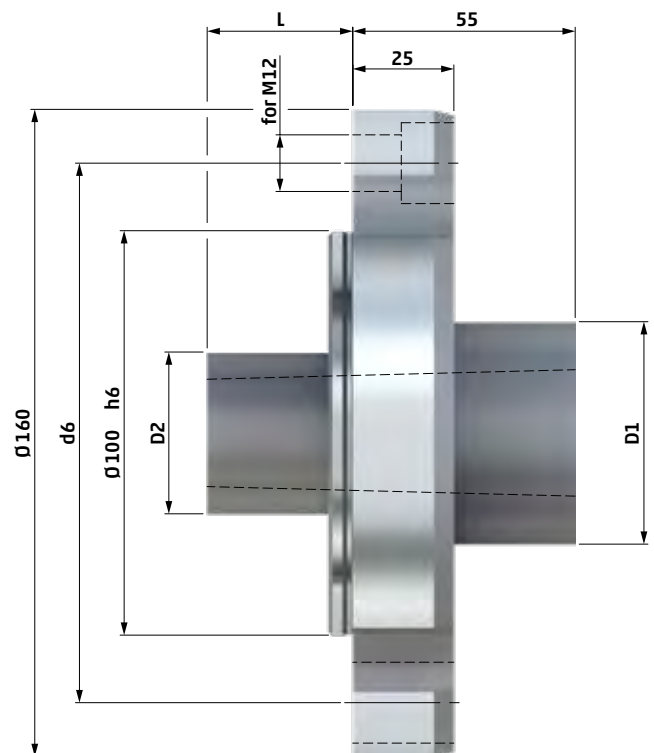
Reducing Adapters RF

for mounting clamping tools with morse taper shank

The reducing adapter is used for direct mounting of **face driver type SB**, **pipe driver type NDG** or of **various center pins with morse taper shank**.

Type RF with morse taper

Technical data – type RF with morse taper



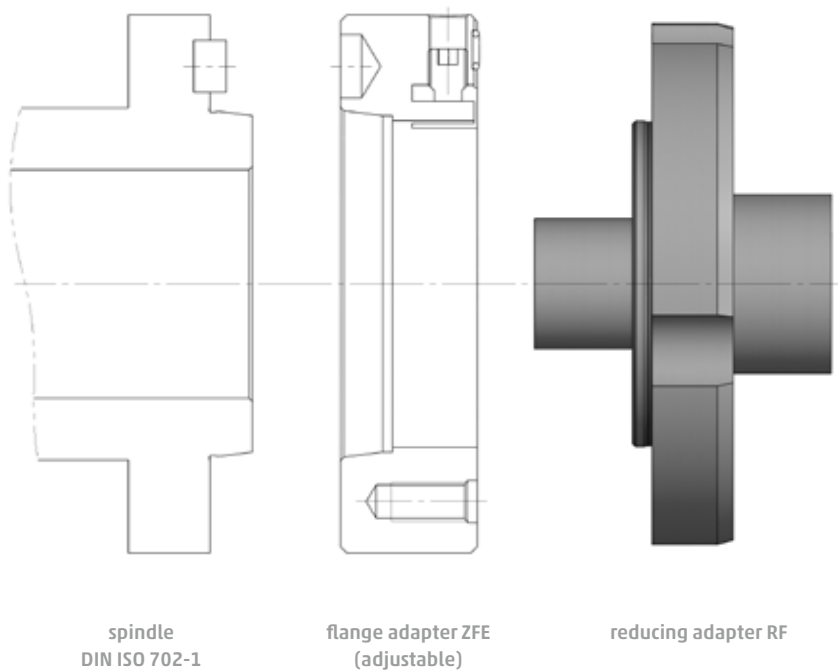
type	MK	D1	D2	L	d6	cat. no.
RF						
3	3	42	36	15	133.4	743 01
4	4	55	40	36	133.4	743 02
5	5	68	55	63	133.4	743 03
6	6	90	80	75	133.4	743 04

- Adapters are supplied with mounting screws to suit the machine tool spindle nose.
- Other sizes and special adapters are available upon request.

Clamping principle

For mounting a clamping tool with morse taper shank onto a machine tool spindle DIN ISO 702-1, a reducing flange RF is used by mounting it onto the machine tool spindle via flange adapter ZFE (e. g. at a double spindle CNC lathe).

Type RF with morse taper



Reducing Sleeves RH

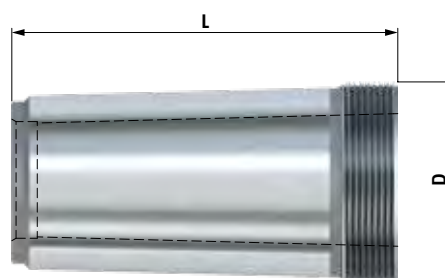
for reducing of morse cone retainers

The reducing sleeve is used for mounting of face driver type SB, pipe driver type NDG or of various center pins with morse taper shank. Demounting by means of extraction screw thread.

Type RH with morse taper



Technical data - type RH with morse taper



type	MK	MK	D	L	cat. no.
RF	outside	inside	screw thread		
4/3	4	3	M35 x 1.5	82	932 09
5/3	5	3	M48 x 1.5	91	932 10
5/4	5	4	M48 x 1.5	91	932 11
6/3	6	3	M70 x 1.5	128	932 12
6/4	6	4	M70 x 1.5	128	932 13
6/5	6	5	M70 x 1.5	128	932 14

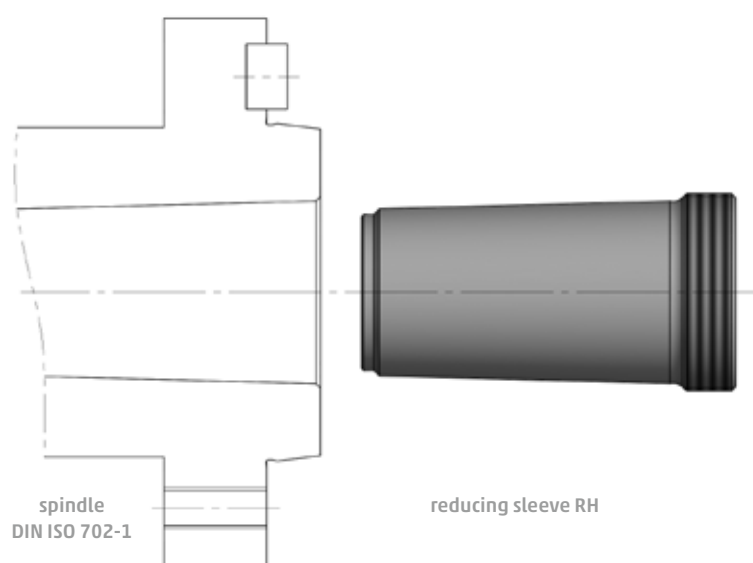
■ Other sizes and special sleeves are available upon request.

Clamping principle

For retaining a morse cone shank which is smaller than the available tailstock quill or machine tool spindle, a reducing sleeve with matching size is adapted.

For easy removal the reducing sleeves are made with an extraction thread.

Type RH with morse taper

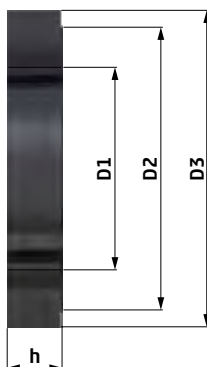


Extracting nut DIN 1804 h · for reducing sleeve RH

Type DIN 1804 h



Technical data - type DIN 1804 h



D1	D2	D3	h	cat. no.
M35 x 1.5	47	55	11	830 41
M48 x 1.5	67	75	13	830 43
M70 x 1.5	90	100	14	830 44



RN

RNW and changeable inserts

RNCS with carbide tip

LIVE CENTERS
FOR TURNING AND GRINDING



Ultra Live Centers RN / RNC	104
Ultra Live Centers RNA	110
Bull nose Live Centers RK	112
Ultra Live Center Cone Heads RKA	114
Ultra Live Centers RNW	116
Ultra Live Centers RNF / RNCF	118
Ultra Live Centers RNF / RNCF VDI	120
Ultra Live Centers RNWF MK + VDI	122

LIVE CENTERS
ESPECIALLY FOR GRINDING



Ultra Live Centers RNS / RNCS	124
Load Charts for Live Centers	128

Live Centers · Dead Centers

with appropriate accessories



RNF VDI



carbide dead center DIN 807



FNA and changeable center cone

DEAD CENTERS FOR TURNING, HARD TURNING AND GRINDING



Dead Centers FN / FNC / FNZ	133
Dead Center Shanks FNA / FNW	136
Carbide Dead Centers DIN 806	138
Carbide Dead Centers DIN 807	140
Dead Centers FE / FEC (for EMAG machines, taper 1:7,5)	142
Carbide Bull Nose Cone FNK	144

ACCESSORIES

Changeable Center Cones for type RNA / FNA	146
Changeable Center Cones for type RKA	147
Changeable Inserts for type RNW / FNW	148
Extracting Nuts and Extracting Disks	150

Ultra Live Centers RN / RNC

for general use



NEIDLEIN ultra live centers are designed for employment **in turning, grinding and other production machine tools.**

Owing to the application of bearing and the stable design high axial and radial load can be absorbed accurately. Therefore our live centers are outstanding for any application, especially for tooling with face drivers.

Type RN with morse taper



with half carbide tip



with full carbide tip

↑ **0.005**



↑ **0.003**

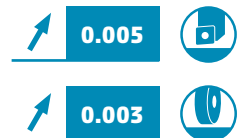


NEIDLEIN revolving ultra live centers type RN / RNC ensure:

- application of live centers in case of high thrust and loading
- run-out deviation max.
0.005 mm · type turning
0.003 mm · type grinding
- enhanced true running accuracy HQ upon request
- maintenance-free, due to gasket system and life-time lubrication of bearings; gasket system comprising variable seal and steel protection cover
- excellent demounting by means of extracting nut and extracting disk, which ensures safe and easy removal of the live center from the tailstock spindle sleeve

Type RNC with morse taper

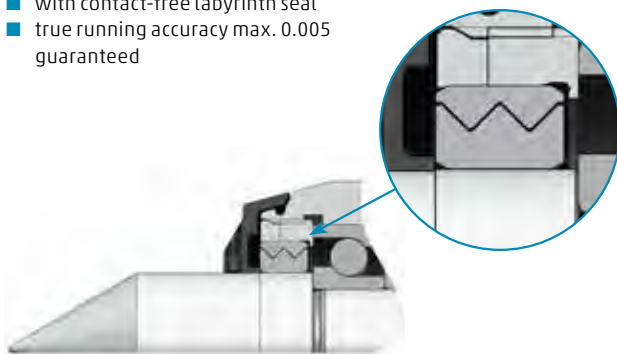
» **extended tooling clearance**
for better access of machining tools



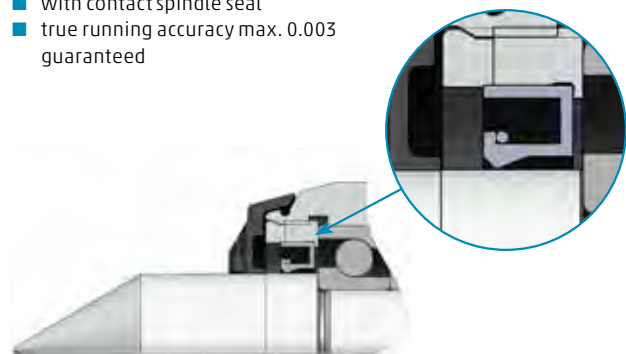
with carbide tip

TYPE TURNING

- with contact-free labyrinth seal
- true running accuracy max. 0.005 guaranteed

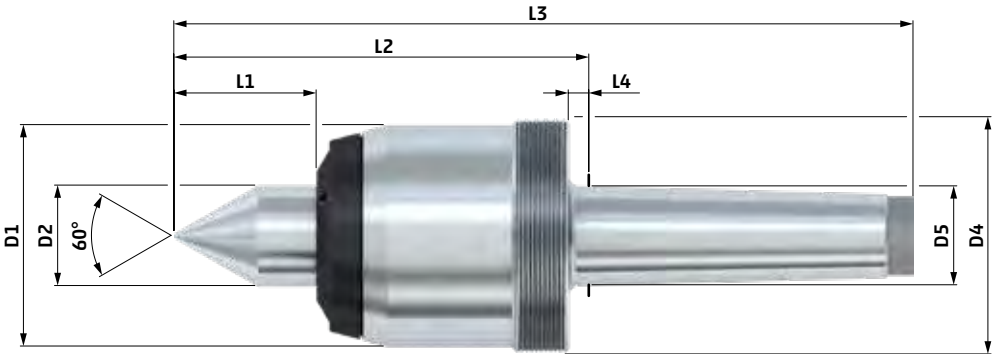
**TYPE GRINDING**

- with contact spindle seal
- true running accuracy max. 0.003 guaranteed



Technical data – type RN with morse taper

type tool steel tip



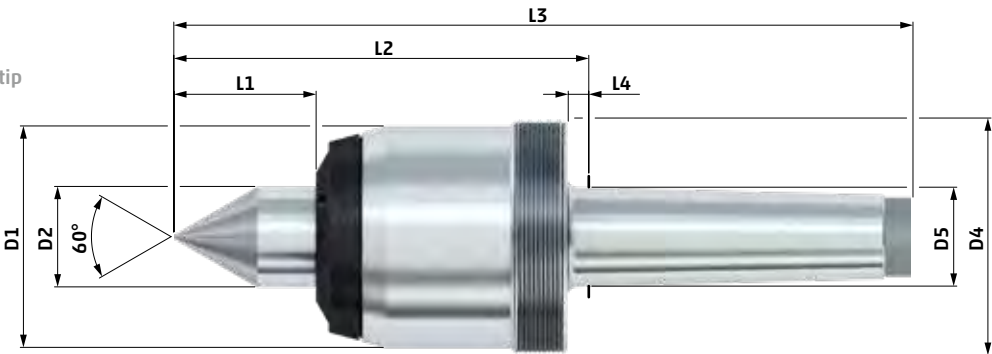
WITH TOOL STEEL TIP

type RN	MK	D1	D2	D4	D5	L1	L2	L3	L4	rpm max. [1/min]	cat. no.	TYPE TURNING	TYPE GRINDING
3	3	55	22	M58 x 1.5	23.83	26	102	183	5	6000	812 01		812 0102
	4	55	22	M58 x 1.5	31.27	26	103.5	206	6.5	6000	812 02		812 0202
	5	55	22	M58 x 1.5	44.4	26	103.5	233	6.5	6000	812 03		812 0302
4	4	70	32	M75 x 1.5	31.27	45	131.2	233.7	6.5	5000	812 04		812 0402
	5	70	32	M75 x 1.5	44.4	45	131.2	260.7	6.5	5000	812 05		812 0502
5	5	92	45	M95 x 2	44.4	60	156.2	285.7	6.5	4000	812 06		812 0602
	6	92	45	M95 x 2	63.35	60	157.7	339.7	8	4000	812 07		812 0702
6	6	107	55	M110 x 2	63.35	60	169.7	351.7	8	3000	812 08		812 0802

- Run-out deviation max.: type turning 0.005 mm · type grinding 0.003 mm.
- Extracting nuts and extracting disks see page 150 - 151 for accessories.
- Load chart see page 128.



type full carbide tip



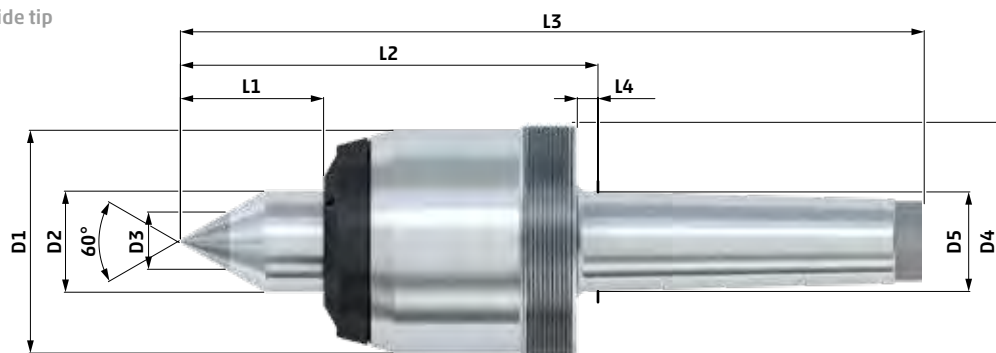
WITH FULL CARBIDE TIP

type RN	MK	D1	D2	D4	D5	L1	L2	L3	L4	rpm max. [1/min]	cat. no.	TYPE TURNING	TYPE GRINDING
3	3	55	22	M58 x 1.5	23.83	26	102	183	5	6000	812 0104		812 0106
	4	55	22	M58 x 1.5	31.27	26	103.5	206	6.5	6000	812 0204		812 0206
	5	55	22	M58 x 1.5	44.4	26	103.5	233	6.5	6000	812 0304		812 0306
4	4	70	32	M75 x 1.5	31.27	45	131.2	233.7	6.5	5000	812 0404		812 0406
	5	70	32	M75 x 1.5	44.4	45	131.2	260.7	6.5	5000	812 0504		812 0506
5	5	92	45	M95 x 2	44.4	60	156.2	285.7	6.5	4000	812 0604		812 0606
	6	92	45	M95 x 2	63.35	60	157.7	339.7	8	4000	812 0704		812 0706
6	6	107	55	M110 x 2	63.35	60	169.7	351.7	8	3000	812 0804		812 0806

- Run-out deviation max.: type turning 0.005 mm · type grinding 0.003 mm.
- Extracting nuts and extracting disks see page 150 - 151 for accessories.
- Load chart see page 128.

