

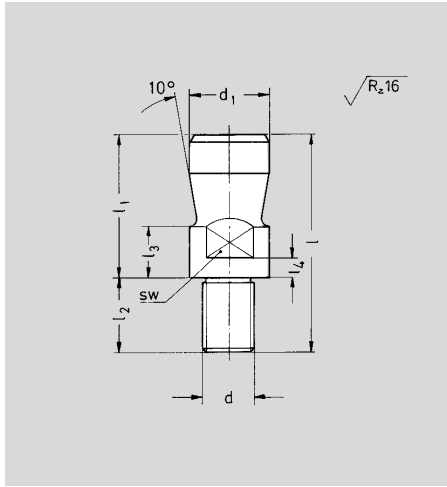
## Accessories

- Carrying units
- Magnets
- Cylindrical pins
- Barrier grids
- Precision gauge and foil strips
- Saw blades
- Casting resins, mould resins
- Jointing compounds, adhesives, lubricants
- Lubricants like high efficiency oil and grease
- Screws and threaded pins with hexagonal recessed holes
- Receiving-chucks
- Clamping sockets
- Wobblers



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**Order example:**  
 Clamping sockets **SZ 4035**  
 d = M 42 x 3, d<sub>1</sub> = 65 mm  
 Add **42 x 65**  
 Order number **SZ 4035.42 x 65**



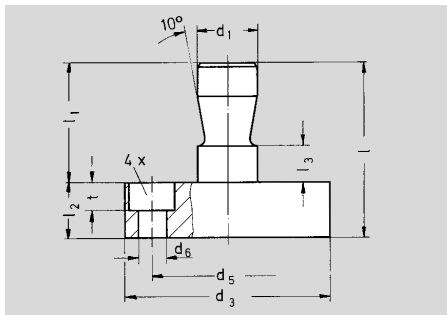
**Clamping sockets DIN ISO 10 242**

**Material:** 1.0503 (C 45)

Clamping sockets with thread are used for tightening the assembly of the die set upper plate with the press plunger. The plug diameters are in accordance with the standardized press plunger bore-holes. They are suitable to all Steinel die sets with thread in the upper plate.

Order number **SZ 4035**.  x

d	d <sub>119</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	SW	▲
M 16 x 1,5	20	58	40	18	12	4	17	<b>16 x 20</b>
M 16 x 1,5	25	68	45	23	16	6	21	<b>16 x 25</b>
M 20 x 1,5	25	68	45	23	16	6	21	<b>20 x 25</b>
M 20 x 1,5	32	79	56	23	16	6	27	<b>20 x 32</b>
M 24 x 1,5	32	79	56	23	16	6	27	<b>24 x 32</b>
M 24 x 1,5	40	93	70	23	26	12	36	<b>24 x 40</b>
M 27 x 2	40	93	70	23	26	12	36	<b>27 x 40</b>
M 30 x 2	40	93	70	23	26	12	36	<b>30 x 40</b>
M 30 x 2	50	108	80	28	26	12	41	<b>30 x 50</b>
M 42 x 3	65	128	100	28	26	12	55	<b>42 x 65</b>



**Order example:**  
 Clamping sockets with flange **SZ 4080**  
 d<sub>1</sub> = 20, d<sub>3</sub> = 68 mm  
 Add **20 x 068**  
 Order number **SZ 4080.20 x 068**



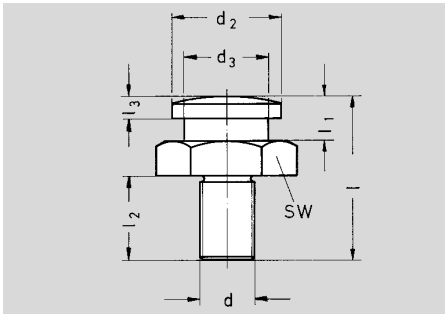
**Clamping sockets DIN 9859/ISO 10242**

**Material:** 1.0503 (C 45)

Clamping sockets with flange are screwed onto the die set upper plate and result more favourable guide rates with a large stroke, due to the use of longer guide pillars.

Order number **SZ 4080**.  x

d <sub>119</sub>	d <sub>3</sub>	d <sub>5</sub>	d <sub>6</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	t	▲
20	68	50	9	58	40	18	12	9	<b>20 x 068</b>
25	83	65	9	63	45	18	16	9	<b>25 x 083</b>
32	98	80	9	79	56	23	16	9	<b>32 x 098</b>
40	123	105	9	93	70	23	26	9	<b>40 x 123</b>



**Wobbler with thread**

**Material:** 1.0503 (C 45)

Wobblers with thread suitable to all Steinel die sets with thread in the upper plate. Suitable receiving-chucks: SZ 4160 and SZ 4161.

Order number **SZ 4125.** □ x □

**Order example:**

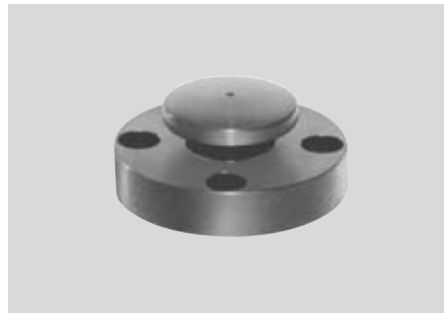
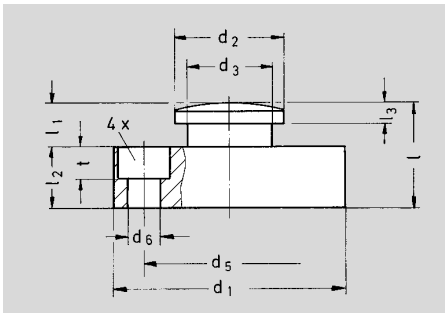
Wobbler with thread **SZ 4125**

d = M 30 x 2, d<sub>2</sub> = 48 mm

Add **30 x 48**

Order number **SZ 4125.30 x 48**

d	d <sub>2</sub>	d <sub>3</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	SW	▲
M 16 x 1,5	32	25	48	13	25	6,5	36	<b>16 x 32</b>
M 20 x 1,5	48	32	65	19	34	9,5	50	<b>20 x 48</b>
M 24 x 1,5	48	32	69	19	38	9,5	50	<b>24 x 48</b>
M 30 x 2	48	32	75	19	42	9,5	60	<b>30 x 48</b>



**Wobbler with flange**

**Material:** 1.0503 (C 45)

Wobblers with flange will be screwed onto the die set upper plate. Suitable receiving-chucks: SZ 4160 and SZ 4161.

Order number **SZ 4129.** □ x □

**Order example:**

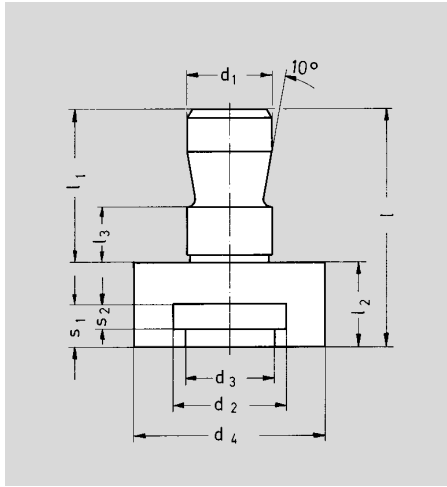
Wobbler with flange **SZ 4129**

d<sub>1</sub> = 68, d<sub>2</sub> = 32 mm

Add **068 x 32**

Order number **SZ 4129.068 x 32**

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>5</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	t	▲
68	32	25	50	9	13	18	6,5	9	<b>068 x 32</b>
83	48	32	65	9	19	18	9,5	9	<b>083 x 48</b>
98	48	32	80	9	19	23	9,5	9	<b>098 x 48</b>
123	48	32	105	9	19	23	9,5	9	<b>123 x 48</b>



**Receiving-chucks for wobblers**

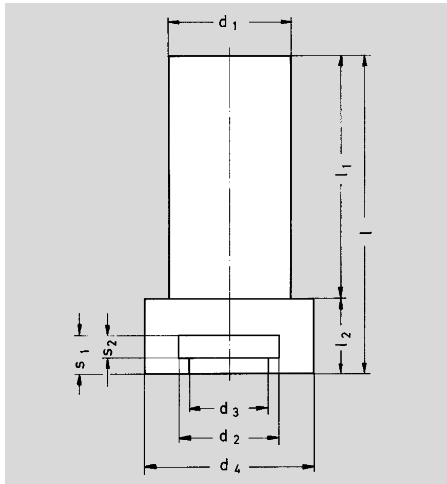
**Material:** 1.0503 (C 45)

The receiving-chuck is used together with a wobbler for a loose assembly of the die set upper plate with the press plunger. The plug diameters are in accordance with the standardized press plunger bore-holes. They are suitable to all Steinel wobblers.

Order number **SZ 4160.**  x

**Order example:**  
 Receiving-chucks for wobblers **SZ 4160**  
 $d_1 = 32, d_2 = 49$  mm  
 Add **32 x 49**  
 Order number **SZ 4160.32 x 49**

$d_{1f9}$	$d_2$	$d_3$	$d_4$	$l$	$l_1$	$l_2$	$l_3$	$s_1$	$s_2$	▲
25	33	26	56	70	45	25	16	13	7	<b>25 x 33</b>
32	49	33	80	86	56	30	16	19	10	<b>32 x 49</b>
40	49	33	80	100	70	30	26	19	10	<b>40 x 49</b>



**Unworked receiving-chucks**

**Material:** 1.0503 (C 45)

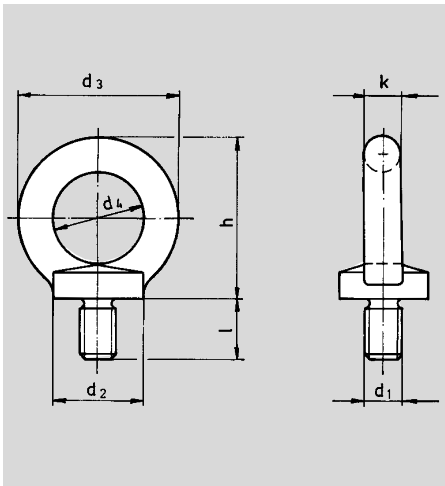
Unworked receiving-chucks are provided with center bore-holes and can be re-turned on a turning lathe to any plug diameter. They are suitable to all Steinel wobblers.

Order number **SZ 4161.**  x

**Order example:**  
 Unworked receiving-chucks **SZ 4161**  
 $d_1 = 40, d_2 = 33$  mm  
 Add **40 x 33**  
 Order number **SZ 4161.40 x 33**

$d_1$	$d_2$	$d_3$	$d_4$	$l$	$l_1$	$l_2$	$s_1$	$s_2$	▲
40	33	26	56	105	80	25	13	7	<b>40 x 33</b>
50	49	33	80	120	90	30	19	10	<b>50 x 49</b>
60	49	33	80	130	100	30	19	10	<b>60 x 49</b>

# Carrying elements



## Eye bolts

**DIN 580**

**Material:** Steel 1.0401 (C 15)

**Order example:** Eye bolt **SZ 4380**

$d_1 = M 12$

Add **12**

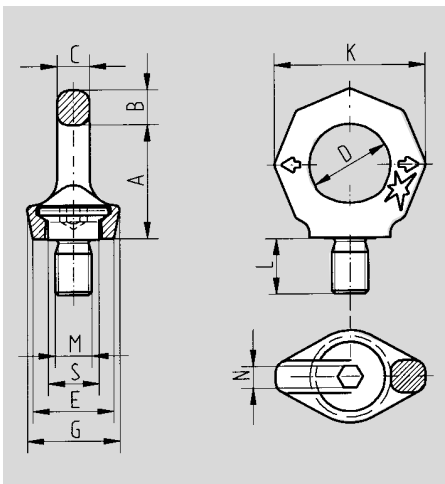
Order number **SZ 4380.12**

**Use of the eye bolts aside are not permitted (only vertically)**

Add size to order number

Order number **SZ 4380.**

$d_1$	Carrying force in axial direction (N)	$d_2$	$d_3$	$d_4$	l	h	k	▲
M 8	1400	20	36	20	13	36	8	<b>08</b>
M 10	2300	25	45	25	17	45	10	<b>10</b>
M 12	3400	30	54	30	20,5	53	12	<b>12</b>
M 16	7000	35	63	35	27	62	14	<b>16</b>
M 20	12000	40	72	40	30	71	16	<b>20</b>
M 24	18000	50	90	50	36	90	20	<b>24</b>



## Eye ring, rotatable

With key, hexagon shape

**Material:** 1.6541 forged, high-tensile quenched and tempered. 100% electromagnetic inspection for cracks per DIN 5691, EN 1677

**Characteristic:** Distinct load capacity specification for the unfavourable load F area, which is not allowed with DIN 580.

