

■ Technical data for planning and calculation



The following data inform you about practical planning, construction and static calculation.

Our application engineering dept. will be at your command with the latest calculations programs and the, only for our customers created software, MEFA static.

Our scope of service includes creating of detailed technical certificates as well as a competent service on site.

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■ Weight- and pipe schedule for medium-weight tubes

Medium-weight tubes according to DIN EN 10255 (DIN 2440)

Heat insulation: density 120 kg/m³

DN	connecting width of the fittings [mm]	OD [mm]	Wall thickness s [mm]	Weight in kg/m				Pipe dimension with insulation		
				empty	with water	with water and 50% insulation	with water and 100% insulation	Insulation thickness in mm at 100% insulation	OD in mm at an insulation of	
									50%	100%
8	1/4"	13,5	2,3	0,64	0,71	1,39	1,90	20	40	60
10	3/8"	17,2	2,3	0,84	0,98	1,74	2,26	20	40	60
15	1/2"	21,3	2,6	1,21	1,42	2,26	2,80	20	40	60
20	3/4"	26,9	2,6	1,56	1,95	2,91	3,47	20	50	70
25	1"	33,7	3,2	2,41	3,02	4,41	5,37	30	60	90
32	1 1/4"	42,4	3,2	3,10	4,15	5,74	6,75	30	70	100
40	1 1/2"	48,3	3,2	3,56	4,98	7,03	8,54	40	90	130
50	2"	60,3	3,6	5,03	7,31	10,03	12,16	50	110	160
65	2 1/2"	76,1	3,6	6,42	10,24	13,80	16,72	60	140	200
80	3"	88,9	4,0	8,36	13,60	18,47	23,01	80	170	250
100	4"	114,3	4,5	12,20	20,89	27,70	34,41	100	210	310
125	5"	139,7	5,0	16,60	29,40	37,13	44,32	100	240	340
150	6"	165,1	5,0	19,80	38,13	46,78	54,44	100	270	370

- weights can differ

- Please note pipe manufacturer's specifications

■ Weight- and pipe schedule for welded steel pipes

Welded steel pipes according to DIN EN 10220 (DIN 2458) - light version

Heat insulation: density 120 kg/m³

DN	OD [mm]	Wall thickness s [mm]	Weight in kg/m				Pipe dimension with insulation		
			empty	with water	with water and 50% insulation	with water and 100% insulation	Insulation thickness in mm at 100% insulation	OD in mm at an insulation of	
								50%	100%
8	13,5	1,80	0,52	0,60	1,28	1,78	20	30	50
	16,0	1,80	0,63	0,75	1,48	2,00	20	40	60
10	17,2	1,80	0,68	0,83	1,59	2,11	20	40	60
15	21,3	2,00	0,95	1,19	2,03	2,57	20	40	60
20	26,9	2,00	1,23	1,64	2,60	3,16	20	50	70
	31,8	2,00	1,47	2,08	3,42	4,37	30	60	90
25	33,7	2,00	1,56	2,26	3,64	4,61	30	60	90
32	42,4	2,30	2,27	3,40	4,98	6,00	30	70	100
	44,5	2,30	2,39	3,64	5,60	7,08	40	90	130
40	48,3	2,30	2,61	4,11	6,16	7,67	40	90	130
	51,0	2,30	2,76	4,45	6,57	8,10	40	90	130
50	57,0	2,30	3,10	5,26	7,89	10,00	50	110	160
	60,3	2,30	3,29	5,73	8,45	10,58	50	110	160
	63,5	2,30	3,47	6,20	9,00	11,17	50	110	160
	70,0	2,60	4,32	7,62	11,01	13,85	60	130	190
65	76,1	2,60	4,71	8,66	12,22	15,14	60	140	200
80	88,9	2,90	6,15	11,57	16,45	20,98	80	170	250
	101,6	2,90	7,06	14,27	20,62	27,09	100	200	300
	108,0	2,90	7,52	15,72	22,30	28,89	100	210	310
100	114,3	3,20	8,77	17,91	24,72	31,43	100	210	310
	127,0	3,20	9,77	21,19	28,46	35,41	100	230	330
	133,0	3,60	11,49	23,92	31,40	38,46	100	230	330
125	139,7	3,60	12,08	25,87	33,60	40,78	100	240	340
	152,4	4,00	14,64	31,02	39,20	46,63	100	260	360
	159,0	4,00	15,29	33,20	41,62	49,17	100	260	360
150	168,3	4,00	16,21	36,39	45,15	52,87	100	270	370
	177,8	4,50	19,23	41,61	50,71	58,62	100	280	380
	193,7	4,50	21,00	47,79	57,47	65,67	100	300	400
200	219,1	4,50	23,82	58,48	69,08	77,76	100	320	420
225	244,5	5,00	29,53	72,72	84,23	93,39	100	340	440
250	273,0	5,00	33,05	87,37	99,91	109,61	100	370	470
300	323,9	5,60	43,96	120,76	135,13	145,79	100	425	525
350	355,6	5,60	48,34	141,49	157,02	168,27	100	460	560
400	406,4	6,30	62,16	183,96	201,32	213,53	100	510	610
450	457,0	6,30	70,02	225,13	244,32	257,49	100	560	660
500	508,0	6,30	77,95	270,70	293,06	308,91	110	620	730
550	559,0	6,30	85,87	320,35	346,09	364,88	120	680	800
600	610,0	6,30	93,80	374,09	401,86	421,80	120	730	850
650	660,0	7,10	114,32	441,88	471,64	492,71	120	780	900