Technical data – type RN with morse taper

type half carbide tip

**WITH HALF CARBIDE TIP****TYPE
TURNING****TYPE
GRINDING**

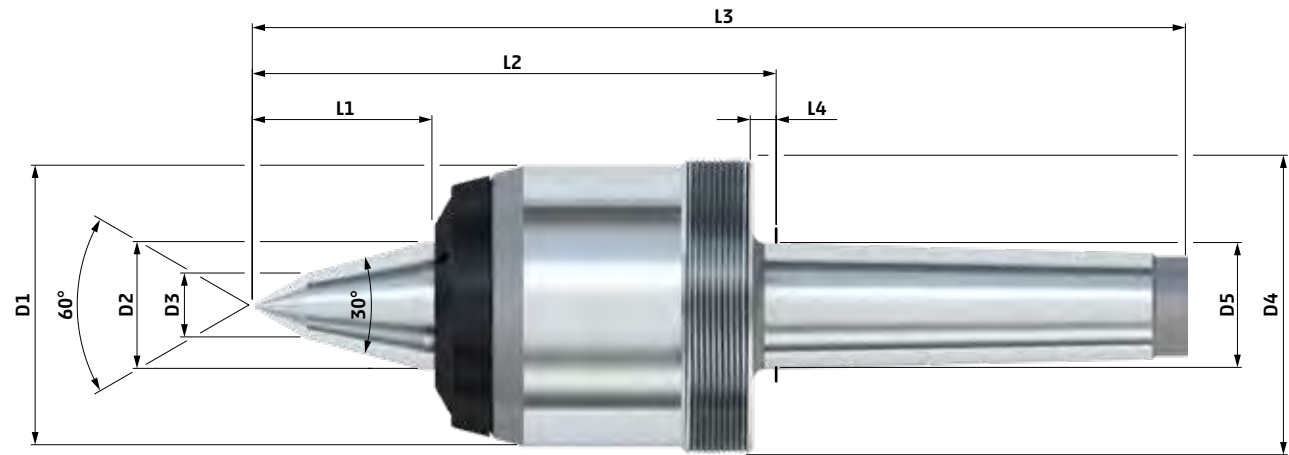
type RN	MK	D1	D2	D3	D4	D5	L1	L2	L3	L4	rpm max. [1 / min]	cat. no.
3	3	55	22	11	M58 x 1.5	23.83	26	102	183	5	6000	812 0103
	4	55	22	11	M58 x 1.5	31.27	26	103.5	206	6.5	6000	812 0203
	5	55	22	11	M58 x 1.5	44.4	26	103.5	233	6.5	6000	812 0303
4	4	70	32	14	M75 x 1.5	31.27	45	131.2	233.7	6.5	5000	812 0403
	5	70	32	14	M75 x 1.5	44.4	45	131.2	260.7	6.5	5000	812 0503
5	5	92	45	22	M95 x 2	44.4	60	156.2	285.7	6.5	4000	812 0603
	6	92	45	22	M95 x 2	63.35	60	157.7	339.7	8	4000	812 0703
6	6	107	55	28	M110 x 2	63.35	60	169.7	351.7	8	3000	812 0803

cat.no
812 0105
812 0205
812 0305
812 0405
812 0505
812 0605
812 0705
812 0805

- Run-out deviation max.: type turning 0.005 mm · type grinding 0.003 mm.
- Extracting nuts and extracting disks see page 150 - 151 for accessories.
- Load chart see page 128.

Technical data – type RNC with morse taper

type tool steel tip



WITH TOOL STEEL TIP

**TYPE
TURNING**

**TYPE
GRINDING**

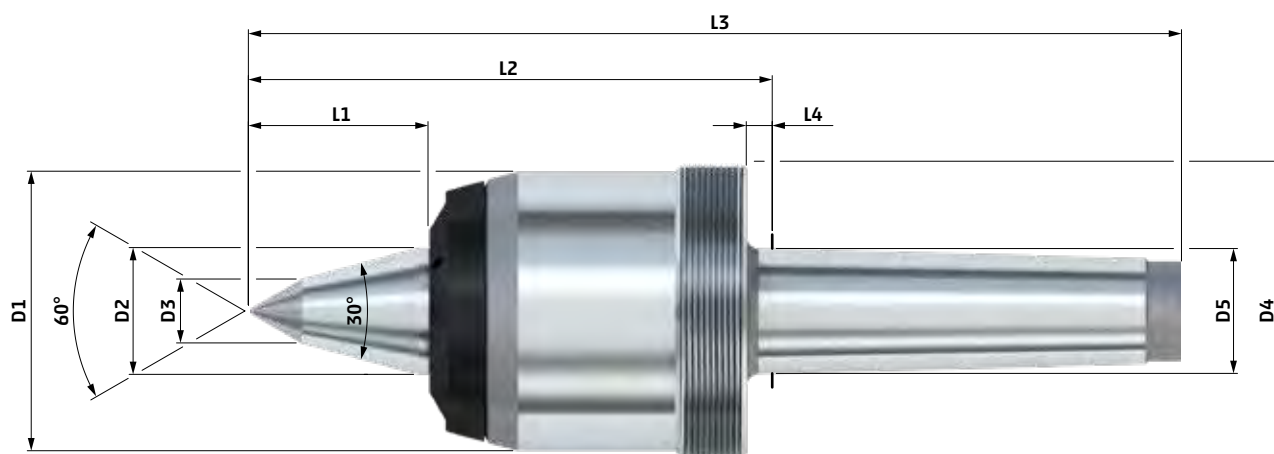
type RNC	MK	D1	D2	D3	D4	D5	L1	L2	L3	L4	rpm max. [1 / min]	cat. no.
3	3	55	22	10	M58 x 1.5	23.83	32	108	189	5	6000	813 01
	4	55	22	10	M58 x 1.5	31.27	32	109.5	212	6.5	6000	813 02
	5	55	22	10	M58 x 1.5	44.4	32	109.5	239	6.5	6000	813 03
4	4	70	32	16	M75 x 1.5	31.27	45	131.2	233.7	6.5	5000	813 04
	5	70	32	16	M75 x 1.5	44.4	45	131.2	260.7	6.5	5000	813 05
5	5	92	45	22	M95 x 2	44.4	62	158.2	287.7	6.5	4000	813 06
	6	92	45	22	M95 x 2	63.35	62	159.7	341.7	8	4000	813 07
6	6	107	55	28	M110 x 2	63.35	72	181.7	363.7	8	3000	813 08

cat. no.
813 0102
813 0202
813 0302
813 0402
813 0502
813 0602
813 0702
813 0802

- Run-out deviation max.: type turning 0.005 mm · type grinding 0.003 mm.
- Extracting nuts and extracting disks see page 150 - 151 for accessories.
- Load chart see page 128.

Technical data – type RNC with morse taper

type carbide tip

**WITH CARBIDE TIP****TYPE
TURNING****TYPE
GRINDING**

type RNC	MK	D1	D2	D3	D4	D5	L1	L2	L3	L4	rpm max. [1/min]	cat. no.
3	3	55	22	10	M58 x 1.5	23.83	32	108	189	5	6000	813 0104
	4	55	22	10	M58 x 1.5	31.27	32	109.5	212	6.5	6000	813 0204
	5	55	22	10	M58 x 1.5	44.4	32	109.5	239	6.5	6000	813 0304
4	4	70	32	16	M75 x 1.5	31.27	45	131.2	233.7	6.5	5000	813 0404
	5	70	32	16	M75 x 1.5	44.4	45	131.2	260.7	6.5	5000	813 0504
5	5	92	45	22	M95 x 2	44.4	62	158.2	287.7	6.5	4000	813 0604
	6	92	45	22	M95 x 2	63.35	62	159.7	341.7	8	4000	813 0704
6	6	107	55	28	M110 x 2	63.35	72	181.7	363.7	8	3000	813 0804

cat. no.
813 0106
813 0206
813 0306
813 0406
813 0506
813 0606
813 0706
813 0806

- Run-out deviation max.: type turning 0.005 mm · type grinding 0.003 mm.
- Extracting nuts and extracting disks see page 150 - 151 for accessories.
- Load chart see page 128.

Ultra Live Centers RNA



high flexibility at large workpiece center holes

NEIDLEIN ultra live centers type RNA are designed for employment **in turning, grinding and other production machines.**

Type RNA with morse taper

high degree of flexibility for clamping of workpieces with large centers



0.01

incl. center cone



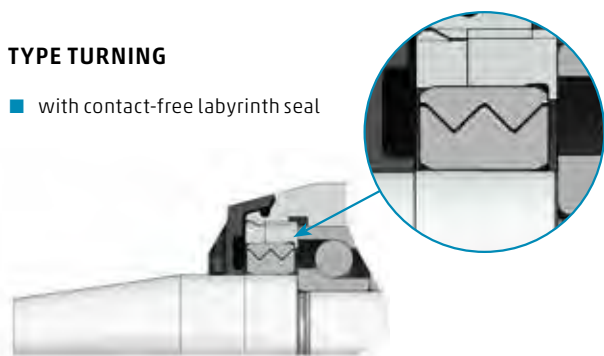
changeable center cone
see page 146

NEIDLEIN revolving ultra live centers type RNA ensure:

- application of live centers in case of high thrust and loading
- run-out deviation max.: 0.01 mm incl. center cone
- easy exchange of center cones using SK30 short taper interface and cylinder screw
- maintenance-free, due to gasket system and life-time lubrication of bearings; gasket system comprising variable seal and steel comprehensive protection cover
- excellent demounting by means of extracting nut and extracting disk, which ensures safe and easy removal of the live center from the tailstock spindle sleeve

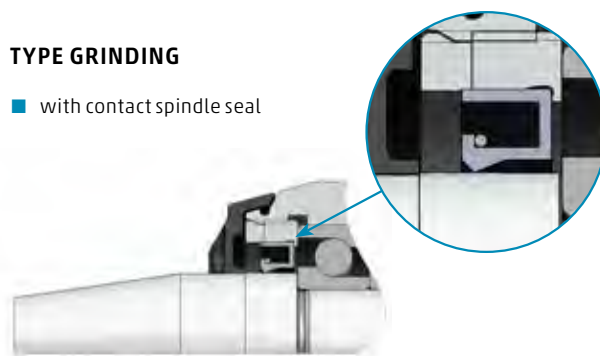
TYPE TURNING

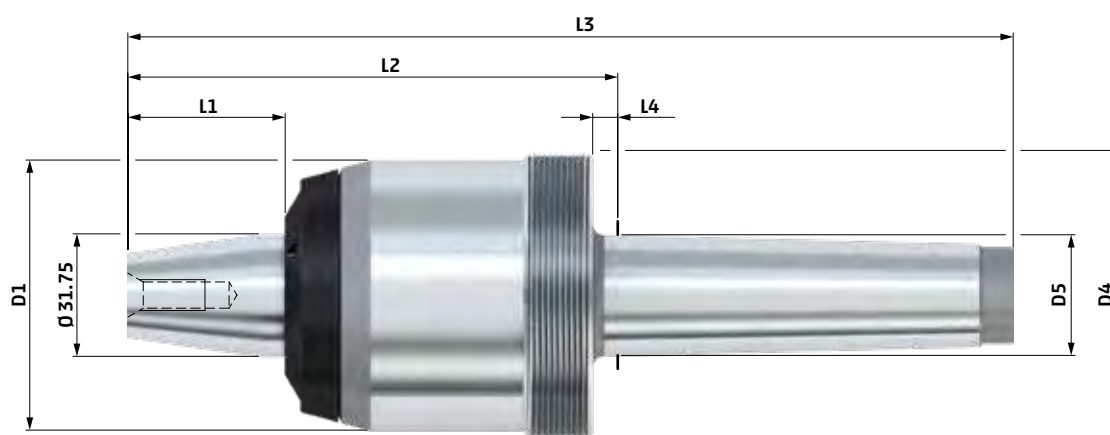
- with contact-free labyrinth seal



TYPE GRINDING

- with contact spindle seal



Technical data – type RNA with morse taper**TYPE
TURNING****TYPE
GRINDING**

type RNA	MK	D1	D4	D5	L1	L2	L3	L4	rpm max. [1/min]	cat. no.	cat. no.
4	4	70	M75 x 1.5	31.27	41	127	229.5	6.5	6000	814 04	814 0402
	5	70	M75 x 1.5	44.4	41	127	256.5	6.5	6000	814 05	814 0502
5	5	92	M95 x 2	44.4	41	137.2	266.7	6.5	5000	814 06	814 0602
	6	92	M95 x 2	63.35	41	138.7	320.7	8	5000	814 07	814 0702
6	6	107	M110 x 2	63.35	41	151.7	333.7	8	3000	814 08	814 0802

- Run-out deviation max.: 0.01 mm incl. center cone.
- Variety of center cones ranging from Ø 25 to Ø 315, see page 146.
- Special cones up to Ø 400 available upon customer's request.
- Extracting nuts and extracting disks see page 150 - 151 for accessories.
- Speed-dependent load see page 128.

Bull nose live center RK

for work pieces with large center holes

NEIDLEIN bull nose live centers type RK are characterized by a large clamping range and therefore they can cover large work piece center holes.