**Note:** The eye ring is rotatable only when tightly screwed in.

**Order example:** Eye ring, rotatable

**SZ 4385**

M = M12

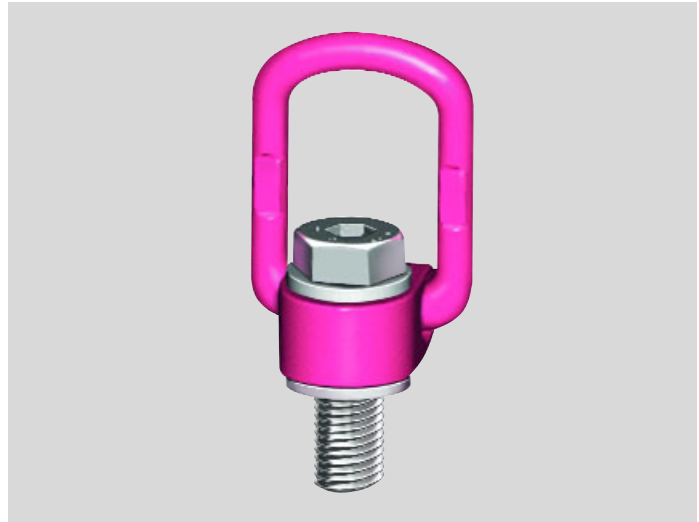
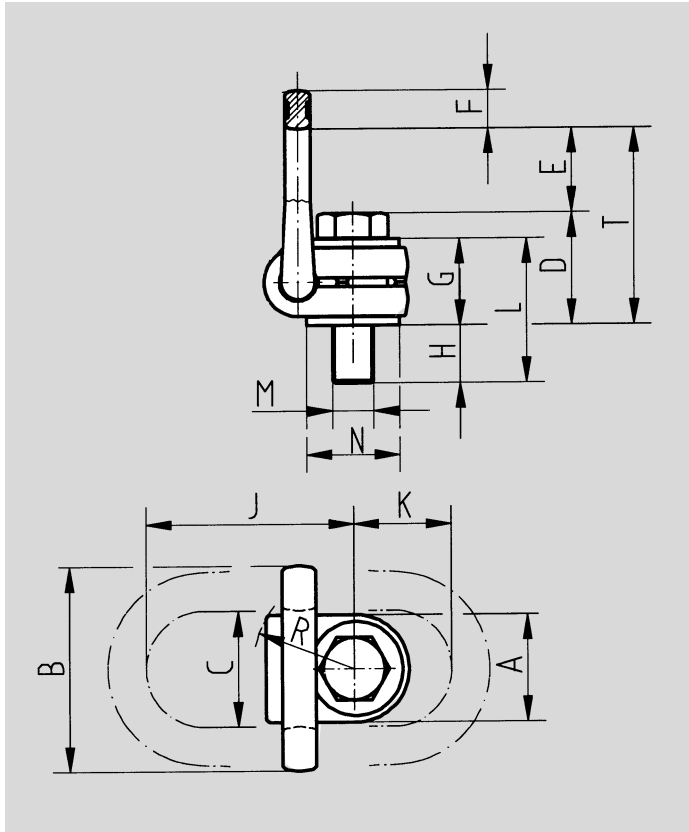
Add **12**

Order number: **SZ 4385.12**

Add size to order number

Eye ring, rotatable Order number **SZ 4385.**

M	Carrying load											▲
	in kg	A	B	C	D	E	G	K	L	N	S	
M 8	400	34	11	8,5	25	25	28	47	12	6	16	<b>08</b>
M 10	400	34	11	8,5	25	25	28	47	15	6	15	<b>10</b>
M 12	750	42	13	10	30	30	34	56	18	8	18	<b>12</b>
M 16	1500	49	15	14	35	35	40	65	24	10	22	<b>16</b>
M 20	2300	57	17	16	40	40	50	75	30	12	27,5	<b>20</b>
M 24	3200	69	21	19	48	48	60	90	36	14	33	<b>24</b>
M 30	4500	86	26	24	60	60	75	112	45	17	41,5	<b>30</b>



**Side-load hoist ring**

**Note:** The side-load hoist ring is rotatable from all directions, collapsible and always adjusts itself to the direction of the load. It carries the full load in every mounting position. The included screw is held secure within the hoist ring, has a minimum strength of a 8.8 and is 100% inspected for cracks.

**Order example:** Side-load hoist ring **SZ 4390**

M = M16

Add **16**

Order number **SZ 4390.16**

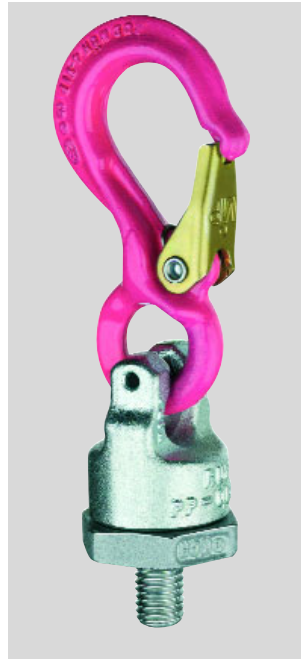
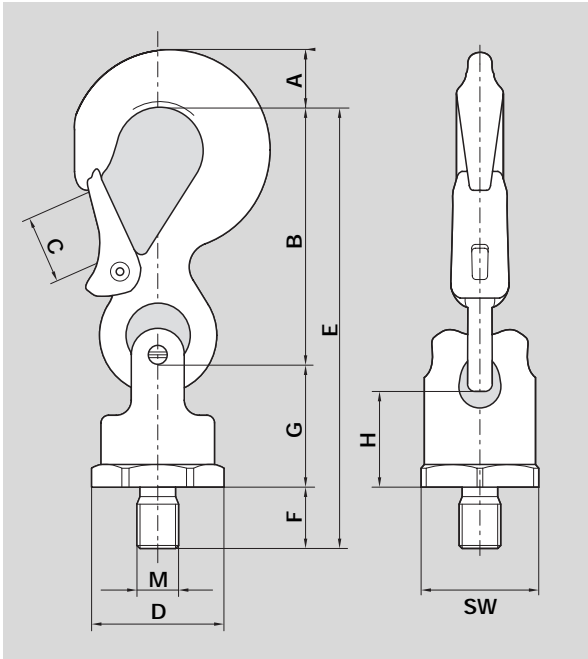
Add size to order number

**Side-load hoist ring**

Order number **SZ 4390.**

M	Load capacity in t	A	B	C	D	E	F	G	H	J	K	L	N	R	T	▲
M 8	0,3	30	54	34	35	40	10	29	11	75	45	40	32	32	75	<b>08</b>
M 10	0,63	30	54	34	36	39	10	29	16	75	45	45	32	32	75	<b>10</b>
M 12	1	32	54	34	37	38	10	29	21	75	45	50	32	32	75	<b>12</b>
M 16	1,5	33	56	36	46	39	13,5	36	24	86	45	60	38	38	85	<b>16</b>
M 20	2,5	50	82	54	55	55	16,5	43	32	116	61	75	50	48	110	<b>20</b>
M 24	4	50	82	54	58	66	16,5	43	37	116	61	80	50	48	125	<b>24</b>
M 30	5	60	103	65	80	67	22,5	61	49	151	80	110	60	67	147	<b>30</b>

# Load Hook SZ 4391



## Rotating load hook

### Special features:

- Running in two sets of ball bearings for jolt-free tilting, rotating and turning.
- Suitable for all separate lifting accessories – whether hooks, loops or slings.
- No protruding hook tip.
- Forged, hardened & tempered safety latch catching inhook tip – this safeguards against lateral bending.
- Triple coiled, stainless steel double torsion spring.
- Thickened hook tip against improper use.

### Order example: Load hook SZ 4391

M = 16

Add 16

Order number **SZ 4391.16**

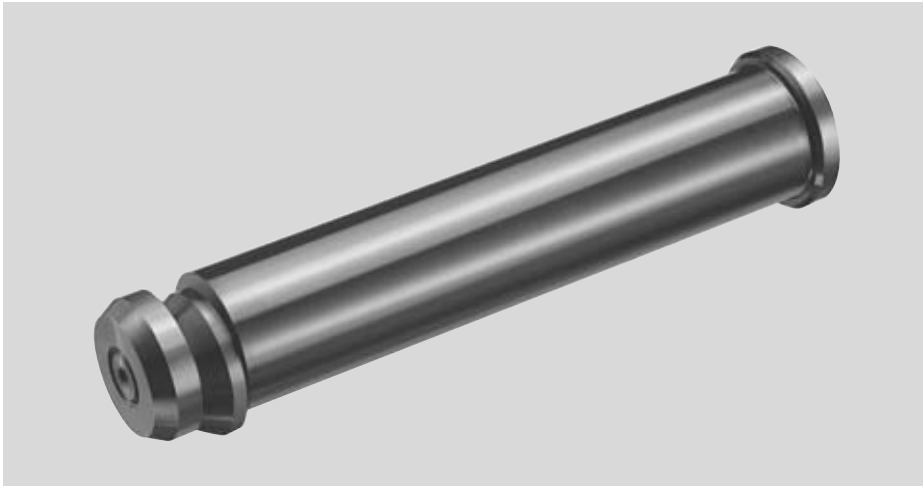
Add size to order number

Order number **SZ 4391.**

M	Load capacity in t	A	B	C	D	E	F	G	H	SW	▲
M 12	0,63	13	75	18	40	116	18	41	34	36	<b>12</b>
M 16	1,5	20	97	25	46	147	25	50	40	41	<b>16</b>
M 20	2,5	28	126	30	61	187	30	61	50	55	<b>20</b>
M 24	4,0	36	150	35	78	227	36	77	62	70	<b>24</b>
M 30	5,0	37	174	40	95	267	45	93	77	85	<b>30</b>
M 36	8,0	49	208	48	100	310	54	102	84	89	<b>36</b>

# Carrying bolt SZ 4366

with safety ring



Carrying bolt with safety ring

VDI 3366

Material: Steel 1.0503 bzw. 1.7227

Areas of application: Press tools with cast carrying inserts

**Note:**

The bolts must always be inserted from the outside to the middle of the tool, some exceptions possible. Note the safety area on both outsides of the casting and the assembly area on one side. Do not leave any carrying bolts in the upper part of the tools during production. Remove them beforehand, in order to prevent any accidents.

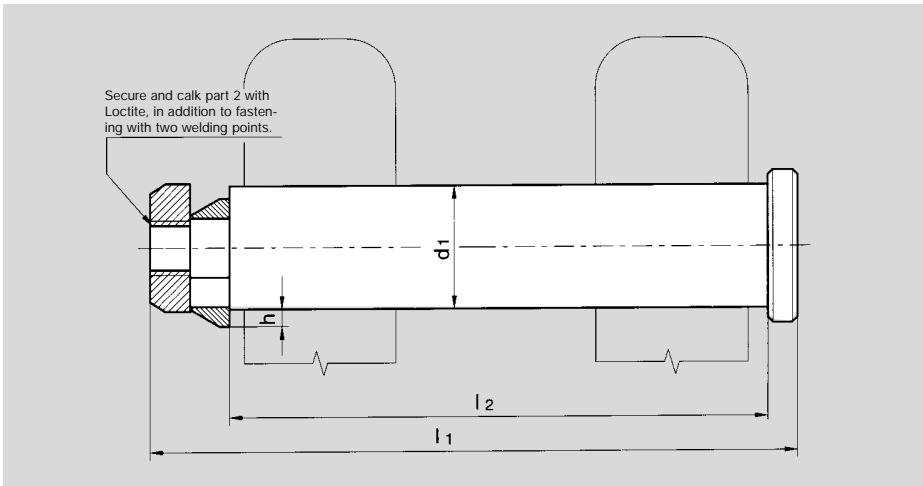
The maximum load capacity  $d_1$  is measured, so that two bolts are used to carry the tool.

Order example: Carrying bolt with safety ring  
**SZ 4366**

$d_1 = 40$  mm

Add 4

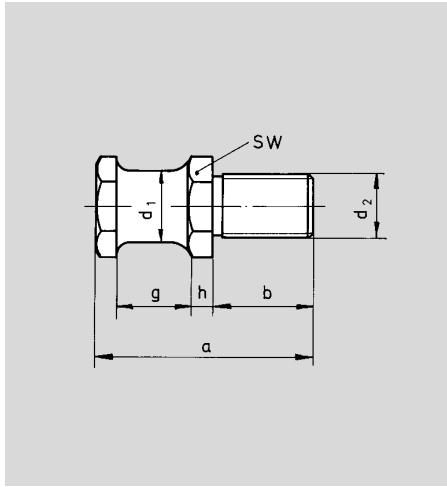
Order number **SZ 4366.4**



Add size to order number

Order number **SZ 4366.** □

$d_1$	Tool weight (2 bolts)	Carrying weight/force (per bolt)	$l_1$	$l_2$	$h$	▲
32	6400 daN	3200 daN	175	145	4,0	<b>3</b>
40	10000 daN	5000 daN	225	188	6,0	<b>4</b>
50	16000 daN	8000 daN	273	230	6,0	<b>5</b>
63	25000 daN	12500 daN	347	295	7,5	<b>6</b>
76	63000 daN	31500 daN	422	360	8,0	<b>7</b>



**Carrying screws**

**VDI 3366**

**Material:** Steel 1.0503 (C 45)  
 Attachment onto the workpiece laterally by screwing in.

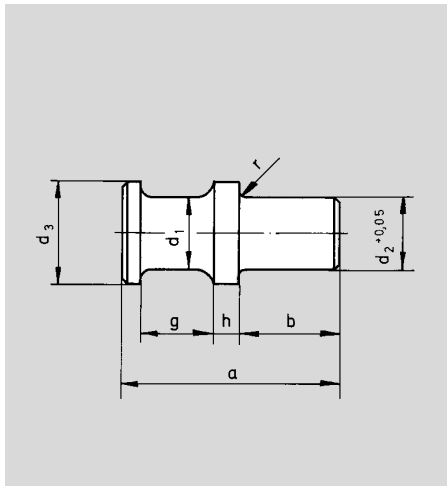
**Note:** Provide for 4 carrying screws, one carrying screw for half a tool weight.

