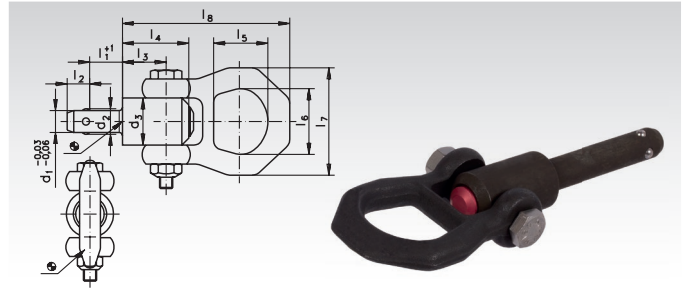


Lifting Pins, Self Locking

Material: Steel, manganese-phosphate treated. Press bolt made from AL.

Press = release.
Loosen = lock.

Fast and easy-to-use, robust lifting element with moveable shackle. Special lifting devices, i.e., threads are no longer required on the workpiece. Simple H11 bores are sufficient.



Ordering Details: e.g.: Product No. 666 910 15, Lifting Pin, Self Locking, 10 x 15

Product No.	d ₁ mm	l ₁ mm	d ₂ mm	d ₃ mm	d ₄ min. mm	l ₂ mm	l ₃ mm	l ₄ mm	l ₅ mm	l ₆ mm	l ₇ mm	l ₈ mm	x min. mm	x max. mm	Location Hole ^{H11} mm	F1* kN	F2* kN	F3* kN	Weight g
666 910 15	10	15	11,7	21,5	12,2	10,2	25,7	36,0	27	30	49	87,5	1,5	10	10	2,7	2,4	2,1	139
666 910 25	10	25	11,7	21,5	12,2	10,2	25,7	36,0	27	30	49	87,5	1,5	15	10	2,7	2,4	2,1	145
666 910 35	10	35	11,7	21,5	12,2	10,2	25,7	36,0	27	30	49	87,5	1,5	25	10	2,7	2,4	2,1	152
666 910 50	10	50	11,7	21,5	12,2	10,2	25,7	36,0	27	30	49	87,5	1,5	35	10	2,7	2,4	2,1	161
666 912 15	12	15	14,2	21,5	14,7	11,0	25,7	36,0	27	30	49	87,5	1,5	10	12	3,5	3,2	2,8	147
666 912 25	12	25	14,2	21,5	14,7	11,0	25,7	36,0	27	30	49	87,5	1,5	20	12	3,5	3,2	2,8	156
666 912 35	12	35	14,2	21,5	14,7	11,0	25,7	36,0	27	30	49	87,5	1,5	25	12	3,5	3,2	2,8	162
666 912 50	12	50	14,2	21,5	14,7	11,0	25,7	36,0	27	30	49	87,5	1,5	45	12	3,5	3,2	2,8	278
666 916 25	16	25	18,6	26,0	19,2	15,1	31,0	44,5	27	30	49	92,8	1,5	20	16	4,8	4,5	4,1	272
666 916 50	16	50	18,6	26,0	19,2	15,1	31,0	44,5	27	30	49	92,8	1,5	40	16	4,8	4,5	4,1	311
666 916 75	16	75	18,6	26,0	19,2	15,1	31,0	44,5	27	30	49	92,8	1,5	55	16	4,8	4,5	4,1	351

* For a 5-fold safety.



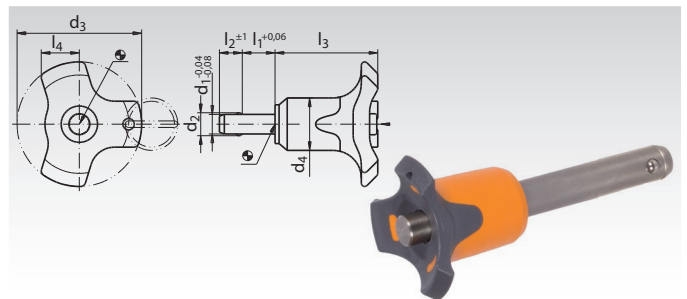
Socket Pins with Spring-Loaded Balls, Self Locking (Ball Lock PINS)

Material: Pin part: stainless steel 1.4542 hardened.
Handle: Plastic (PA6).
Spring: stainless steel.



Press = release.
Loosen = lock.