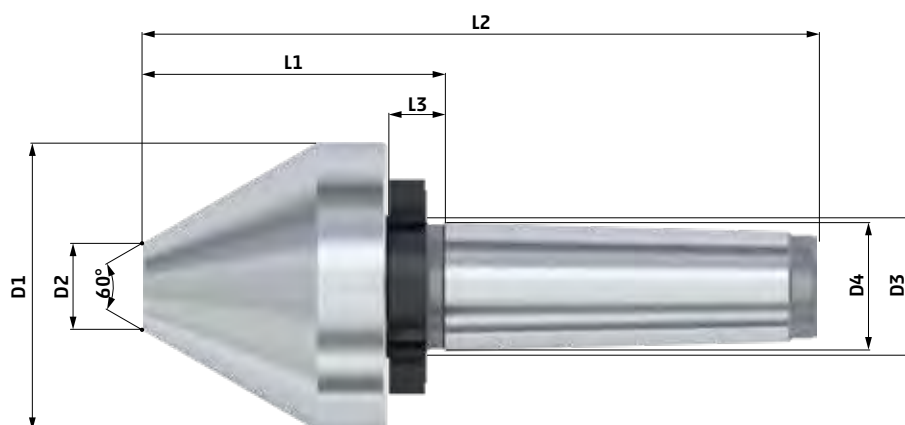
The clamping system allows for a high degree of flexibility. It enables clamping of work pieces with center hole sizes from Ø 6 to Ø 340. Due to the heavy duty bearing system, work pieces up to 5000 kg can be clamped.

Type RK with morse taper



NEIDLEIN bull nose live centers type RK ensure:

- high flexibility due to the large diameter range
- run-out deviation max.: 0.005 - 0.02 (depending onto type)
- high true run accuracy even when using low axial forces
- use in case of high thrust and loads
- maintenance free due to gasket system and life-time lubrication of the bearings; gasket system by use of a shaft seal ring
- excellent demounting by means of extracting nut, which ensures safe and easy removal of the bull nose live center from the tailstock spindle sleeve

Technical data - Type RK with morse taper

Type RK	MK	D1	D2	D3	D4	L1	L2	L3	rpm. max (1/min.)	cat. no.
3	2	70	2	M22 x 1.5	17.78	93	157	15.5	3000	820 00
	3	70	2	M28 x 1.5	23.83	93.5	174.5	16	3000	820 01
	4	70	2	M35 x 1.5	31.27	95	197.5	17.5	3000	820 02
4	4	100	30	M35 x 1.5	31.27	103	205.5	17.5	2500	820 03
	5	100	30	M48 x 1.5	44.4	105	234.5	19.5	2500	820 04
5	4	160	90	M35 x 1.5	31.27	135.5	238	17.5	2000	820 05
	5	160	90	M48 x 1.5	44.4	137.5	267	19.5	2000	820 06
	6	160	90	M70 x 1.5	63.35	140	322	22	2000	820 07
6	5	220	150	M48 x 1.5	44.4	157.5	287	19.5	1500	820 08
	6	220	150	M70 x 1.5	63.35	160	342	22	1500	820 09
	6	280	210	M70 x 1.5	63.35	160	342	22	1500	820 10
	6	340	270	M70 x 1.5	63.35	160	342	22	1500	820 11

- load chart see page 129.
- At speeds lower than 500 rpm and high loads, upon request it's possible to use a heavy duty grease for lubrication of the bearings
- The extraction nut is included.



Ultra Live Center Cone Heads RKA

for heavy workpieces with large centers

NEIDLEIN ultra live centers type cone head RKA are designed for heavy workpieces with large centers.

The modular clamping system allows for a high degree of flexibility. It enables clamping of workpieces with centers from $\varnothing 50$ to $\varnothing 460$.

Type RKA basic retainer with morse taper



0.005

without center cone

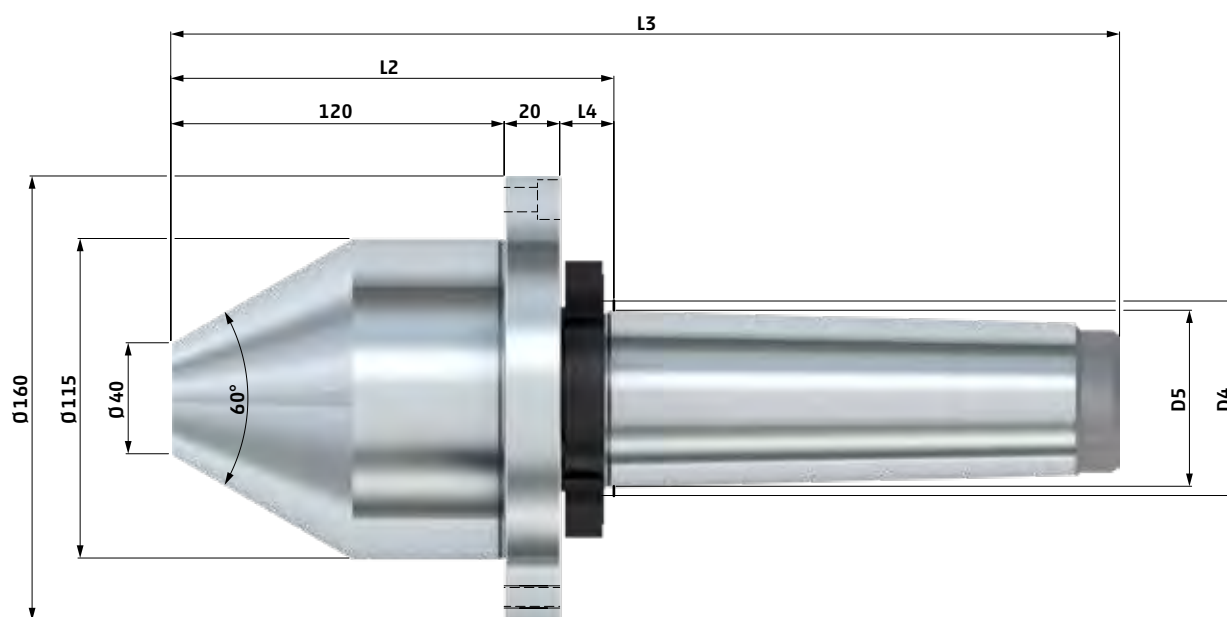


0.02

incl. center cone



changeable center cones
see page 147

Technical data - type RKA basic retainer with morse taper

type RKA	MK	D4	D5	L2	L3	L4	rpm max. [1 / min]	cat. no.
6	5	M48 x 1.5	44.4	159.5	289	19.5	2500	814 09
	6	M70 x 1.5	63.35	162.5	344.5	22	2500	814 10

- Run-out deviation max.: 0.005 mm without center cone - 0.02 mm incl. center cone.
- Workpieces with centers between Ø50 and Ø115 can be clamped using the basic retainer. In this case the max. radial loads (see page 129) must be reduced by 50%.
- Special basic retainer available upon customer's request.
- Basic retainer including extraction nut.
- Accessories on page 147.
- Load chart see page 129.

Ultra Live Centers RNW



high flexibility by using different changeable inserts

NEIDLEIN ultra live centers type RNW are designed for employment **in turning, grinding and other production machines.**

Type RNW with morse taper

the adaptation of various changeable inserts ensures a high degree of flexibility and saving of costs

 **0.01**
incl. insert



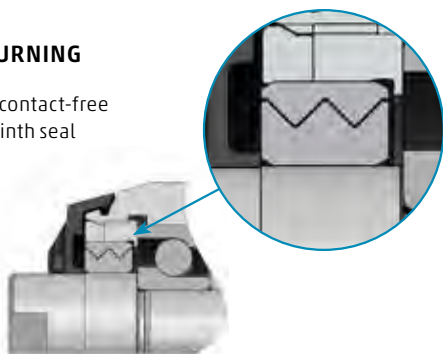
changeable inserts
see page 148 - 149

NEIDLEIN revolving ultra live centers type RNW ensure:

- application of live centers in case of high thrust and loading
- run-out deviation max.: 0.01 mm incl. insert
- easy exchange of changeable inserts using spanner flat and open-end wrench or Tommy bar
- maintenance-free, due to gasket system and life-time lubrication of bearings; gasket system comprising variable seal and steel comprehensive protection cover
- excellent demounting by means of extracting nut and extracting disk, which ensures safe and easy removal of the live center from the tailstock spindle sleeve

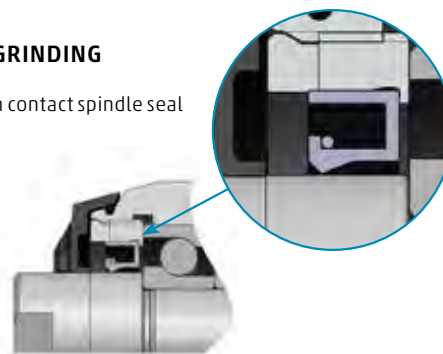
TYPE TURNING

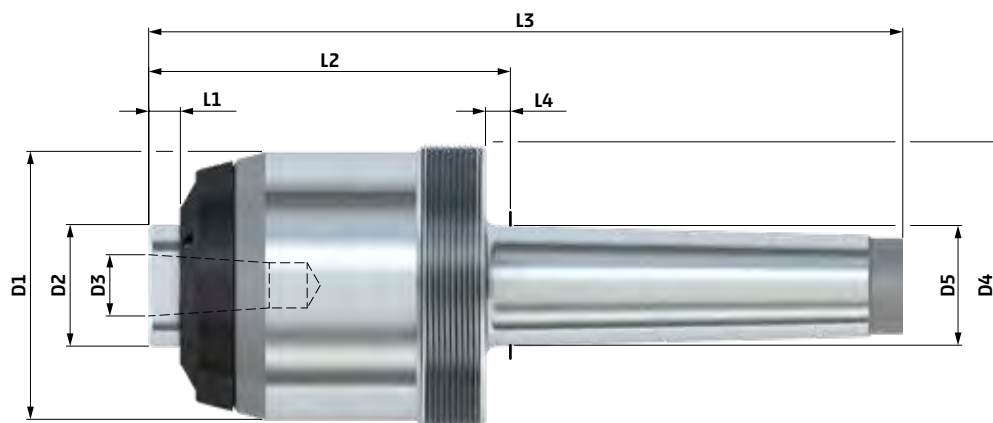
- with contact-free labyrinth seal



TYPE GRINDING

- with contact spindle seal



Technical data - type RNW with morse taper


type RNW	MK	D1	D2	D3	D4	D5	L1	L2	L3	L4	rpm max. [1/min]	TYPE TURNING	TYPE GRINDING
												cat. no.	cat. no.
3	3	55	22	16	M58 x 1.5	23.83	6.3	82	163	5	6000	815 01	815 0102
	4	55	22	16	M58 x 1.5	31.27	6.3	83.5	186	6.5	6000	815 02	815 0202
	5	55	22	16	M58 x 1.5	44.4	6.3	83.5	213	6.5	6000	815 03	815 0302
4	4	70	32	16	M75 x 1.5	31.27	8.3	94.5	197	6.5	5000	815 04	815 0402
	5	70	32	16	M75 x 1.5	44.4	8.3	94.5	224	6.5	5000	815 05	815 0502
5	5	92	45	22	M95 x 2	44.4	10.3	106.5	236	6.5	4000	815 06	815 0602
	6	92	45	22	M95 x 2	63.35	10.3	108	290	8	4000	815 07	815 0702
6	6	107	55	22	M110 x 2	63.35	10.3	120	302	8	3000	815 08	815 0802

- Run-out deviation max.: 0.01 mm incl. insert.
- Various changeable inserts of different designs, see page 148 - 149.
- Special inserts available upon customer's request.
- Extracting nuts and extracting disks see page 150 - 151 for accessories.
- Speed-dependent load see page 130.



Ultra Live Centers RNF / RNCF

spring loaded live center

NEIDLEIN ultra live centers type RNF are especially suitable for **employment in turrets, in manual tailstocks and in case of linear thermal extension of workpieces.**

The spring loaded, moving spindle and the engraved scale rings enable the adjustment and/or programming of various axial forces.

Type RNF with morse taper

0.003



Type RNCF with morse taper

» **extended tooling clearance**
for better access of machining tools

0.003

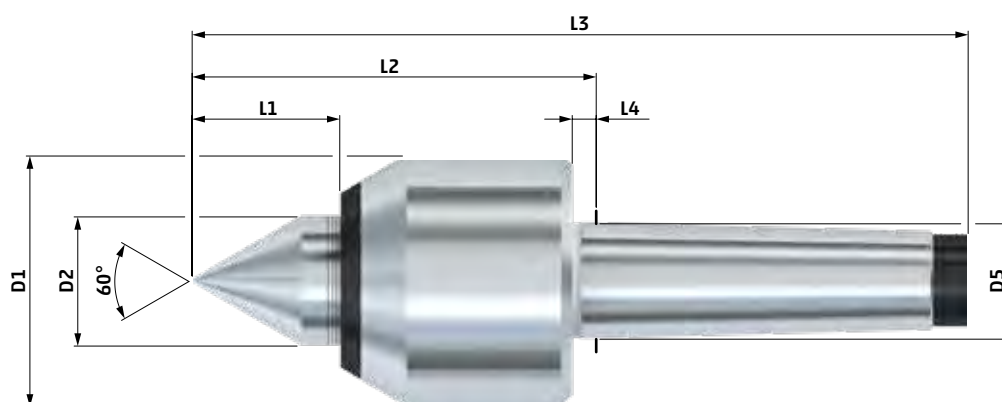


NEIDLEIN ultra live centers type RNF / RNCF ensure:

- employment of live centers in turrets and manual tailstocks when hydraulic systems cannot guarantee any repositioning
- compensation if there is a linear thermal extension of workpieces or if the extension is caused by the process of machining
- run-out deviation max.: 0.003 mm
- maintenance free, due to the gasket system and the lifetime lubrication filling of the bearing
- obtaining of the axial forces applied via scale rings as well as clarification of the force ranges on the outside of the housing

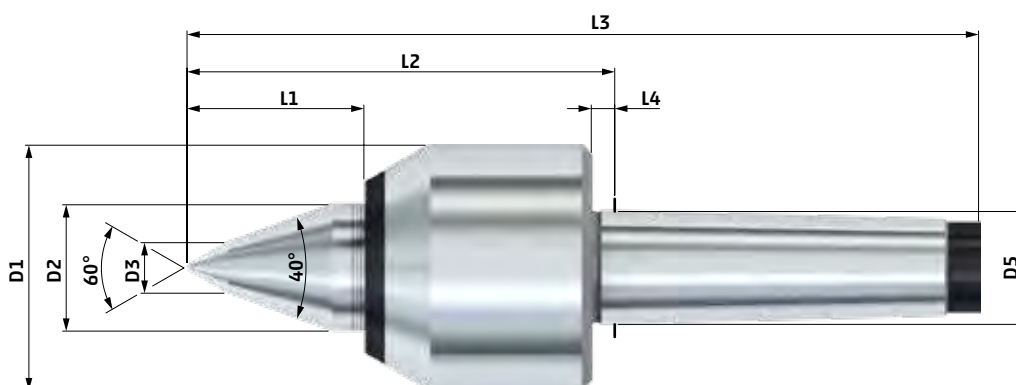


Example type RNF 4 MK4

Technical data - type RNF with morse taper

type RNF	MK	D1	D2	D3	D5	L1	L2	L3	L4	rpm max. [1/min]	cat. no.
3	3	55	25	-	23.83	28.5	84.5	165	5	4500	817 01
	4	55	25	-	31.27	28.5	86	185.5	6.5	4500	817 02
	5	55	25	-	44.4	28.5	86	215.5	6.5	4500	817 03
4	4	68	35	-	31.27	40	109.5	210.3	6.5	4000	817 04
	5	68	35	-	44.4	40	109.5	239	6.5	4000	817 05
5	5	92	50	-	44.4	53	138.5	268	6.5	3500	817 09

- Run-out deviation max.: 0.003 mm.
- Models with extraction thread or with special spindles are available upon customer's request.
- Load chart see page 131.