**Order example:** Carrying screw **SZ 4351**  
 $d_1 = 32$  mm  
 Add **32**  
 Order number **SZ 4351.32**

Add size to order number

Order number **SZ 4351.**

$d_1$	Carrying force (N)	a	b	$d_2$	g	h	SW	▲
16	3200	58	28	M 16	20	5	24	<b>16</b>
20	5000	68	34	M 20	22	6	30	<b>20</b>
25	10000	78	38	M 24	25	8	36	<b>25</b>
32	15000	95	45	M 30	32	10	41	<b>32</b>
40	25000	118	56	M 36	40	12	50	<b>40</b>



**Carrying bolts**

**Material:** Steel 1.0503 (C 45)  
 Attachment onto the workpiece laterally by knock-in with tight fit and additional welding.

**Note:** Provide for 4 carrying bolts, one carrying bolt for half a tool weight.

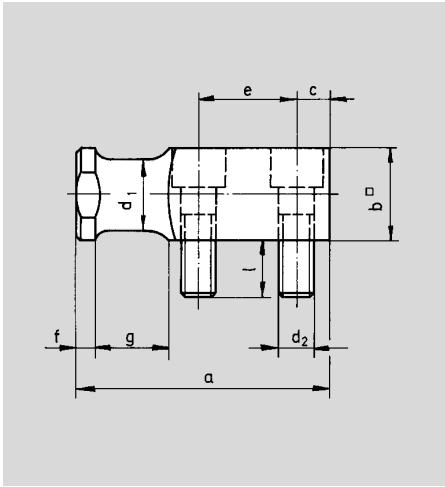
**Order example:** Carrying bolt **SZ 4361**  
 $d_1 = 25$  mm  
 Add **25**  
 Order number **SZ 4361.25**

Add size to order number

Order number **SZ 4361.**

$d_1$	Carrying force (N)	a	b	$d_2^{+0,05}$	$d_3$	g	h	r	▲
25	12500	80	38	25	36	25	9	2	<b>25</b>
32	20000	100	45	32	45	32	13	2	<b>32</b>
40	32000	120	56	40	56	40	14	2	<b>40</b>

# Carrying elements



## Lifting lugs with screws

VDI 3366

**Material:** Steel 1.0503 (C 45)  
Attachment onto the workpiece from top by 2 screws with hexagonal recessed holes (included in the delivery volume).

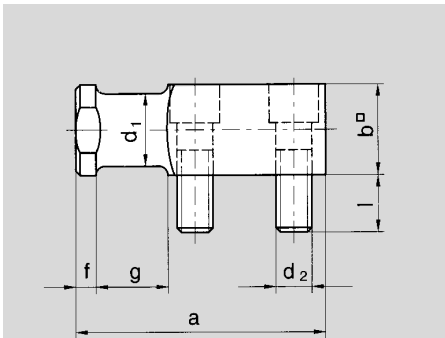
**Note:** Provide for 4 lifter lugs, one lifter lug for half a tool weight.

**Order example:** Lifting lug **SZ 4371**

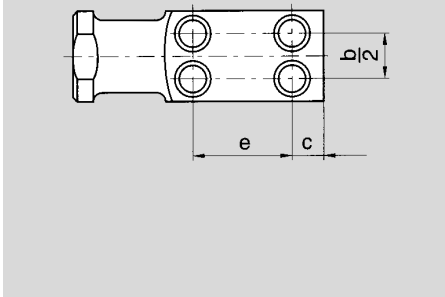
$d_1 = 40$  mm

Add **40**

Order number **SZ 4371.40**



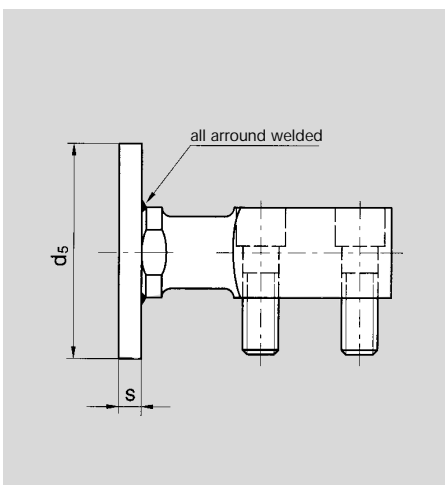
Support pivot ab  $d_1 = 63$  mm, has 4 clamping bolts (see also figure below)



Add size to order number

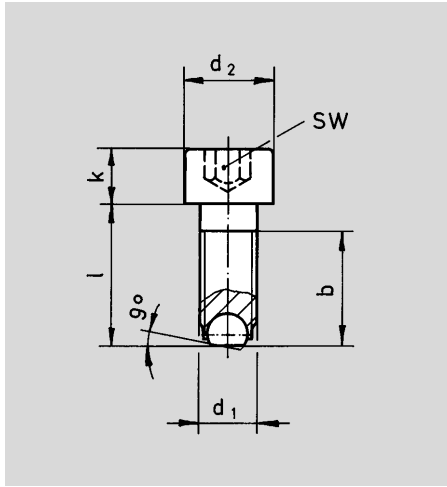
Order number **SZ 4371.**

$d_1$	Carrying force (N)	a	b	c	$d_2$	e	f	g	l	▲
16	3200	80	20	10	M 8 x 25	34	6	20	14	<b>16</b>
20	6300	90	25	10	M 10 x 30	37	8	25	16	<b>20</b>
25	12500	100	35	12	M 12 x 40	38	8	30	18	<b>25</b>
32	20000	120	40	16	M 16 x 45	46	10	32	22,5	<b>32</b>
40	32000	140	50	18	M 20 x 60	54	10	40	31,5	<b>40</b>
50	50000	160	60	22	M 24 x 70	59	12	45	35,5	<b>50</b>
63	80000	200	80	20	M 20 x 100	78	12	50	41,5	<b>63</b>
80	125000	250	100	25	M 24 x 120	100	15	65	45,5	<b>80</b>
100	200000	300	120	30	M 30 x 140	125	15	80	52	<b>100</b>



## Lifting lug with disc

Price and delivery upon request  
Please state dimensions  $d_s$  and  $s$



**Ball pressure screws with cylindrical head and hexagonal recess**

**Material:** Screw grade of firmness 12.9, ball hardened

Ball flattened and run movable up to 9°. By that, surfaces, which are not plane parallel, can be tensed or supported.

**Order example:** Ball pressure screws with cylindrical head and hexagonal recess **SZ 4432**  
 d<sub>1</sub> = M 8, l = 50 mm  
 Add **08 x 50**  
 Order number **SZ 4432.08 x 50**

Add size to order number  
 Order number **SZ 4432.**  x

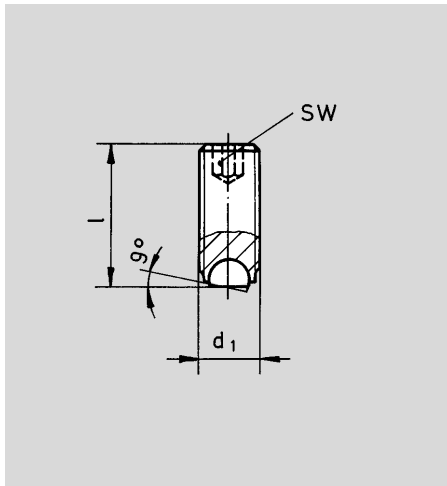
d <sub>1</sub>	l	b	d <sub>2</sub>	k	Ball diam.	SW	▲
M 6	20	17	10	6	4	5	<b>06 x 20</b>
	30	27					<b>06 x 30</b>
	40	24					<b>06 x 40</b>
M 8	20	16,5	13	8	5,5	6	<b>08 x 20</b>
	35	31,5					<b>08 x 35</b>
	50	28					<b>08 x 50</b>

Add size to order number  
 Order number **SZ 4432.**  x

d <sub>1</sub>	l	b	d <sub>2</sub>	k	Ball diam.	SW	▲
M 10	25	20,5	16	10	7	8	<b>10 x 25</b>
	40	35,5					<b>10 x 40</b>
	60	32					<b>10 x 60</b>
M 12	30	25	18	12	8,5	10	<b>12 x 30</b>
	50	36					<b>12 x 50</b>
	80	36					<b>12 x 80</b>

Add size to order number  
 Order number **SZ 4432.**  x

d <sub>1</sub>	l	b	d <sub>2</sub>	k	Ball diam.	SW	▲
M 16	40	34	24	16	12	14	<b>16 x 40</b>
	60	44					<b>16 x 60</b>
	80	44					<b>16 x 80</b>



**Ball pressure screws without head and hexagonal recess**

**Material:** Screw grade of firmness 12.9, ball hardened

Ball flattened and run movable up to 9°. By that, surfaces, which are not plane parallel, can be tensed or supported.

**Order example:** Ball pressure screws without head and hexagonal recess **SZ 4434**  
 d<sub>1</sub> = M 10, l = 25 mm  
 Add **10 x 25**  
 Order number **SZ 4434.10 x 25**

Add size to order number  
 Order number **SZ 4434.**  x

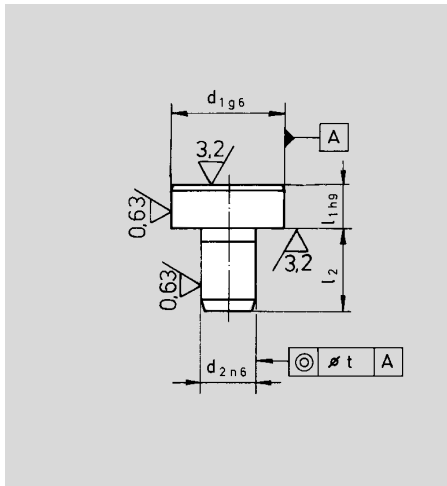
d <sub>1</sub>	l	Ball diameter	SW	▲
M 6	10	4	3	<b>06 x 10</b>
	16			<b>06 x 16</b>
	25			<b>06 x 25</b>
M 8	12	5,5	4	<b>08 x 12</b>
	20			<b>08 x 20</b>
	30			<b>08 x 30</b>

Add size to order number  
 Order number **SZ 4434.**  x

d <sub>1</sub>	l	Ball diameter	SW	▲
M 10	16	7	5	<b>10 x 16</b>
	25			<b>10 x 25</b>
	35			<b>10 x 35</b>
M 12	20	8,5	6	<b>12 x 20</b>
	30			<b>12 x 30</b>
	40			<b>12 x 40</b>

Add size to order number  
 Order number **SZ 4434.**  x

d <sub>1</sub>	l	Ball diameter	SW	▲
M 16	25	12	8	<b>16 x 25</b>
	35			<b>16 x 35</b>
	50			<b>16 x 50</b>



### Supporting bolts rigid

#### DIN 6321, Form A

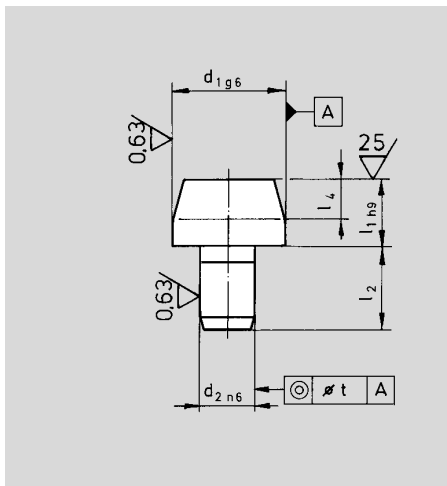
**Material:** Tool steel hardened  
hardness HRC 56 ± 2  
mounting into mounting bore-hole ISO H7

**Order example:** Supporting bolt rigid  
**SZ 4512**  
d<sub>1</sub> = 10 mm, l<sub>1</sub> = 6 mm  
Add **10 x 06**  
Order number **SZ 4512.10 x 06**

Add size to order number

Order number **SZ 4512.**  x

d <sub>1g6</sub>	l <sub>1h9</sub>	d <sub>2n6</sub>	l <sub>2</sub>	t	▲
6	5	4	6	0,02	<b>06 x 05</b>
10	6	6	9	0,02	<b>10 x 06</b>
16	8	8	12	0,04	<b>16 x 08</b>
25	10	12	18	0,04	<b>25 x 10</b>



### Receiving bolts cylindrical

#### DIN 6321, Form B

**Material:** Tool steel hardened  
hardness HRC 56 ± 2  
mounting into mounting bore-hole ISO H7

**Order example:** Receiving bolt cylindrical  
**SZ 4513**  
d<sub>1</sub> = 16 mm, l<sub>1</sub> = 22 mm  
Add **16 x 22**  
Order number **SZ 4513.16 x 22**

Add size to order number

Order number **SZ 4513.**  x

d <sub>1g6</sub>	l <sub>1</sub>	d <sub>2n6</sub>	l <sub>2</sub>	l <sub>4</sub>	t	▲
6	7 12	4	6	4	0,02	<b>06 x 07</b> <b>06 x 12</b>
8	10 16	6	9	6	0,02	<b>08 x 10</b> <b>08 x 16</b>
10	10 18	6	9	6	0,02	<b>10 x 10</b> <b>10 x 18</b>