For quick fastening and securing of parts and workpieces. Fast and easily released for frequently repeated actions, e.g., replaceable bearing pins.
Temperature range: -30° / +80° C.



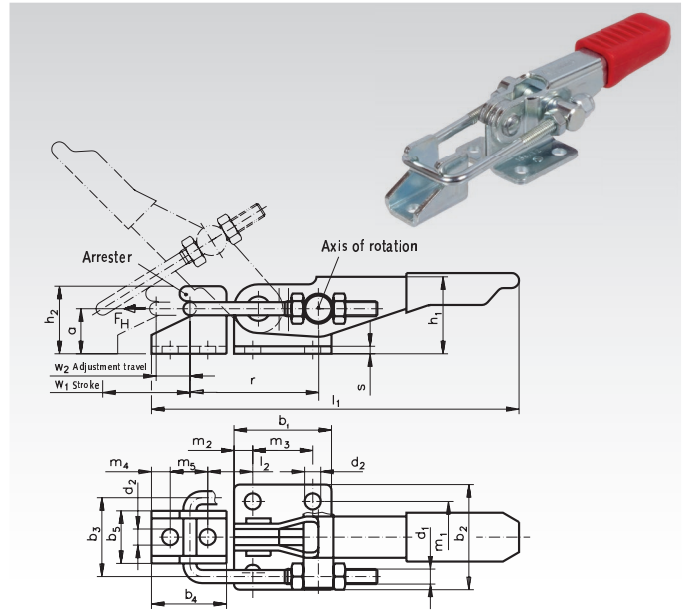
Product No.	d ₁ mm	l ₁ mm	d ₂ mm	d ₃ mm	d ₄ mm	l ₂ mm	l ₃ mm	l ₄ mm	Location Hole H11	Shearing Resistance* kN	Weight g
666 806 10	6	10	7,0	33,2	14,5	7,0	26,7	10,8	6	35	16
666 806 20	6	20	7,0	33,2	14,5	7,0	26,7	10,8	6	35	18
666 806 30	6	30	7,0	33,2	14,5	7,0	26,7	10,8	6	35	20
666 806 40	6	40	7,0	33,2	14,5	7,0	26,7	10,8	6	35	22
666 806 50	6	50	7,0	33,2	14,5	7,0	26,7	10,8	6	35	24
666 808 20	8	20	9,6	39,2	19,3	8,2	33,3	13,4	8	63	40
666 808 30	8	30	9,6	39,2	19,3	8,2	33,3	13,4	8	63	44
666 808 40	8	40	9,6	39,2	19,3	8,2	33,3	13,4	8	63	47
666 808 50	8	50	9,6	39,2	19,3	8,2	33,3	13,4	8	63	51
666 810 20	10	20	12,0	39,2	19,3	9,6	33,3	13,4	10	100	47
666 810 30	10	30	12,0	39,2	19,3	9,6	33,3	13,4	10	100	53
666 810 40	10	40	12,0	39,2	19,3	9,6	33,3	13,4	10	100	58
666 810 50	10	50	12,0	39,2	19,3	9,6	33,3	13,4	10	100	64
666 810 60	10	60	12,0	39,2	19,3	9,6	33,3	13,4	10	100	70
666 812 30	12	30	14,5	47,6	26,3	10,6	39,7	16,7	12	144	100
666 812 40	12	40	14,5	47,6	26,3	10,6	39,7	16,7	12	144	109
666 812 50	12	50	14,5	47,6	26,3	10,6	39,7	16,7	12	144	117
666 812 70	12	70	14,5	47,6	26,3	10,6	39,7	16,7	12	144	134
666 812 80	12	80	14,5	47,6	26,3	10,6	39,7	16,7	12	144	143
666 816 50	16	50	19,0	47,6	26,3	14,0	39,7	16,7	16	257	168
666 816 80	16	80	19,0	47,6	26,3	14,0	39,7	16,7	16	257	208

* Rupture limit.

Latch Clamps

Material: Sheet-metal parts: Case-hardened steel C10, zinc-plated, blue passivated.
 Pulling latch: Steel St37, zinc-plated, blue passivated.
 Handle with plastic sleeve, red, oil resistant.

Latch clamps allow a fast and secure locking of lids and covers.
 The stroke of the pulling ledge can be adjusted within its range.
 In the clamped position the pulling ledge with its clamping arm is parallel to the plane of the operating handle.
 Latch bracket included in the delivery.



