



FSB



FFB



FSP

FOR TURNING AND HARD TURNING WITH DRIVE PINS



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FFBR



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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 centrally 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

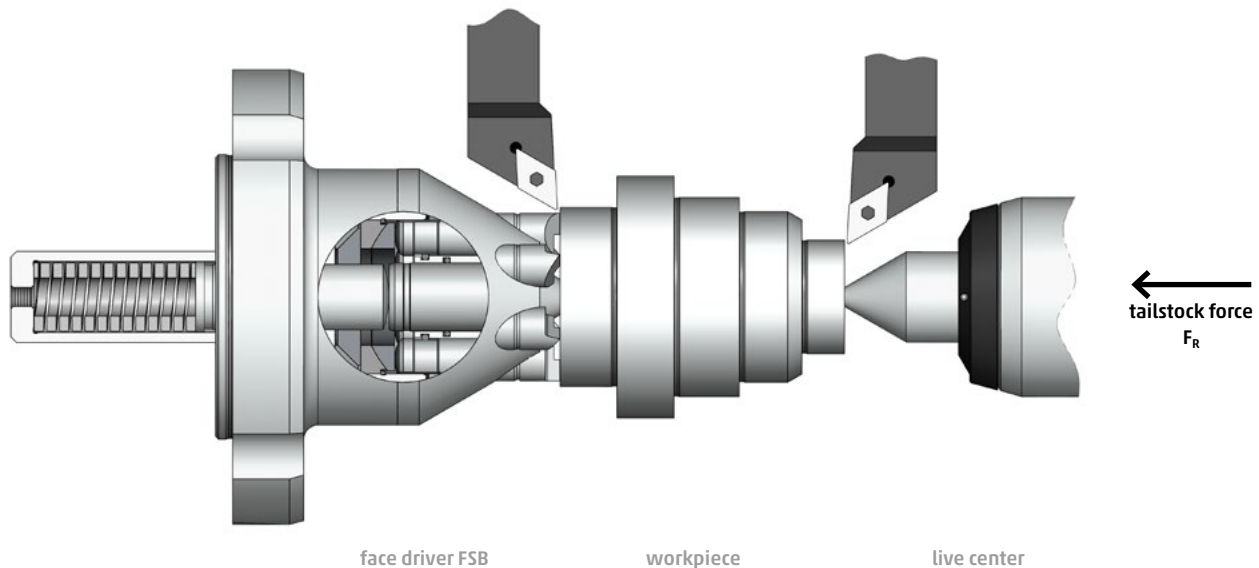
Clamping principle

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.

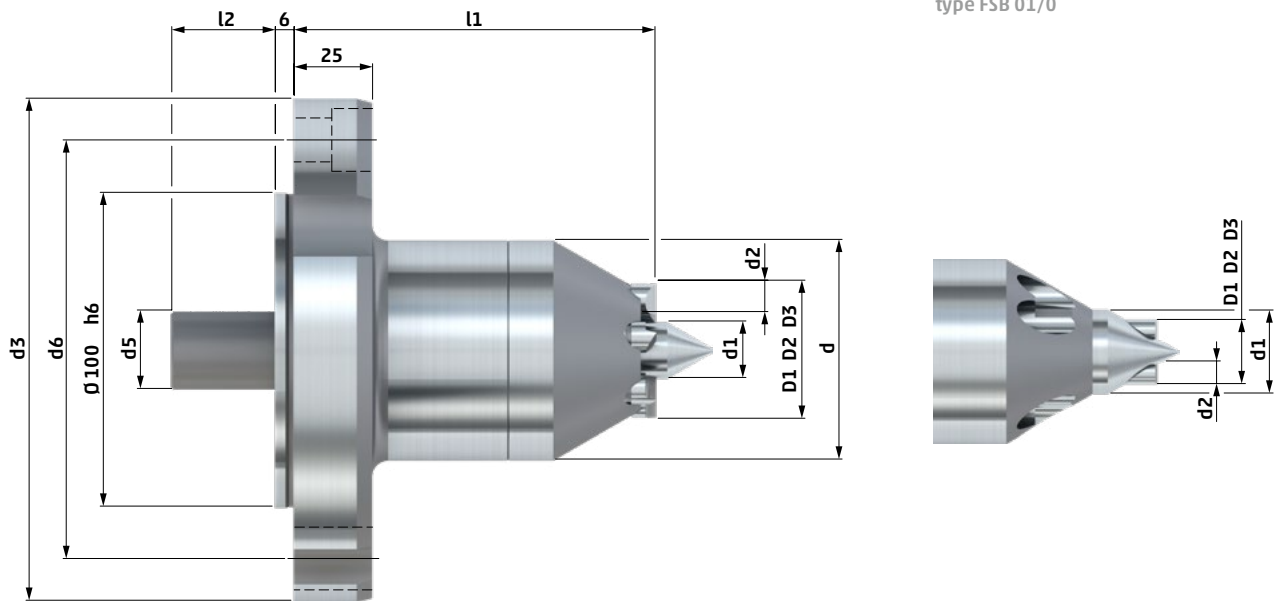
The drive pins are "floatingly", thus compensating for variations in workpiece, squareness and surface finish. The entire surface of the workpiece can now be finished in one single clamping. Please check page 15 - 16 for metal removing rates to be obtained as well as for the tailstock forces required.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

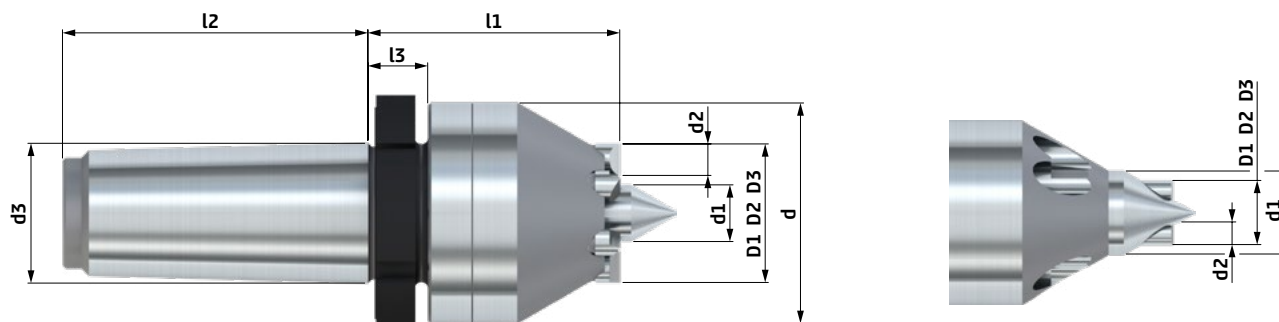
It is the purpose of a flange-adapter to provide stable connection to the machine spindle. We supply these flange adapters for various sizes of spindle noses either in standard size (DIN ISO 702-1 / DIN 55028) or for spindle noses specific to manufacturer of machine-tools. Thus face drivers of type FSB 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.

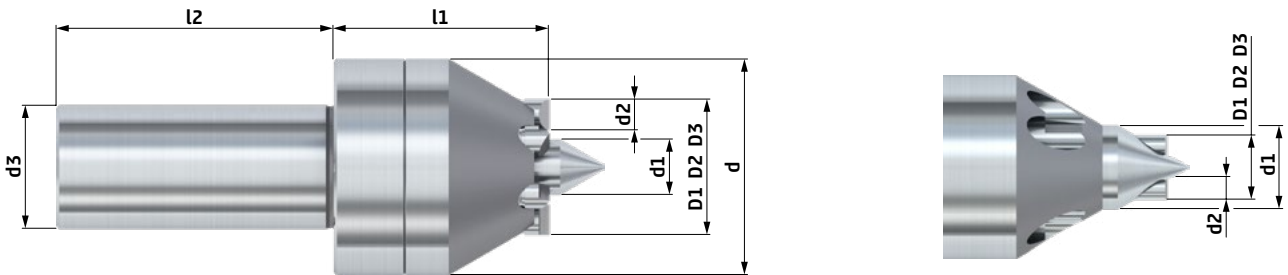
If necessary and depending on the tooling direction of the machine the face driver can be equipped optionally with drive pins for counter-clockwise tooling (SR/tooling direction M3), for

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.

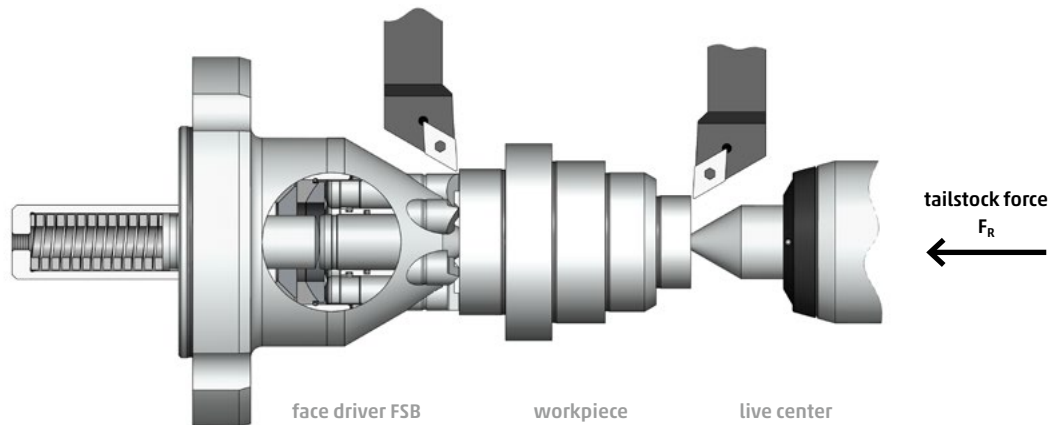
If necessary and depending on the tooling direction of the machine the face driver can be equipped optionally with drive pins for counter-clockwise tooling (SR/tooling direction M3), for clockwise tooling (SL/tooling direction M4) or for both tooling directions (NV = bi-directional).

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:**

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

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

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

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.

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

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

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

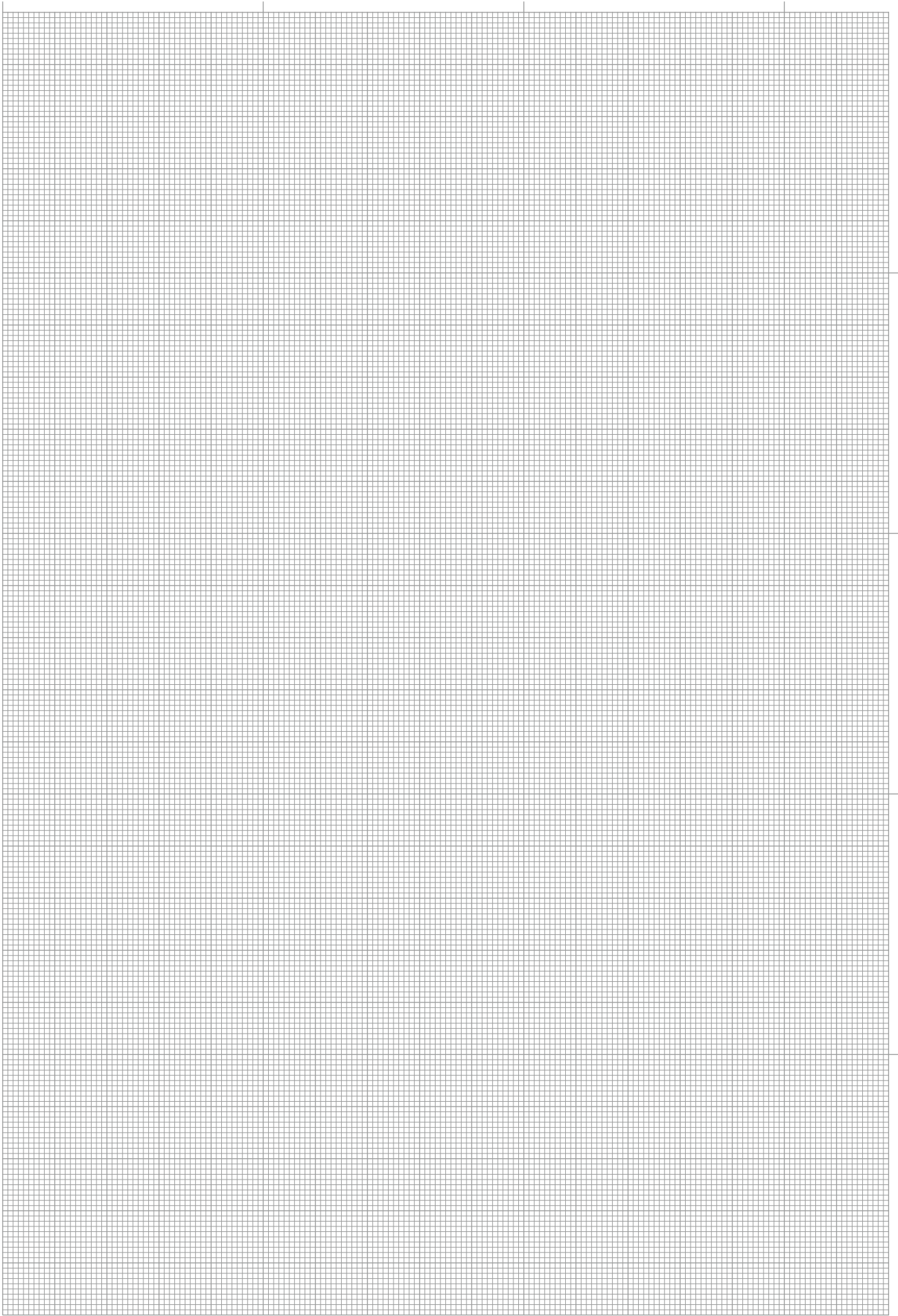
The maximum chip cross section (at the ultimate turning-Ø) is calculated as follows:

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

Determination of material factor m:

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

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 centrally 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

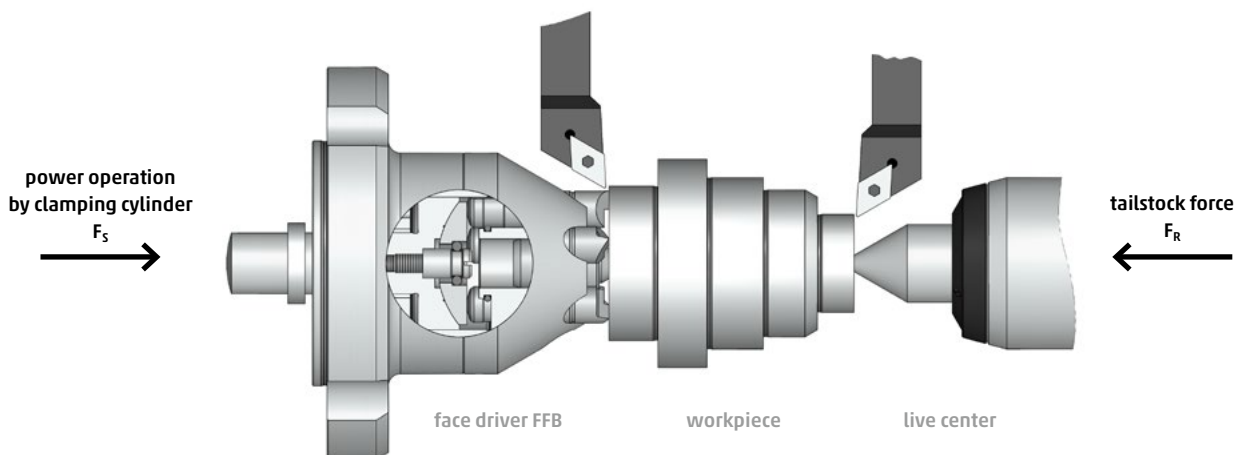
Clamping principle

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.