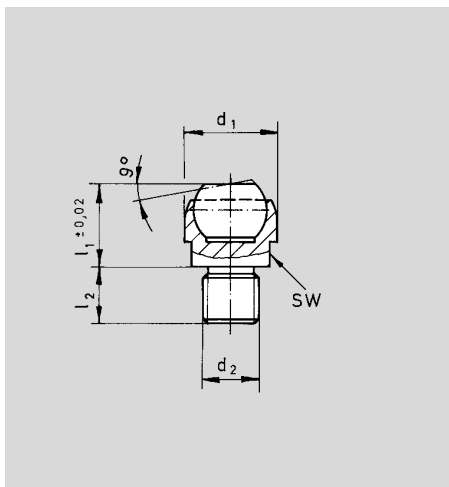
Add size to order number

Order number **SZ 4513.**  x

d <sub>1g6</sub>	l <sub>1</sub>	d <sub>2n6</sub>	l <sub>2</sub>	l <sub>4</sub>	t	▲
12	10 18	6	9	6	0,02	<b>12 x 10</b> <b>12 x 18</b>
16	13 22	8	12	8	0,04	<b>16 x 13</b> <b>16 x 22</b>
20	15 25	12	18	9	0,04	<b>20 x 15</b> <b>20 x 25</b>
25	15 25	12	18	9	0,04	<b>25 x 15</b> <b>25 x 25</b>

# Supporting bolts

## Threaded pins



### Supporting bolts swinging with external thread

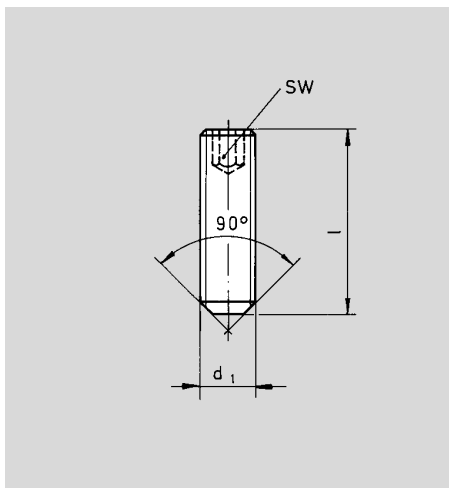
Mounting body tempered, ball hardened, flattened and up to 9° run movable. By that, surfaces, which are not plane parallel, can be tensed or supported.

**Order example:** Supporting bolt swinging **SZ 4516**  
 $d_1 = 20 \text{ mm}$ ,  $d_2 = \text{M } 12$   
 Add **20 x 12**  
 Order number **SZ 4516.20 x 12**

Add size to order number

Order number **SZ 4516.**  x

$d_1$	$d_2$	$l_1^{\pm 0.02}$	$l_2$	Ball-diameter	SW	▲
13	M 8	13	8	10	11	<b>13 x 08</b>
20	M 12	18	12	16	18	<b>20 x 12</b>
30	M 16	27	16	25	27	<b>30 x 16</b>



### Threaded pins with hexagonal recess

**DIN 913, ISO 4026**

**Material:** Grade of firmness 45 H (14.9)

**Order example:** Threaded pins with hexagonal recess **SZ 8530**  
 $d_1 = \text{M } 6$ ,  $l = 16 \text{ mm}$   
 Add **06 x 16**  
 Order number **SZ 8530.06 x 16**

Add size to order number

Order number **SZ 8530.**  x

$d_1$	l	SW	Pieces/standard packing	▲
M 3	8	1,5	100	<b>03 x 08</b>
	10		100	<b>03 x 10</b>
	12		100	<b>03 x 12</b>
M 4	8	2	100	<b>04 x 08</b>
	10		100	<b>04 x 10</b>
	12		100	<b>04 x 12</b>
	16		100	<b>04 x 16</b>
M 5	8	2,5	100	<b>05 x 08</b>
	10		100	<b>05 x 10</b>
	12		100	<b>05 x 12</b>
	16		100	<b>05 x 16</b>
	20		100	<b>05 x 20</b>
25	100	<b>05 x 25</b>		

Add size to order number

Order number **SZ 8530.**  x

$d_1$	l	SW	Pieces/standard packing	▲
M 6	8	3	100	<b>06 x 08</b>
	10		100	<b>06 x 10</b>
	12		100	<b>06 x 12</b>
	16		100	<b>06 x 16</b>
	20		100	<b>06 x 20</b>
M 8	10	4	50	<b>08 x 10</b>
	12		50	<b>08 x 12</b>
	16		50	<b>08 x 16</b>
	20		50	<b>08 x 20</b>
	25		50	<b>08 x 25</b>
30	50	<b>08 x 30</b>		

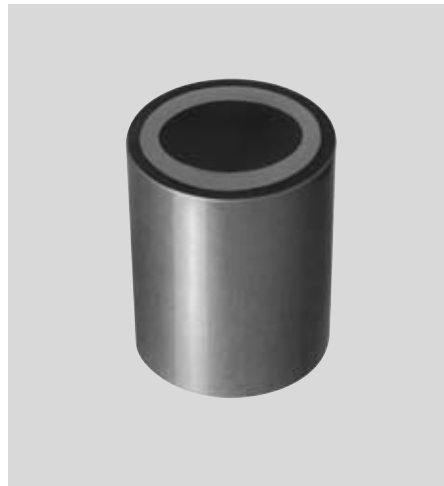
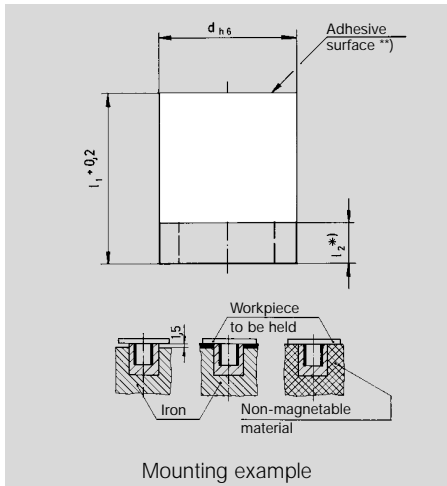
Add size to order number

Order number **SZ 8530.**  x

$d_1$	l	SW	Pieces/standard packing	▲
M 10	12	5	50	<b>10 x 12</b>
	16		50	<b>10 x 16</b>
	20		50	<b>10 x 20</b>
	25		50	<b>10 x 25</b>
	30		50	<b>10 x 30</b>
M 12	35	6	50	<b>10 x 35</b>
	40		50	<b>10 x 40</b>
	50		25	<b>12 x 16</b>
	20		25	<b>12 x 20</b>
	25		25	<b>12 x 25</b>
	30		25	<b>12 x 30</b>
	35		25	<b>12 x 35</b>
40	25	<b>12 x 40</b>		
50	25	<b>12 x 50</b>		

# Holding magnets

round and flat



## Holding magnets round

Screened system  
Application temperature up to 450° C

**Mounting hints:** Round holding magnets SZ 9335 are pressed, shrunk or glued into the mounting bore-holes. How to do the mounting is shown in the illustration.

**Order example:** Holding magnets round

**SZ 9335**

d = 6 mm

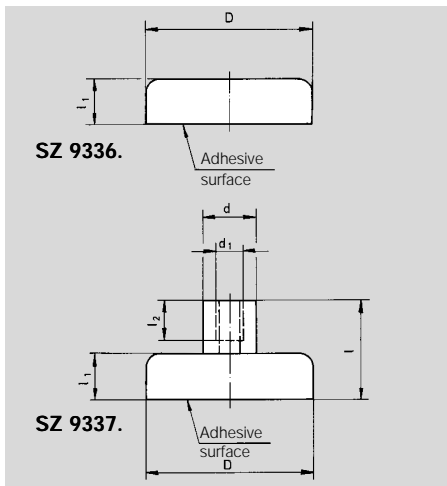
Add **06**

Order number **SZ 9335.06**

\*) The holding magnets can be shortened by the measure  $l_2$  without any reduction of the adhesion.

\*\*) The adhesive surface should not be decreased by more than 2 mm, otherwise the adhesion would be strongly reduced.

				Add size to order number
				Order number <b>SZ 9335.</b> <input type="checkbox"/>
$d_{h6}$	$l_1 \pm 0.2$	$l_2^*$	Minimum adhesion (N)	▲
6	10	2	1	<b>06</b>
8	12	3	2,5	<b>08</b>
10	16	6	5	<b>10</b>
13	18	7	8	<b>13</b>
16	20	5	15	<b>16</b>
20	25	6	35	<b>20</b>
25	30	5	80	<b>25</b>
32	35	3	150	<b>32</b>



## Holding magnets flat

Surface galvanized, screened system,  
application temperature up to 100° C

**Mounting hints:** Flat holding magnets are pressed or glued into the mounting bore-holes, SZ 9337 screwed on.

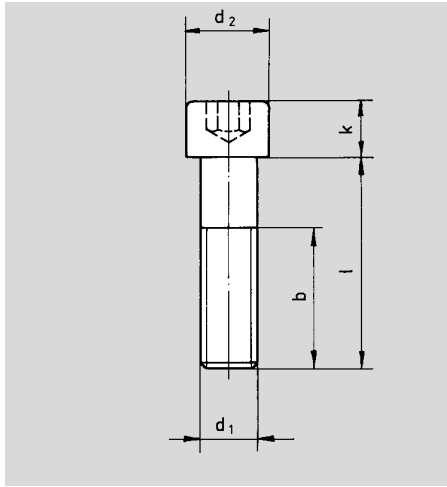
**Order example:** Holding magnets flat **SZ 9336**

D = 13 mm

Add **13**

Order number **SZ 9336.13**

								Add size to order number
								Order number <b>SZ 9336.</b> <input type="checkbox"/>
								Order number <b>SZ 9337.</b> <input type="checkbox"/>
D	d	d <sub>1</sub>	l	l <sub>1</sub>	l <sub>2</sub>	Minimum adhesion (N)	▲	
10 <sup>±0,15</sup>	6	M 3	11,5	4,5 <sup>±0,1</sup>	5	3	<b>10</b>	
13 <sup>±0,15</sup>	6	M 3	11,5	4,5 <sup>±0,1</sup>	5	5	<b>13</b>	
16 <sup>±0,15</sup>	6	M 3	11,5	4,5 <sup>±0,1</sup>	5	10	<b>16</b>	
20 <sup>±0,15</sup>	6	M 3	13	6 <sup>±0,1</sup>	5	25	<b>20</b>	
25 <sup>±0,15</sup>	8	M 4	15	7 <sup>±0,1</sup>	6	40	<b>25</b>	
32 <sup>±0,2</sup>	8	M 4	15	7 <sup>±0,15</sup>	6	70	<b>32</b>	
40 <sup>±0,2</sup>	10	M 5	18	8 <sup>±0,15</sup>	8	100	<b>40</b>	
50 <sup>±0,2</sup>	12	M 6	22	10 <sup>±0,15</sup>	10	180	<b>50</b>	



**Cheese head screws with hexagonal recess**

**DIN EN ISO 4762**

**Material:** Grade of firmness 8.8  
 partially also deliverable in grade of firmness 12.9  
 Order number **SZ 8515**

**Order example:** Cheese head screws with  
 hexagonal recess **SZ 8510**  
 $d_1 = M 10, l = 80 \text{ mm}$   
 Add **10 x 080**  
 Order number **SZ 8510.10 x 080**

Add  
 size to  
 order number

Order number **SZ 8510.**  x

Add  
 size to  
 order number

Order number **SZ 8510.**  x

Add  
 size to  
 order number

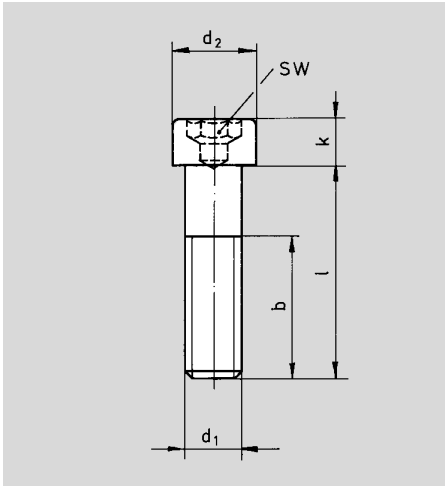
Order number **SZ 8510.**  x

$d_1$	l	b	$d_2$	k	SW	Pieces/standard packing	▲
M 4	6	4	7	4	3	50	<b>04 x 006</b>
	8	6				50	<b>04 x 008</b>
	10	8				50	<b>04 x 010</b>
	12	10				50	<b>04 x 012</b>
	16	14				50	<b>04 x 016</b>
	20	18				50	<b>04 x 020</b>
	25	23				50	<b>04 x 025</b>
30	20				50	<b>04 x 030</b>	
M 5	8	6	8,5	5	4	50	<b>05 x 008</b>
	10	8				50	<b>05 x 010</b>
	12	10				50	<b>05 x 012</b>
	16	14				50	<b>05 x 016</b>
	20	18				50	<b>05 x 020</b>
	25	23				50	<b>05 x 025</b>
	30	22				50	<b>05 x 030</b>
	35	22				50	<b>05 x 035</b>
	40	22				50	<b>05 x 040</b>
	45	22				50	<b>05 x 045</b>
50	22				50	<b>05 x 050</b>	
M 6	10	7	10	6	5	50	<b>06 x 010</b>
	12	9				50	<b>06 x 012</b>
	16	13				50	<b>06 x 016</b>
	20	17				50	<b>06 x 020</b>
	25	22				50	<b>06 x 025</b>
	30	27				50	<b>06 x 030</b>
	35	24				50	<b>06 x 035</b>
	40	24				50	<b>06 x 040</b>
	45	24				50	<b>06 x 045</b>
	50	24				50	<b>06 x 050</b>
	60	24				50	<b>06 x 060</b>
	70	24				50	<b>06 x 070</b>
	80	24				50	<b>06 x 080</b>