Ordering Details: e.g.: Product No. 676 204 00, Latch Clamp, Size 160

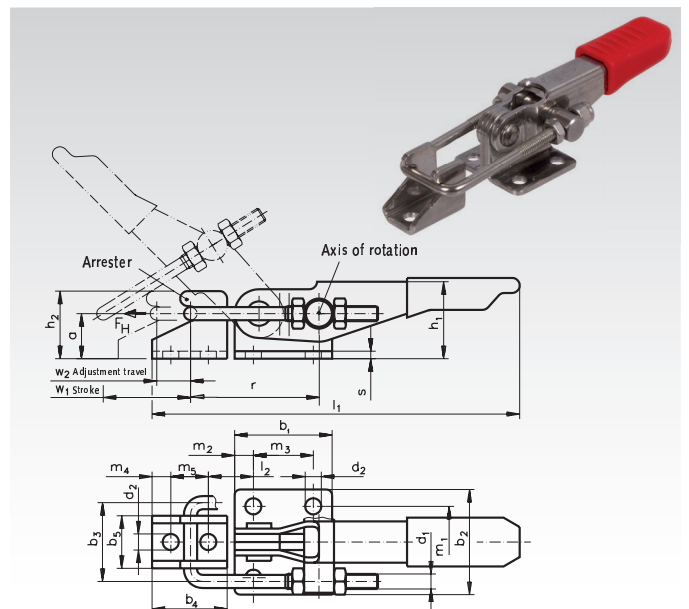
Product No.	Size	Holding Force F_H N	approx. Dimensions																	Weight g				
			a	b_1	b_2	b_3	b_4	b_5	d_1	d_2	h_1	h_2	l_1	l_2	m_1	m_2	m_3	m_4	m_5		r	s	w_1	w_2
676 204 00	160	1600	12	26	28	21	20	14	M4	4,3	22	18	98	11	19	5,0	16,0	5,0	10	34	2,0	25	11	85
676 206 00	320	3200	16	40	44	32	28	22	M6	6,5	30	25	152	19	32	10,5	19,0	7,0	14	57	3,0	48	13	250
676 208 00	700	7000	24	60	54	39	38	26	M8	8,5	42	36	220	23	38	9,5	41,5	9,5	19	74	3,5	58	26	60

Latch Clamps, Stainless Steel

Material: Sheet-metal parts: 1.4301.
 Pulling latch: 1.4305.
 Handle: Plastic sleeve, red, oil resistant.



Latch clamps allow a fast and secure locking of lids and covers.
 The stroke of the pulling ledge can be adjusted within its range.
 In the clamped position the pulling ledge with its clamping arm is parallel to the plane of the operating handle.
 Latch bracket included in the delivery.



Ordering Details: e.g.: Product No. 676 992 04, Latch Clamp, Stainless Steel, Size 160

Product No.	Size	Holding Force F_H N	approx. Dimensions																	Weight g				
			a	b_1	b_2	b_3	b_4	b_5	d_1	d_2	h_1	h_2	l_1	l_2	m_1	m_2	m_3	m_4	m_5		r	s	w_1	w_2
676 992 04	160	1600	12	26	28	21	20	14	M4	4,3	22	18	98	11	19	5,0	16	5	10	37	2	25	11	85
676 992 06	320	3200	16	40	44	32	28	22	M6	6,5	30	25	152	19	32	10,5	19	7	14	57	3	48	13	250

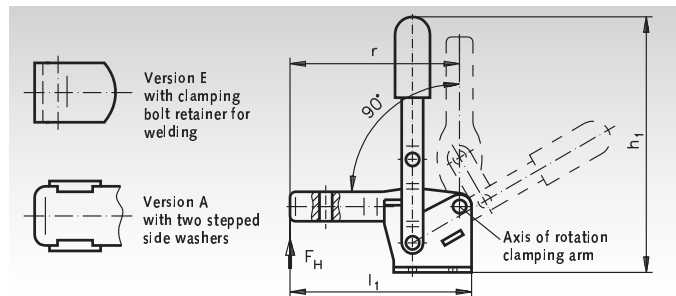
Quick Clamps (Vertical Clamp with Horizontal Base, without Clamping Bolts)

Material: Steel-sheet parts: Case-hardened steel C10, zinc-plated. Bearing pins: Hardened, from size 200 case hardened.

All moving parts lubricated with special grease.
Handle with plastic sleeve, red, oil resistant.