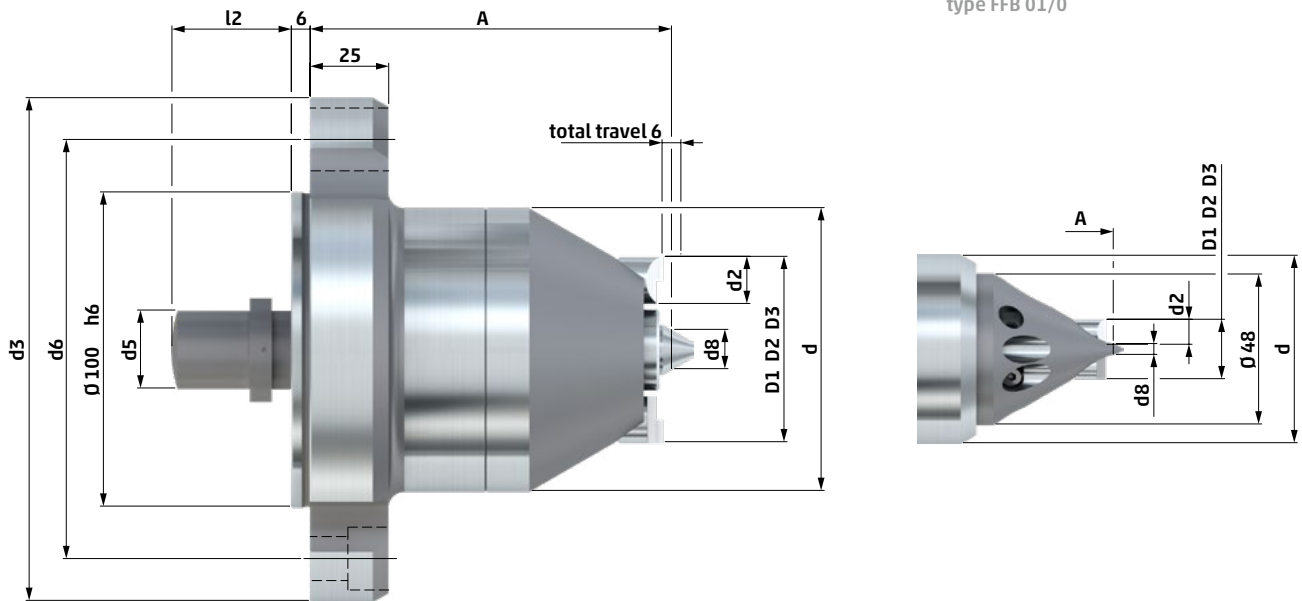
See page 22 - 23 with data for achievable removal of material and the thrust requested. The appropriate standard drive pins and center pins can be found on page 24 - 31.

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	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

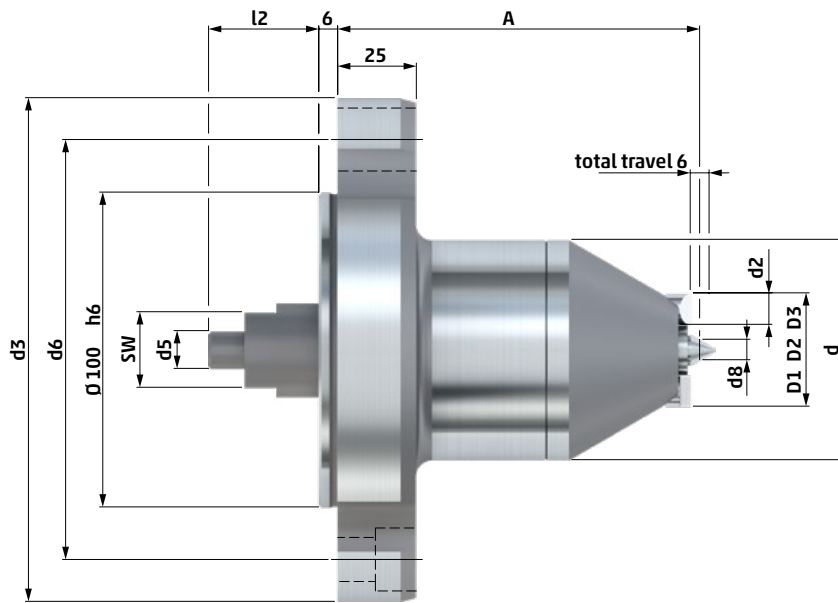
- All face drivers are supplied without drive pins. (drive pins see page 24 - 29)
- Types FFB 01/0 are supplied with center body, all other types without center pin. (center pin see page 30 - 31)
- The diameter d8 refers to the standard center pins. (see page 30 - 31)
- Further center pins for other 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.

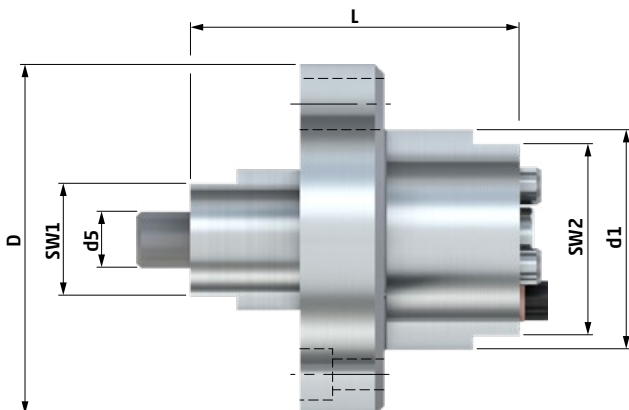
Technical data – type FFBH face drivers



type	d	center Ø	d2	d3	SW	d5	d6	d8	A	l2	drive pin	fastening screw			cat. no.		
												type	pcs	clamping Ø			
FFBH													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	
2	24	12	70,5	47	41	75	631 02 HE
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

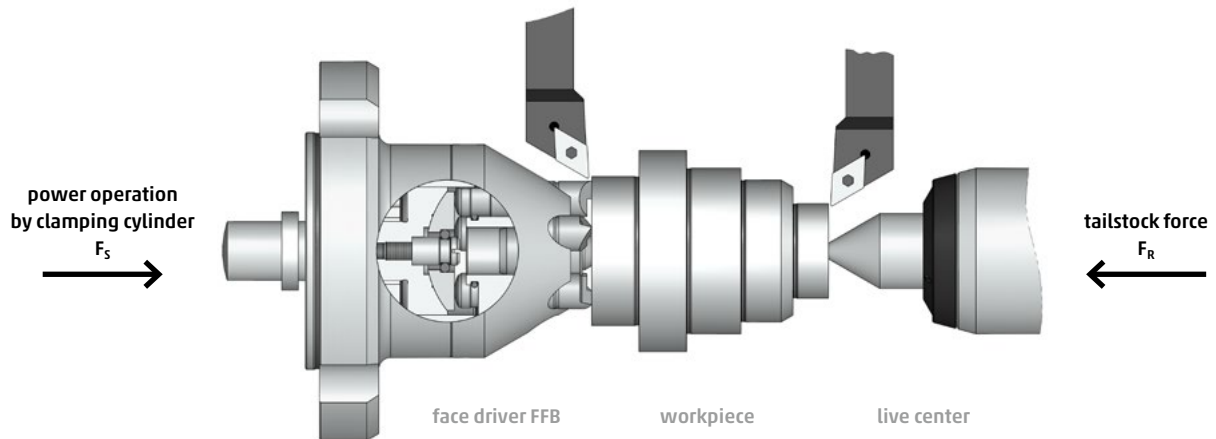
The general explanatory notes for this face driver FFBH can be obtained from the sheet "technical data – type FFB". For safe and smooth operation of face driver we recommend exchange of hydraulic unit after 1500 operating hours.

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:

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

■ 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 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:

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

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.



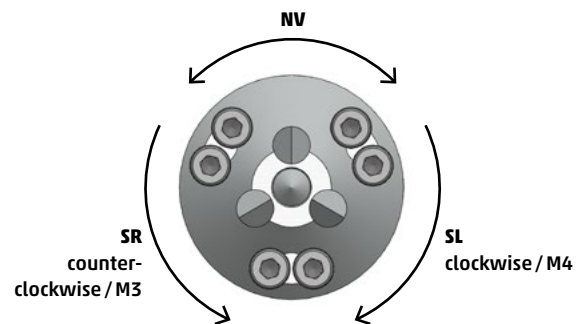
Drive Pins FSB / SB / FFB · Chisel SL / SR / NV

for torque transmission onto the workpiece
for soft / green tooling

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

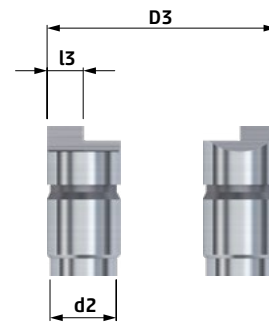
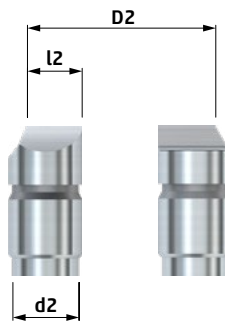
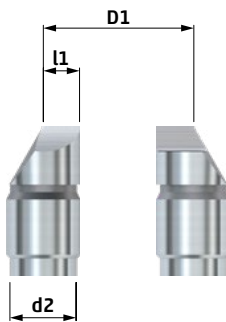


view from tailstock onto the face driver



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	TYPE CHISEL SR	TYPE CHISEL NV
		D1	D2	D3	l1	l2	l3	for tooling direction M4	for tooling direction M3	for tooling direction M4 and M3
							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			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			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			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			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	

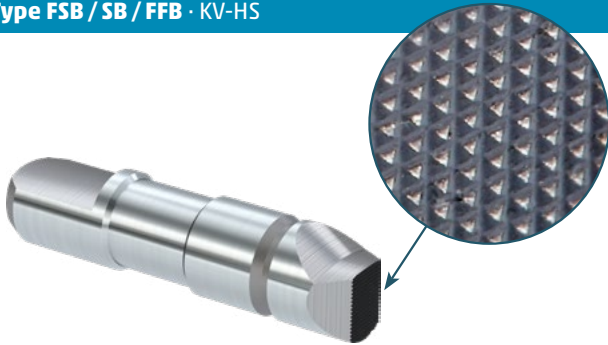
■ Further clamping Ø of drive pins upon request.



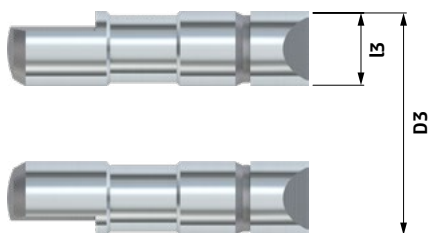
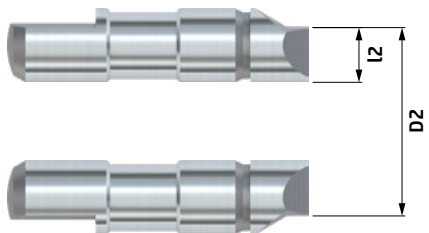
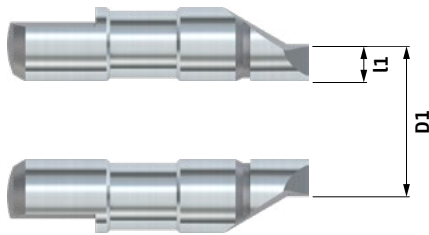
Drive Pins FSB / SB / FFB · KV-HS

**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 FSB/SB/FFB	clamping Ø			chisel length			cat. no.
	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.

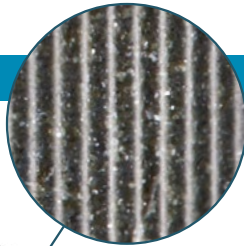


Drive Pins FSB / SB / FFB · FV Diamond

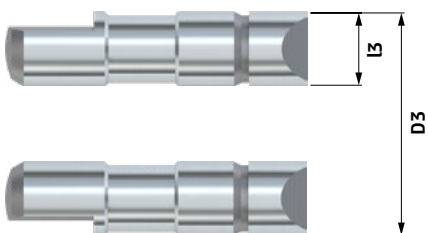
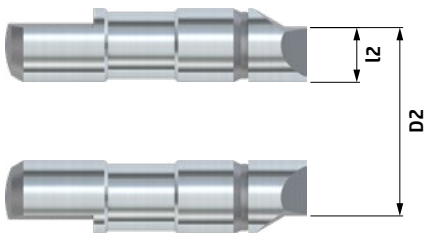
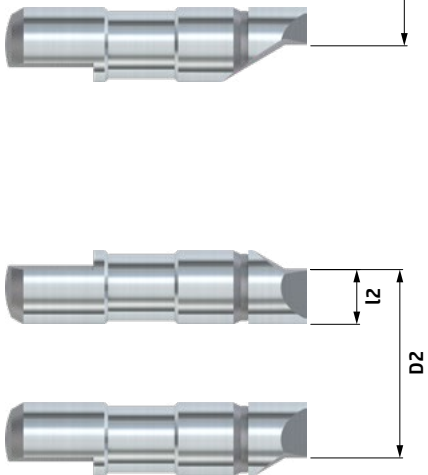
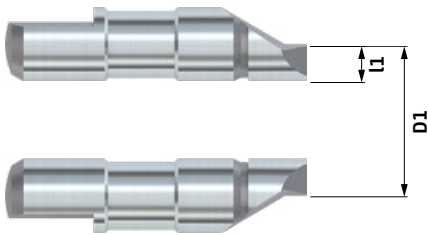
serrated and diamond embedded
for torque transmission onto the workpiece
for hard tooling

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 FSB/SB/FFB	clamping Ø			chisel length			cat. no.
	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

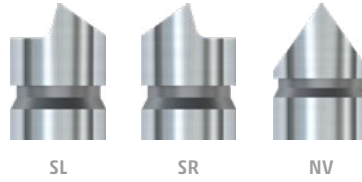
full carbide / carbide inserts
for torque transmission onto the workpiece
for tooling of high-tensile-strength materials

Type FSB / SB / FFB · chisel carbide

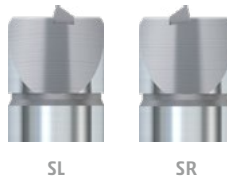
model B / SR



MODEL A



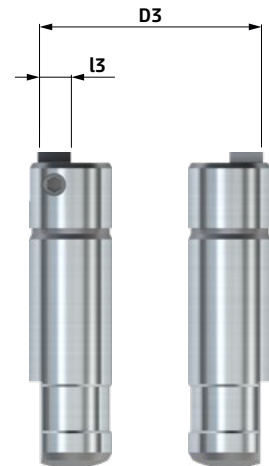
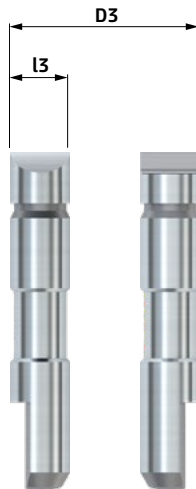
MODEL B