Technical data - type RNCF with morse taper

type RNCF	MK	D1	D2	D3	D5	L1	L2	L3	L4	rpm max. [1/min]	cat. no.
3	3	55	25	12	23.83	37	93	173.5	5	4500	818 01
	4	55	25	12	31.27	37	94.5	194	6.5	4500	818 02
	5	55	25	12	44.4	37	94.5	224	6.5	4500	818 03
4	4	68	35	14	31.27	49	118.5	219.3	6.5	4000	818 04
	5	68	35	14	44.4	49	118.5	248	6.5	4000	818 05
5	5	92	50	22	44.4	65	150.5	280	6.5	3500	818 09

- Run-out deviation max.: 0.003 mm.
- Models with extraction thread or with special spindles are available upon customer's request.
- Load chart see page 131.



Ultra Live Centers RNF / RNCF VDI

spring loaded live center with VDI retainer

NEIDLEIN ultra live centers type RNF/RNCF VDI are adapted in the tool turret and are **especially suited for CNC machines without tailstock or with sub spindle**.

The spring loaded, moving spindle and the engraved scale rings enable the adjustment and/or programming of various axial forces.

Type RNF with VDI retainer

0.003



Type RNCF with VDI retainer

» extended tooling clearance
for better access of machining tools

0.003



NEIDLEIN ultra live centers type RNF / RNCF VDI ensure:

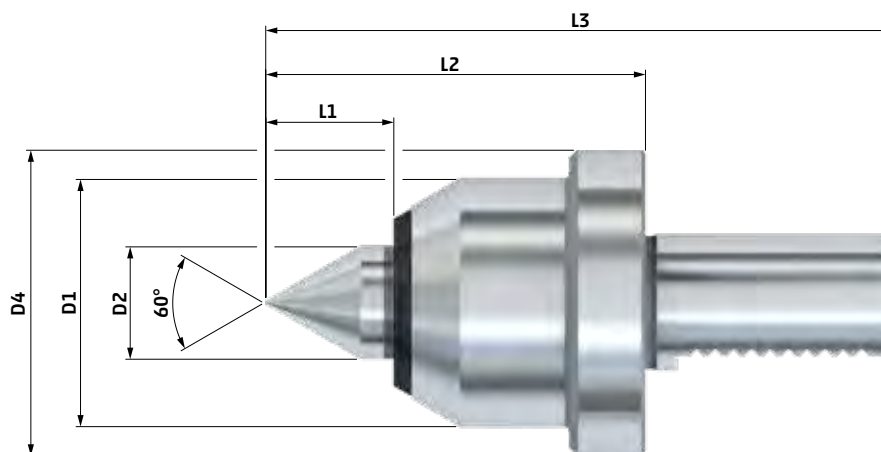
- employment of live centers in turrets when hydraulic systems cannot guarantee any repositioning
- compensation if there is a linear thermal extension of workpieces or if the extension is caused by the process of machining
- run-out deviation max.: 0.003 mm
- maintenance free, due to the gasket system and the lifetime lubrication filling of the bearing
- obtaining of the axial forces applied via scale rings as well as clarification of the force ranges on the outside of the housing



Example type RNF 4 VDI 40

Technical data – type RNF with VDI retainer

DIN ISO 10889-1

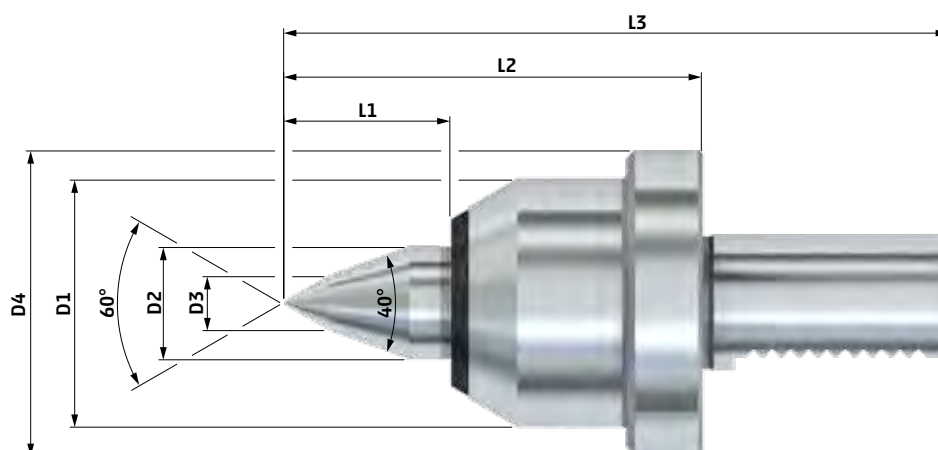


type RNF	VDI	D1	D2	D3	D4	L1	L2	L3	rpm max. [1/min]	cat. no.
3	30	55	25	-	68	28.5	84.5	139.5	4500	817 06
	40	55	25	-	83	28.5	84.5	147.5	4500	817 07
4	40	68	35	-	83	40	108	171	4000	817 08

- Run-out deviation max.: 0.003 mm.
- Load chart see page 131.

Technical data – type RNCF with VDI retainer

DIN ISO 10889-1



type RNCF	VDI	D1	D2	D3	D4	L1	L2	L3	rpm max. [1/min]	cat. no.
3	30	55	25	12	68	37	93	148	4500	818 06
	40	55	25	12	83	37	93	156	4500	818 07
4	40	68	35	14	83	49	117	180	4000	818 08

- Run-out deviation max.: 0.003 mm.
- Load chart see page 131.



Ultra Live Centers RNWF MK + VDI

spring loaded live center with morse taper and VDI retainer

NEIDLEIN ultra live centers type RNWF are especially suitable for **employment in turrets, in manual tailstocks and in case of linear thermal extension of workpieces.**

The spring loaded, moving spindle and the engraved scale rings enable the adjustment and/or programming of various axial forces.

Type RNWF with morse taper

the adaptation of various changeable inserts ensures a high degree of flexibility and saving of costs

↗ **0,01**
incl. insert



Type RNWF with VDI retainer

↗ **0,01**
incl. insert



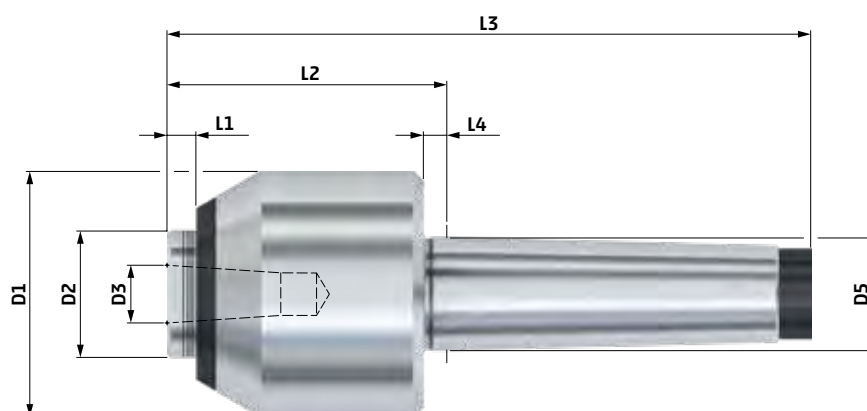
changeable inserts
see page 148-149

NEIDLEIN mitlaufende Hochleistungsrollspitzen Typ RNWF garantieren:

- employment of live centers in turrets and manual tailstocks when hydraulic systems cannot guarantee any repositioning
- compensation if there is a linear thermal extension of workpieces or if the extension is caused by the process of machining
- run-out deviation max.: 0.01 mm incl. insert
- easy exchange of changeable inserts using spanner flat and open-end wrench or Tommy bar
- maintenance free, due to the gasket system and the lifetime lubrication filling of the bearing
- obtaining of the axial forces applied via scale rings as well as clarification of the force ranges on the outside of the housing



Example
RNWF 4 MK4

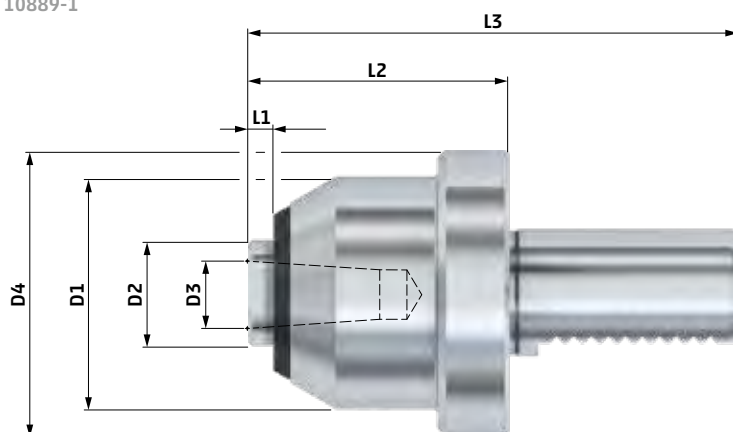
Technical data – type RNWF with morse taper

type RNWF	MK	D1	D2	D3	D5	L1	L2	L3	L4	rpm max. [1/min]	cat. no.
3	3	55	25	16	23.83	6	62	142.5	5	4500	818 15
	4	55	25	16	31.27	6	63.5	163	6.5	4500	818 16
	5	55	25	16	44.4	6	63	193	6.5	4500	818 17
4	4	68	35	16	31.27	8	77.5	178.3	6.5	4000	818 18
	5	68	35	16	44.4	8	77.5	207	6.5	4000	818 19
5	5	92	50	22	44.4	10	95.5	225	6.5	3500	818 20

- Run-out deviation max.: 0.01 mm with insert.
- Models with extraction thread or with special spindles are available upon customer's request.
- Load chart see page 131.
- Various changeable inserts of different designs, see page 148 - 149.

Technical data – type RNWF with VDI retainer

DIN ISO 10889-1



type RNWF	VDI	D1	D2	D3	D4	L1	L2	L3	rpm max. [1/min]	cat. no.
3	3	55	25	16	68	6	62	117	4500	818 21
	4	55	25	16	83	6	62	125	4500	818 22
4	4	68	35	16	83	8	76	139	4000	818 23

- Run-out deviation max.: 0.01 mm with insert.
- Load chart see page 131.
- Various changeable inserts of different designs, see page 148 - 149.



Ultre Live Centers RNS / RNCS

especially for grinding operations

NEIDLEIN ultra live centers type RNS / RNCS are **especially suited for the use in grinding and other production machine tools.**

By the specific arrangement of the bearings, the design of the live centers is very short and also the live centers can be

used for precise clamping of heavy workpieces with high axial forces. Therefore they are ideal for every use, especially in combination with face drivers.

Type RNS with morse taper


0.003


with carbide tip
for hardened workpieces
and high production quantities

NEIDLEIN ultra live centers RNS / RNCS ensure:

- short projection length
- run-out deviation max.: 0.003 mm
- high true run accuracy even when using low axial forces
- application of live centers in case of high axial and radial loads
- maintenance free, due to the gasket system and the lifetime lubrication of the bearings
- easy and safe removal by means of extracting nut and extracting disk

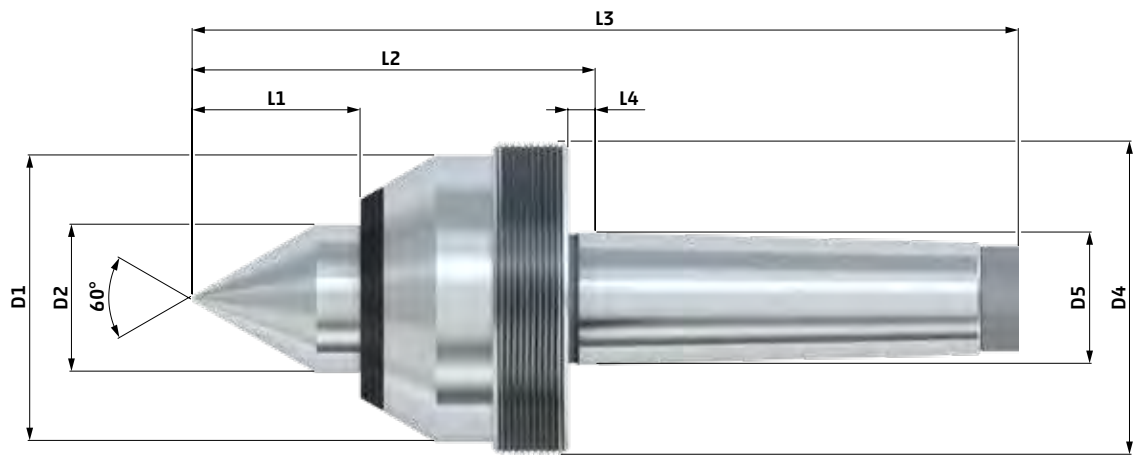
Type RNCS with morse taper

» **extended tooling clearance**
for better access of machining tools

**0.003**

with carbide tip
for hardened workpieces
and high production quantities

Technical data – type RNS with morse taper

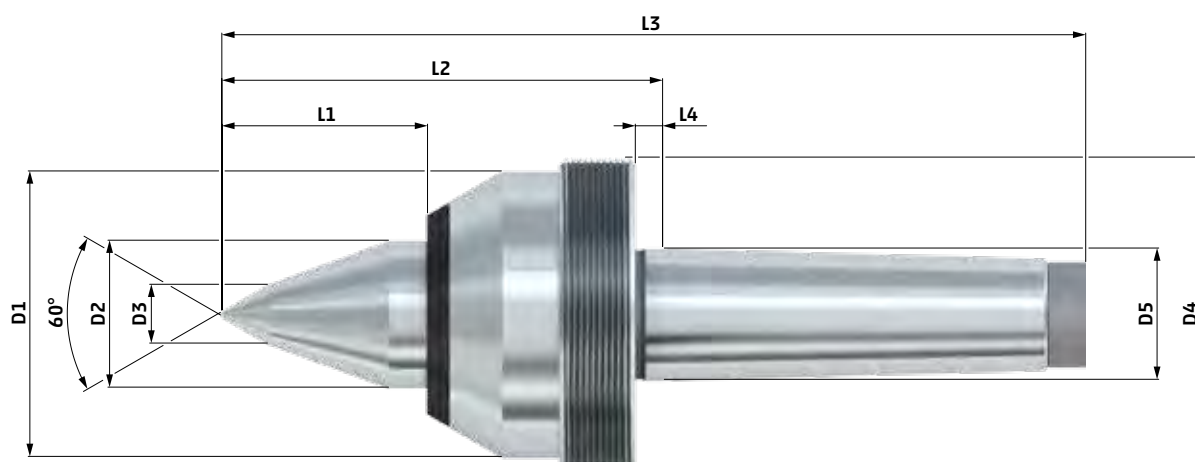


type caride tip



											TYPE TOOL STEEL	TYPE CARBIDE
type RNS	MK	D1	D2	D4	D5	L1	L2	L3	L4	rpm max. [1/min]	cat. no.	cat. no.
1	2	34	18	M36 x 1.5	17.78	20	61	125	5	6000	818 97	818 9706
	3	34	18	M36 x 1.5	23.83	20	61	142	5	6000	818 98	818 9806
2	3	42	22	M48 x 1.5	23.83	25	72	152.5	5	5500	818 99	818 9906
	4	42	22	M48 x 1.5	31.27	25	73.5	173	6.5	5500	819 00	819 0006
3	3	55	25	M58 x 1.5	23.83	28	74.5	155	5	4500	819 01	819 0106
	4	55	25	M58 x 1.5	31.27	28	76	175.5	6.5	4500	819 02	819 0206
	5	55	25	M58 x 1.5	44.4	28	76	205.5	6.5	4500	819 03	819 0306
4	4	68	35	M75 x 1.5	31.27	40	96	197	6.5	4000	819 04	819 0406
	5	68	35	M75 x 1.5	44.4	40	96	225.5	6.5	4000	819 05	819 0506
5	5	92	50	M95 x 2	44.4	53	119	248.5	6.5	3600	819 06	819 0606

- Run-out deviation max.: 0.003 mm.
- Extracting nuts and extracting disks see page 150 - 151 for accessories.
- Load chart see page 132.