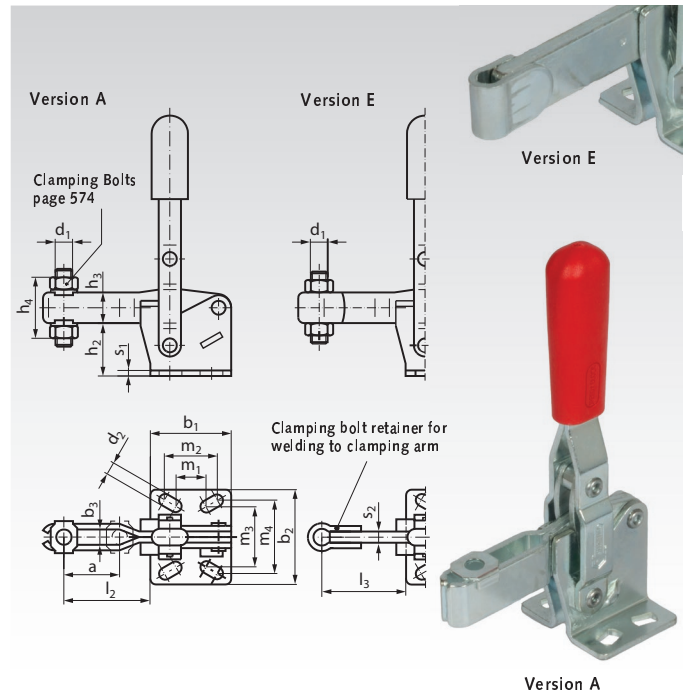
Operating handle and clamping lever move in the same direction.
In the clamping position the operating handle is vertical. Vertical clamps are available for holding forces F_H from 90 daN up to 460 daN.

Note: Worth pointing out is the clamping arm on all vertical clamps: It is blanked out from full and reinforced on the points of highest load. During the closing movement it is guided on both sides to prevent being affected by possible side thrusts.



Version A: forked clamping arm.

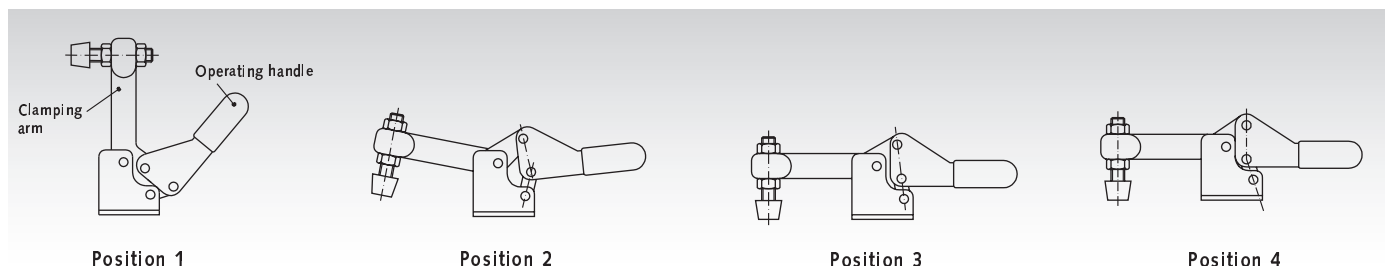
Version E: solid clamping arm.



Product No. Version A	Product No. Version E	Size	F_H N	$a \approx$ mm	b_1 mm	b_2 mm	b_3 mm	d_1^* mm	$d_2 \approx$ mm	$h_1 \approx$ mm	h_2 mm	h_3 mm	h_4 mm	$l_1 \text{ max}$ mm	$l_2 \approx$ mm	$l_3 \text{ max}$ mm	m_1 mm	m_2 mm	m_3 mm	m_4 mm	r mm	s_1 mm	s_2 mm	Weight g
676 003 00	676 043 00	70	900	20	29	34	5,2	M5	4,5	98	20	11	21	67	32	41	15	16	24	24	63	2	4	95
676 006 00	676 046 00	130	1600	28	35	42	6,2	M6	5,5	142	28	16	27	86	42	54	12,5	19	27	29	80	2,5	5	210
676 010 00	676 050 00	230	2200	40	43	45	8,5	M8	6,5	168	33	18	31	112	58	73	19	20	32	32	104	3	6	350
676 015 00	676 055 00	330	2700	43	50	65	10,5	M10	8,5	195	43	22	38	131	66	86	29	32	46	45	122	3,5	7	550
676 020 00	676 060 00	430	3000	64	58	65	12,5	M12	8,5	247	55	26	45	166	88	114	32	32	54	45	156	4	10	1000
676 025 00	676 065 00	530	4600	90	80	95	12,5	M12	12,5	303	84	32	51	225	125	152	50	51	70	70	212	7	10	1960

* Clamping bolt page 574 has to be ordered separately.