$d_1$	l	b	$d_2$	k	SW	Pieces/standard packing	▲	
M 8	12	8	13	8	6	25	<b>08 x 012</b>	
	16	12				25	<b>08 x 016</b>	
	20	16				25	<b>08 x 020</b>	
	25	21				25	<b>08 x 025</b>	
	30	26				25	<b>08 x 030</b>	
	35	31				25	<b>08 x 035</b>	
	40	28				25	<b>08 x 040</b>	
	45	28				25	<b>08 x 045</b>	
	50	28				25	<b>08 x 050</b>	
	60	28				25	<b>08 x 060</b>	
	70	28				25	<b>08 x 070</b>	
	80	28				25	<b>08 x 080</b>	
M 10	16	11	16	10	8	25	<b>10 x 016</b>	
	20	15				25	<b>10 x 020</b>	
	25	20				25	<b>10 x 025</b>	
	30	25				25	<b>10 x 030</b>	
	35	30				25	<b>10 x 035</b>	
	40	35				25	<b>10 x 040</b>	
	45	32				25	<b>10 x 045</b>	
	50	32				25	<b>10 x 050</b>	
	60	32				25	<b>10 x 060</b>	
	70	32				25	<b>10 x 070</b>	
	80	32				25	<b>10 x 080</b>	
	90	32				25	<b>10 x 090</b>	
M 16	100	32				25	<b>10 x 100</b>	
	110	32				25	<b>10 x 110</b>	
	120	32				25	<b>10 x 120</b>	
	130	32				25	<b>10 x 130</b>	
	140	32				25	<b>10 x 140</b>	
	150	32				25	<b>10 x 150</b>	
	160	32				25	<b>10 x 160</b>	
	M 20	50	42	30	20	17	10	<b>20 x 050</b>
		60	52				10	<b>20 x 060</b>
		70	62				10	<b>20 x 070</b>
80		52				10	<b>20 x 080</b>	

$d_1$	l	b	$d_2$	k	SW	Pieces/standard packing	▲
M 12	20	14	18	12	10	10	<b>12 x 020</b>
	25	19				10	<b>12 x 025</b>
	30	24				10	<b>12 x 030</b>
	35	29				10	<b>12 x 035</b>
	40	34				10	<b>12 x 040</b>
	45	39				10	<b>12 x 045</b>
	50	44				10	<b>12 x 050</b>
	60	36				10	<b>12 x 060</b>
	70	36				10	<b>12 x 070</b>
	80	36				10	<b>12 x 080</b>
	90	36				10	<b>12 x 090</b>
	100	36				10	<b>12 x 100</b>
	110	36				10	<b>12 x 110</b>
	120	36				10	<b>12 x 120</b>
	130	36				10	<b>12 x 130</b>
	140	36				10	<b>12 x 140</b>
150	36				10	<b>12 x 150</b>	
160	36				10	<b>12 x 160</b>	
M 16	30	24	24	16	14	10	<b>16 x 030</b>
	35	29				10	<b>16 x 035</b>
	40	34				10	<b>16 x 040</b>
	45	39				10	<b>16 x 045</b>
	50	44				10	<b>16 x 050</b>
	60	54				10	<b>16 x 060</b>
	70	44				10	<b>16 x 070</b>
	80	44				10	<b>16 x 080</b>
	90	44				10	<b>16 x 090</b>
	100	44				10	<b>16 x 100</b>
	110	44				10	<b>16 x 110</b>
	120	44				10	<b>16 x 120</b>
M 20	130	44				10	<b>16 x 130</b>
	140	44				10	<b>16 x 140</b>
	150	44				10	<b>16 x 150</b>
	160	44				10	<b>16 x 160</b>
	50	42	30	20	17	10	<b>20 x 050</b>
	60	52				10	<b>20 x 060</b>
	70	62				10	<b>20 x 070</b>
	80	52				10	<b>20 x 080</b>

# Cheese head screws



Cheese head screws with hexagonal recess and low head

DIN 6912

Material: Grade of firmness 8.8

Order example: Cheese head screws with hexagonal recess and low head **SZ 8512**

$d_1 = M 8, l = 45 \text{ mm}$

Add **08 x 045**

Order number **SZ 8512.08 x 045**

Add size to order number

Order number **SZ 8512.**  x

$d_1$	l	b	$d_2$	k	SW	Pieces/standard packing	▲
M 6	12	9	10	4	5	50	<b>06 x 012</b>
	16	13				50	<b>06 x 016</b>
	20	17				50	<b>06 x 020</b>
	25	18				50	<b>06 x 025</b>
	30	18				50	<b>06 x 030</b>
	35	18				50	<b>06 x 035</b>
	40	18				50	<b>06 x 040</b>
	45	18				50	<b>06 x 045</b>
	50	18				50	<b>06 x 050</b>
	55	18				50	<b>06 x 055</b>
	60	18				50	<b>06 x 060</b>
	65	18				50	<b>06 x 065</b>
	70	18				50	<b>06 x 070</b>
	75	18				50	<b>06 x 075</b>
	80	18				50	<b>06 x 080</b>
	90	18				50	<b>06 x 090</b>
	100	18				50	<b>06 x 100</b>
	110	18				50	<b>06 x 110</b>
	120	18				50	<b>06 x 120</b>
M 8	12	8	13	5	6	50	<b>08 x 012</b>
	16	12				50	<b>08 x 016</b>
	20	16				50	<b>08 x 020</b>
	25	21				50	<b>08 x 025</b>
	30	22				50	<b>08 x 030</b>
	35	22				50	<b>08 x 035</b>
	40	22				50	<b>08 x 040</b>
	45	22				25	<b>08 x 045</b>
	50	22				25	<b>08 x 050</b>
	55	22				25	<b>08 x 055</b>

Add size to order number

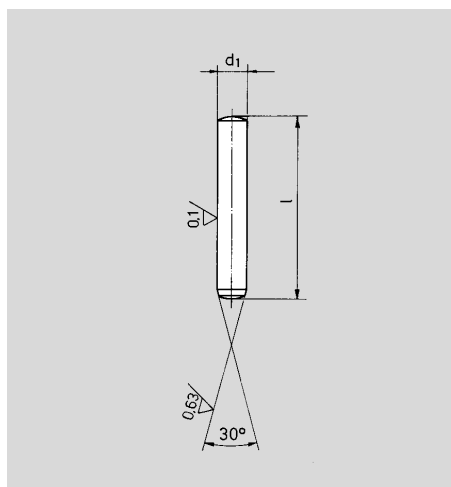
Order number **SZ 8512.**  x

$d_1$	l	b	$d_2$	k	SW	Pieces/standard packing	▲
M 8	60	22	13	5	6	25	<b>08 x 060</b>
	65	22				25	<b>08 x 065</b>
	70	22				25	<b>08 x 070</b>
	75	22				25	<b>08 x 075</b>
	80	22				25	<b>08 x 080</b>
	90	22				25	<b>08 x 090</b>
	100	22				25	<b>08 x 100</b>
	110	22				25	<b>08 x 110</b>
	120	22				25	<b>08 x 120</b>
M 10	16	11	16	6,5	8	25	<b>10 x 016</b>
	20	15				25	<b>10 x 020</b>
	25	20				25	<b>10 x 025</b>
	30	25				25	<b>10 x 030</b>
	35	26				25	<b>10 x 035</b>
	40	26				25	<b>10 x 040</b>
	45	26				25	<b>10 x 045</b>
	50	26				25	<b>10 x 050</b>
	55	26				25	<b>10 x 055</b>
	60	26				25	<b>10 x 060</b>
	65	26				25	<b>10 x 065</b>
	70	26				25	<b>10 x 070</b>
	75	26				25	<b>10 x 075</b>
	80	26				25	<b>10 x 080</b>
	90	26				25	<b>10 x 090</b>
	100	26				25	<b>10 x 100</b>
	110	26				25	<b>10 x 110</b>
	120	26				25	<b>10 x 120</b>
	150	32				25	<b>10 x 150</b>

Add size to order number

Order number **SZ 8512.**  x

$d_1$	l	b	$d_2$	k	SW	Pieces/standard packing	▲
M 12	20	14	18	7,5	10	10	<b>12 x 020</b>
	25	19				10	<b>12 x 025</b>
	30	24				10	<b>12 x 030</b>
	35	29				10	<b>12 x 035</b>
	40	30				10	<b>12 x 040</b>
	45	30				10	<b>12 x 045</b>
	50	30				10	<b>12 x 050</b>
	55	30				10	<b>12 x 055</b>
	60	30				10	<b>12 x 060</b>
	65	30				10	<b>12 x 065</b>
	70	30				10	<b>12 x 070</b>
	75	30				10	<b>12 x 075</b>
	80	30				10	<b>12 x 080</b>
	90	30				10	<b>12 x 090</b>
	100	30				10	<b>12 x 100</b>
	110	30				10	<b>12 x 110</b>
	120	30				10	<b>12 x 120</b>
	130	36				10	<b>12 x 130</b>
	140	36				10	<b>12 x 140</b>
	180	36				10	<b>12 x 180</b>
	200	36				10	<b>12 x 200</b>



**Precision cylindrical pins**

**Structural dimensions according to DIN EN ISO 8734**

**Material:** Chrome vanadium alloyed tool steel, hardness HRC 60 ± 2

**Precision workmanship** ground and lapped, ISO m 5, spherical cap and chamfer polished

**Order example:** Precision cylindrical pin **SZ 7900**

$d_1 = 2 \text{ mm}$ ,  $l = 16 \text{ mm}$

Add **020 x 016**

Order number **SZ 7900.020 x 016**

Add size to order number

Order number **SZ 7900.**  x

Add size to order number

Order number **SZ 7900.**  x

Add size to order number

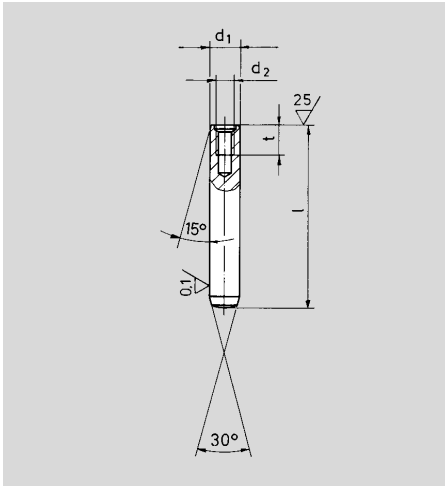
Order number **SZ 7900.**  x

$d_{1m5}$	l	Pieces/standard packing	▲
1,5	5	50	<b>015 x 005</b>
	6	50	<b>015 x 006</b>
	8	50	<b>015 x 008</b>
	10	50	<b>015 x 010</b>
	12	50	<b>015 x 012</b>
	14	50	<b>015 x 014</b>
	16	50	<b>015 x 016</b>
2	6	50	<b>020 x 006</b>
	8	50	<b>020 x 008</b>
	10	50	<b>020 x 010</b>
	12	50	<b>020 x 012</b>
	14	50	<b>020 x 014</b>
	16	50	<b>020 x 016</b>
	18	50	<b>020 x 018</b>
	20	50	<b>020 x 020</b>
	24	50	<b>020 x 024</b>
	28	50	<b>020 x 028</b>
	32	50	<b>020 x 032</b>
2,5	8	50	<b>025 x 008</b>
	10	50	<b>025 x 010</b>
	12	50	<b>025 x 012</b>
	14	50	<b>025 x 014</b>
	16	50	<b>025 x 016</b>
	18	50	<b>025 x 018</b>
	20	50	<b>025 x 020</b>
	24	50	<b>025 x 024</b>
3	8	50	<b>030 x 008</b>
	10	50	<b>030 x 010</b>
	12	50	<b>030 x 012</b>
	14	50	<b>030 x 014</b>
	16	50	<b>030 x 016</b>
	18	50	<b>030 x 018</b>
	20	50	<b>030 x 020</b>
	24	50	<b>030 x 024</b>
	28	50	<b>030 x 028</b>
	32	50	<b>030 x 032</b>
	36	50	<b>030 x 036</b>
	40	50	<b>030 x 040</b>
	4	10	25
12		25	<b>040 x 012</b>
14		25	<b>040 x 014</b>
16		25	<b>040 x 016</b>
18		25	<b>040 x 018</b>
20		25	<b>040 x 020</b>
24		25	<b>040 x 024</b>
28		25	<b>040 x 028</b>
32		25	<b>040 x 032</b>