Technical data – type RNCS with morse taper

type caride tip



LIVE CENTERS · DEAD CENTERS

**TYPE
TOOL STEEL****TYPE
CARBIDE**

type RNCS	MK	D1	D2	D3	D4	D5	L1	L2	L3	L4	rpm max. [1/min]	cat. no.	cat. no.
1	2	34	18	6	M36 x 1.5	17.78	26	67	131	5	6000	819 17	819 1706
	3	34	18	6	M36 x 1.5	23.83	26	67	148	5	6000	819 18	819 1806
2	3	42	22	10	M48 x 1.5	23.83	29	76	156.5	5	5000	819 19	819 1906
	4	42	22	10	M48 x 1.5	31.27	29	77.5	177	6.5	5000	819 20	819 2006
3	3	55	25	12	M58 x 1.5	23.83	37	83.5	164	5	4500	819 21	819 2106
	4	55	25	12	M58 x 1.5	31.27	37	85	186.5	6.5	4500	819 22	819 2206
	5	55	25	12	M58 x 1.5	44.4	37	85	214.5	6.5	4500	819 23	819 2306
4	4	68	35	14	M75 x 1.5	31.27	49	105.5	206	6.5	4000	819 24	819 2406
	5	68	35	14	M75 x 1.5	44.4	49	105	234.5	6.5	4000	819 25	819 2506
5	5	92	50	22	M95 x 2	44.4	65	131	260.5	6.5	3600	819 26	819 2606

■ Run-out deviation max.: 0.003 mm.

■ Extracting nuts and extracting disks see page 150 - 151 for accessories.

■ Load chart see page 132.

Load Charts for Live Centers

TYPE RN tool steel and with full carbide tip

TYPE RNC / RNA tool steel

type	rpm [1/min]	typ of load	load [daN]	max. load [daN]	max. workpiece weight [daN]
3	250	radial	110	110	220
	500		90		
	1000		70		
	2000		50		
	4000		30		
	6000		10		
	250	axial	600	600	
	500		600		
	1000		600		
	2000		500		
	4000		400		
	6000		350		
4	250	radial	250	250	500
	500		210		
	1000		170		
	2000		120		
	3500		70		
	5000		20		
	250	axial	900	900	
	500		900		
	1000		700		
	2000		600		
	3500		500		
	5000		500		
5	250	radial	600	600	1200
	500		520		
	1000		420		
	2000		310		
	3000		200		
	4000		50		
	250	axial	1500	1500	
	500		1400		
	1000		1300		
	2000		1100		
	3000		900		
	4000		700		
6	250	radial	750	750	1500
	500		650		
	1000		520		
	2000		360		
	3000		200		
	250	axial	2000	2000	
	500		2000		
	1000		1600		
	2000		1400		
	3000		1200		

- The max. load is based on a bearing service life of approx. min. 2000 operating hours.
- Higher loads are possible for short periods.

TYPE RN with half carbide tip

TYPE RNC with carbide tip

type	rpm [1/min]	typ of load	load [daN]	max. load [daN]	max. workpiece weight [daN]
3	250	radial	75	75	150
	500		65		
	1000		55		
	2000		40		
	4000		25		
	6000		10		
	250	axial	600	600	
	500		600		
	1000		600		
	2000		500		
	4000		400		
	6000		350		
4	250	radial	150	150	300
	500		130		
	1000		110		
	2000		85		
	3500		60		
	5000		20		
	250	axial	900	900	
	500		900		
	1000		700		
	2000		600		
	3500		500		
	5000		500		
5	250	radial	300	300	600
	500		250		
	1000		200		
	2000		150		
	3000		100		
	4000		40		
	250	axial	1500	1500	
	500		1400		
	1000		1300		
	2000		1100		
	3000		900		
	4000		700		
6	250	radial	450	450	900
	500		380		
	1000		300		
	2000		220		
	3000		120		
	250	axial	2000	2000	
	500		2000		
	1000		1600		
	2000		1400		
	3000		1200		

- The max. load is based on a bearing service life of approx. min. 2000 operating hours.
- Higher loads are possible for short periods.

TYPE RK

type	rpm [1/min]	typ of load	load [daN]	max. load [daN]	max. workpiece weight [daN]
3	500	radial	150	150	300
	1000		110		
	2000		70		
	3000		30		
	500	axial	600	600	
	1000		550		
	2000		400		
	3000		300		
4	500	radial	400	400	800
	1000		300		
	1800		200		
	2500		100		
	500	axial	1000	1000	
	1000		800		
	1800		700		
	2500		600		
5	250	radial	1500*	1500*	3000*
	500		1000*		
	1000		600*		
	1500		300		
	250	axial	2500	2500	
	500		2500		
	1000		2000		
	1500		1500		
6	250	radial	2500**	2500**	5000**
	500		2000**		
	800		1500**		
	1200		1000		
	250	axial	3500	3500	
	500		3000		
	800		2500		
	1200		2000		

- The max. load is based on a bearing service life of approx. min. 2000 operating hours.
- Higher loads are possible for short periods.
- * In version MK4 the max. radial load is 400daN (=work piece weight 800daN) and in version MK5 the max. radial load is 1000daN (=work piece weight 2000daN)
- ** in version MK5 the max. radial load is 1000daN (=work piece weight 2000daN)

TYPE RKA

type	rpm [1/min]	typ of load	load [daN]	max. load [daN]	max. workpiece weight [daN]
6 MK5	250	radial	1000*	1000	2000
	500		850*		
	1000		700*		
	1500		500*		
	2000		300*		
	250	axial	2000	2000	
	500		2000		
	1000		1600		
	1500		1400		
	2000		1000		
6 MK6	250	radial	1250*	1250	2500
	500		1100*		
	1000		900*		
	1500		650*		
	2000		350*		
	250	axial	2000	2000	
	500		2000		
	1000		1600		
	1500		1400		
	2000		1000		

- The max. load is based on a bearing service life of approx. min. 2000 operating hours.
- Higher loads are possible for short periods.
- * When just using the basic retainer for work piece clamping (up to σ 115) the declared loads must be reduced by 50%.

Load Charts for Live Centers

TYPE RNW tool steel

type	rpm [1/min]	typ of load	load [daN]	max. load [daN]	max. workpiece weight [daN]
3	250	radial	110	110	220
	500		90		
	1000		70		
	2000		50		
	4000		30		
	6000		10		
	250	axial	600	600	
	500		600		
	1000		600		
	2000		500		
	4000		400		
	6000		350		
4	250	radial	150	150	300
	500		130		
	1000		110		
	2000		90		
	3500		70		
	5000		20		
	250	axial	900	900	
	500		900		
	1000		700		
	2000		600		
	3500		500		
	5000		500		
5	250	radial	325	325	650
	500		280		
	1000		250		
	2000		200		
	3000		160		
	4000		50		
	250	axial	1200	1200	
	500		1200		
	1000		1200		
	2000		1100		
	3000		900		
	4000		700		
6	250	radial	325	325	650
	500		280		
	1000		250		
	2000		200		
	3000		160		
	250	axial	1200	1200	
	500		1200		
	1000		1200		
	2000		1200		
	3000		1200		

- The max. load is based on a bearing service life of approx. min. 2000 operating hours.
- Higher loads are possible for short periods.

TYPE RNF / RNCF

type	rpm [1/min]	typ of load	load [daN]	max. load [daN]	max. workpiece weight [daN]
3	250	radial	150	150	300
	500		130		
	1000		105		
	1800		80		
	3000		50		
	4500		15		
	250	axial	650	650	
	500		550		
	1000		450		
	1800		400		
	3000		330		
	4500		250		
4	250	radial	350	350	700
	500		300		
	1000		250		
	1800		190		
	2800		110		
	4000		40		
	250	axial	800	800	
	500		700		
	1000		600		
	1800		500		
	2800		400		
	4000		300		
5	250	radial	650	650	1300
	500		540		
	900		420		
	1600		290		
	2400		160		
	3500		60		
	250	axial	1350	1350	
	500		1200		
	900		1000		
	1600		800		
	2400		700		
	3500		600		

- The max. load is based on a bearing service life of approx. min. 2000 operating hours.
- Higher loads are possible for short periods.

TYPE RNWF

type	rpm [1/min]	typ of load	load [daN]	max. load [daN]	max. workpiece weight [daN]
3	250	radial	75	75	150
	500		65		
	1000		50		
	1800		40		
	3000		30		
	4500		15		
	250	axial	650	650	
	500		550		
	1000		450		
	1800		400		
	3000		330		
	4500		250		
4	250	radial	175	175	350
	500		150		
	1000		130		
	1800		110		
	2800		85		
	4000		40		
	250	axial	800	800	
	500		700		
	1000		600		
	1800		500		
	2800		400		
	4000		300		
5	250	radial	325	325	650
	500		280		
	900		250		
	1600		200		
	2400		160		
	3500		60		
	250	axial	1350	1350	
	500		1200		
	900		1000		
	1600		800		
	2400		700		
	3500		600		

- The max. load is based on a bearing service life of approx. min. 2000 operating hours.
- Higher loads are possible for short periods.

TYPE RNS tool steel and with carbide tip
TYPE RNCS tool steel

type	rpm [1/min]	typ of load	load [daN]	max. load [daN]	max. workpiece weight [daN]
1	250	radial	50	50	100
	500		40		
	1000		30		
	2000		20		
	3900		10		
	6000		5		
	250	axial	250	250	
	500		200		
	1000		180		
	2000		160		
	3900		130		
	6000		120		
2	250	radial	125	125	250
	500		105		
	1000		85		
	2000		60		
	3500		35		
	5500		10		
	250	axial	380	380	
	500		320		
	1000		280		
	2000		260		
	3500		190		
	5500		100		
3	250	radial	150	150	300
	500		130		
	1000		105		
	2000		80		
	3200		50		
	4500		15		
	250	axial	550	550	
	500		450		
	1000		400		
	2000		330		
	3200		250		
	4500		200		
4	250	radial	350	350	700
	500		300		
	1000		250		
	1800		190		
	2800		110		
	4000		40		
	250	axial	800	800	
	500		700		
	1000		600		
	1800		500		
	2800		400		
	4000		300		
5	250	radial	650	650	1300
	500		540		
	1000		420		
	1700		290		
	2500		160		
	3600		60		
	250	axial	1400	1400	
	500		1350		
	1000		1100		
	1700		900		
	2500		700		
	3600		600		

- The max. load is based on a bearing service life of approx. Min. 2000 operating hours.
- Higher loads are possible for short periods.

TYPE RNCS with carbide tip

type	rpm [1/min]	typ of load	load [daN]	max. load [daN]	max. workpiece weight [daN]
1	250	radial	25	25	50
	500		22		
	1000		18		
	2000		15		
	3900		10		
	6000		5		
	250	axial	250	250	
	500		200		
	1000		180		
	2000		160		
	3900		130		
	6000		120		
2	250	radial	50	50	100
	500		45		
	1000		40		
	2000		30		
	3900		20		
	6000		8		
	250	axial	380	380	
	500		320		
	1000		280		
	2000		260		
	3500		190		
	5500		100		
3	250	radial	100	100	200
	500		90		
	1000		75		
	2000		60		
	3200		40		
	4500		12		
	250	axial	550	550	
	500		450		
	1000		400		
	2000		330		
	3200		250		
	4500		200		
4	250	radial	150	150	300
	500		130		
	1000		110		
	1800		80		
	2800		50		
	4000		15		
	250	axial	800	800	
	500		700		
	1000		600		
	1800		500		
	2800		400		
	4000		300		
5	250	radial	300	300	600
	500		260		
	1000		210		
	1700		150		
	2500		90		
	3600		30		
	250	axial	1500	1500	
	500		1350		
	1000		1100		
	1700		900		
	2500		700		
	3600		600		

- The max. load is based on a bearing service life of approx. Min. 2000 operating hours.
- Higher loads are possible for short periods.

Dead Centers FN / FNC / FNZ

for general use



For rotating and fixed tailstock spindle sleeve. Designed for employment **in turning, grinding and other production machines.**

Type FN with morse taper

» can be reground



0.002



Type FNC with morse taper

» extended tooling clearance
for better access of machining tools



0.002



- Run-out deviation max.: 0.002 mm.
- Made of fully hardened tool-steel.
- All types with extracting thread to prevent spindle ball bearings or solid spindle sleeves from damage.
- Extracting nuts DIN 807, see page 151.
- Max. load of the dead centers upon request.
- Special design upon request.

Type FNZ with morse taper

» can be reground

for general use with extended length for better tool clearance

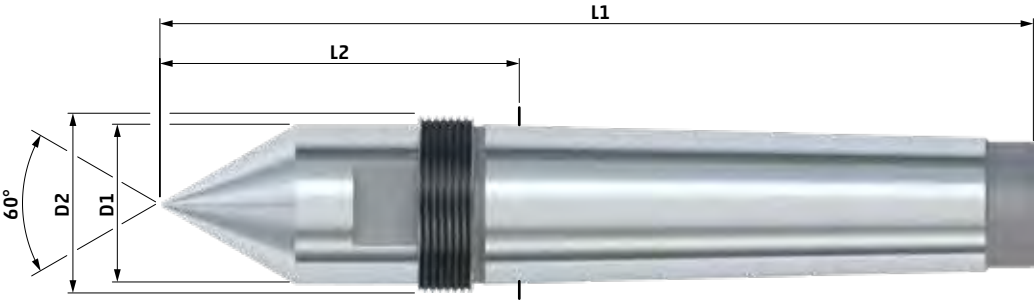


0,002



- Run-out deviation max.: 0.002 mm.
- Made of fully hardened tool-steel.
- With cylindrical set down and extended length for better tool clearance
- All types with extracting thread to prevent spindle ball bearings or solid spindle sleeves from damage.
- Extracting nuts DIN 807, see page 151.
- Max. load of the dead centers upon request.
- Special design upon request.