Operating Principle



Position 1: By using the toggle link principle, these quick clamps offer essential advantages:

The clamping arm retracts to such an extent, that the workpiece can be inserted and removed completely unobstructed.

Position 2: Even the slightest forward movement of the operating handle moves the clamping arm with the contact pad over the workpiece.

As can be seen from the sketch, the position of the toggle links leads to a multiple of the input force at the operating handle being applied to the clamping arm.

In this position the quick clamp is not yet fully locked, i.e., any counter force applied to the operating handle will open the clamp.

Position 3: In this position all three pivots are perfectly aligned yielding the maximum clamping force (dead centre point). The clamping force applied to the workpiece is mainly dependent on:

- the input force applied to the operating handle,
- the position of the clamping bolt on the clamping lever.

The clamping force can be altered by readjusting the position

of the clamping bolt: It increases if the entire contact area of the bolt touches the workpiece before the dead centre point is reached. This effect is clearly illustrated when using an elastic clamping pad.

Position 4: In this position the toggle link has arrived in the over-centre lock position, and the operating lever has reached a firm stop. This leads to a secure locking (self-blocking) of the quick clamp, preventing it from opening until it is released by the operator. The force which the clamping element is capable of withstanding in this over-centre lock position without suffering permanent deformation is known as holding force F_H . The holding force F_H is a characteristic value (co-efficient) for toggle clamps, and this value is mainly dependent on:

- the size (dimensions, geometry) of the quick clamp,
 - the position of the clamping bolt on the clamping arm.
- In the tables, the maximum holding force F_H is stated in relation to a particular position of the clamping arm.

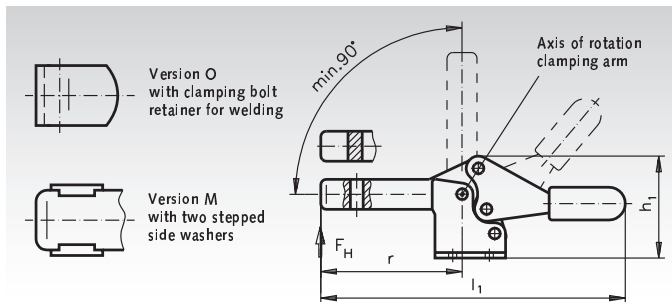
Quick Clamps (Horizontal Clamp with Horizontal Base, without Clamping Bolts)

Material: Steel-sheet parts: Case-hardened steel C10, zinc-plated. Bearing pins: hardened, from size 350 case hardened.

All moving parts lubricated with special grease.
Handle with plastic sleeve, red, oil resistant.

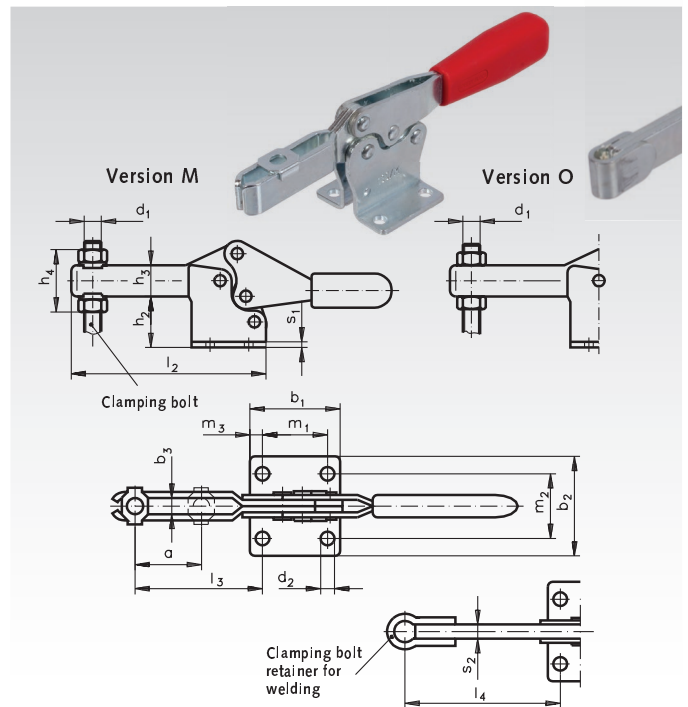
Low profile in the clamping position, designed to avoid the operator's fingers being caught between the retracting clamping arm and the operating handle (safety distance). During the closing movement it is guided on both sides to prevent it from being affected by possible side thrusts

Operating principle page 573.