$d_{1m5}$	l	Pieces/standard packing	▲	
4	36	25	<b>040 x 036</b>	
	40	25	<b>040 x 040</b>	
	45	25	<b>040 x 045</b>	
	50	25	<b>040 x 050</b>	
	5	10	25	<b>050 x 010</b>
12		25	<b>050 x 012</b>	
14		25	<b>050 x 014</b>	
16		25	<b>050 x 016</b>	
18		25	<b>050 x 018</b>	
20		25	<b>050 x 020</b>	
24		25	<b>050 x 024</b>	
28		25	<b>050 x 028</b>	
6	32	25	<b>050 x 032</b>	
	36	25	<b>050 x 036</b>	
	40	25	<b>050 x 040</b>	
	45	25	<b>050 x 045</b>	
	50	25	<b>050 x 050</b>	
	55	25	<b>050 x 055</b>	
	60	25	<b>050 x 060</b>	
	8	14	25	<b>060 x 014</b>
		16	25	<b>060 x 016</b>
		18	25	<b>060 x 018</b>
		20	25	<b>060 x 020</b>
24		25	<b>060 x 024</b>	
28		25	<b>060 x 028</b>	
32		25	<b>060 x 032</b>	
36		25	<b>060 x 036</b>	
40		25	<b>060 x 040</b>	
45		25	<b>060 x 045</b>	
50		25	<b>060 x 050</b>	
55		25	<b>060 x 055</b>	
60		25	<b>060 x 060</b>	
10	70	25	<b>060 x 070</b>	
	80	25	<b>060 x 080</b>	
	12	18	25	<b>080 x 018</b>
		20	25	<b>080 x 020</b>
		24	25	<b>080 x 024</b>
		28	25	<b>080 x 028</b>
		32	25	<b>080 x 032</b>
		36	25	<b>080 x 036</b>
		40	25	<b>080 x 040</b>
		45	25	<b>080 x 045</b>
		50	25	<b>080 x 050</b>
		55	25	<b>080 x 055</b>
		60	25	<b>080 x 060</b>
70		25	<b>080 x 070</b>	
80		25	<b>080 x 080</b>	
90	25	<b>080 x 090</b>		
100	25	<b>080 x 100</b>		

$d_{1m5}$	l	Pieces/standard packing	▲	
10	20	10	<b>100 x 020</b>	
	24	10	<b>100 x 024</b>	
	28	10	<b>100 x 028</b>	
	32	10	<b>100 x 032</b>	
	36	10	<b>100 x 036</b>	
	40	10	<b>100 x 040</b>	
	45	10	<b>100 x 045</b>	
	50	10	<b>100 x 050</b>	
	55	10	<b>100 x 055</b>	
	60	10	<b>100 x 060</b>	
	70	10	<b>100 x 070</b>	
12	80	10	<b>100 x 080</b>	
	90	10	<b>100 x 090</b>	
	100	10	<b>100 x 100</b>	
	14	24	10	<b>120 x 024</b>
		28	10	<b>120 x 028</b>
		32	10	<b>120 x 032</b>
		36	10	<b>120 x 036</b>
		40	10	<b>120 x 040</b>
		45	10	<b>120 x 045</b>
		50	10	<b>120 x 050</b>
		55	10	<b>120 x 055</b>
60		10	<b>120 x 060</b>	
70		10	<b>120 x 070</b>	
80		10	<b>120 x 080</b>	
16	90	10	<b>120 x 090</b>	
	100	10	<b>120 x 100</b>	
	14	36	10	<b>140 x 036</b>
		40	10	<b>140 x 040</b>
		45	10	<b>140 x 045</b>
		50	10	<b>140 x 050</b>
		55	10	<b>140 x 055</b>
		60	10	<b>140 x 060</b>
		70	10	<b>140 x 070</b>
		80	10	<b>140 x 080</b>
		90	10	<b>140 x 090</b>
100		10	<b>140 x 100</b>	
16		40	10	<b>160 x 040</b>
	50	10	<b>160 x 050</b>	
	60	10	<b>160 x 060</b>	
	70	10	<b>160 x 070</b>	
	80	10	<b>160 x 080</b>	
	90	10	<b>160 x 090</b>	
	100	10	<b>160 x 100</b>	

# Precision cylindrical pins



## Precision cylindrical pins with inside thread

**Structural dimensions according to DIN EN ISO 8735**

**Material:** High grade chrome – alloyed casehardening steel, casehardened, hardness HRC 60 ± 2

**Precision workmanship** ground and lapped, ISO m 5, with air escape surface

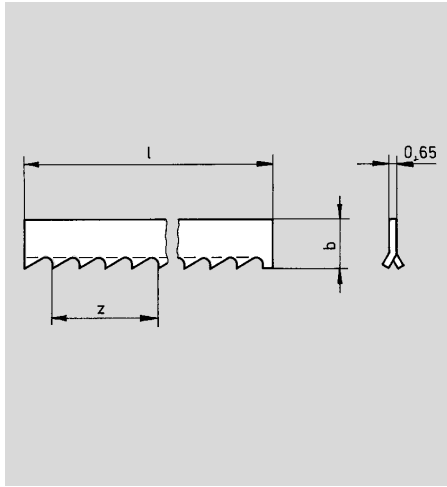
**Use** with blind-end bores, if the drive-out of the pin from the rear side is not possible.

**Order example:** Precision cylindrical pin with inside thread **SZ 7905**  
d<sub>1</sub> = 8 mm, l = 32 mm  
Add **08 x 032**  
Order number **SZ 7905.08 x 032**

Add size to order number

Order number **SZ 7905.**  x

d <sub>1m5</sub>	d <sub>2</sub>	l	t	Pieces/standard packing	▲
6	M 4	24	6	25	<b>06 x 024</b>
		32		25	<b>06 x 032</b>
		40		25	<b>06 x 040</b>
		50		25	<b>06 x 050</b>
8	M 5	28	8	25	<b>08 x 028</b>
		32		25	<b>08 x 032</b>
		40		25	<b>08 x 040</b>
		50		25	<b>08 x 050</b>
		60		25	<b>08 x 060</b>
		80		25	<b>08 x 080</b>
10	M 6	32	10	10	<b>10 x 032</b>
		40		10	<b>10 x 040</b>
		50		10	<b>10 x 050</b>
		60		10	<b>10 x 060</b>
		80		10	<b>10 x 080</b>
12	M 6	32	10	10	<b>12 x 032</b>
		40		10	<b>12 x 040</b>
		50		10	<b>12 x 050</b>
		60		10	<b>12 x 060</b>
		80		10	<b>12 x 080</b>
		100		10	<b>12 x 100</b>
14	M 8	50	12	10	<b>14 x 050</b>
		60		10	<b>14 x 060</b>
		80		10	<b>14 x 080</b>
		100		10	<b>14 x 100</b>
16	M 8	60	12	10	<b>16 x 060</b>
		80		10	<b>16 x 080</b>
		100		10	<b>16 x 100</b>



**Sawing strips in boxes**  
30 m of length

**Material:** High-alloy Swedish steel

**Order example:** Sawing strip **SZ 9503**  
6 teeth each cm, b = 8 mm  
Add **608**  
Order number **SZ 9503.608**

Number of teeth each cm	Number of teeth each inch	b mm	▲
4	10	4	<b>404</b>
		6	<b>406</b>
		8	<b>408</b>
		10	<b>410</b>
6	14	3	<b>603</b>
		4	<b>604</b>
		6	<b>606</b>
		8	<b>608</b>
		10	<b>610</b>

Number of teeth each cm	Number of teeth each inch	b mm	▲
9	22	4	<b>904</b>
		6	<b>906</b>
		8	<b>908</b>
		10	<b>910</b>

Material		Standard values for numbers of teeth (z/cm) and cutting speeds v in m/min							
		2mm		2 – 10 mm		10 – 25 mm		> 25 mm	
		z/cm	m/min	z/cm	m/min	z/cm	m/min	z/cm	m/min
Steel	up to 420 N/mm <sup>2</sup>	9	55	6	50	4	40	4	35
	up to 700 N/mm <sup>2</sup>	9	45	6	40	6	35	4	30
	up to 1200 N/mm <sup>2</sup>	9	30	9	25	6	18	4	15
C-steel		9	70	6	60	4	50	4	40
Alloyed tool steel		9	35	6	30	4	25	4	20
High speed steel		9	30	6	25	4	20	4	18
Rust-free steel		9	20	6	18	6	15	4	14
Cast steel, grey cast iron		–	–	6	40	4	35	4	30
Bronze	hard	9	50	6	40	6	35	4	30
	soft	9	120	6	100	4	80	4	60
Brass		9	600	6	500	4	400	4	250
Copper		6	200	6	150	4	100	4	80
Aluminium alloy		6	600	4	450	4	300	4	200
Hard paper, synthetic resins		4	800	4	600	4	500	4	400

# Precision gauge strips



**Foil strips in the plastic box**  
made of steel and brass

**Order example:** Foil strips made of brass  
**SZ 9512**  
Foil thickness 0,025 mm  
Add **025**  
Order number **SZ 9512.025**

Brass Ms 63	Order number <b>SZ 9513</b>
Workshop assortment 150 x 1200 mm in thickness	
0,025	
0,050	
0,075	
0,100 mm	

Steel, rust-free	150 x 1200 mm	Order number <b>SZ 9511.</b> <input type="checkbox"/>
Brass Ms 63	150 x 2500 mm	Order number <b>SZ 9512.</b> <input type="checkbox"/>
Steel, non-alloy	150 x 2500 mm	Order number <b>SZ 9514.</b> <input type="checkbox"/>

Foil thickness (mm)	▲
0,025	<b>025</b>
0,050	<b>050</b>
0,075	<b>075</b>
0,100	<b>100</b>
0,150	<b>150</b>
0,200	<b>200</b>
0,250	<b>250</b>

Add size to order number



**Precision gauge strips in the pile box**

Made of best cold-rolled and hardened tracer gauge strip steel  
Surface polished  
Extremely plane with tightest thickness tolerances

**Order example:** Precision gauge strip width 12,7 mm **SZ 9515.12,7** thickness 0,03 mm  
Add **003**  
Order number **SZ 9515.12,7 x 003**

Add size to order number

Order number **SZ 9515.12,7 x**

Thickness	Width	Length (m)	▲
0,01	12,7	2	<b>001</b>
0,02	12,7	2	<b>002</b>
0,03	12,7	2	<b>003</b>
0,04	12,7	2	<b>004</b>
0,05	12,7	2	<b>005</b>
0,10	12,7	2	<b>010</b>
0,20	12,7	2	<b>020</b>
0,30	12,7	2	<b>030</b>



#### High-performance oil

**Characteristics:**

The high-performance oil with molybdenum-disulphide (MoS<sub>2</sub>)-additive is especially well suited for highly stressed narrow running fits due to its viscosity and composition. The viscosity additive acts anti-attritioning creating a bearing armouring having excellent emergency running properties.

**Fields of application:**

Lubrication of die sets, guides, etc.

in a canister 5 l

Order number **SZ 9850**



400 ml in a spray can

Order number **SZ 9851**



#### High-performance oil (Slidingway oil No. 1)

**Characteristics:**

Modern demulsifying sliding way oil with excellent anti-stick and slip properties to lubricate metal and plastic sliding guides, sliding ways with solid lubrication as well as ball and roller guides. It is also suitable as a universal oil to lubricate machine tools.

**Fields of application:**

Lubrication of die sets, sliding guides etc.

in a canister 5 l

Order number **SZ 9853**



#### High-performance grease

**Characteristics:**

- Performance optimized long time lubrication grease
- Highest anti-corrosion protection
- Best water resistance
- -30° degrees Celsius to +120° degrees Celsius

in a 400 g cartridge

Order number **SZ 9006**

in a bucket 15,0 kg

Order number **SZ 9006.15**

**Suitable grease gun:** SZ 9810



#### Roller bearing grease

Special lubricant for high demands

**Characteristics:**

- Superior wearing protection
- Good temperature stability up to 140 °C (284 °F)
- Excellent water and medium stability
- Good corrosion prevention
- Very good age stability

**Fields of application:**

Lubrication of ball and roller guides

in a 400 g cartridge

Order number **SZ 9005**

**Suitable grease gun:** SZ 9810

# Fat solvent, anti-corrosion oil, slushing oil, tracing paint



## Fat solvent

300 ml in the spray can  
Order number **SZ 9010**

The solvent from the spray can easily softens oil and fat coats and removes them. Parts which are to be cast en bloc, glued or sprayed with tracing paint should be cleaned with fat solvent from the spray can. The adhesive force of the compound is thereby essentially increased.

Combustible!  
Filled with safety fuel gas



## Anti-corrosion oil

300 ml in the spray can  
Order number **SZ 9012**

For untightening struck or corroded screws, nuts, interference fits etc. Effective lubrication of chains, locks, hinges etc. Little surface tension, therefore quick and deep penetration into even utmost narrow joints and fits. High lubricating effect, sustained corrosion protection.

Filled with safety fuel gas.



## Slushing oil

300 ml in the spray can  
Order number **SZ 9013**

Active agent for corrosion protection with sustaining its effect for several months by releasing gases penetrate into hollow bodies, bores, taps etc. where there is difficult access protecting iron and steel parts having direct contact.

Filled with safety fuel gas.



## Tracing paint

300 ml in the spray can  
Order number **SZ 9020**

It couldn't be done any faster! Just spray on – already tracing. Paint will dry without peeling off. Even and permanent paint film. Also for marking workpieces, work cycles and packages very well suited.

Filled with safety fuel gas.



## Multifunctions spray WD-40

400 ml in the spray can  
Order number **SZ 9014**

The five basic functions

- Displaces Moisture
- Protects
- Penetrates
- Lubricates
- Cleans

### Anaerobic bonding agents for plastics

Anaerobic bonding agents for plastics are distributed onto the mounting parts in a liquid state. They stay liquid as long as oxygen has got access. Not before the parts are mounted but with the occlusion of oxygen and metal contact the chemical transformation is started from the liquid state into a tough substance formed by linear molecule chains.

Due to its effective capillarity this plastic material fills out even smallest interspaces. It cramps fast in the surface roughness of the parts that are to be linked together. The jointing gap is so filled completely out. Due to this 100% surface contact an interlocking compound is formed which is shock and vibration-proof.