- weights can differ

- Please note pipe manufacturer's specifications

■ Weight- and pipe schedule for seamless steel pipes

Seamless steel pipes according to DIN EN 10220 (DIN 2448) - heavy version

Heat insulation: density 120 kg/m³

DN	OD [mm]	Wall thickness s [mm]	Weight in kg/m				Pipe dimension with insulation		
			empty	with water	with water and 50% insulation	with water and 100% insulation	Insulation thickness in mm at 100% insulation	OD in mm at an insulation of	
								50%	100%
8	13,5	1,80	0,52	0,60	1,28	1,78	20	30	50
	16,0	1,80	0,63	0,75	1,48	2,00	20	40	60
10	17,2	1,80	0,68	0,83	1,59	2,11	20	40	60
15	21,3	2,00	0,95	1,19	2,03	2,57	20	40	60
20	26,9	2,30	1,40	1,79	2,75	3,31	20	50	70
	31,8	2,60	1,87	2,43	3,77	4,72	30	60	90
25	33,7	2,60	1,99	2,63	4,02	4,98	30	60	90
32	42,4	2,60	2,55	3,64	5,23	6,24	30	70	100
	44,5	2,60	2,69	3,90	5,86	7,34	40	90	130
40	48,3	2,60	2,93	4,39	6,44	7,95	40	90	130
	51,0	2,60	3,10	4,75	6,87	8,40	40	90	130
50	57,0	2,90	3,87	5,93	8,56	10,67	50	110	160
	60,3	2,90	4,11	6,44	9,16	11,30	50	110	160
	63,5	2,90	4,33	6,95	9,75	11,92	50	110	160
	70,0	2,90	4,80	8,04	11,42	14,27	60	130	190
65	76,1	2,90	5,24	9,12	12,68	15,59	60	140	200
80	88,9	3,20	6,76	12,11	16,98	21,51	80	170	250
	101,6	3,60	8,70	15,70	22,05	28,52	100	200	300
	108,0	3,60	9,27	17,25	23,83	30,42	100	210	310
100	114,3	3,60	9,83	18,84	25,65	32,35	100	210	310
	127,0	4,00	12,13	23,26	30,52	37,47	100	230	330
	133,0	4,00	12,73	25,00	32,48	39,54	100	230	330
125	139,7	4,00	13,39	27,01	34,73	41,92	100	240	340
	152,4	4,50	16,41	32,56	40,75	48,17	100	260	360
	159,0	4,50	17,15	34,82	43,24	50,79	100	260	360
150	168,3	4,50	18,18	38,11	46,87	54,59	100	270	370
	177,8	5,00	21,31	43,42	52,52	60,43	100	280	380
	193,7	5,60	25,98	52,14	61,81	70,02	100	300	400
200	219,1	6,30	33,06	66,55	77,15	85,83	100	320	420
225	244,5	6,30	37,01	79,25	90,76	99,92	100	340	440
250	273,0	6,30	41,44	94,69	107,23	116,93	100	370	470
300	323,9	7,10	55,47	130,80	145,18	155,84	100	425	525
350	355,6	8,00	68,58	159,16	174,68	185,94	100	460	560
400	406,4	8,80	86,29	205,01	222,37	234,58	100	510	610
450	457,2	10,00	110,29	260,41	279,60	292,77	100	560	660
500	508,0	11,00	134,82	320,33	342,69	358,54	110	620	730
550	559,0	12,50	168,47	392,43	418,17	436,95	120	680	800
600	610,0	12,50	184,19	452,97	480,74	500,68	120	730	850
650	660,0	14,20	226,15	539,46	569,23	590,30	120	780	900