Version M: forked clamping arm.

Version O: solid clamping arm.



Ordering Details: e.g.: Product No. 676 102 00, Horizontal Clamp, Version M, Size 25

Product No. Version M	Product No. Version O	Size	Holding Force		b_1	b_2	b_3	d_1^{**}	d_2	h_1	h_2	h_3	h_4	l_1	l_2	l_3	l_4	m_1	m_2	m_3	r	s_1	s_2	Weight g
			F_H N	a^2 mm																				
676 102 00	-	25*	400	10	24	24,5	4,3	M4	4,3	23	12	7	15	68	43	20	-	15	16	4,5	24,5	1,2	-	25
676 103 00	676 143 00	75	900	20	28	26	5,5	M5	4,5	38	20	11	22,5	118	67	40	49,5	13,5	17	7,2	43	2	4	80
676 105 00	676 145 00	130	1000	32	36	40	6,5	M6	5,5	51	29	14	27	168	92	53	64	26	26	5	62	2,5	5	180
676 111 00	676 151 00	230	1700	37	44	42	8,5	M8	6,5	61,5	37	18	35	196	110	63,5	78	26	28,5	9	72	3	6	300
676 117 00	676 157 00	355	3200	58	60	56	10,4	M10	8,5	83	50	22	43	270	161	96	115	41	41	9,5	108,5	3,5	7	600
676 122 00	676 162 00	455	6200	65	70	65	12,4	M12	8,5	99	60	26	53	309	186	116	135	41,5	41,5	14,2	126	4	10	1400

* Size 25 only available in version M.

** Clamping bolts have to be ordered separately.

Clamping Bolts and Protective Caps for Quick Clamps

Material:

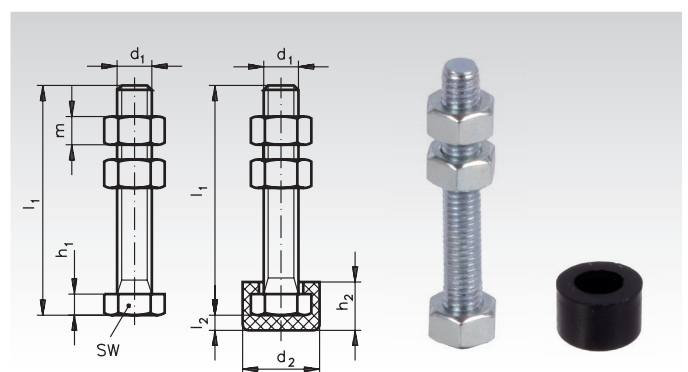
Hexagon Bolt: DIN 933, steel, strength class 8, zinc-plated.

Hexagon nuts: DIN 934/DIN 936, steel, zinc-plated.

Protective cap: Neoprene 85° Shore hardness, black.

Note: Protective cap has to be ordered separately.

The elastic protective cap can be easily slipped over the bolt head.



Ordering Details: e.g.: Product No. 676 000 04, Clamping Bolt M4

Product No. Screw	Product No. Protect. Cap	d_1 mm	Length l_1 mm	d_2 mm	h_1 mm	h_2 mm	l_2 mm	m mm	sw mm	Weight	
										Screw g	Cap g
676 000 04	676 000 44	M4	23	11	3	6,5	2,5	3,2	7	5	1
676 000 05	676 000 45	M5	38	12,5	3,5	8	2,5	4,7	8	9	1
676 000 06	676 000 46	M6	49	15	4	10	4	5,2	10	11	2
676 000 08	676 000 48	M8	56	19	5,5	13	5,5	6,8	13	24	4
676 000 10	676 000 50	M10	77	24	6,5	16	7	8,4	16	47	7
676 000 12	676 000 52	M12	88	26	7,5	19	8,5	10,8	18	75	10