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	6	736 507	736 525
4	44		6	736 508	736 526
		56	6	736 509	736 527
45	54		6	736 510	736 528
		66	6	736 511	736 529
5	75		6	736 512	736 530
		95	6	736 513	736 531
55	116		6	736 514	736 532
		136	6	736 515	736 533
6	146		6	736 516	736 534
		166	6	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

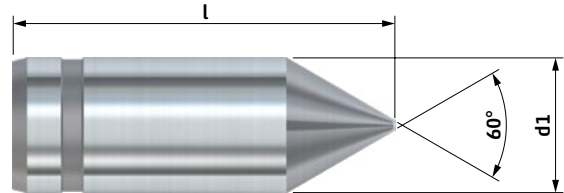
Type FSB / SB · center pin



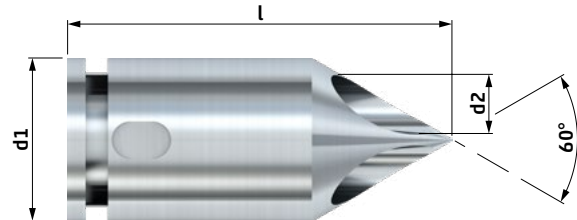
center body type FSB / SB 01 / 0



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

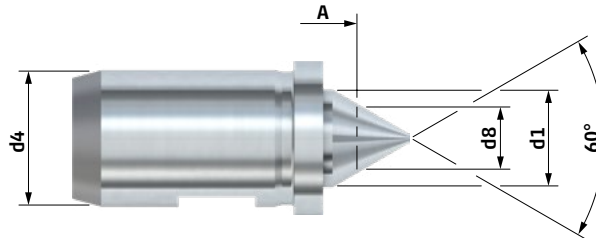
for face drivers FFB / FFBH with fixed center pin

Type FFB / FFBH · tool steel or carbide

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



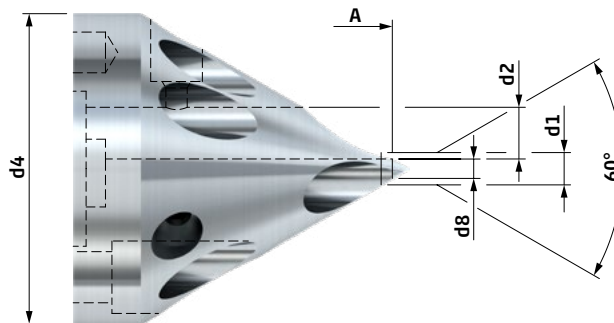
HM with carbide insert



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

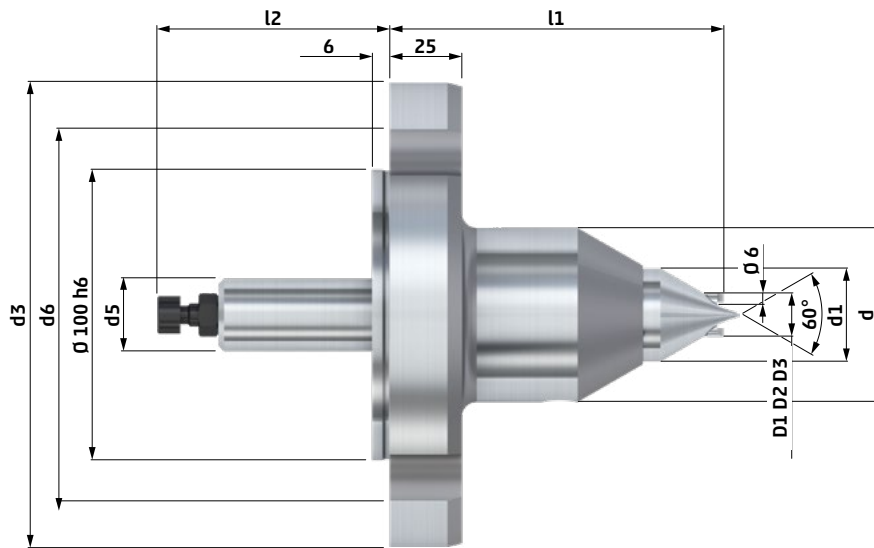
Type SBR with taper shank and extracting nut for fast mounting into the machine spindle.



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

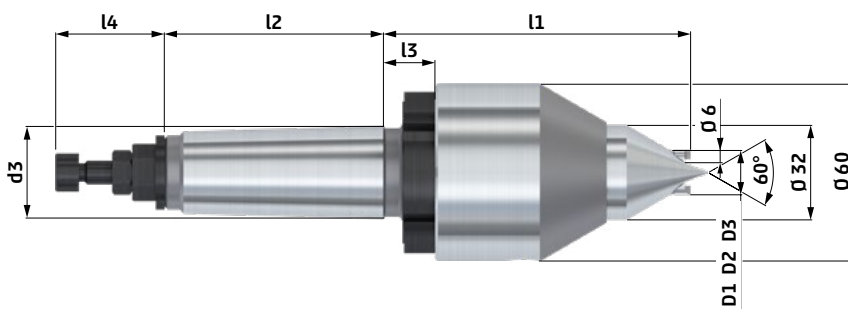
Technical data – type FSBR face driver



type FSBR	d	d1	center Ø	d3	d5	d6	l1	l2	drive pin	fastening screw		clamping-Ø			cat. no.
										type	pcs	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.

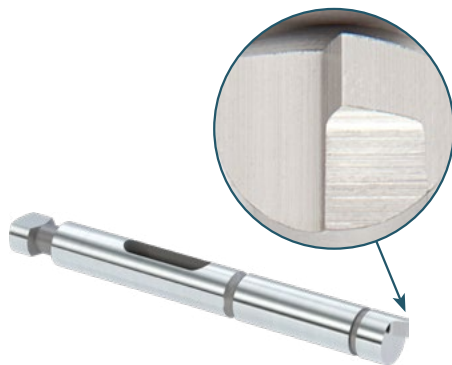


Drive Pins FSBR / SBR · Chisel SL / SR

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



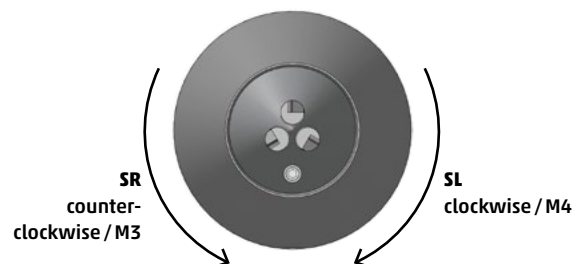
Form B



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 \varnothing of drive pins upon request.

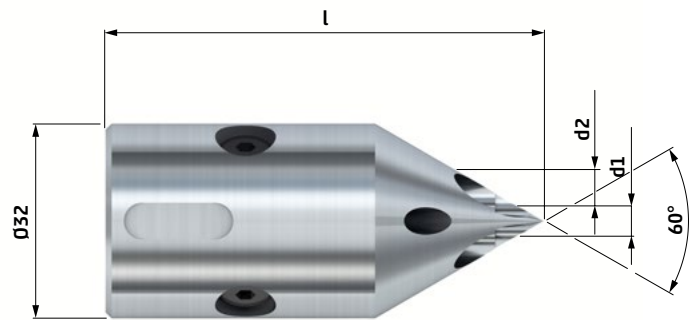
Center body FSBR / SBR

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

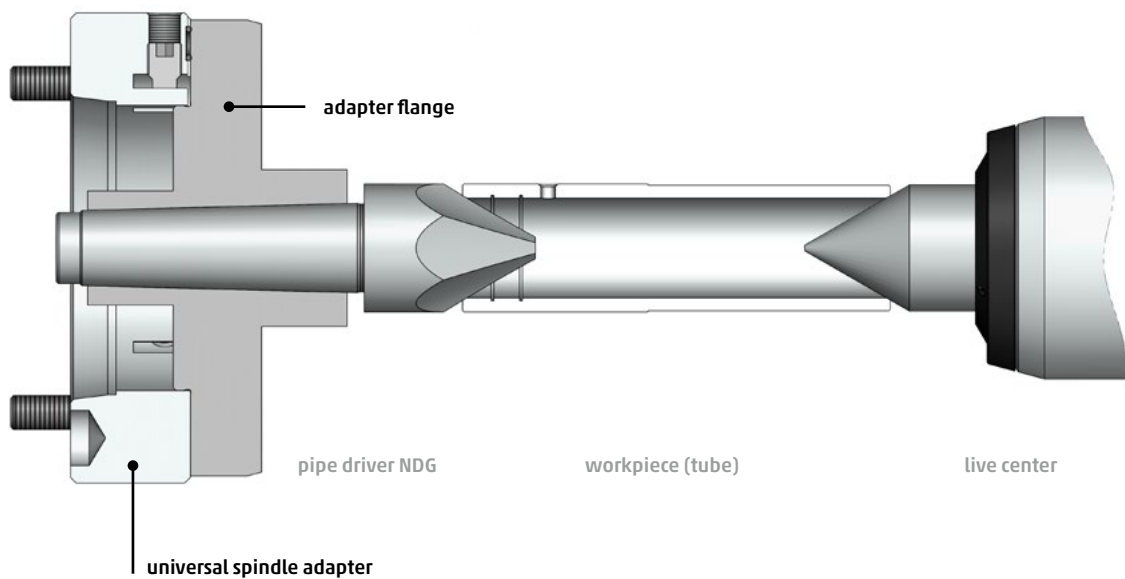
The entire outside surface of a tubular workpiece can be tooled with one single clamping and high torque transmission.

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

Type NDG pipe driver



Clamping principle

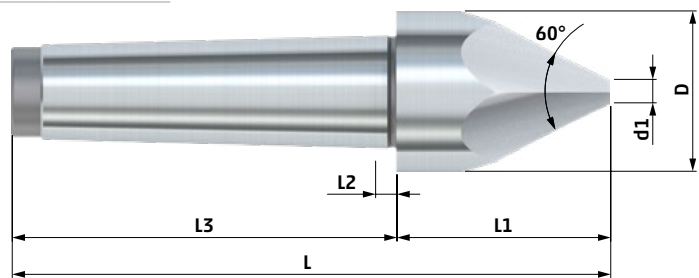


NEIDLEIN pipe drivers NDG and AND ensure:

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

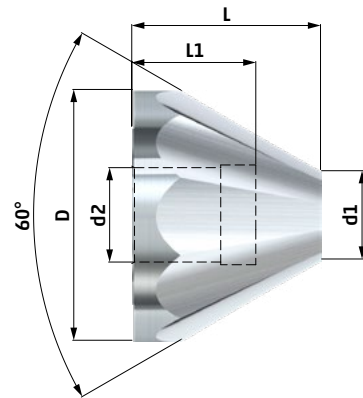
Technical data - type NDG pipe driver

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



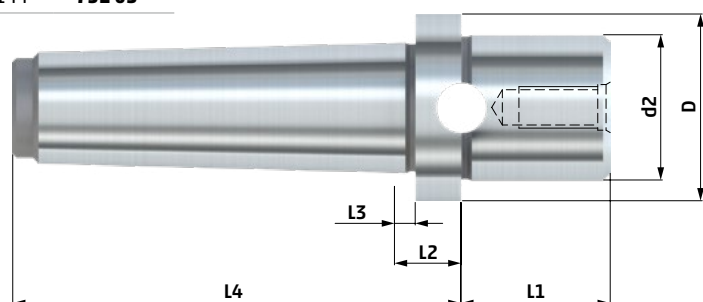
Technical data - type NDG drive cone exchangeable

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.

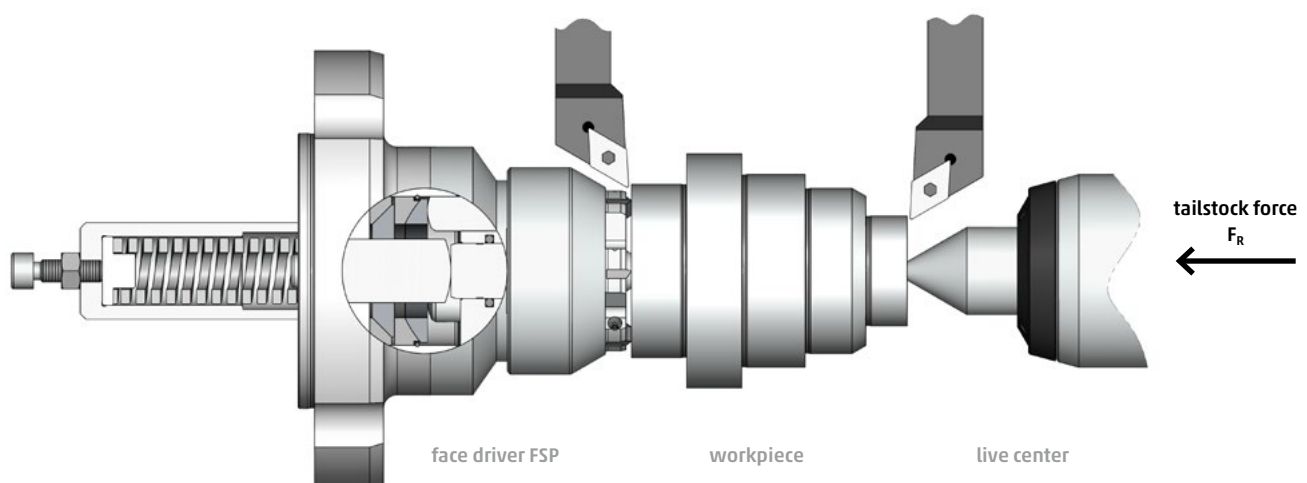
In this state the clamping bolt is clamped over the the power flow, in order to ensure a fixed datum-point throughout the entire tooling process.

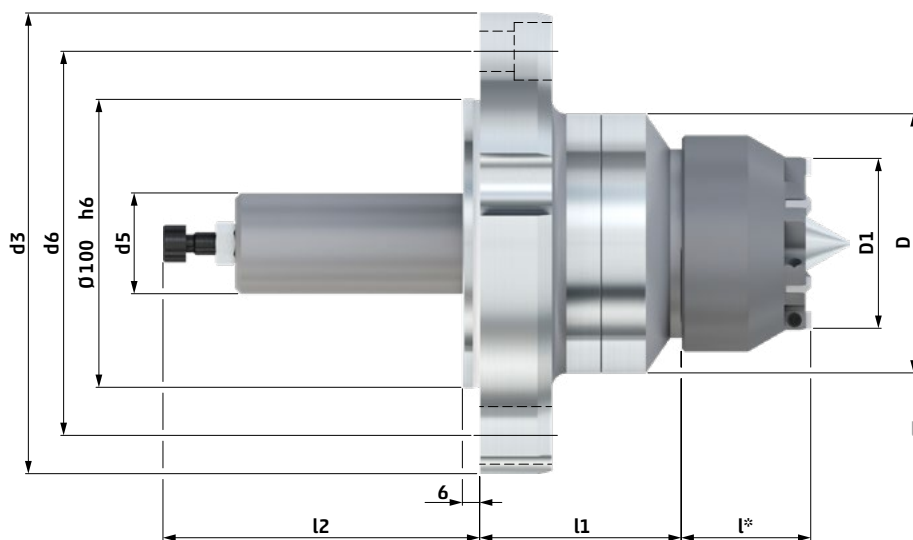
The drive disk is "floatingly" suspended, thus balancing out possible planarity defects of the contact surface of the workpiece.