### Constructional outlay of a compound

A jointing and bonding compound should always be laid out in a way that only pulling, pressing and shearing forces occur – not however peel-off forces.

A high L/D ratio (Length/Diameter) grants a good tensional distribution in the bonding gap.

### Gap filling

Bull noses and basils sized sufficiently big enable an even dissipation of the product upon mounting jointing parts. In case of press-fits and of bigger sizes always moisten both surfaces thinly and evenly with the concerning LOCTITE product.

Moisten the bore of blind holes in such a way to prevent the compressed air from driving the liquid bonding agent away upon mounting.

### Joining different materials

When joining different materials (for example steel bolts in an alu-housing) with operating temperatures over 50 °C the various coefficients of thermal expansion must be taken into consideration. Aluminium expands for instance twice as much as steel does.

### Compatibility with other materials

The materials used most (metals, sintered materials, ceramics and glass) are chemically not changed by the liquid bonding agents for plastics.

The hardened layer stays chemically neutral.

The following plastic materials can be affected and show reactions after a longer period of time: vinyl, ABS-products, polysulphone, PVC, polycarbonate, polystyrene, SAN-products and lacquered surfaces.

### Solubility

The liquid anaerobic LOCTITE products are soluble in trichlorethylene and in many other chlorinated hydrocarbons.

### Chemical constancy

The fully hardened LOCTITE products show a very good stability with regard to oil, benzene, organic solvents and coolants.

The greater the sturdiness is of a special type of bonding agent the greater is the chemical constancy.

### Storing time

With room temperature the LOCTITE products are storable for at least 1 year. The content of air in the bottles is necessary in order to prevent a hardening before use. Screws, metal parts or brushes must not be dipped into the bottle. Soiled LOCTITE must not be poured back into the bottle. The activator must not be mixed with LOCTITE products to prevent any hardening.



### Aktivator 7649

A hardening accelerator for anaerobic products loctite 542, 603 and 270. Reduces time required for hardening. Simple use: spray on, and let dry – and then apply the loctite product.

Colour: light yellow  
contains: acetone  
flammable  
storage duration: 1 year

500 ml pump bottle

Order number **SZ 9740**

# Bonding agents



**Gluing of flat surfaces LOCTITE 496**

A glue for the gluing of difficult components such as steel plates, bearings, and ceramics respectively, and among each other.

glue gap max. 0.1 mm  
preferably 0.05 mm

**Hardening time**

Hard to the touch with Activator 7649 20–40 sek  
Final hardness ≈12 hrs

Colour: colourless  
100 ml in plastic bottle  
shelf life: 1 year

Order number **SZ 9741**



**Axle-Hub connection bearing glue LOCTITE 603**

For tension-free, enduring fastening of parts with radial and axial pressure, such as bearings, bushings, axles, pins, rotors, gear wheels, rings, tires and sinterbearings. The extrusion force of press fits increases by approximately 100% and more. Fitting rust and leakage are avoided. Thin liquid, only very difficult to break fastening.

glue gap max. 0.15 mm  
preferably 0.05 mm

**Hardening time**

hard to the touch 10–30 min.  
Functional hardness 30–60 min.  
Final hardness ≈ 6 hrs

Colour: green  
50 ml in plastic bottle  
shelf life: 1 year

Order number **SZ 9742**



**Fastening of screws very difficult to break fastening, LOCTITE 270**

A highly viscous glue for the connection of bearings, bushings, spacer bolts, for the securing and simultaneous sealing of stud bolts and screws. Highly resistant to vibrations and pressure. Decidedly higher fitting area between two parts.

Reliable sealing of hydraulic and pneumatic cables as well as other highly used pipes. High resistance to pressure and lye solutions; only difficult to break fastening.

glue gap max. 0.15 mm  
preferably 0.05 mm  
thread up to M 20

**Hardening time**

Hard to the touch 10–30 min.  
Functional hardness 1–3 hrs  
Final hardness 3–6 hrs

Colour: green  
50 ml in plastic bottle

Order number **SZ 9743**



**Joint fastening medium tight LOCTITE 542**

Medium tight connection for hydraulic and pneumatic cables for the securing of parts, that will need to be able to be removed/loosened with normal tools. LOCTITE 542 seals screw threads against the standard hydraulic fluids. It is nixothopic, and does not run. To be used for hydraulic and pneumatic fittings, so well as pipe coils up to R 1/2".

Easily broken connection  
max. glue gap 0.12 mm

**Hardening time**

Hard to the touch 10–30 min.  
Final hardness ≈ 3 hrs

Colour: brown  
50 ml in plastic bottle

Order number **SZ 9717**



**Fastglue gel LOCTITE 454**

A drip and run-free glue for gluing metal, plastics, wood, paper, rubber, leather, etc. It can be used to glue substances with rough surfaces.

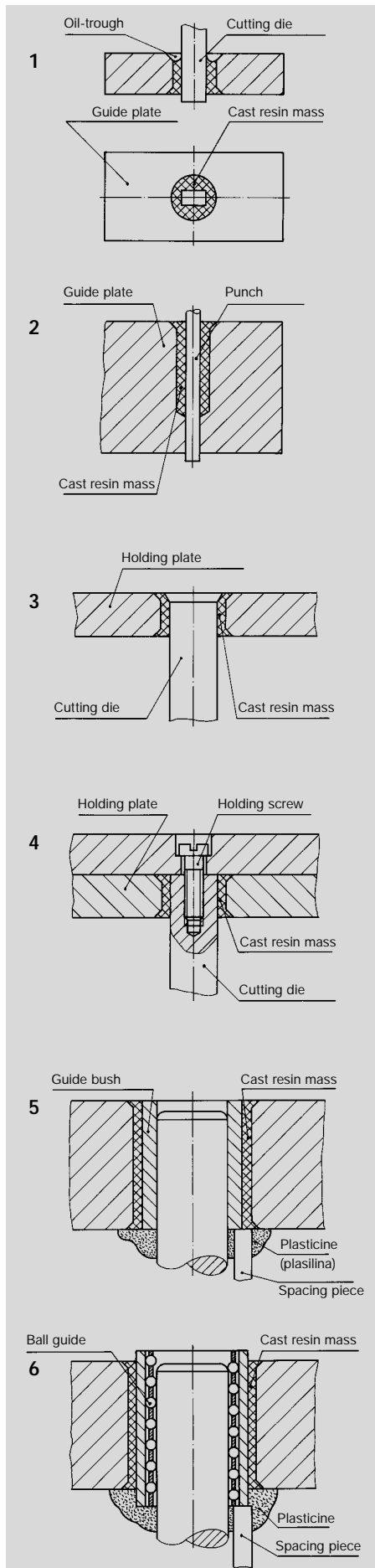
glue gap 0.20 mm  
preferably 0.05 mm

**Hardening time**

Hard to the touch 5–20 sek  
Final hardness 12 hrs

Colour: colourless  
20 g in plastic tube

Order number **SZ 9744**



### Introduction

The usage of cast resin mass in the blanking tool engineering has essentially facilitated the creation of breaking-throughs for profiled dies but also the fixing of cutting dies and guides. By the use of casting resin in a great reduction of the manufacture and repair costs, a valuable saving of skilled workers' hours, in certain cases even quality and tool life improvements have been obtained. The casting of resin to certain parts of cutting and punching dies is applied with good success to:

- dies with slide play in guide plates
- interchangeable dies with holding plates
- fixed dies in holding plates
- fixed guide bushes in die sets
- dies in ejectors
- die-plate inserts

The epoxy casting resin system ARALDIT CW 2418 with the activator Hy 5162 (has reactions) developed for this special usage has an enormous adhesion, excellent sliding properties, a high resistance to pressure, is relatively fluid and admits small casting gaps. It can be cast and hardened in room temperature. Dwindling is very little and negligible.

The resin enriched in factory with filler can be cast in layers of 1 – 10 mm. It is very reactive and hardens very well even in thin layers.

### Preparation of tools parts

The epoxy casting resin system ARALDIT CW 2418 adheres very well on all materials, especially well on metals. Therefore all tool parts which are to stay moveable after the casting as f. e. dies must be pretreated with the separating agent QZ 5111 (SZ 9704). By some polishing of the pretreated surfaces with a woolen cloth the separating effect and surface quality of the cast resin moulding material can be improved. Multiple applications of the separating agent QZ 5111 (SZ 9704) result in a greater sliding play.

Interchangeable tool parts and dies must absolutely be aligned plane-parallel and must possess the surface roughness "fine".

The breaking throughs in the guide and die plates just like resin cast fixed dies, guide bushes and die-plate inserts must be free from grease and should be roughened. With grooves, bores or pins the connection of the cast resin material and the metal can still be improved.

### Examples for the casting

**1st** Cutting dies with sliding play in the guide-plates.

The breaking-through in the guide-plate is delineated from the ready cutting plate and is bored about 1 – 3 mm bigger or sawed out. The sawed out resp. drilled fraction surfaces must be degreased. The contact surfaces of the two plates must be sprayed with the separating agent QZ 5111 (SZ 9704) or be provided with a wax paper interlining to prevent a mutual gluing together; then the contact surfaces are clamped to each other. The die coated with the separating agent is to put into the fraction, centered in the cutting plate and held by magnetic angles in vertical position. Then the casting is done and after the past resin mass has become hard the final cutting play between die and the cutting plate fraction is arranged.

In case of profiled dies the mould rupture in the guide plate can be substituted by a bore by casting Araldit CW 2418 into the rupture (1).

In case of thin cutting dies which must be rather long for reasons of stability the guide plate must be cast out (2).

**2nd** Cutting dies having a firm seat holding plates.

The casting is done by the same principle as with the guide plates. The position of the cutting die is determined by the cutting, the guiding, stripper or ejector plate in conformity to the tool type. As the die must sit firmly in the holding plate the punch head must be roughened and degreased. Picture (3) shows a cast cutting die with conical head.

With mould dies it is useful to provide the holding portion with grooves and to lay out the fraction conically in the holding plate. In certain cases it is necessary to lessen the stripping forces by additional holding screws (4). The cast resin mass only serves then for fixing the position of the die.

**3rd** Interchangeable cutting dies in holding plates.

If cast-in cutting dies for upkeep or repair should be interchangeable in the holding plate it must be noted that the die head must be applied with a separating agent and that the breaking-through is roughened and degreased.

**4th** Guide bushes with firm seats in die-sets.

Cast-in-die-sets having their firm seat in the top of the die-set have the advantage that there happens to be no narrowing due to the press-fit, and that the guidance diameter must not be honed a second time.

Furthermore costly fineboring, lapping works and taking the finishing cut need not be done, and the quality is thereby not lessened.

The position bore for the guide bush in the top part should be 3 to 6 mm bigger than the outside diameter of the guide bush. Bore and outside surface of the bush must be roughened and degreased.

The top part is moved over the guide bushes seated on the columns of the lower part, is aligned on a parallel base and charged. The cast gap must be sealed from bottom with plasticine (Plastilina), the guide bush must be supported by additional spacers (5). A cast out ball guide bush is depicted in (6).

# Casting resin

**Steel-filled black free-flowing epoxy cast resin system for coat thickness up to 10 mm adapted to the needs of the tool manufacture.**

### Fields of application

Cast-in of dies and cast-out of guides with blanking tools, foundries and contour milling models, general mould making, tools for sheet metal conversion.

### Processing methods

Full mould casting  
Front casting (conditionally suited only)

### Characteristics

Black, fluid casting resin  
Hardening in room temperature  
Little sedimentation  
Excellent pouring capability  
Layers in thicknesses up to approx. 10 mm can be cast in one work cycle  
Hard surfaces relatively resistant to abrasion with good sliding properties  
Cutting properties good

### Product description Araldite CW 2418

Modified epoxy resin containing filling materials  
Supplied type: black thixotrope paste  
Viscosity at 25 °C: 130.000 – 180.000 mPa.s  
Density: 2,7 g/cm<sup>3</sup>  
Flash point (Pensky-Martens): 200 °C  
Storability at 18 – 25 °C: 1 year

### Activator Hy 5162 (reactive)

Formulated polyamino-activator for layers in thicknesses up to 10 mm at max., especially designed for cutting die guides.

Supplied type: clear, light yellow liquid  
Viscosity at 25 °C: 30–70 mPa.s  
Density : 1.0 g/cm<sup>2</sup>  
Flash point (Pensky-Martens): 108 °C  
Storability at 18 – 25 °C: 1 year

### Proportion of mixture

**100 parts by weight of resin Araldite CW 2418**  
**15 parts by weight Activator Hy 5162**

### Procedure

The resin must be stirred well in spite of its little sedimentation tendency, before making use of it. Then the apt activator can be added and must be mixed thoroughly. If fine contours are to be formed of it, before pouring either a special surface coat of the resin or a thin layer of the casting resin/activator mixture must be applied on the mould surface by using a short-bristled brush. The resin/activator mixture must continuously be cast along the mould wall or along a spatula into the deepest location of the mould. By a slow and even pouring occlusions of air can be avoided to a great extent.

### Storability

Araldite CW 2418 and Activator Hy 5162 must be stored at 18 – 25 °C, must always stay well closed and be kept in dry circumference, if possible in original packages. Under these conditions the storability conforms to the times designated in the product description.

### Industrial hygiene

As with many chemicals it is necessary to act in accordance with the recommendations for industrial hygiene also with regard to the handling of epoxy resins and activators.