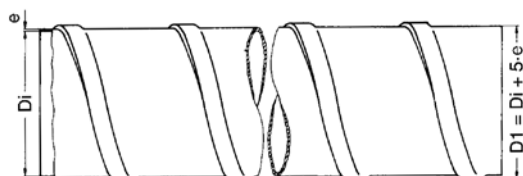
- weights can differ

- Please note pipe manufacturer's specifications

■ General pipe weights, general

DN Inside- Ø Di	Wall thickness e [mm]	Pipe- weight [kg/m]
Ventilation pipelines acc. to DIN EN 12237 (DIN 24145)		
71	0,4	0,70
80	0,4	0,79
90	0,4	0,88
100	0,6	1,47
112	0,6	1,65
125	0,6	1,84
140	0,6	2,06
150	0,6	2,21
160	0,6	2,36
180	0,6	2,65
200	0,6	2,95
224	0,6	3,31
250	0,6	3,69
280	0,6	4,13
300	0,8	5,90
315	0,8	6,20
355	0,8	6,99
400	0,8	7,88
450	0,8	8,86
500	0,8	9,85
560	0,8	11,03
600	1,0	14,77
630	1,0	15,51
710	1,0	17,49
800	1,0	19,70
900	1,0	22,17
1000	1,2	29,56
1120	1,2	33,11
1250	1,2	36,96
1400	1,5	51,73
1600	1,5	59,13
1800	1,5	66,53
2000	1,5	73,93

OD [mm]	Wall- thickness [mm]	Pipe weight empty [kg/m]	Pipe weight water- filled [kg/m]	insulated [kg/m]	Fastening distances [m]
Type copper pipe acc. to DIN EN 1057 (DIN 1786)					
8,0	1,0	0,20	0,22	0,40	0,60
10,0	1,0	0,25	0,30	0,50	1,00
12,0	1,0	0,31	0,39	0,60	1,25
15,0	1,0	0,39	0,52	0,70	1,25
18,0	1,0	0,48	0,68	0,90	1,50
22,0	1,0	0,59	0,90	1,20	2,00
28,0	1,5	1,11	1,60	2,20	2,25
35,0	1,5	1,41	2,21	2,90	2,75
42,0	1,5	1,70	2,90	3,90	3,00
54,0	2,0	2,91	4,87	6,50	3,50
64,0	2,0	3,47	6,29	8,70	4,00
76,1	2,0	4,14	8,23	11,3	4,25
88,9	2,0	4,86	10,52	14,5	4,75
108,0	2,5	7,37	15,71	21,8	5,00
133,0	3,0	10,90	23,57	30,7	5,00
159,0	3,0	13,09	31,47	37,3	5,00