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.

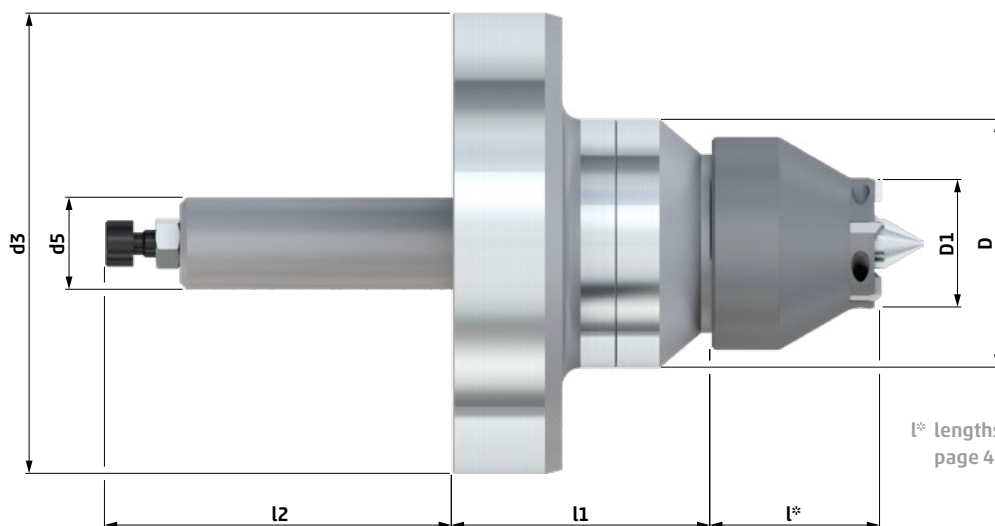
Type FSP with flange retainer

Technical data – type FSP face driver · for screw connection

l* lengths of drive disk see
page 44 - 45

type	D	D1	d3	d5	d6	l1	l2	fixing screws	cat. no.
FSP								type pcs	
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

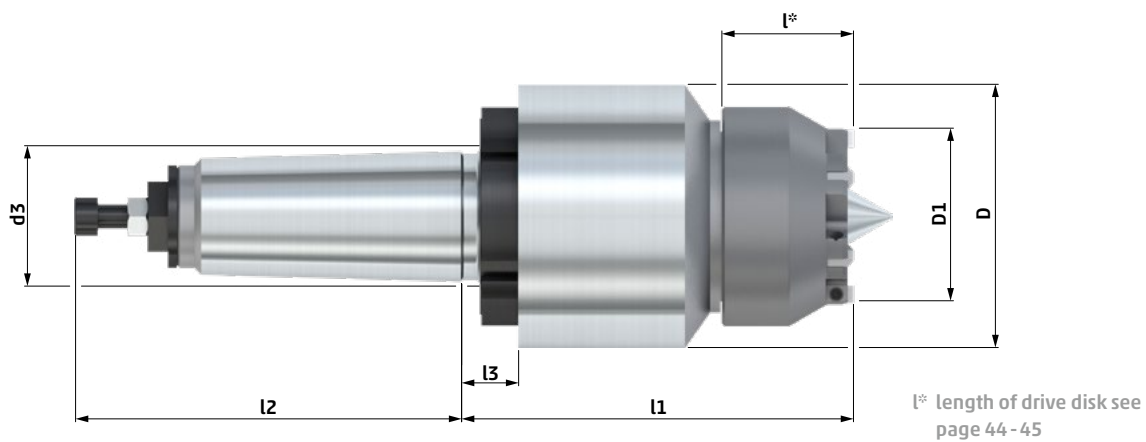
- All face drivers are provided without drive disk and without center pin. (changeable parts see page 44 - 47)
- Mounting elements for face drivers see page 92 - 97.

Technical data – type FSPB face driver · for jaw clamping

l* lengths of drive disk see
page 44 - 45

type	D	D1	d3	d5	l1	l2	cat. no.
FSPB							
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

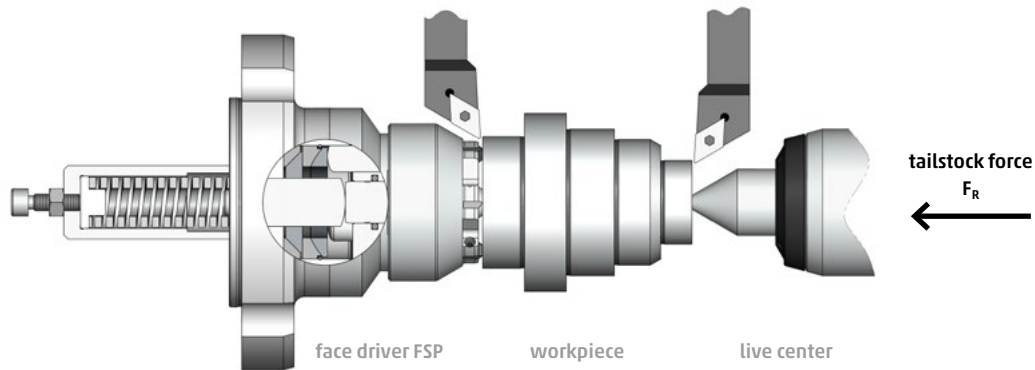
type	MK	D	D1	d3	l1	l2	l3	cat. no.
3	4	70	14 - 59	M35 x 1,5	125	106	17,5	632 60
	5	70	14 - 59	M48 x 1,5	125	129	19,5	632 61
4	5	90	31 - 125	M48 x 1,5	134	132	19,5	632 62
	6	90	31 - 125	M70 x 1,5	134	169	22	632 63

- 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

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%.

■ 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:

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

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 / mm ²]	1000	800	700	600	400
examples	42CrMo4	16MnCr5 25CrMo4	C 15E (Ck 15) C 45E (Ck 45)	S355J0 35S20	S235J0

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 facé 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.



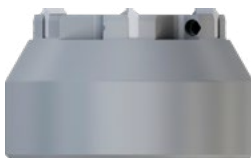
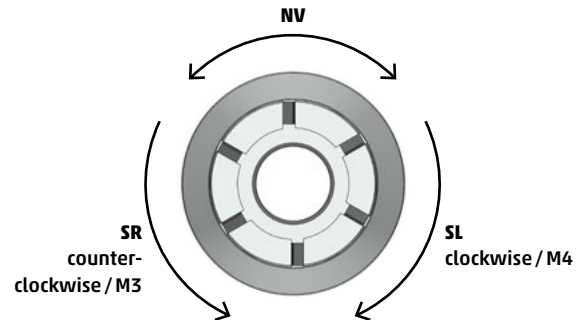
Drive Disks FSP / FSPB / SP · Chisel NV / SL / SR

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

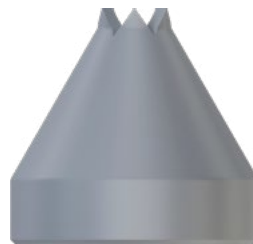
Type FSP / FSPB / SP · chisel NV / SL / SR



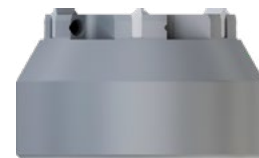
view from tailstock onto the face driver



SL (carbide)

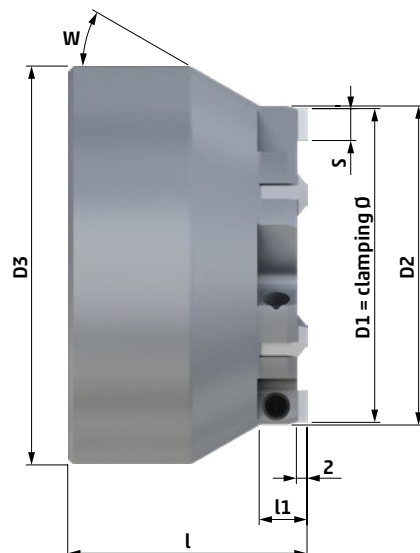


NV (tool steel)



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
125	126	75	45	-	-	7 (Carbide)	6	12600	738 50	738 70	
55	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
	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			
4	SL/SR	4	736 548
3			
4	SL/SR	6	736 550
55			
55	SL/SR	10	736 552

SET SCREW

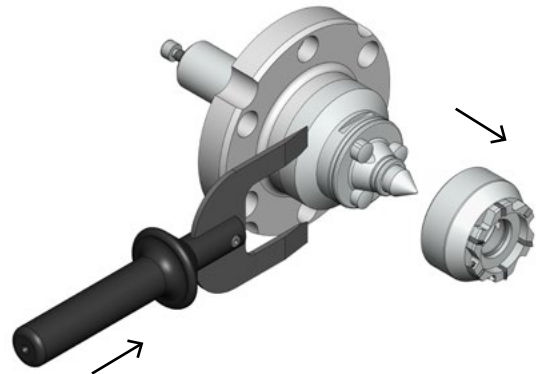
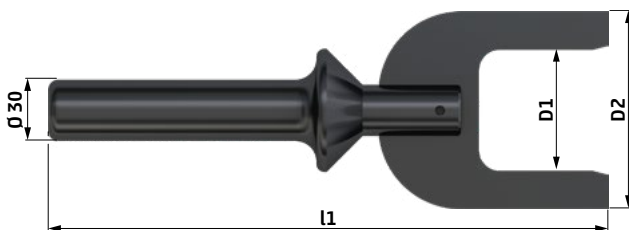
for fixing carbide inserts

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.

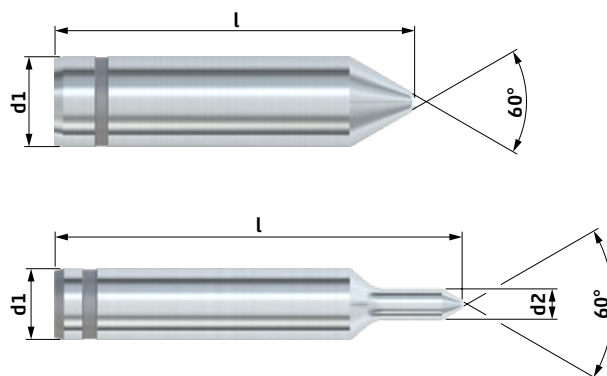
Center Pins FSP / FSPB / SP

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.



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.

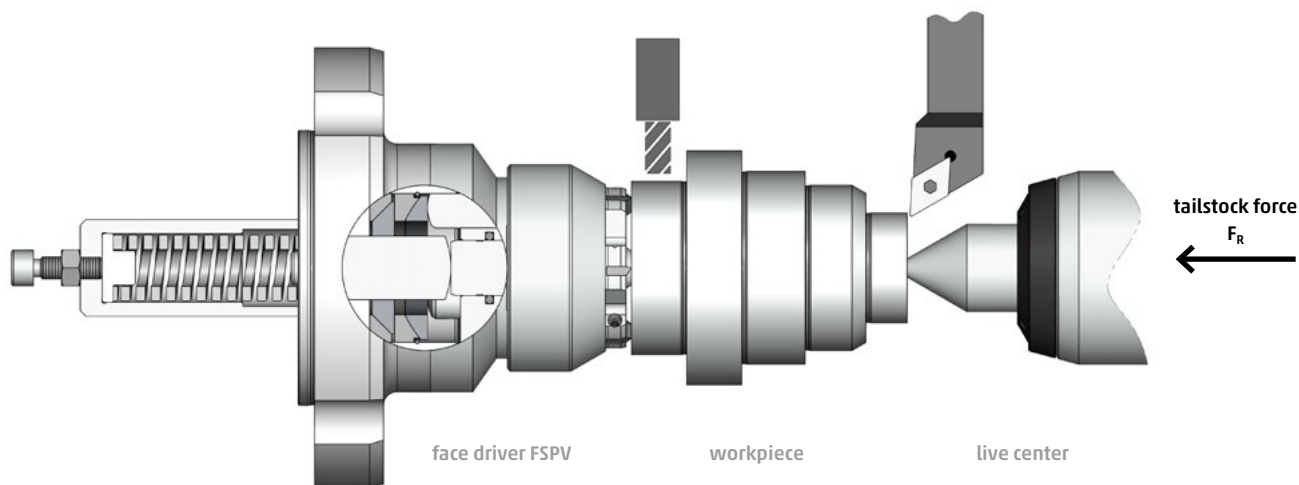
In this state the clamping bolt is clamped over the the power flow, in order to ensure a fixed datum-point throughout the entire tooling process.

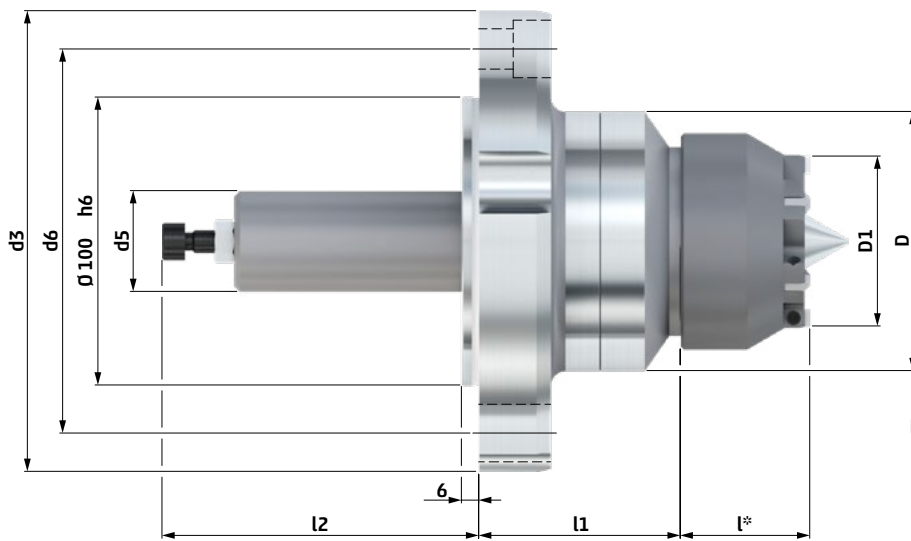
The drive disk is "floatingly" suspended, thus balancing out possible planarity defects of the contact surface of the workpiece.

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.