3 cans of resin CW 2418 à 1.000 kg 3.000 kg  
3 cans of activator Hy 5162 à 0.150 kg 0.450 kg  
Order number **SZ 9703**

1 can of resin CW 2418 13.500 kg  
1 can of activator Hy 5162 2.000 kg  
Order number **SZ 9703.04**

10 tubes of resin CW 2418 à 0.100 kg 1.000 kg  
10 tubes of activator Hy 5162 à 0.015 kg 0.150 kg  
without a tube fork  
Order number **SZ 9716**

1 tube of resin CW 2418 100 g  
1 tube of activator Hy 5162 15 g  
without a tube fork  
Order number **SZ 9718**

1 tube fork  
Order number **SZ 9730**

Separating fluid QZ 5111 0.750 kg  
Order number **SZ 9704.1**

### Application!

It is necessary to shake product before use. Use a brush or cloth to apply to parts several times in 10–15 minute intervals, let dry, and polish with a soft cloth.  
Allows a trouble-free separation or removal of molded parts or laminates of ARALDIT from pore-free forming materials: ARALDIT, UREOL, metal, glass, porcelain, etc.

### Warning!

Separating fluid QZ 5111 is combustible.

### Properties Resin/activator mixture at 25 °C

	Test prescription	Araldite CW 2418 Activator Hy 5162	Unit
Mixing ratio		100 : 15	Parts by weight
Viscosity at 25 °C		4000 – 6000	mPa.s
Useability period at 25 °C (1000g)		20 – 30	min
Removeable	from mould after	8 – 12	h
	with thickness of layer	10	mm

### After complete hardening

		7 days / 20 – 25 °C or 14 h / 40 °C	
Density		2,3	g/cm <sup>3</sup>
Shore D hardness	ISO 868	85 – 90	Degree
Compression strength	ISO R 604	85 – 90	N/mm <sup>2</sup>
Flectional strength	ISO 178	80 – 85	N/mm <sup>2</sup>
E-module from flection test	ISO 178	5000 – 5500	N/mm <sup>2</sup>
Impact strength	ISO R 179	5 – 7	kJ/m <sup>2</sup>
Constancy			
of form in warmth (Martens)	ISO R 75	60 – 65	°C
Linear dwindling		0,1 – 0,3	‰
Test specimen: 900 x 75 x 10 mm			
Cold water take-up			
10 days	ISO R 62	0,20 – 0,40	%
Water at boil take-up			
30 min	ISO R 117	0,05 – 0,30	%
60 min	ISO R 117	0,10 – 0,45	%
Abrasion (S-33-sandpaper-strips, Charge: 500 P)	NEMA	100 – 120	mg/100 U.

### Introduction

The construction of foundry models, templates, fixtures, moulding and tolerance gauges a.o. foundry devices by making use of model resin Araldit CW 2215 has the following advantages:

- Quick manufacture with simple means
- Excellent constancy to form and permanency to dimension of the end product
- Excellent sturdiness, little wear
- Little weight
- Easy to change, quick to repair, practical to make up

In tool and model manufacture four simple basic working methods resp. mounting procedures are applied depending on the type of the workpiece and its usage:

- Creating the surface coat
- Casting
- Backfilling
- Laminating

### Basic models and their pre-treatments

Master or gauge patterns of high precision are required for manufacturing model devices out of Araldit CW 2215. Their surface quality has a decisive influence upon the surface smoothness of the negatives and of the model devices.

The extraordinary adhesive force of Araldit CW 2215 on almost all materials must be compensated by an appropriate pretreatment of the basic models with sealing and using the separating agent QZ 5111 (SZ 9704).

Thereby the well hardened models can be perfectly be removed from the moulds. In case of proferous surfaces (f. e. wood) several layers should be applied for reasons of expediency. Each layer must dry for a short time, the last layer should be polished with a soft cloth or cotton wad in order to obtain a blank surface on the to be cast workpiece. Basic models can be made out of all usual model materials such as f.e. wood, gypsum, metal, concrete and epoxy araldite resin

### Set-up methods

Surface coats:

A surface coating is applied with a short cut brush onto the pretreated basic models or is cast between negative and too low sized core. This coating makes a flexible until hard surface with a high edge tear resistance allowing a precise shaping of finest contours.

The surface layers are backed up by cast model resin or are lined up by a high-fill model resin mass, depending on the usage of the production equipment of concern.

Full mould casting:

Pretreated moulds can be cast out directly with Araldit CW 2215. This full mould casting method is suited for manufacturing screw-on models and negatives up to layer thicknesses of 20 mm at maximum.

Front mould casting:

With this method a too low sized core of metal or araldite epoxy resin is required. This core is fixed according to the desired front layer thickness in the negative form with keeping a distance of 12-18 mm all the way around where the casting resin is cast.

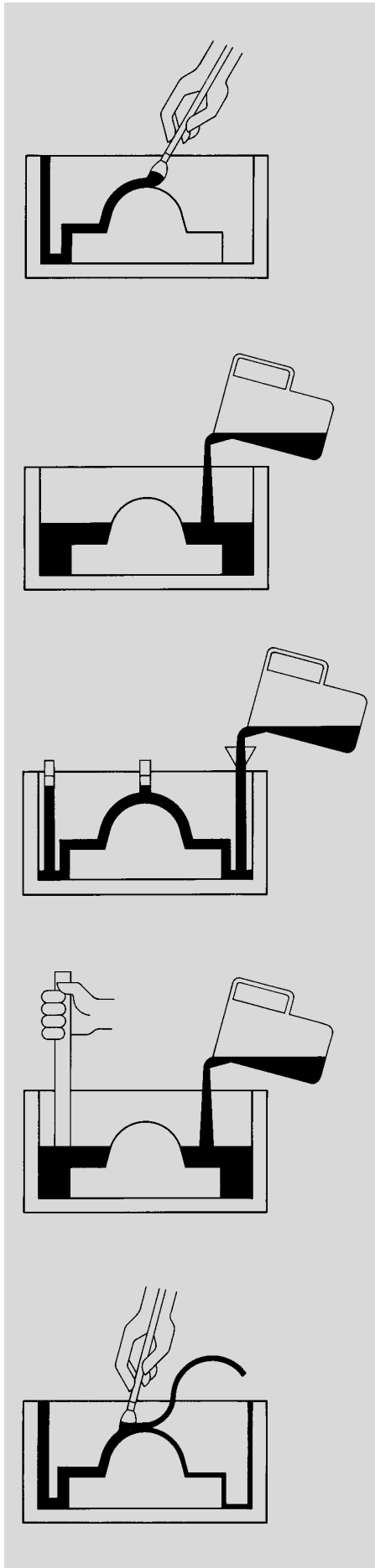
Backfilling:

Big quantities of filling materials are mixed into the model resin. This resin/activator/filler mixture is cast into the moulds provided with surface coat and coupling layer or laminate or is rammed. As filling materials various sorts can be used: silica sand, aluminium crit etc. Backfill masses of silica sand reach highest resistance to pressure whereas admixtures of aluminium grit work out as backfillers which are well to treat and dissipate the heat. To facilitate the treatment of model devices on the rearside an additional well treatable casting resin layer of Araldit CW 2215 is cast on in a thickness of approx. 5 - 10 mm.

Laminating:

When laminating, glass fabric is perfused thoroughly with laminating resin by means of a stiff-bristled brush, a ductor blade or a special laminating hook and is built up in layers until the required mould shell is reached.

Instead of the time consuming set-up of a laminate shell out of several glass fabric layers a shell can be made in one work cycle in an economical way by using araldite laminating pasters.



# Model resin

## Model resin Araldit CW 2215

**A light-beige fluid epoxy resin system filled with minerals for layer thicknesses up to 20 mm** designated for the manufacture of models, gauges and devices.

### Fields of application:

Manufacture of foundry and copy-milling models, screw thread models, core boxes, dimension gauges, moulding plates.

### Set-up methods

Full mould casting  
Front mould casting

### Characteristics

Light-beige fluid casting resin  
Hardening in room temperature  
Little sedimentation  
Excellent casting properties  
Layer thickness up to approx. 40 mm can be cast in one work cycle.  
Inkable with araldite colour pastes  
Easy to treat mould material

### Product description of Araldit CW 2215

Modified epoxy resin with mineral filler  
Supplied type: light-beige paste  
Viscosity at 25 °C: 80.000 – 140.000 mPa.s  
Density: 1,7 g/cm<sup>3</sup>  
Flash point (Pensky-Martens): 135 °C  
Storability at 18 – 25 °C: 1 year

### Activator Hy 5161

Formulated polyamino-activator for layers in thicknesses up to 20 mm at max., especially designed for cutting die guides.  
Supplied type: clear, light yellow liquid  
Viscosity at 25 °C: 30 – 70 mPa.s.  
Density: 1,0 g/cm<sup>3</sup>  
Flash point (Pensky-Martens): 162 °C  
Storability at 18 – 25 °C: 1 year

### Ratio of components

**100 parts by weight of resin Araldite CW 2215  
20 parts by weight of Activator Hy 5161**

### Work-up

The resin must be stirred well in spite of its little sedimentation tendency, before making use of it. The the apt activator can be added but must be mixed thoroughly. If fine contours are to be formed of it, before the casting is done either a special surface coat of the resin or a thin layer of the casting resin/activator mixture must be applied on the mould surface by means of a short-bristled brush.

### Storage

Araldit CW 2215 and Activator Hy 5161 must be stored at 18 – 25 °C, must be always stay well closed and kept in a dry place, if possible in original packages. Under these conditions the storability conforms to the times as designated in the product description.

### Industrial hygiene

As with many chemicals it is necessary to act in accordance with the recommendations for industrial hygiene also with regard to the handling of epoxy resins and activators.



6 cans of resin CW 2215 à 0,750 kg 4.500 kg  
6 cans of activator Hy 5161 à 0,150 kg 0.900 kg  
Order number **SZ 9720**

1 can of resin CW 2215 10.000 kg  
1 can of activator Hy 5161 2.000 kg  
Order number **SZ 9720.2**

3 cans of resin CW 2215 à 0,750 kg 2.250 kg  
3 cans of activator Hy 5161 à 0,150 kg 0.450 kg  
Order number **SZ 9722**

Separating fluid QZ 5111 0.750 kg  
Order number **SZ 9704.1**

### Application:

It is necessary to shake product before use. Use a brush or cloth to apply to parts several times in 10–15 minute intervals, let dry, and polish with a soft cloth. Allows a trouble-free separation or removal of molded parts or laminates of ARALDIT from pore-free forming materials: ARALDIT, UREOL, metal, glass, porcelain, etc.

### Warning!

Separating fluid QZ 5111 is combustible

### Properties

#### Resin/activator mixture at 25 °C

	Test prescription	Araldite CW 2215 Activator Hy 5161	Unit
Mixing ration		100 : 20	Parts by weight
Viscosity at 25 °C		4000 – 6000	mPa.s
Useability period at 25 °C (1000g)		30 – 40	min
Removeable from mould after		12 – 16	h
with thickness of layer		20	mm

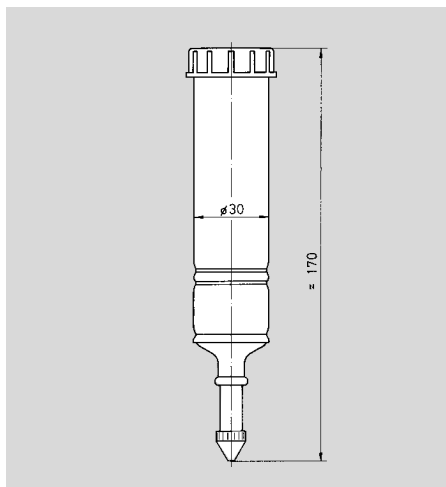
#### After complete hardening

		7 days / 20 – 25 °C or 14 h / 40 °C	
Density		1.7	g/cm <sup>3</sup>
Shore d hardness	ISO 868	85 – 90	degree
Compression strength	ISO R 604	85 – 90	N/mm <sup>2</sup>
Flectional strength	ISO 178	60 – 70	N/mm <sup>2</sup>
E-module from flection test	ISO 178	5800 – 6200	N/mm <sup>2</sup>
Impact strength	ISO R 179	4 – 5	kJ/m <sup>2</sup>
Constancy of form in warmth (Martens)	ISO R 75	55 – 60	°C
Linear dwindling		0.7 – 0.9	%
Test spedimen: 900 x 75 x 20 mm			
Cold water take-up			
10 days	ISO R 62	0.25 – 0.30	%
Water at boil take-up			
30 min	ISO R 117	0.10 – 0.30	%
60 min	ISO R 117	0.20 – 0.55	%
Abrasion (S-33-sandpaper strips, Charge: 500 P)	NEMA	140 – 150	mg/100 U.

# Rush-type hand guns

**STEINEL**  
NORMALIEN

## Hand-lever grease press



### Rush-type hand guns

similar to DIN 1282

with pointed mouth piece for funnel-type lubricating nipple incorporate in guides.

Contents 60 cm<sup>3</sup>

Conveyed quantity per stroke: approx. 0.7 cm<sup>3</sup>

**Order example:** Rush-type hand gun

**SZ 9800**

Order number **SZ 9800**



### Hand-lever grease press

#### Characteristics:

- Constructed all of steel
- Possible to lubricate every opening
- No wear parts in high-pressure section
- Secure piston rod fastening
- Universal filling possibilities
- Suitable for grease cartridges

**Suitable grease cartridge:** SZ 9005 and SZ 9006

Order number **SZ 9810**