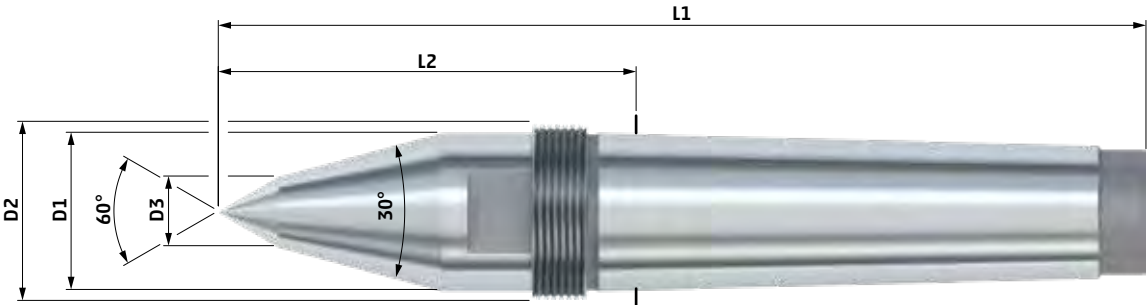
Technical data – type **FN** with morse taper



TYPE **FN**

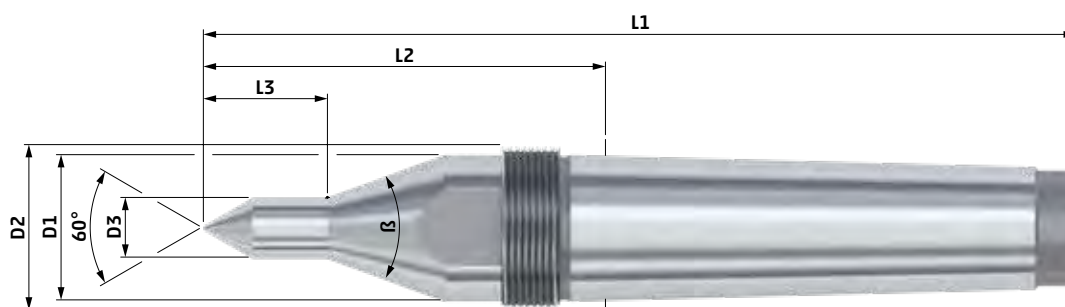
MK	D1	D2	D3	L1	L2	cat. no.
3	24	M27 x 1.5	-	138	57	920 01
4	32	M36 x 1.5	-	175	72	920 02
5	45	M48 x 1.5	-	217	87	920 03
6	64	M68 x 1.5	-	290	108	920 04

Technical data – type **FNC** with morse taper



TYPE **FNC**

MK	D1	D2	D3	L1	L2	cat. no.
3	24	M27 x 1.5	10	148	67	921 01
4	32	M36 x 1.5	14	187	84	921 02
5	45	M48 x 1.5	16	242	112	921 03
6	64	M68 x 1.5	20	330	148	921 04

Technical data – type FNZ with morse taper**TYPE FNZ**

MK	D1	D2	D3	L1	L2	L3	β	cat. no.
2	18	M22x1.5	9	120	56	17	40	921 10
	18	M22x1.5	11	120	56	21	40	921 11
3	24	M27x1.5	9	150	69	17	40	921 12
	24	M27x1.5	13	150	69	25	40	921 13
4	31.6	M36x1.5	9	190	87.5	17	40	921 14
	31.6	M36x1.5	13	190	87.5	27	40	921 15
	31.6	M36x1.5	19	190	87.5	53	90	921 16
5	44.7	M48x1.5	19	245	115	53	40	921 17
	44.7	M48x1.5	28	245	115	65	60	921 18



Dead Center Shanks FNA / FNW

high flexibility at different workpiece center holes

Type FNA with morse taper

» for large workpiece centers

high degree of flexibility for clamping of workpieces with large centers



0.01

incl. center cone



changeable center cones
see page 146

- Run-out deviation max.: 0.01 mm incl. center cone.
- Different types of center cones from Ø 25 to Ø 315, see page 146.
- Special center cones up to Ø 400 available upon customer's request.
- Extracting nuts DIN 807, see page 151.
- Max. load of the dead centers upon request.

Type FNW with morse taper

» maximum flexibility

the adaptation of various changeable inserts ensures a high degree of flexibility and saving of costs



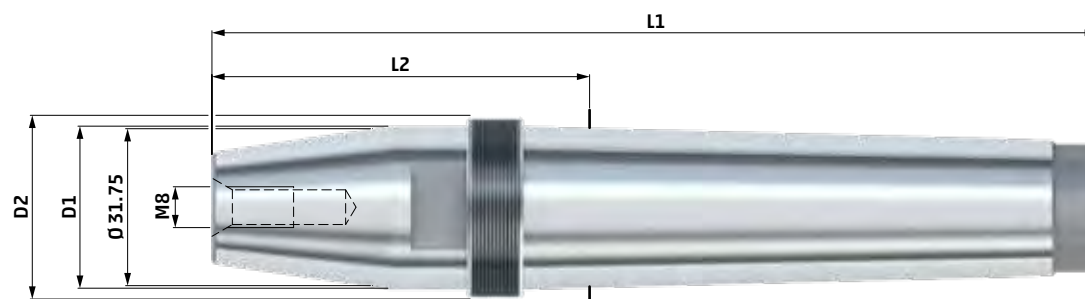
0.01

incl. insert

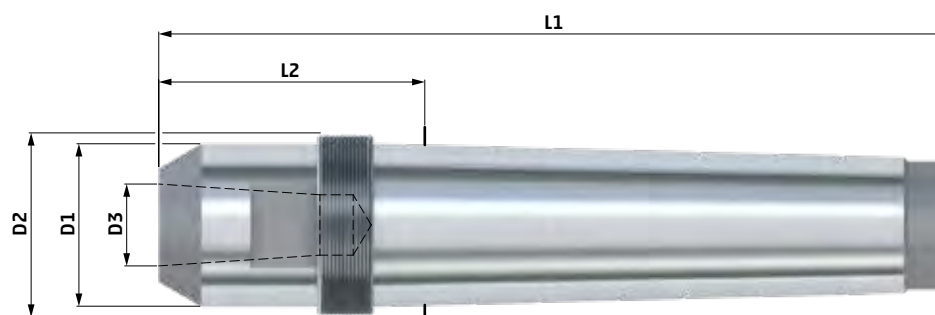


changeable inserts
see page 148 - 149

- Run-out deviation max.: 0.01 mm incl. insert.
- Various changeable inserts of different designs, see page 148 - 149.
- Special inserts available upon customer's request.
- True running accuracy at center cone: max. 0.01
- Extracting nuts, see page 151 for accessories.
- Max. load of the dead centers upon request.

Technical data – type FNA with morse taper**TYPE FN**

MK	D1	D2	D3	L1	L2	cat. no.
3	32	M27 x 1.5	-	149	68	922 01
4	32	M36 x 1.5	-	173.5	71	922 02
5	45	M48 x 1.5	-	202.5	73	922 03
6	64	M68 x 1.5	-	263.5	81.5	922 04

Technical data – type FNW with morse taper**TYPE FNC**

MK	D1	D2	D3	L1	L2	cat. no.
3	24	M27 x 1.5	16	121	40	923 01
4	32	M36 x 1.5	16	154.5	52	923 02
5	45	M48 x 1.5	22	190	60	923 03
6	64	M68 x 1.5	22	252	70	923 04

Carbide Dead Centers DIN 806



for hardened workpieces

To be applied with hardened workpieces. For headstocks and fixed tailstock spindle sleeves. Designed for employment in grinding and other production machines.

Type DIN 806 · model E



with full carbide tip



0.002



with half carbide tip



Type DIN 806 · model HE



flattened with half carbide tip



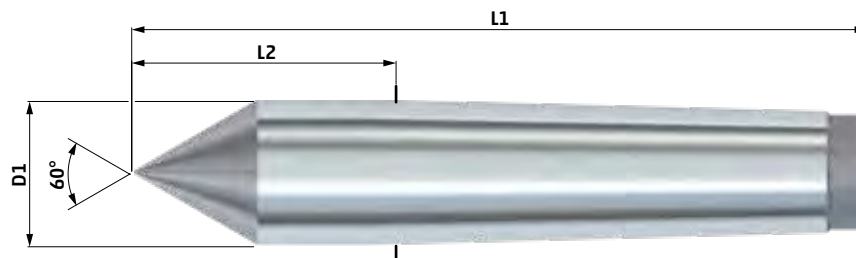
0.002



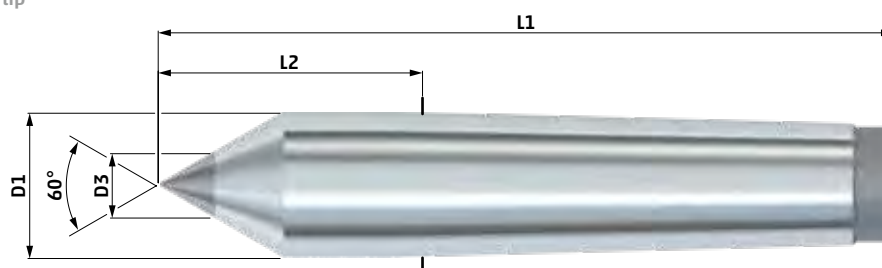
- Run-out deviation max.: 0.002 mm.
- With carbide insert.
- Max. load of the dead centers upon request.
- Special design upon request.

Technical data – type DIN 806 · model E/HE

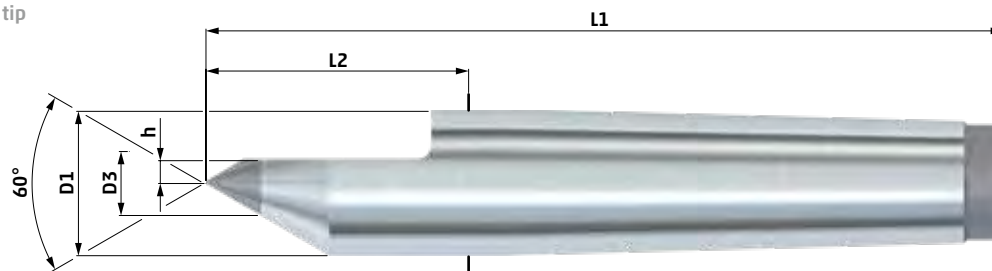
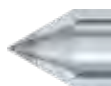
similar to DIN 806 · model E
with full carbide tip



model E
with half carbide tip



model HE
flattened with
half carbide tip

**MODEL E****MODEL HE**

MK	D1	L1	L2
1	12.2	80	26.5
2	18	100	36
3	24.1	125	44
4	31.6	160	57.5
5	44.7	200	70.5
6	63.8	270	88

cat. no.**910 02****910 05****910 08****910 11****910 14****910 18****D3 cat. no.**7 **910 01**7 **910 03**11 **910 06**14 **910 09**18 **910 12**18 **910 15****D3 h cat. no.**7 1.5 **911 01**7 2 **911 02**11 3 **911 04**14 5 **911 06**18 7 **911 08**18 10 **911 10**

Carbide Dead Centers DIN 807



type with extraction screw thread for hardened workpieces

With extraction screw thread

Dead centers according to DIN 807 are designed with an extraction thread. This serves to protect the spindle bearings and is necessary for use in non-drilled sleeves.

Type DIN 807 · model E



with full carbide tip



0.002



Type DIN 807 · model HE



flattened with half carbide tip



0.002



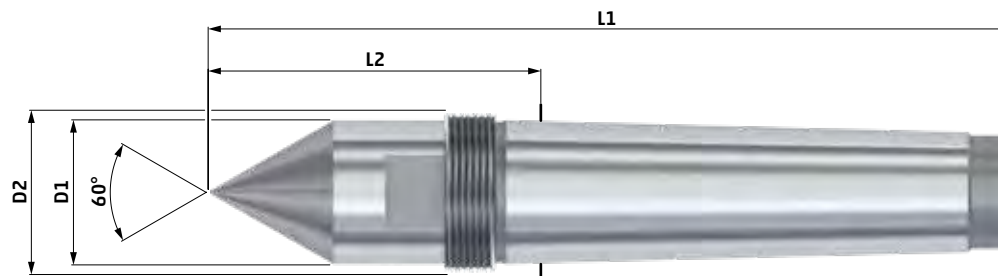
with half carbide tip



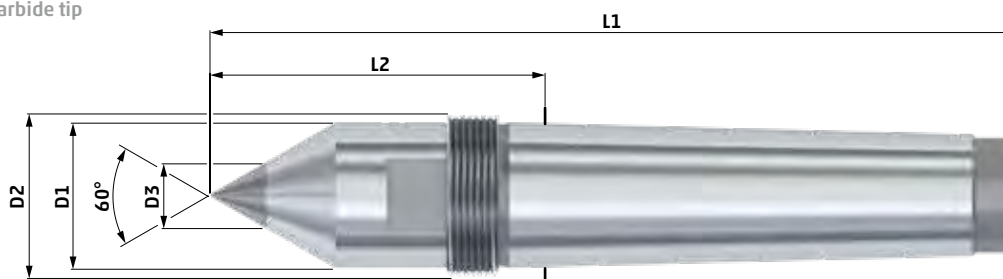
- Run-out deviation max.: 0.002 mm.
- With carbide insert.
- Max. load of the dead centers upon request.
- Special design upon request.
- For demounting and for preventing the spindle bearing from damage of for spindle sleeves which have no through bore the center pins come with an extracting screw thread.
- Extracting nuts DIN 807, see page 151.
- Available with wrench flat upon request.

Technical data – Type DIN 807 · Model E / HE

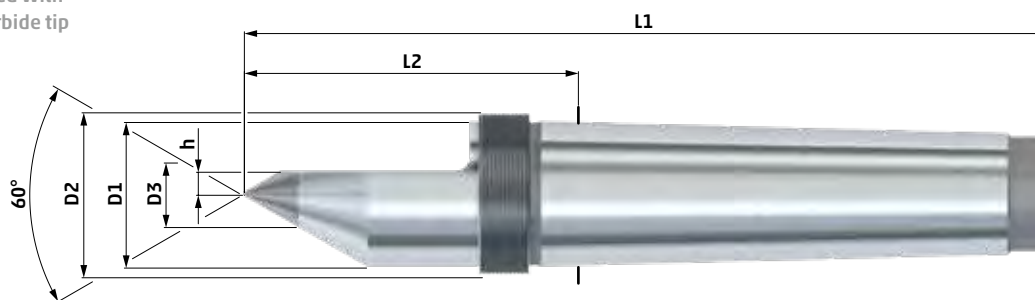
similar to DIN 807 · model E
with full carbide tip



model E
with half carbide tip



model HE
flattened with
half carbide tip

**MODEL E****MODEL HE**

MK	D1	D2	L1	L2
1	12.2	M16 x 1.5	90	36.5
2	18	M22 x 1.5	112	48
3	24.1	M27 x 1.5	138	57
4	31.6	M36 x 1.5	175	72.5
5	44.7	M48 x 1.5	217	87.5
6	63.8	M68 x 1.5	290	108

cat. no.
912 02
912 05
912 08
912 11
912 14
912 18

D3	cat. no.
7	912 01
7	912 03
11	912 06
14	912 09
18	912 12
18	912 15

D3	h	cat. no.
7	1.5	913 01
7	2	913 03
11	3	913 06
14	5	913 09
18	7	913 12
18	10	913 15

Dead centers FE / FEC



For use in EMAG machines with taper 1:7.5

For use in **EMAG turning-, grinding- and other production machines**

Type FE taper 1:7,5

» can be reground



0,002



Type FEC taper 1:7,5

» extending tool clearance
for better access of the machining tool



0,002



- Run- out deviation max.: 0.002mm
- Made of through hardened tool steel
- All types with extracting thread to prevent spindle bearings and solid spindle sleeves from damage
- Extracting nuts see page 151 for accessories
- Max. load of the dead centers upon request
- Special design upon request