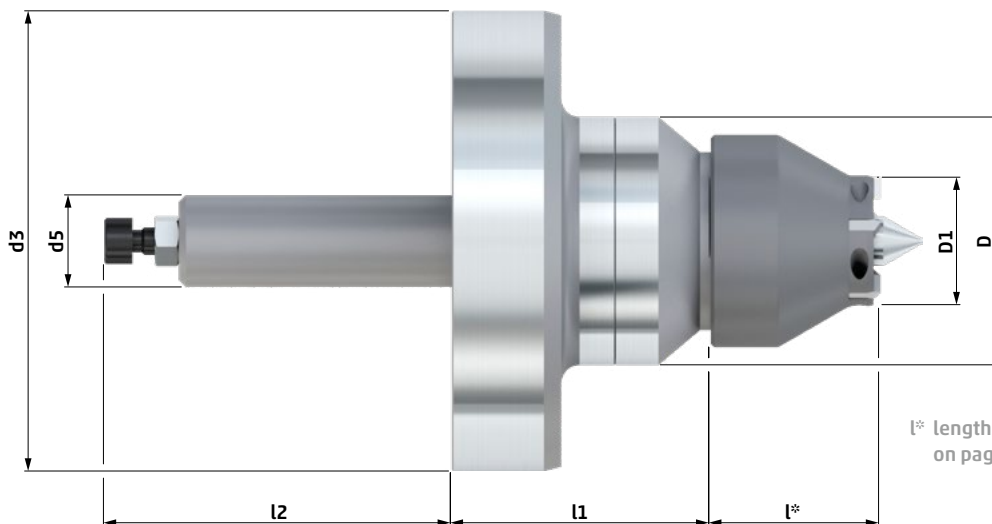
Type FSPV with flange retainer

Technical data – type FSPV face driver · for screw connection

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

type	D	D1	d3	d5	d6	l1	l2	fixing screws	cat. no.
FSPV								type pcs	
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)

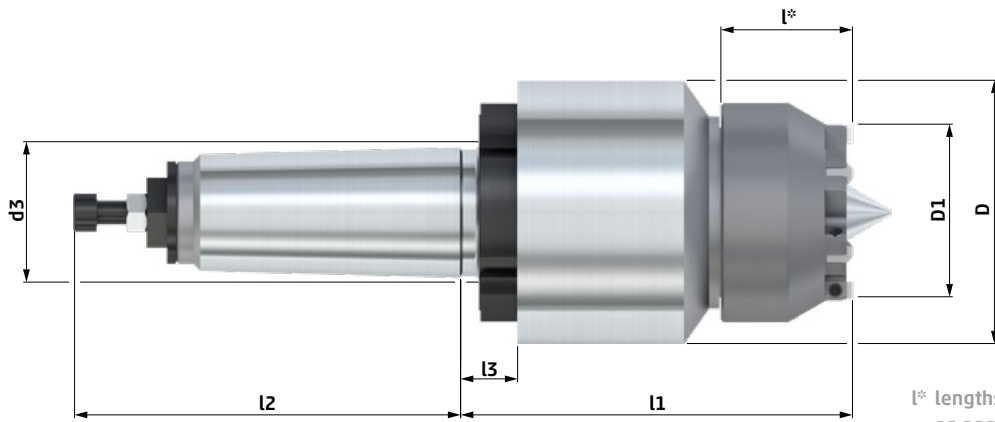
Technical data – type FSPBV face driver · for jaw clamping

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

type	D	D1	d3	d5	l1	l2	cat. no.
FSPBV							
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.



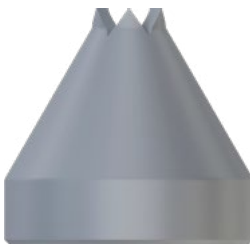
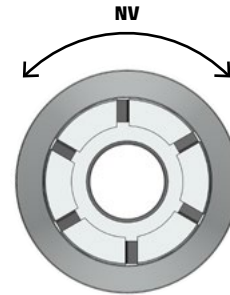
Drive disks FSPV / FSPBV / SPV · Chisel NV

**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

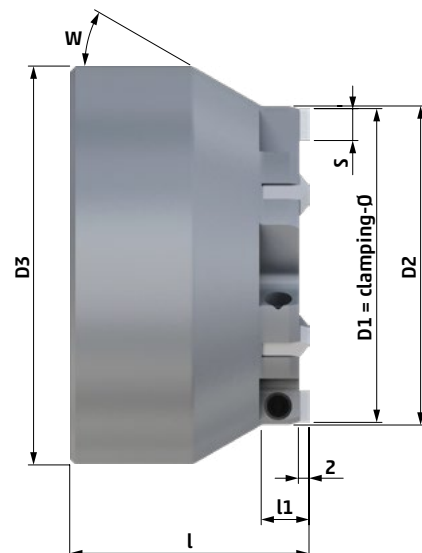


NV (tool steel)
D1 = 14 - 18 · type 3



NV (carbide)

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



TYPE CHISEL NVfor 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 NVfor 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
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
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			
55	NV	10	736 562

SET SCREW

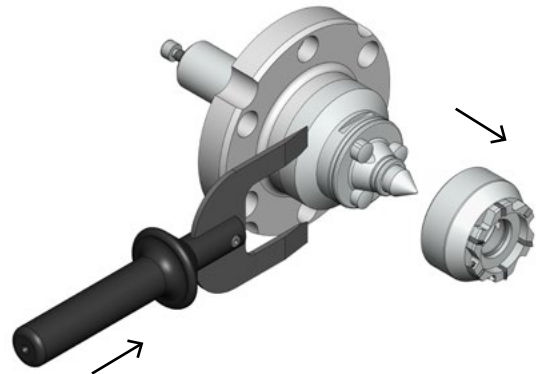
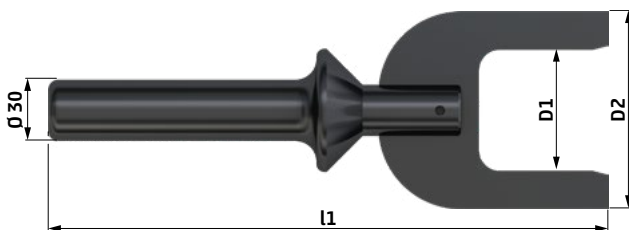
for fixing carbide inserts

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.

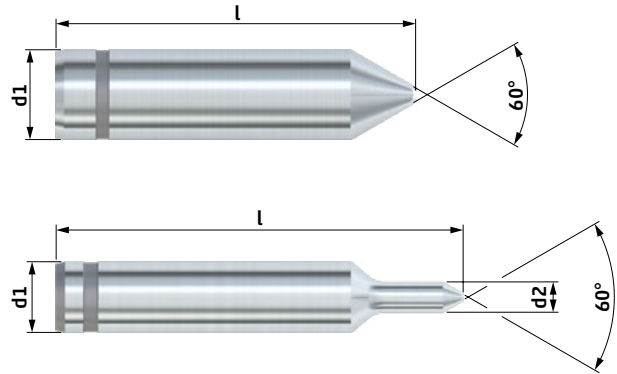
Center Pins FSP(V) / FSPB(V) / SP(V)

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

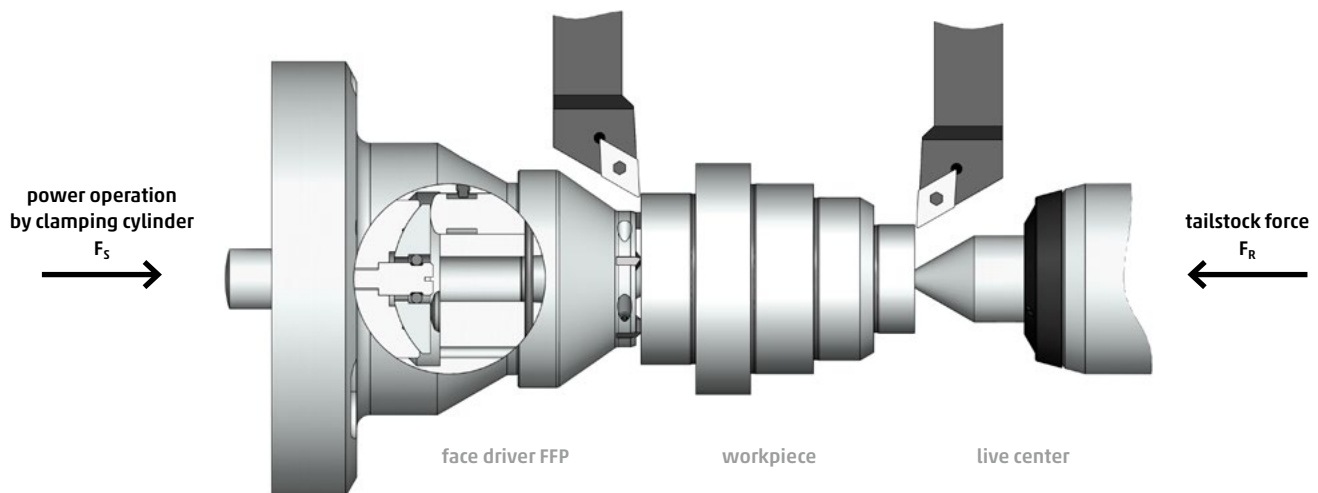
The center pin located on the side of the tailstock pushes the workpiece against the fixed center pin of the face driver. The motion of the drive disk against the workpiece face side is initiated by the clamping cylinder mounted into the machine. The drive disk is "floatingly" suspended, thus balancing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

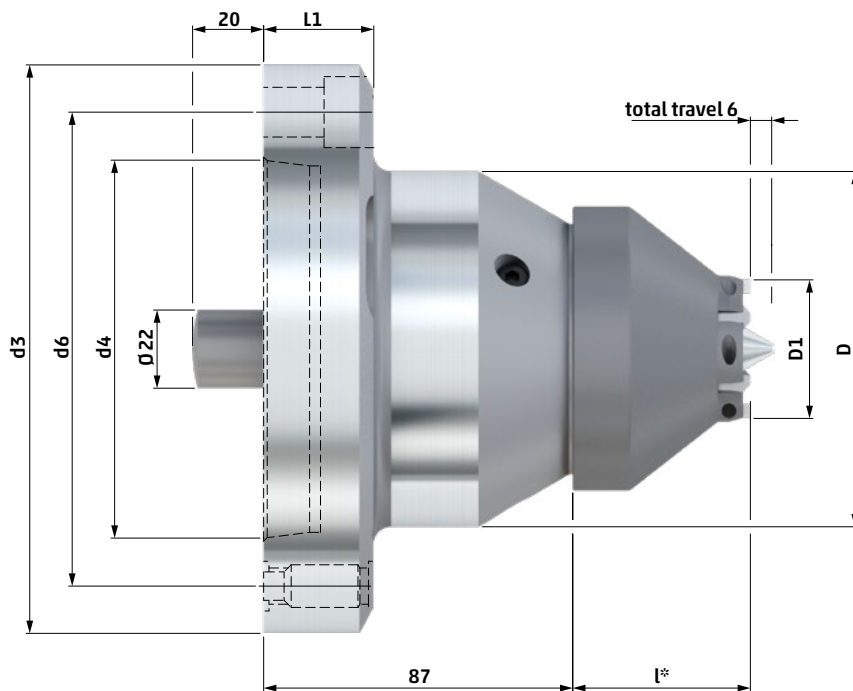
The entire surface of the workpiece can now be tooled in one single clamping. See page 59 for data of cutting performance and the clamping forces requested.

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

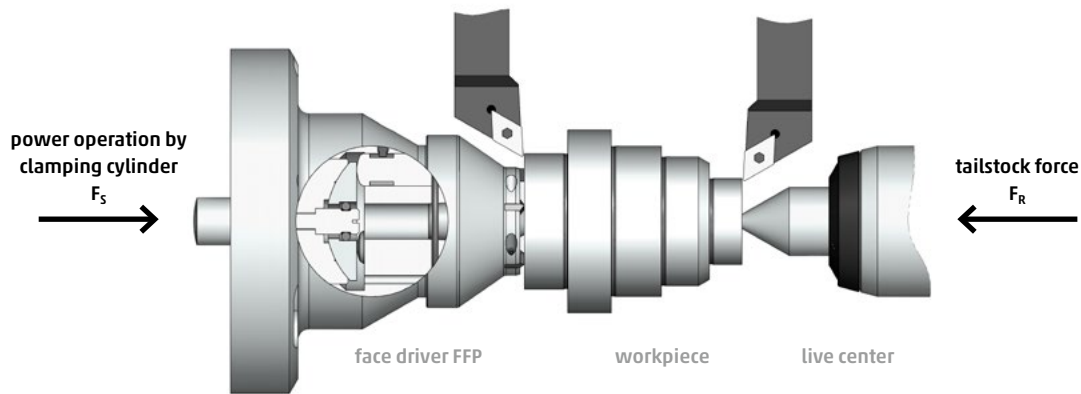
type FFP	D	D1	d3	d4	d6	L1	fixing screws		short taper size	cat. no.
							type	pcs		
3	80	14 - 59	130	82.563	104.8	31	M12	3	5	632 30
	90	14 - 59	160	106.375	133.4	31	M12	3	6	632 31
4	90	31 - 125	160	106.375	133.4	31	M12	3	6	632 32
	100	31 - 125	220	139.719	171.4	39	M16	3	8	632 33

■ 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/mm²]	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



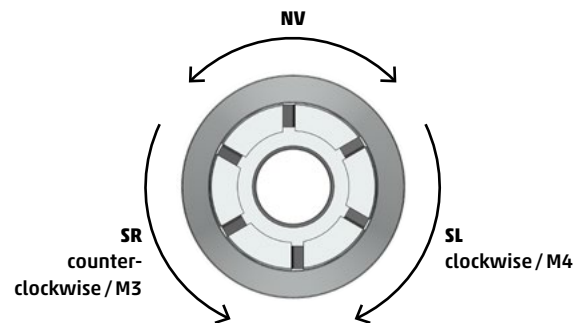
Drive Disks FFP · Chisel NV / SL / SR

**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



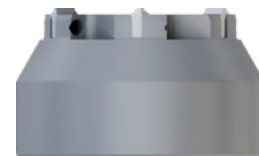
view from tailstock onto the face driver



SL (carbide)

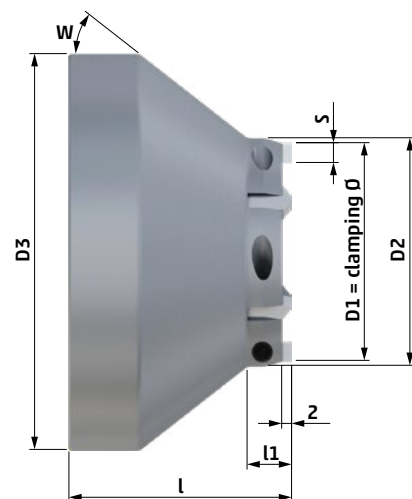


NV (tool steel)



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

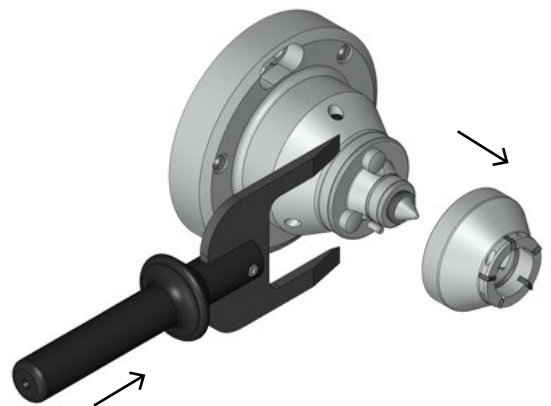
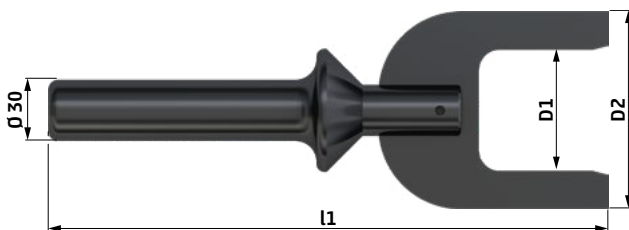
for fixing carbide inserts

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.

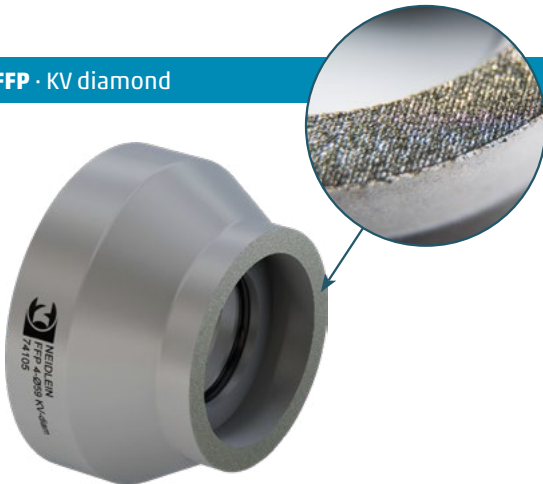
Drive Disks FFP · KV Diamond



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

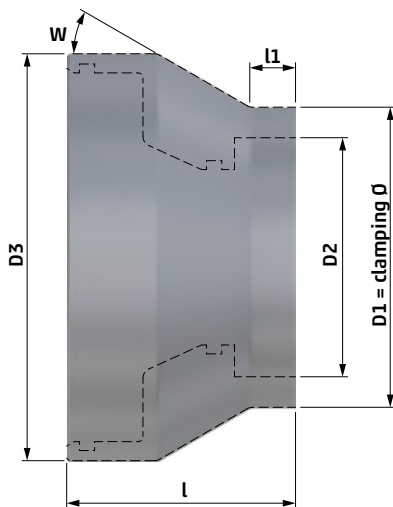
This drive disks have a very high friction coefficient and can be used for both directions of rotation.

Type FFP · KV diamond

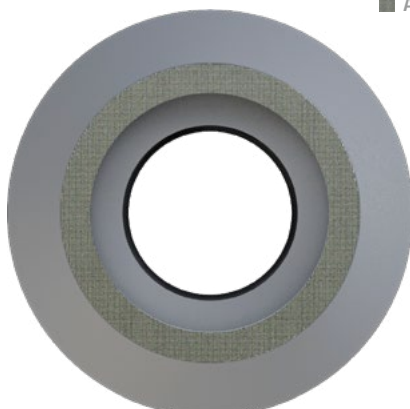


for type FFP	D1	D2	D3	l	l1	W	A [mm ²]	cat. no.
3	14	9	60	59	5	35°	90	740 82
	18	13	60	59	5	30°	120	740 83
	22	13	60	59	9	30°	250	740 84
	26	17	60	53	9	30°	300	740 85
	31	22	60	53	9	30°	370	740 86
	36	24	60	45	9	30°	450	740 87
	39	30	60	45	9	30°	490	740 88
	44	35	60	45	9	30°	560	740 89
	49	39	60	45	9	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	9	-	1470	741 07
	99	87	80	45	-	-	1750	741 08
	110	98	80	45	-	-	1960	741 09
125	113	80	45	-	-	2240	741 10	

Technical data - type FFP · KV diamond



■ A [mm²]



■ 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

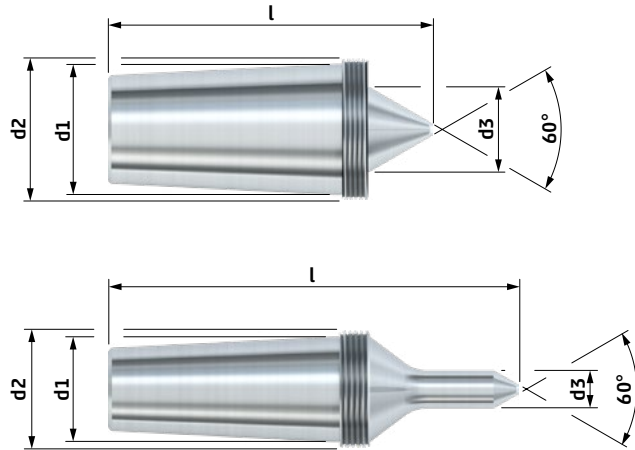
for face drivers FFP with taper shank dead center

Type FFP · tool steel or carbide



with carbide insert

Technical data – type FFP · tool steel or carbide



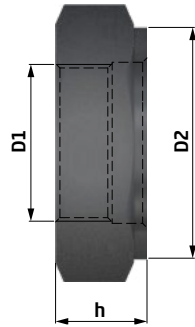
for type FFP	d1	d2	center Ø	clamping Ø	d3	l	TYPE	TYPE
							TOOL STEEL	CARBIDE
							cat. no.	cat. no.
3	14	M16 x 1.5	3.35	14	7	55	734 52	734 62
	14	M16 x 1.5	4.25	18 - 22	11	56	734 53	734 63
	14	M16 x 1.5	5.3	26 - 31	14	50.5	734 54	734 64
	14	M16 x 1.5	6.7	36 - 59	11.3	44	734 55	734 65
	14	M16 x 1.5	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 FFPV 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 FFPV 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

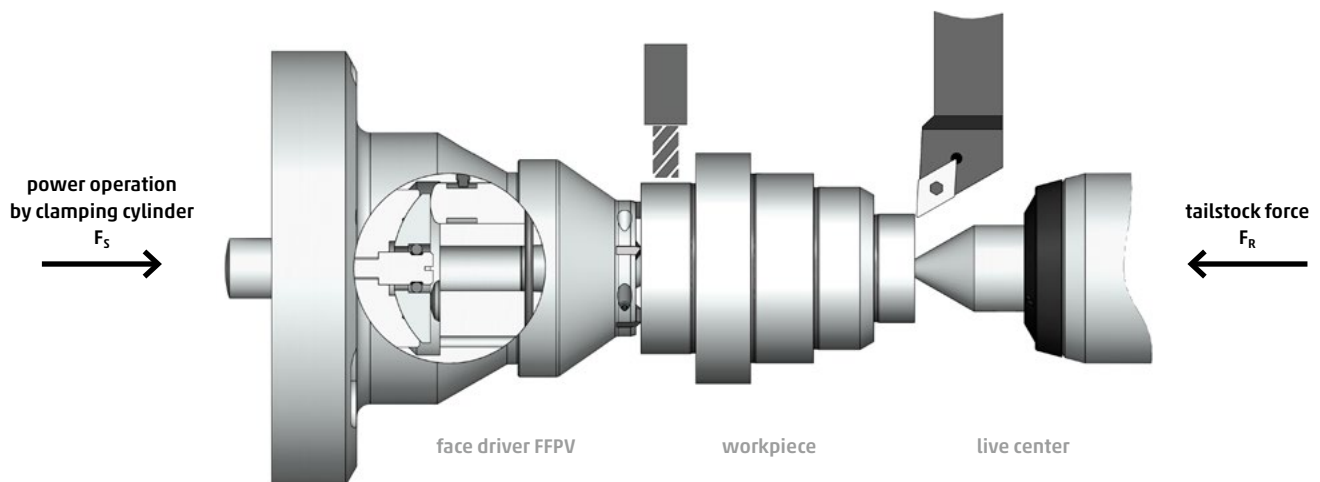
The center pin located on the side of the tailstock pushes the workpiece against the fixed center pin of the face driver. The motion of the drive disk against the workpiece face side is initiated by the clamping cylinder mounted into the machine. The drive disk is "floatingly" suspended, thus balancing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

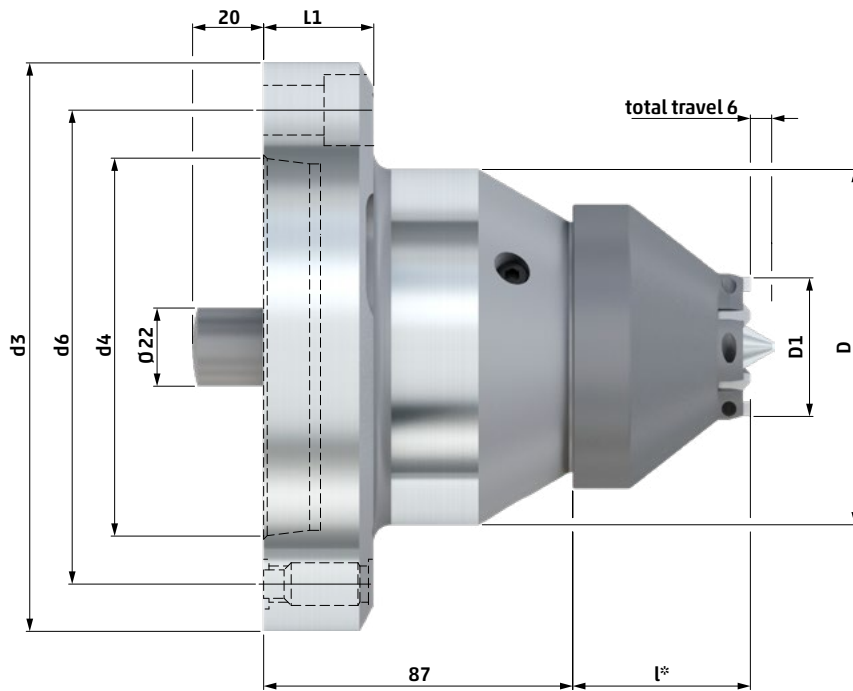
The entire surface of the workpiece can now be tooled in one single clamping. See page 69 for data of cutting performance and the clamping forces requested.

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

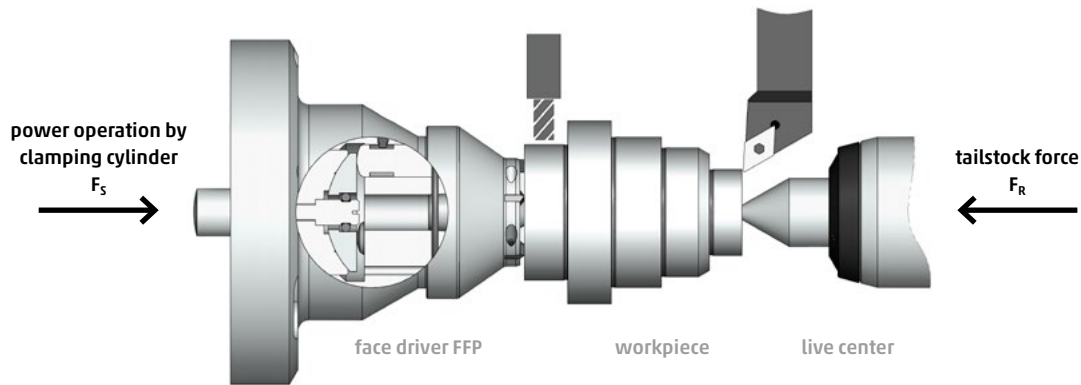
type FFPV	D	D1	d3	d4	d6	L1	fixing screws		short taper size	cat. no.
							type	pcs		
3	80	14 - 59	130	82.563	104.8	31	M12	3	5	632 50
	90	14 - 59	160	106.375	133.4	31	M12	3	6	632 51
4	90	31 - 125	160	106.375	133.4	31	M12	3	6	632 52
	100	31 - 125	220	139.719	171.4	39	M16	3	8	632 53

- 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/mm²]	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

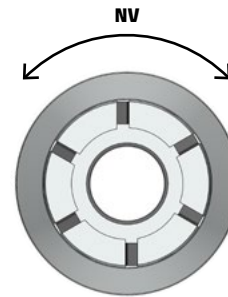
Drive disks FFPV · Chisel NV

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



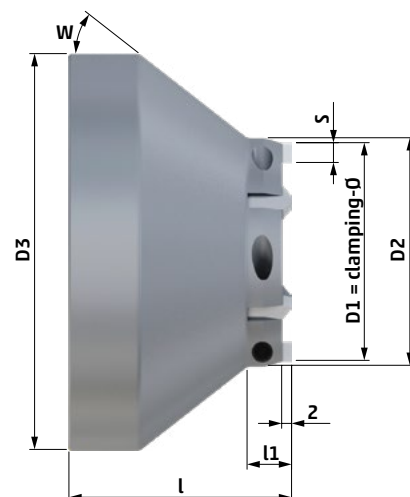
NV (tool steel)

D1 = 14 - 18 · type 3



NV (carbide)

Technical data - type FFPV · chisel NV



TYPE CHISEL NVfor 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 NVfor 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
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

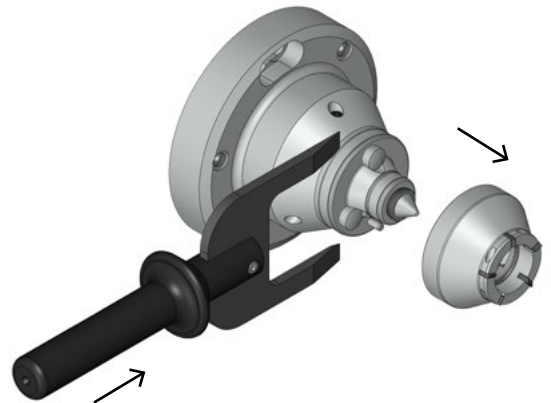
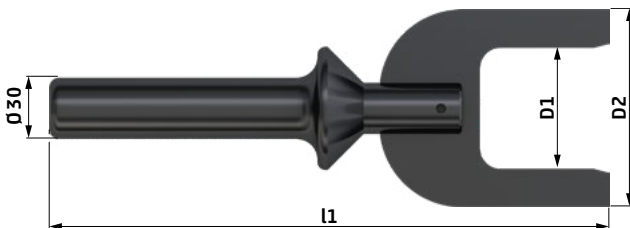
for fixing carbide inserts

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)

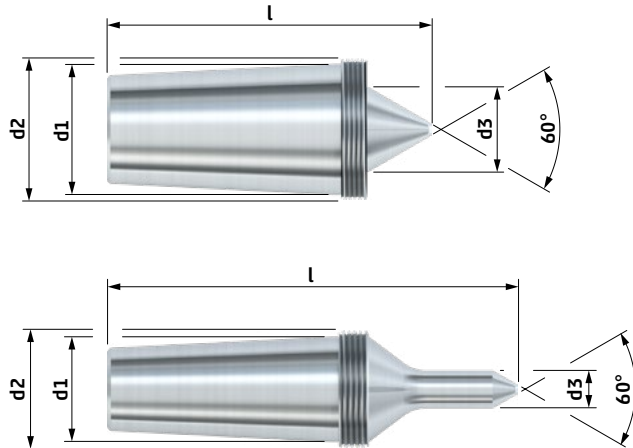
for face drivers FFP / FFP(V) with taper shank dead center

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

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



with carbide insert



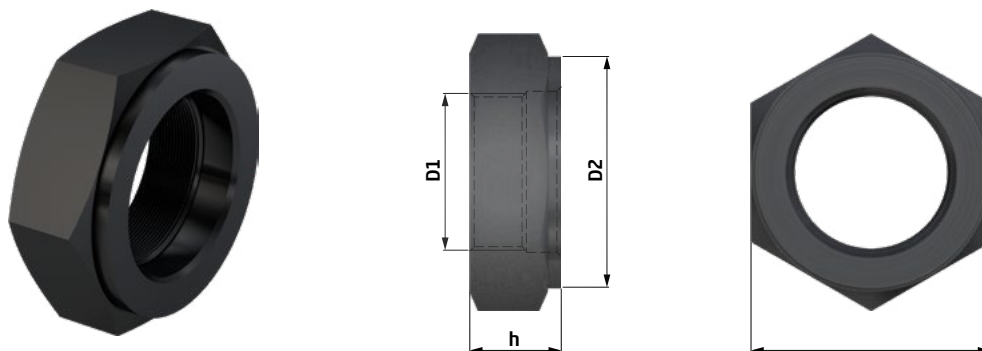
for type FFP / FFP(V)	d1	d2	center Ø	clamping Ø	d3	l	TYPE	
							TOOL STEEL	CARBIDE
							cat. no.	cat. no.
3	14	M16 x 1.5	3.35	14	7	55	734 52	734 62
	14	M16 x 1.5	4.25	18 - 22	11	56	734 53	734 63
	14	M16 x 1.5	5.3	26 - 31	14	50.5	734 54	734 64
	14	M16 x 1.5	6.7	36 - 59	11.3	44	734 55	734 65
	14	M16 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.