Type FE carbide taper 1:7,5



0,002



with full carbide tip



Type FEC carbide taper 1:7,5

» extending tooling clearance
for better access of machining tool



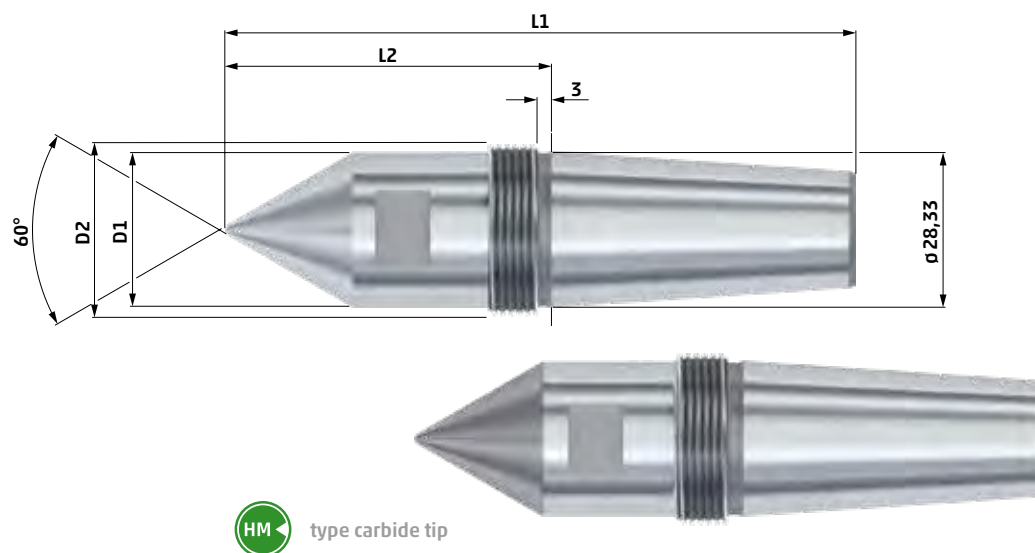
0,002



with half carbide tip

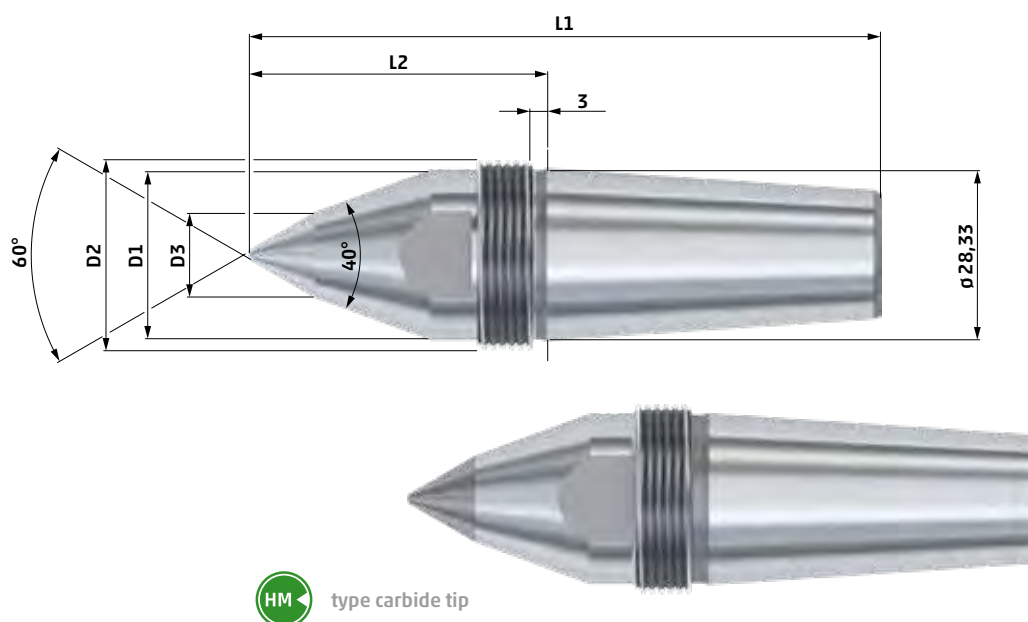


- Run- out deviation max.: 0.002mm
- With carbide insert
- Max. load of the dead centers upon request
- Special design upon request
- All types with extracting thread to prevent spindle bearings and solid spindle sleeves from damage
- Extracting nuts see page 151 for accessories

Technical data - type FE / FE HM taper 1:7.5

type	D1	D2	D3	L1	L2	cat. no.
FE	28	M32x1,5	-	115	60	914 03

type	cat. no.
FE carbide	914 13

Technische Daten - Typ FEC / FEC HM Kegel 1:7,5

type	D1	D2	D3	L1	L2	cat. no.
FEC	28	M32x1.5	8	105	50	914 01
FEC	28	M32x1.5	14	105	50	914 02

type	cat. no.
FEC carbide	914 11
FEC carbide	914 12



Carbide Bull Nose Cone FNK

for hardened workpieces

Our carbide bull nose cones FNK are made for hardened workpieces, with big center holes, for grinding and other manufacturing machines. For headstocks and fixed tailstock spindle sleeves.

Type FNK



mushroom carbide bull nose



0,002



- Run-out deviation max.: 0,002mm.
- With carbide insert.

Upon request:

- Max. load of the bull nose cone.
- Special designs.

with extraction screw thread for hardened workpieces

FNK bull nose cones are made with extraction screw thread. This serves to protect the spindle bearings and is used for sleeves that are non-drilled.

Type FNK with extraction screw thread



mushroom carbide bull nose



0,002

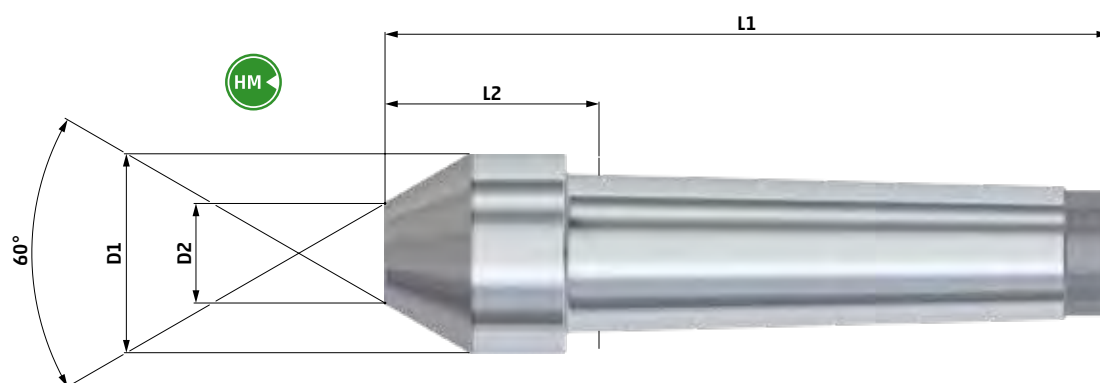


- Run-out deviation max.: 0,002mm.
- With carbide insert.
- With spanner flat.
- All types with extraction screw threads for protecting the spindle bearings or for non-drilled sleeves.
- Extracting nuts see page 151 for accessories.

Upon request:

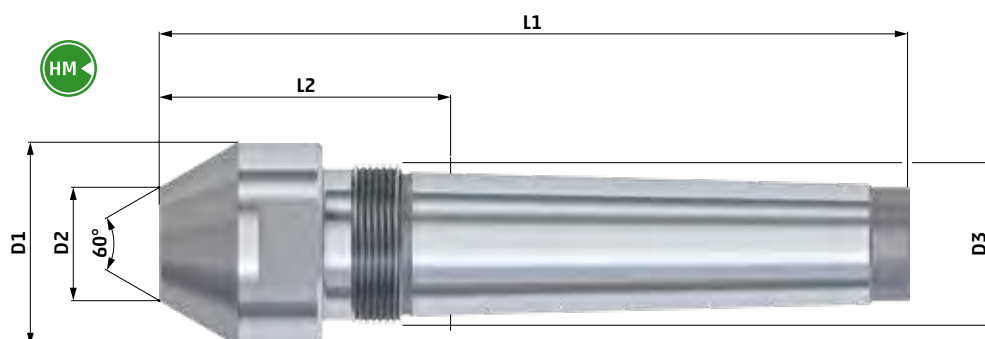
- Max. load of the bull nose cone.
- Special design.

Technical data - type FNK



MK	D1	D2	D3	L1	L2	cat. no.
2	30	10	-	100.5	36.5	915 01
2	40	20	-	103.5	39.5	915 03
2	50	30	-	108.5	44.5	915 05
3	30	10	-	118.5	37.5	915 06
3	35	15	-	121.5	40.5	915 07
3	40	20	-	121.5	40.5	915 08
3	45	25	-	121.5	40.5	915 09
3	55	35	-	126.5	45.5	915 11
3	70	50	-	131.5	49.5	915 13
4	40	20	-	145.5	43	915 17
4	50	30	-	150.5	48	915 19
4	60	40	-	155.5	53	915 21
4	70	50	-	155.5	53	915 22
4	80	60	-	155.5	53	915 23
5	55	35	-	175	48	915 29
5	60	40	-	180	53	915 30
5	70	50	-	180	53	915 31
5	80	60	-	180	53	915 32

Technical data - type FNK with extraction screw thread



MK	D1	D2	D3	L1	L2	cat. no.
3	35	15	M27 x 1.5	134.5	57	915 071
3	50	30	M27 x 1.5	138.5	61	915 101
4	45	25	M36 x 1.5	167	64.5	915 181
4	60	40	M36 x 1.5	168	65.5	915 211
5	55	35	M48 x 1.5	197	67.5	915 291
5	70	50	M48 x 1.5	199	69.5	915 311

Changeable Center Cones for type RNA / FNA

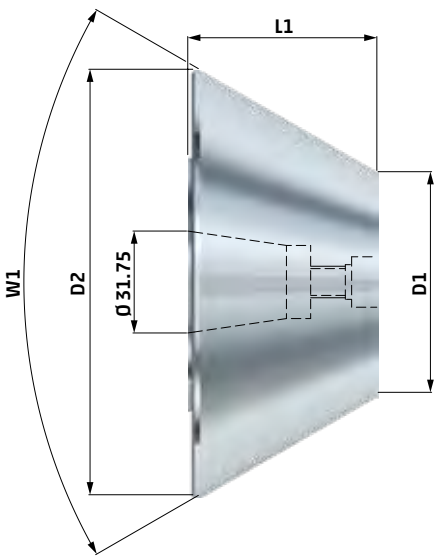
center cones for large workpiece centers

High degree of flexibility for clamping of workpieces with large centers.

For type RNA / FNA with SK30 interface



Technical data - for type RNA / FNA with SK30 interface



- Suitable for live centers type RNA on page 110 - 111 and for dead centers type FNA on page 136 - 137.
- Special cones up to Ø 400 available upon customer's request.
- The center cones are fastened with a screw M8 DIN 912 onto the base body.
- The center cones can be drawn off with a screw M10.

FOR TYPE RNA / FNA

W1	D1	D2	L	cat. no.
60	20	85	60	814 50
60	70	135	60	814 51
60	120	185	60	814 52
60	170	235	60	814 53
60	220	285	60	814 54
75	20	105	60	814 55
75	90	175	60	814 56
75	160	245	60	814 57
75	230	315	60	814 58
90	20	130	60	814 59
90	100	210	60	814 60
90	180	290	60	814 61

Changeable Center Cones for type RKA

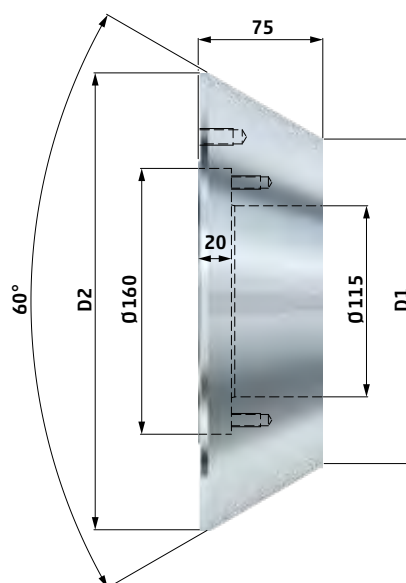
center cones for large workpiece centers

Workpieces with large center holes from Ø120 to Ø460 are clamped with a basic retainer and a changeable center cone.

for type RKA · centering taper



Technical data – for type RKA · centering taper



- Suitable for live center type RKA on page 114 - 115.
- Special changeable center cones (90° / 75° / various diameters) available upon customer's request.
- True run-out accuracy max 0.02 at changeable center cone is guaranteed.

FOR TYPE RKA

D1	D2	cat. no.
113	220	814 80
195	275	814 81
270	350	814 82
345	425	814 83
380	460	814 84

Changeable Inserts for type RNW / FNW

Changeable inserts for a maximum of flexibility

The adaptation of various changeable inserts ensures a high degree of flexibility and saving of costs.

For type RNW / FNW with taper interface

model B



model G



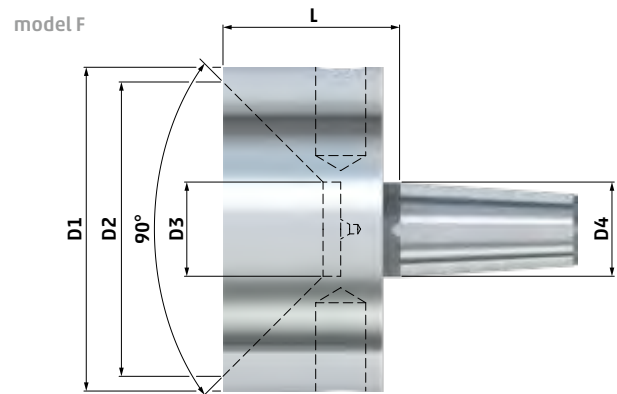
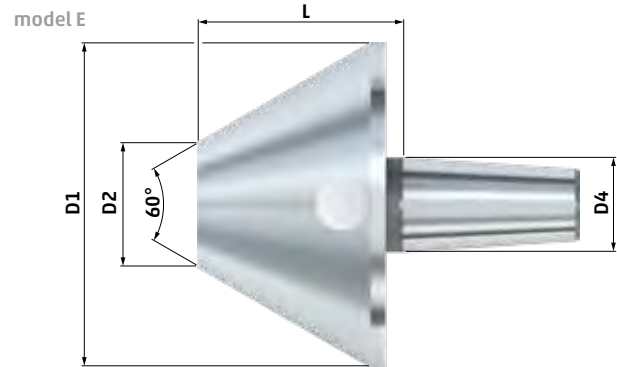
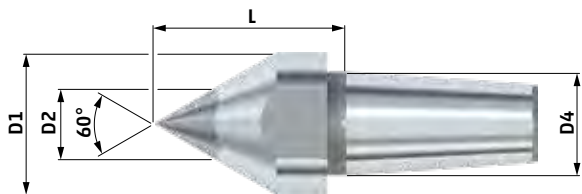
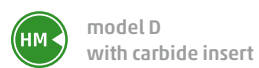
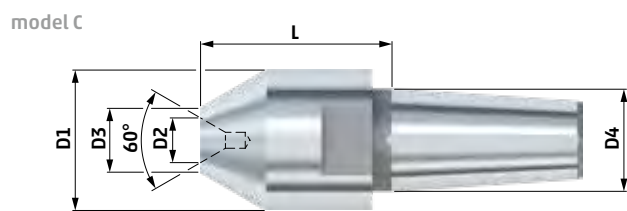
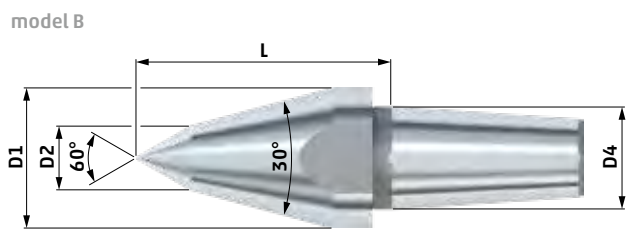
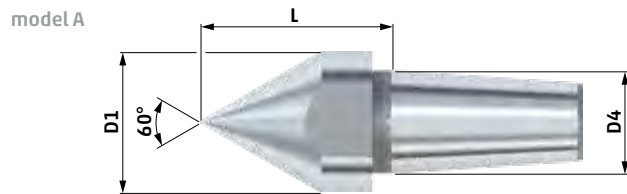
- Suitable for live centers type RNW on page 116 - 117, for the live centers type RNWF on page 122 - 123 and for the dead centers type FNW on page 136 - 137.
- Special inserts available upon customer's request.
- For quick demounting all changeable inserts come with spanner flat or cross hole.