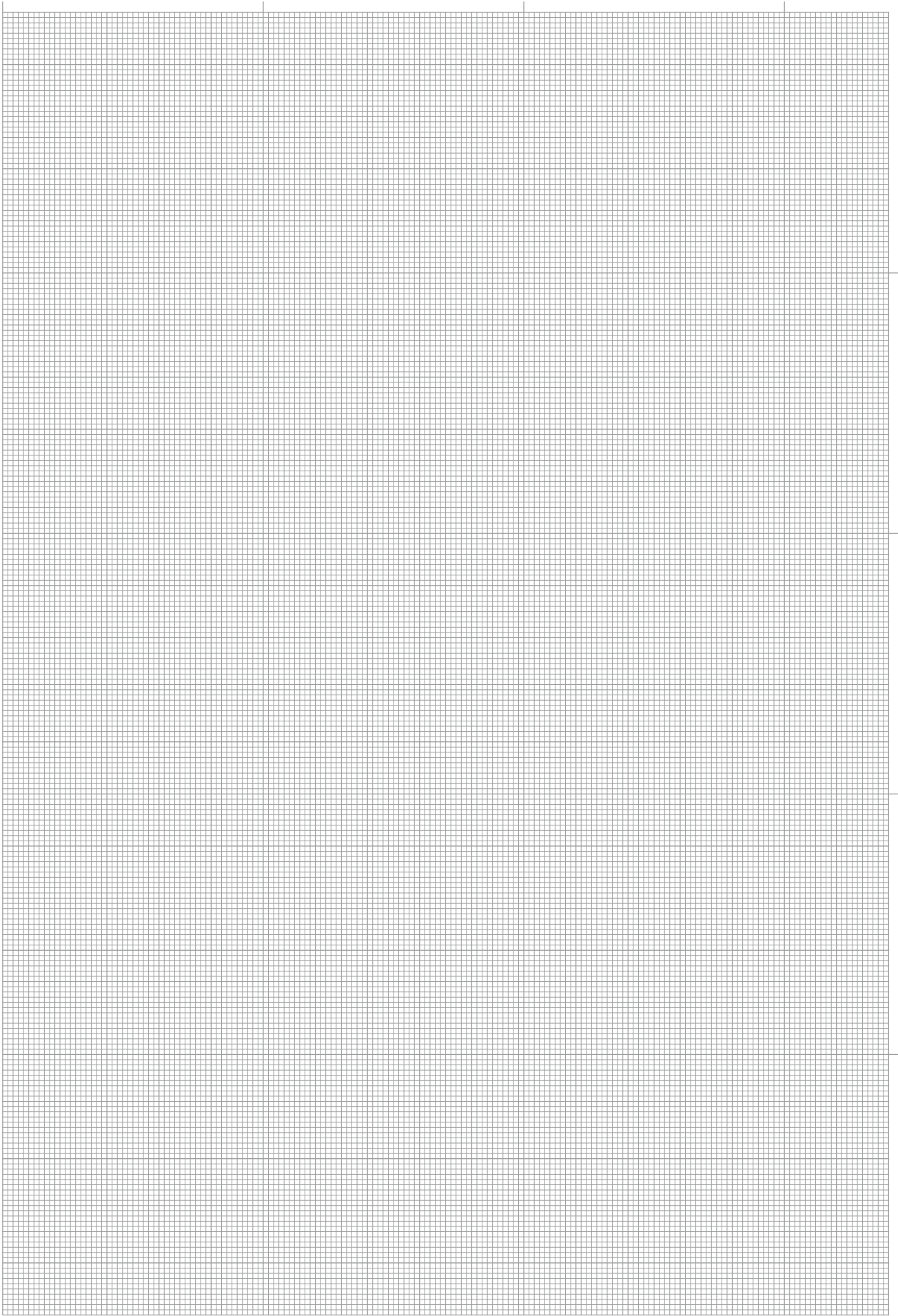
Extracting nuts for center pin FFP / FFPV

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:

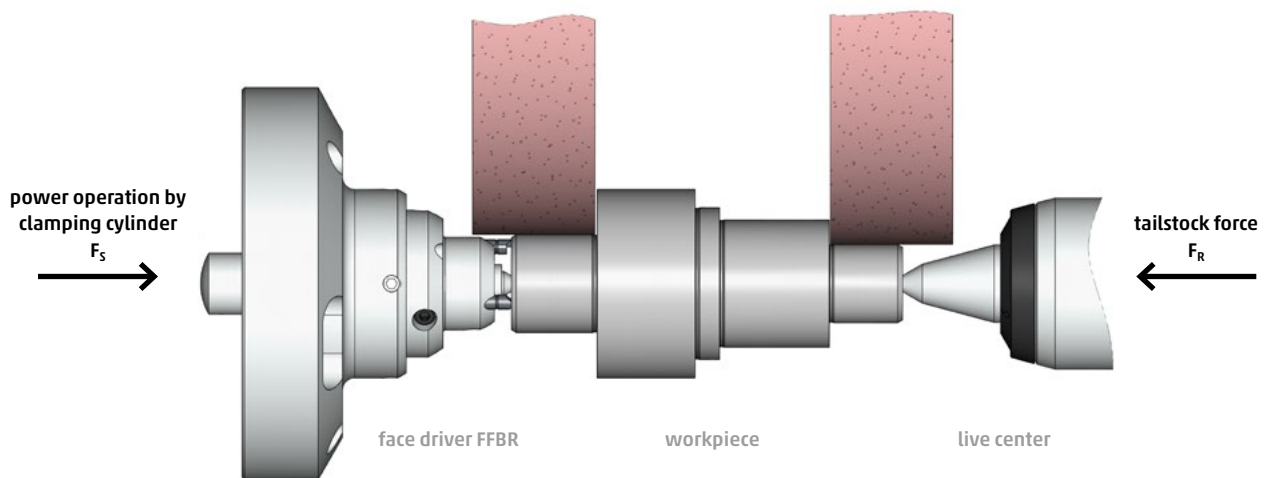
- datum-point located in the center of the workpiece
- run-out deviation max.: 0.002 - 0.003 mm
- compensating drive components
- retractable drive pins for secure loading and unloading of the workpiece
- adjustment true at face drivers for highest run-out requirements

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.

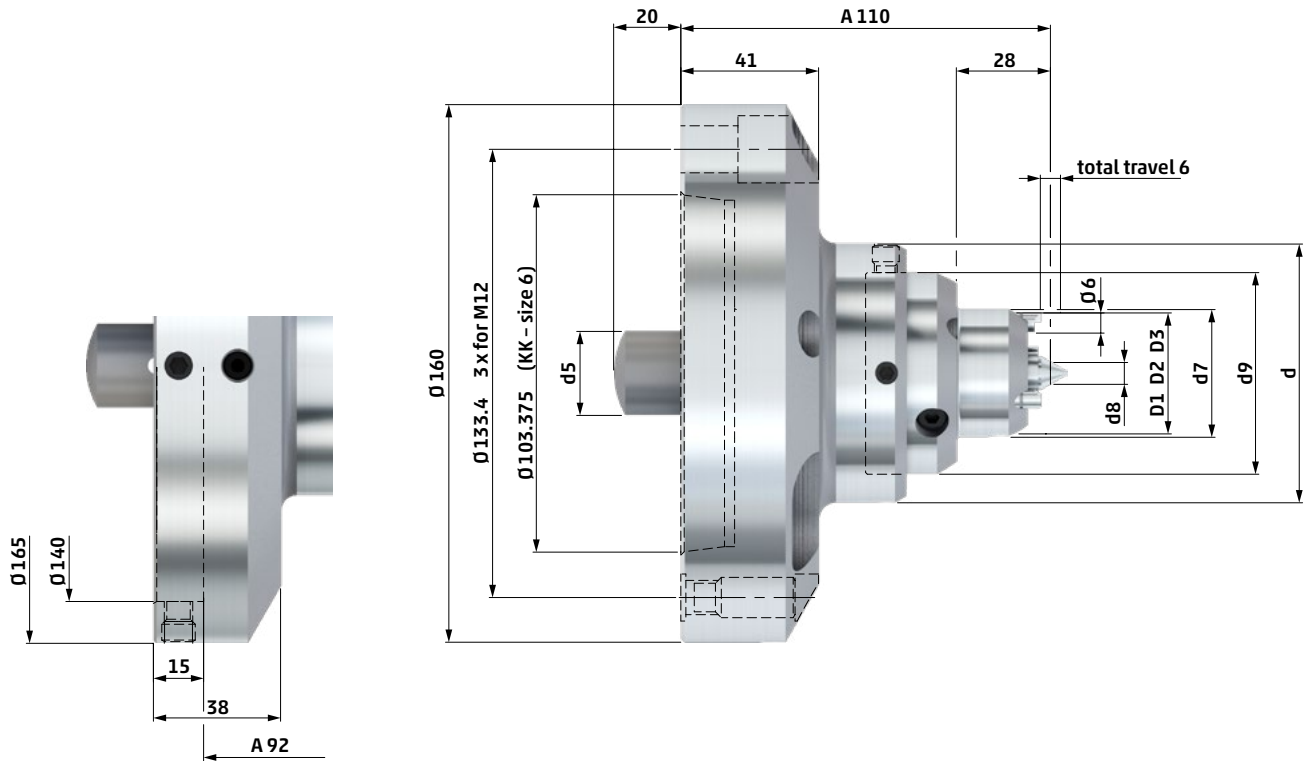
Typ FFBR with flange retainer



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

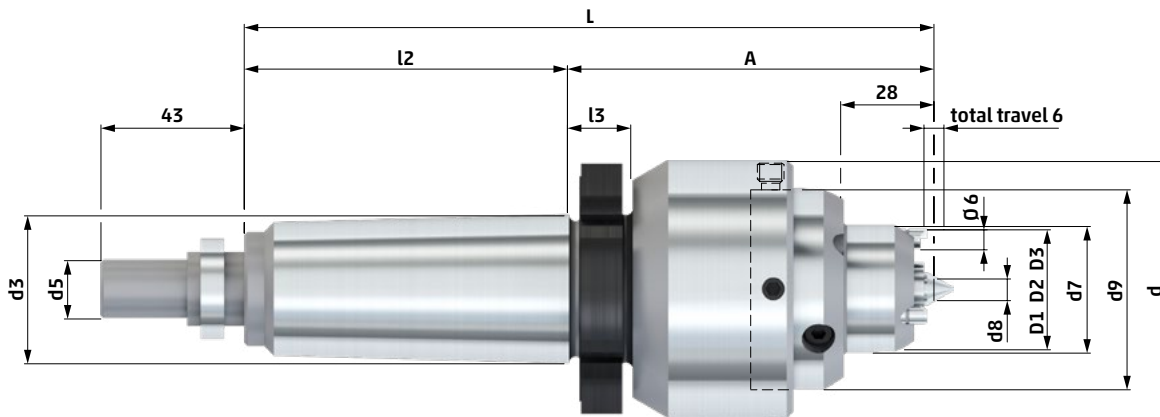
TYPE SHORT TAPER RETAINER SIZE 6

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.



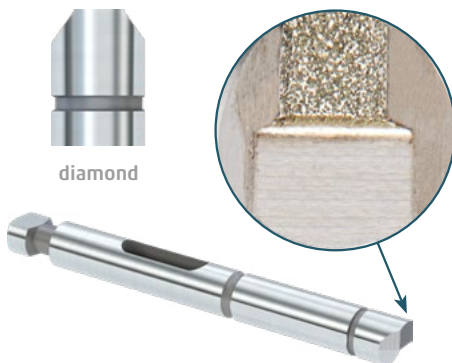
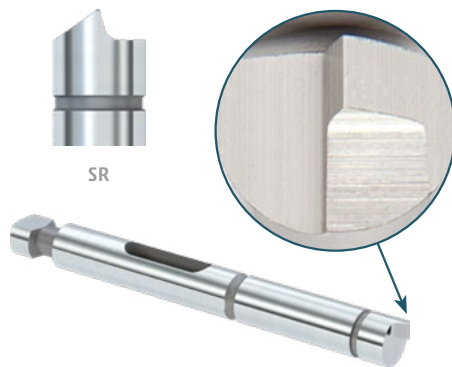
Drive Pins FFBR / FBSR · Chisel SR · Diamond

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



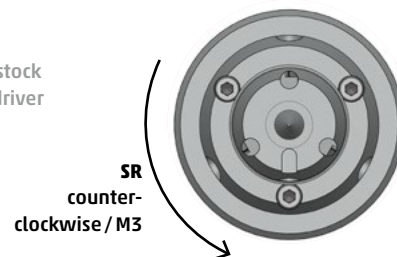
model B



model C



view from tailstock
onto the face driver



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 \varnothing 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.

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

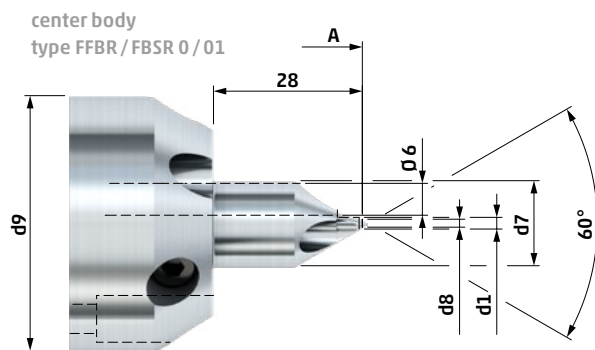
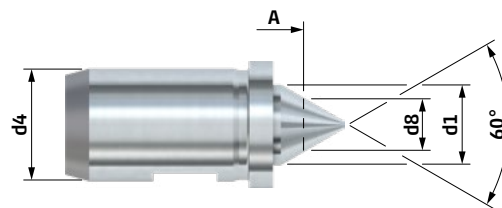
For a large batch of hardened workpieces we recommend the construction comprising carbide insert. Center heads of type 0 / 01 consist of 60°-taper tip that are carbide coated.

Type FFBR / FBSR · tool steel or carbide

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



with carbide insert



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

for type FFBR / FBSR	d1	d4	center Ø	d7	d8	d9	TYPE	
							TOOL STEEL	CARBIDE
							cat. no.	cat. no.
0	3	-	1 - 3	16	1.5	48	734 15	734 31
01	5	-	1 - 5	18	3	48	734 16	734 32
11	7.8	6	2 - 6.5	-	4.25	-	734 11	734 33
1	9.8	8	4 - 8.5	-	6.25	-	734 02	734 34
2	10	14	4 - 9	-	6.5	-	734 03	734 35
3	12	18	6 - 11	-	8.5	-	734 04	734 36
4	16	20	10 - 15	-	12.5	-	734 05	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 $\varnothing 100$ 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

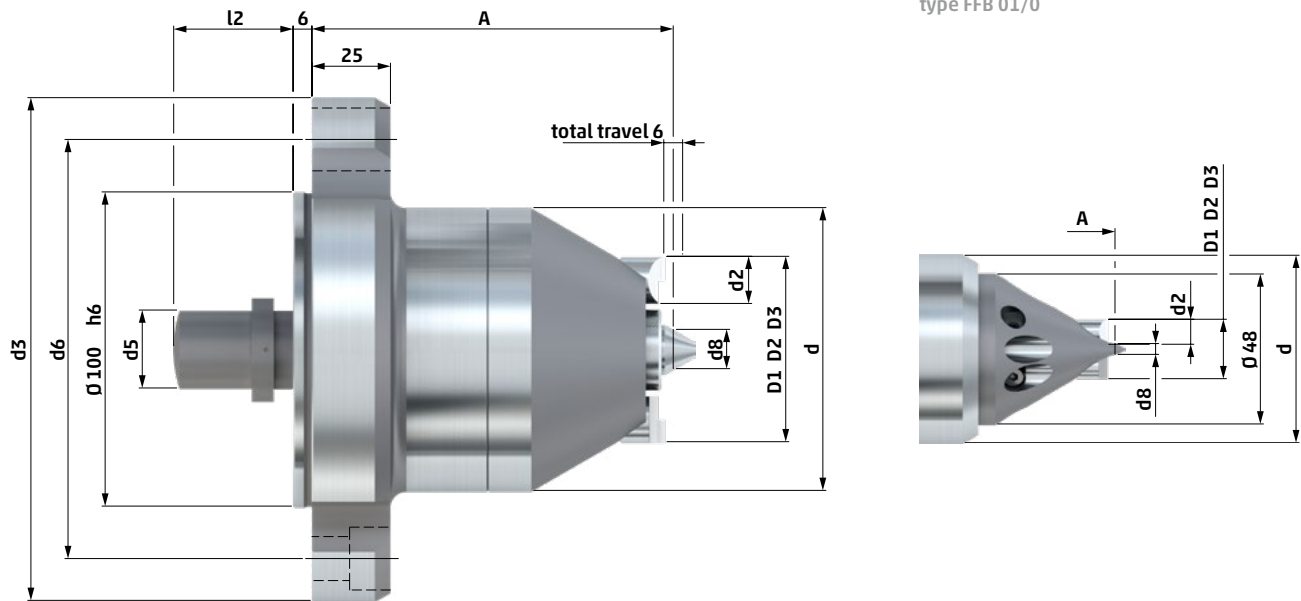
Type FFBH is adapted onto the machine spindle using an adjustable flange adapter.



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

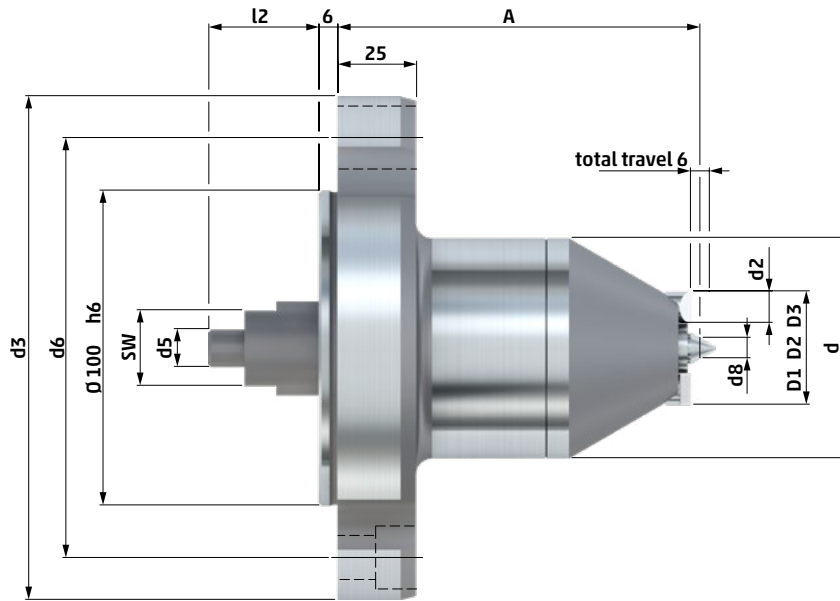
- All face drivers are supplied without drive pins. (drive pins see page 86 - 87)
- Types FFB 01/0 are supplied with center body, all other types without center pin. (center pin see page 85)
- Diameter d8 refers to standard center pins. (see page 85)
- Further center pins for other center holes upon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

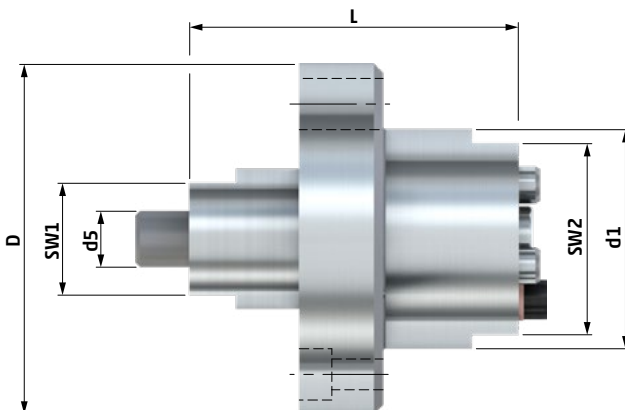
Technical data – type FFBH face driver



type	d	center Ø	d2	d3	SW	d5	d6	d8	A	l2	drive pins	clamping screws			cat. no.		
												type	pcs	clamping Ø			
FFBH													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	
2	24	12	70.5	47	41	75	631 02 HE
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.

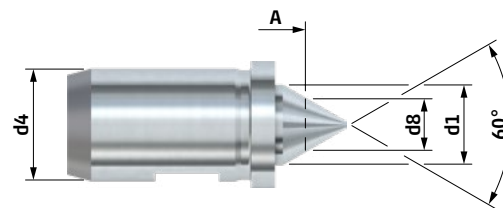
Due to the accurate assembly between center pin and head of face driver we ensure highly accurate replacement.

Type FFB / FFBH · tool steel or carbide

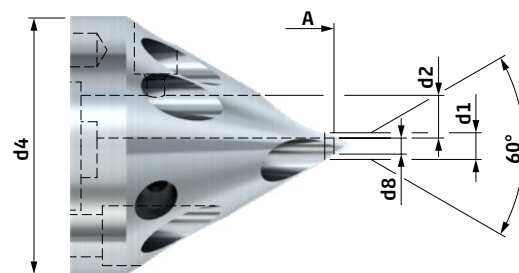


with carbide insert

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.



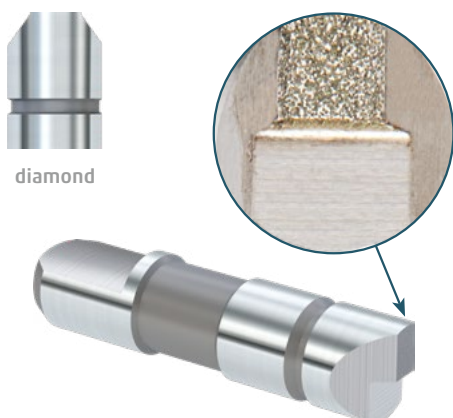
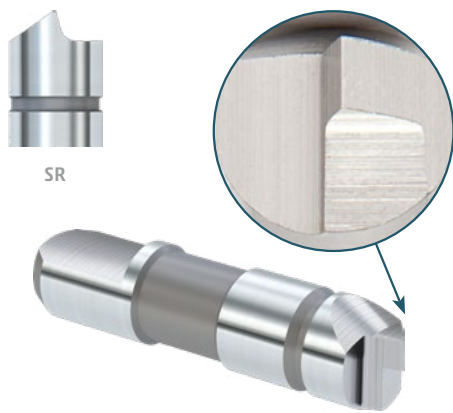
Drive Pins FFB / FFBH · Chisel SR · Diamond

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

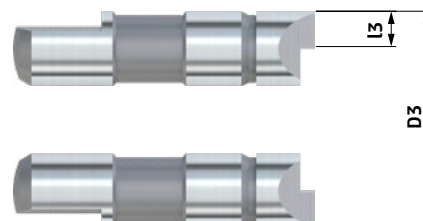
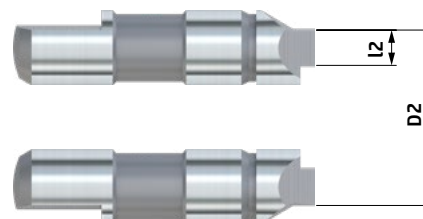
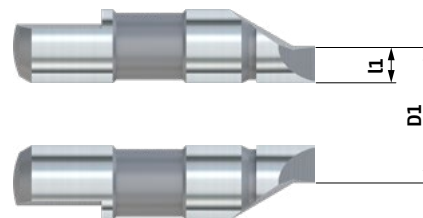
Drive pins made of hardened HSS with chisel are used **for grinding soft workpieces**. These are characterized by a high resistance to wear and tear and a maximum torque transmission.

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.

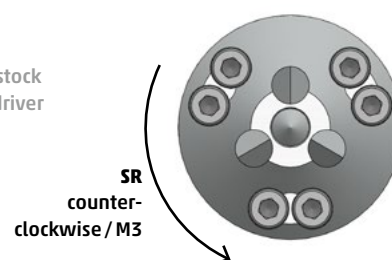
Type FFB / FFBH · chisel SR · diamond



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.

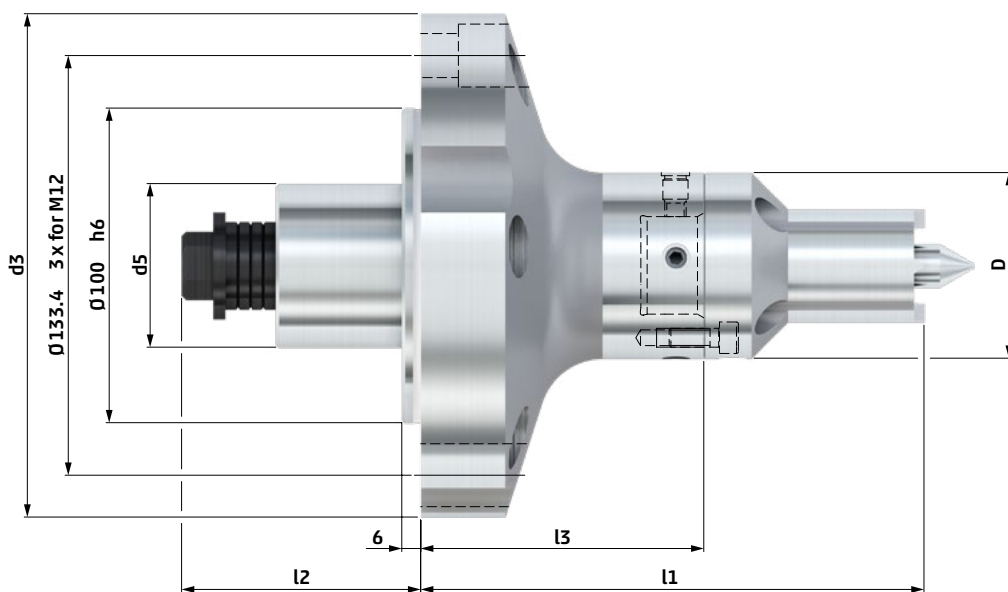
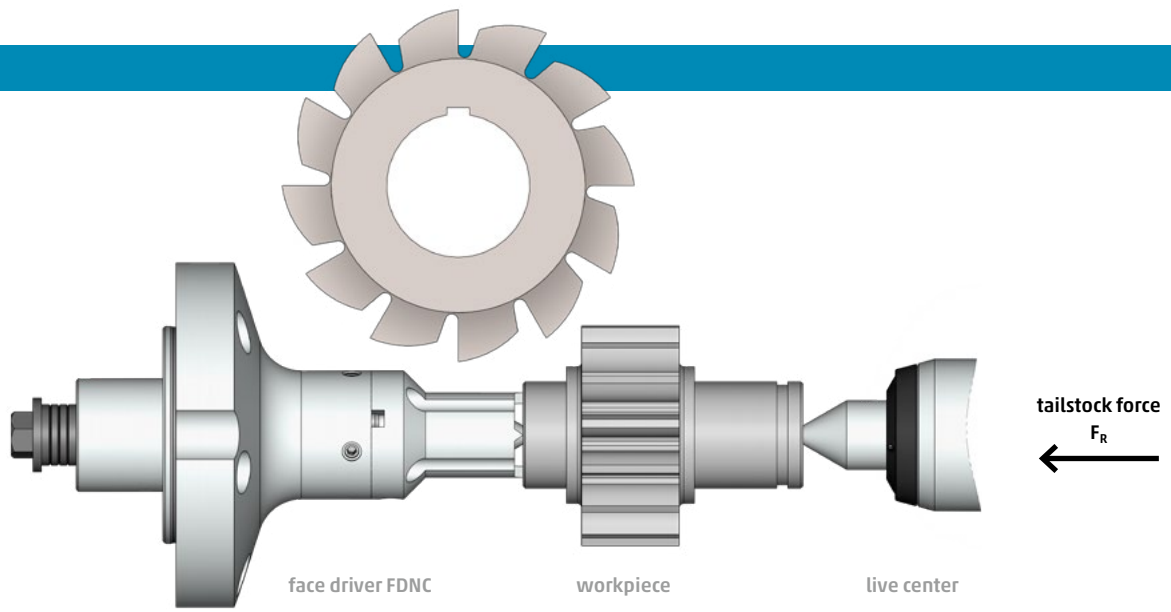


NEIDLEIN face drivers FDNC ensure:

- 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.



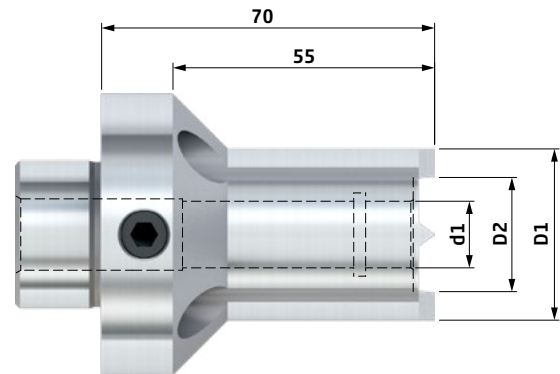
Drive Heads FDNC

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.

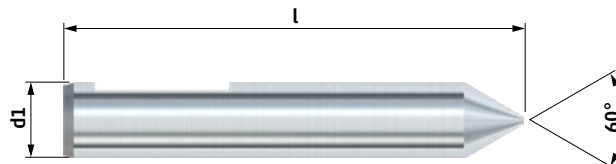
Center Pins FDNC

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.