FOR TYPE RNW3 / 4 FNW MK3 / MK4

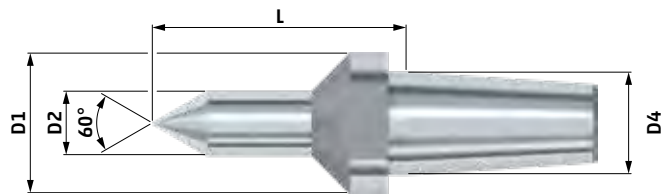
model	D1	D2	D3	D4	L	cat. no.
A	22	-	-	16	30	815 50
B	22	10	-	16	40	815 51
C	22	7	10	16	30	815 52
D	22	11	-	16	30	815 53
E	55	21	-	16	35	815 54
F	55	50	16	16	30	815 55
G	22	10	-	16	40	815 56

FOR TYPE RNW5 / 6 FNW MK5 / MK6

model	D1	D2	D3	D4	L	cat. no.
A	34	-	-	22	35	815 60
B	34	16	-	22	54	815 61
C	34	10	7	22	29	815 62
D	34	18	-	22	35	815 63
E	70	33	-	22	38	815 64
F	70	64	24	22	34	815 65
G	34	16	-	22	54	815 66

Technical data – for type RNW / FNW with taper interface

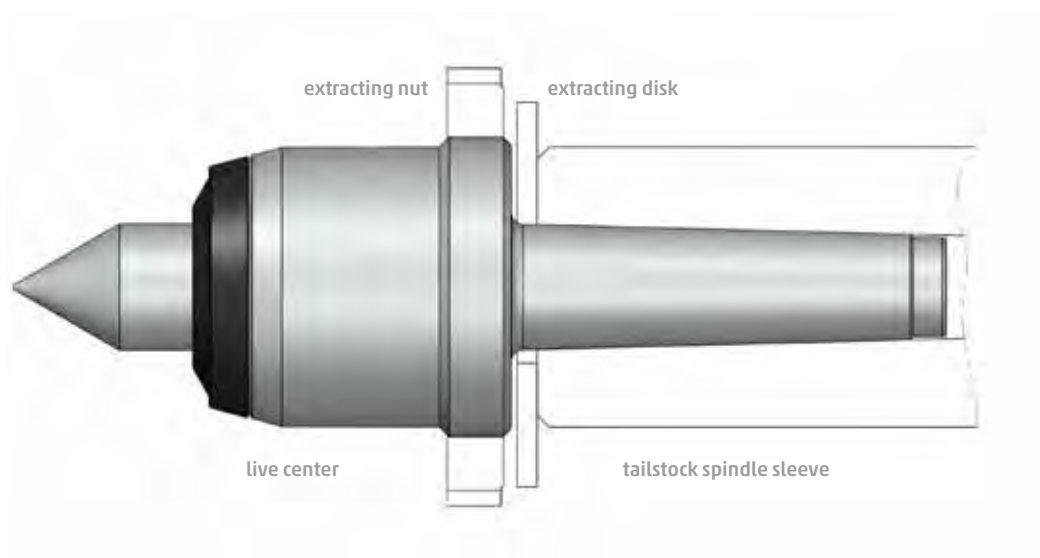
model G



Extracting Nuts and Extracting Disks

Accessories for demounting

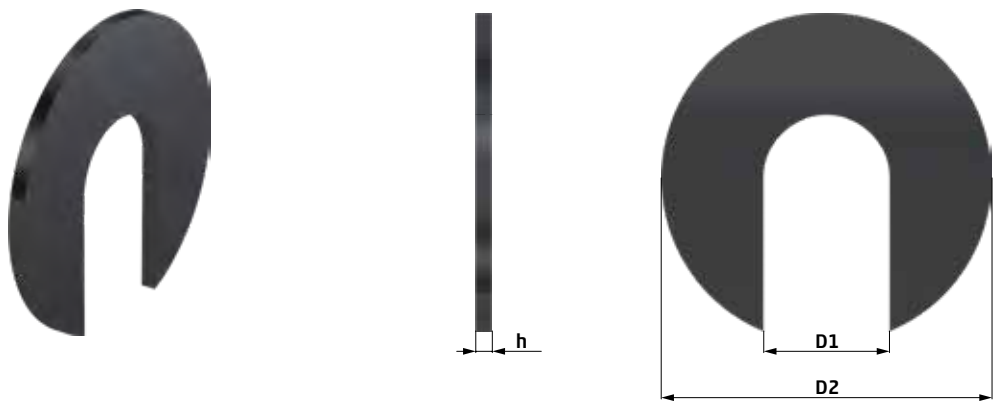
Accessories for safe and quick demounting of our ultra live centers, dead centers, center pins and face drivers.



Extracting disk

Extracting disk

Technical data – extracting disk



for ultra live centers **type RN/RNC/RNA/RNW/RNS**

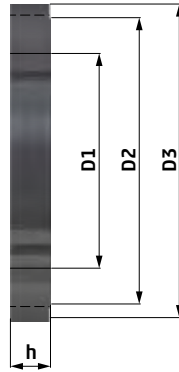
for type	MK	D1	D2	h	cat. no.
1	2	22	60	4	830 30
	3	28	80	4	830 31
3	4	38	80	5	830 32
	5	49	80	5	830 33
4	4	38	100	5	830 34
	5	49	100	5	830 35
5	5	49	120	5	830 36
	6	70	120	6	830 37
6	6	70	140	6	830 38

Extracting nut DIN 1804 h

Type DIN 1804 h



Technical data - type DIN 1804 h



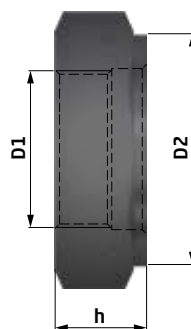
for ultra live centers, center pins and face driver

D1	D2	D3	h	cat. no.
M28 x 1.5	43	50	10	830 39
M32 x 1.5	45	52	11	830 40
M35 x 1.5	47	55	11	830 41
M36 x 1.5	48	55	11	830 42
M48 x 1.5	67	75	13	830 43

D1	D2	D3	h	cat. no.
M58 x 1.5	80	90	13	830 22
M70 x 1.5	90	100	14	830 44
M75 x 1.5	100	110	14	830 23
M95 x 2	120	135	16	830 24
M110 x 2	140	155	16	830 25

Extracting nut DIN 807

Type DIN 807



for dead centers and center pins

MK	D1	D2	h	s	cat. no.
1	M16 x 1.5	23	12	24	929 99
2	M22 x 1.5	30	15.5	32	930 00
3	M27 x 1.5	39	17.5	41	930 01
4	M36 x 1.5	53	21	55	930 02
5	M48 x 1.5	67	23	75	930 03
6	M68 x 1.5	90	25.5	100	930 04



thrust indicator KMD

General accessories



Puller Set



Taper Cleaner / Cone Wiper



Installation- / Removal Paste

Thrust Measuring System	154
Puller Set	156
Taper Cleaner / Cone Wiper	157
Installation- / Removal Paste	157

Thrust Measuring System

Hydraulic measuring of clamping thrust for face drivers and live centers for measuring the ideal clamping thrust on machine tools

For setting up and checking the clamping thrust required, it is necessary to have a thrust indicator. A pressure gauge on the machine without tabulation or conversion is insufficient.

The hydraulic thrust measuring system is perfectly suitable for safe adjusting and checking of the clamping thrust within the machine.

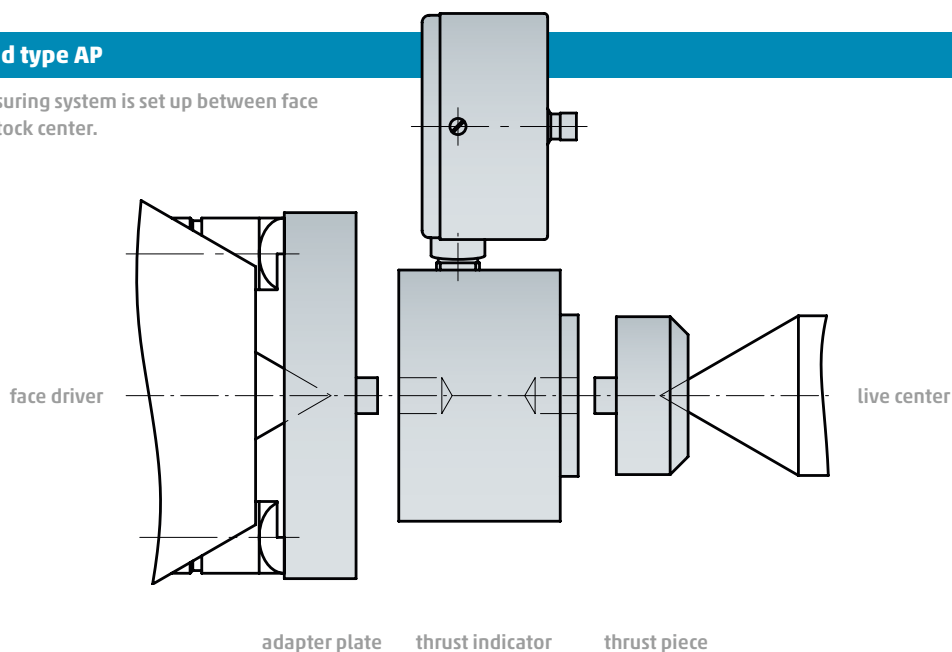
Type KMD - thrust indicator including centered tailstock piece and case



Clamping principle

Type KMD and type AP

The thrust measuring system is set up between face driver and tailstock center.



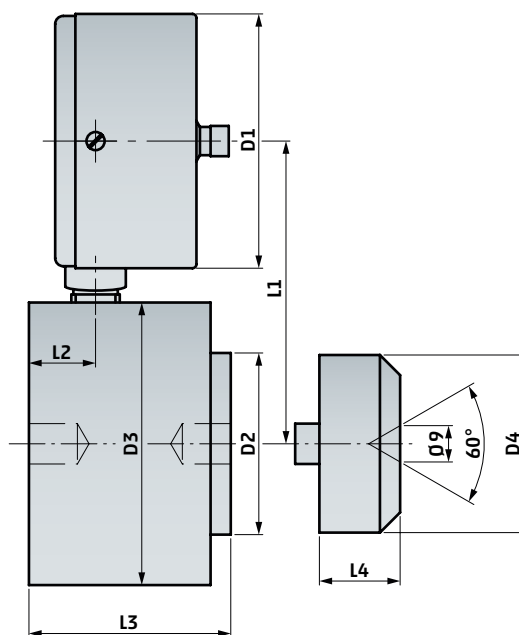
Thrust indicator

Device for measuring clamping thrust in machine tools

All thrust indicators are equipped with a differential thrust indicator as well as a centered tailstock piece.

In order to ensure a perfect torque transmission of the face drivers onto the work piece, it is essential to determine the chisel load of the drive pins accurately.

Technical data – type KMD



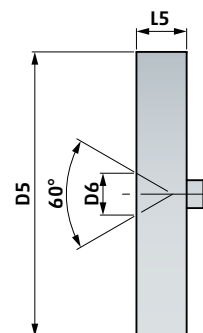
type KMD	D1	D2	D3	L1	L2	L3	D4	L4	measuring range [kN]	scale division [daN]	scale division [kN]	application	cat. no.
250	63	45	70	75	16	50	44	20	0 - 2.5	0 - 250	0.1	grinding	500 01
1600	63	45	70	75	16	50	44	20	0 - 16	0 - 1600	0.5	turning	500 02
2500	63	45	70	75	16	50	44	20	0 - 25	0 - 2500	1	turning	500 03

Thrust piece

interim plate on face driver

In order to measure the impact of thrust onto the face driver, it is essential to have an adapter plate for parallel and even contact of the drive pins.

Technical data – type AP



type AP	D5	D6	L5	für Stirnmitnehmer Größen	cat. no.
50	50	5	12	0 - 35	500 10
102	102	15	18	4 - 5	500 11
175	175	20	28	55 - 6	500 12

Puller Set

complete with case

Puller set with slide hammer in plastic case

Stable extractor (galvanised) with ergonomically shaped slide hammer.

In conjunction with the appropriate adapter, the centre pin is removed by means of vigorous strikes with the slide hammer.

Use:
For removing centre pins with internal thread

Puller set with slide hammer in plastic case

Pin extractor in plastic case (275 x 230 x 80 mm)
with thread inserts (M3 - M12)



type	cat. no.
M3 - M12	500 20

Taper Cleaner / Cone Wiper

for cleaning an inner Morse taper
(e. g. work spindle or tailstock)

Taper cleaner / cone wiper



MK	cat. no.
1	500 31
2	500 32
3	500 33
4	500 34
5	500 35
6	500 36

Installation- / Removal Paste

**Universal use as installation paste and
for preventing fretting corrosion**

Castrol Optimol Paste White T is ideal for all installation work as well as for base-film and thin-film lubrication. The paste prevents fretting rust as well as facilitating installation and removal of our clamping tools.

It is resilient to hot and cold water and provides anti-corrosion protection.

Installation- / removal paste

white, virtually colourless when applied as a thin film

cat. no.

500 40





Training & Service

Training	160
Repair service	161
Special design	161

Training

We provide free product training so as to enable you to put our products to effective use in line with requirements.

Whether on our premises or yours, we give you an overview of our product range and as well a detailed specialist knowledge in terms of cost efficiency, quality and safety.

Training is provided in German and English.

If you wish to take advantage of our training programmes, please get in touch with our Technical Sales department and our staff will take care of everything else.

www.neidlein.de

» Contact » Contact person » technical sales



Repair service

Our service for sustainable machining

Our clamping tools boast a long service life. After continuous use over lengthy periods of time or if damage occurs during production, we get the tools back into perfect shape with the necessary maintenance or repair. This investment is generally worthwhile since you then have a tool that is fully functional and virtually as good as new.

We will be pleased to compile a cost estimate for repair and maintenance, including delivery period.



Special design

Special tools for special tasks

Not every machining job can be carried out using standard tools. At this point our design department collaborates closely with you to develop custom-made tools that are precisely adapted to the job at hand and meet your needs in terms of functionality, ease of set-up and cost efficiency.



Example: Sliding jaw mandrel for internal clamping.

You will find our GTB at

www.neidlein.de

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