- weights can differ
- Please note pipe manufacturer's specifications

■ General pipe weights

DN	OD	Wall- thickness [mm]	Pipe weight		Fastening distances [m]	
	[mm]		empty [kg/m]	waterfilled [kg/m]		
Type drainpipe cast iron - acc. to DIN EN 877 (DIN 19522)						
40	48	3,0	3,10	4,50	approx. 1,50 According to the statements of the manufacturer, every pipe should be supported twice at least; additionally every shaped piece	
50	58	3,5	4,30	6,40		
70	78	3,5	5,90	9,90		
80	83	3,5	6,30	10,90		
100	110	3,5	8,50	16,80		
125	135	4,0	11,90	24,60		
150	160	4,0	14,20	32,40		
200	210	5,0	23,40	54,80		
250	274	5,5	33,60	88,00		
300	326	6,0	43,70	121,20		
Type drainpipe PE (Geberit) - acc. to DIN EN 12056 (DIN 1986)						
30	32	3,0	0,26	0,79	0,8	≤ 20°
40	40	3,0	0,33	1,23	0,8	
50	50	3,0	0,42	1,94	0,8	
56	56	3,0	0,47	2,43	0,8	
70	75	3,0	0,65	4,38	0,8	
90	90	3,5	0,91	6,32	0,9	
100	110	4,3	1,35	9,42	1,1	
125	125	4,9	1,75	12,20	1,3	
150	160	6,2	2,84	19,95	1,6	
200	200	6,2	3,58	31,22	2,0	
250	250	7,8	5,63	48,78	2,0	
300	315	9,8	8,92	77,45	2,0	
Typ drainpipe PVC, hard - acc. to DIN 8062 (line 3)						
40	50	1,8	0,40	2,09	0,8	≤ 40°
50	63	1,9	0,53	3,29	1,0	
70	75	2,2	0,73	4,65	1,2	
80	90	2,7	1,08	6,70	1,35	
100	110	3,2	1,57	10,00	1,5	
125	125	3,7	2,06	12,92	1,6	
150	160	4,7	3,35	21,16	1,8	
PP-pipe (pressure stage PN10 - SDR11) - acc. to DIN EN ISO 15874 (DIN 8077/78)						
15	20	1,9	0,11	0,32	0,6	≤ 20°
20	25	2,3	0,17	0,50	0,75	
25	32	2,9	0,27	0,80	0,9	
32	40	3,7	0,41	1,25	1,0	
40	50	4,6	0,64	1,95	1,2	
50	63	5,8	1,01	3,09	1,4	
-	75	6,8	1,42	4,36	1,5	
65	90	8,2	2,03	6,28	1,6	
80	110	10,0	3,01	9,37	1,8	
100	125	11,4	3,90	12,10	1,9	

- weights can differ

- Please note pipe manufacturer's specifications

■ General pipe weights

DN	OD	Wall- thickness [mm]	Pipe weight		Fastening distances [m]
	[mm]		empty [kg/m]	waterfilled [kg/m]	
C-steel system pipe (type Mapress) - steel, galvanized (in- and outside)					
10	12	1,2	0,32	0,39	1,25
12	15	1,2	0,41	0,53	1,25
15	18	1,2	0,50	0,69	1,50
20	22	1,5	0,76	1,04	2,00
25	28	1,5	0,98	1,47	2,25
32	35	1,5	1,24	2,04	2,75
40	42	1,5	1,50	2,69	3,00
50	54	1,5	1,94	3,99	3,50
65	76,1	2,0	3,66	7,74	4,25
80	88,9	2,0	4,29	9,95	4,75
100	108	2,0	5,23	13,72	5,00
Stainless steel system pipe (type Mapress) - grade 1.4401					
10	12	1,0	0,28	0,36	1,25
12	15	1,0	0,35	0,48	1,25
15	18	1,0	0,43	0,63	1,50
20	22	1,2	0,63	0,93	2,00
25	28	1,2	0,81	1,32	2,25
32	35	1,5	1,26	2,06	2,75
40	42	1,5	1,52	2,72	3,00
50	54	1,5	1,97	4,02	3,50
65	76,1	2,0	3,72	7,80	4,25
80	88,9	2,0	4,36	10,02	4,75
100	108	2,0	5,32	13,81	5,00
Composite system pipe (type Mepla) - Alu/PE (expansion coefficient a = 0,026mm/(mK))					
12	16	2,25	0,14	0,24	1,50
15	20	2,5	0,19	0,36	1,50
20	26	3,0	0,30	0,61	1,50
25	32	3,0	0,42	0,95	2,00
32	40	3,5	0,60	1,45	2,00
40	50	4,0	0,84	2,23	2,50
50	63	4,5	1,10	3,40	2,50
65	75	4,7	1,45	4,83	2,50

- weights can differ
- Please note pipe manufacturer's specifications

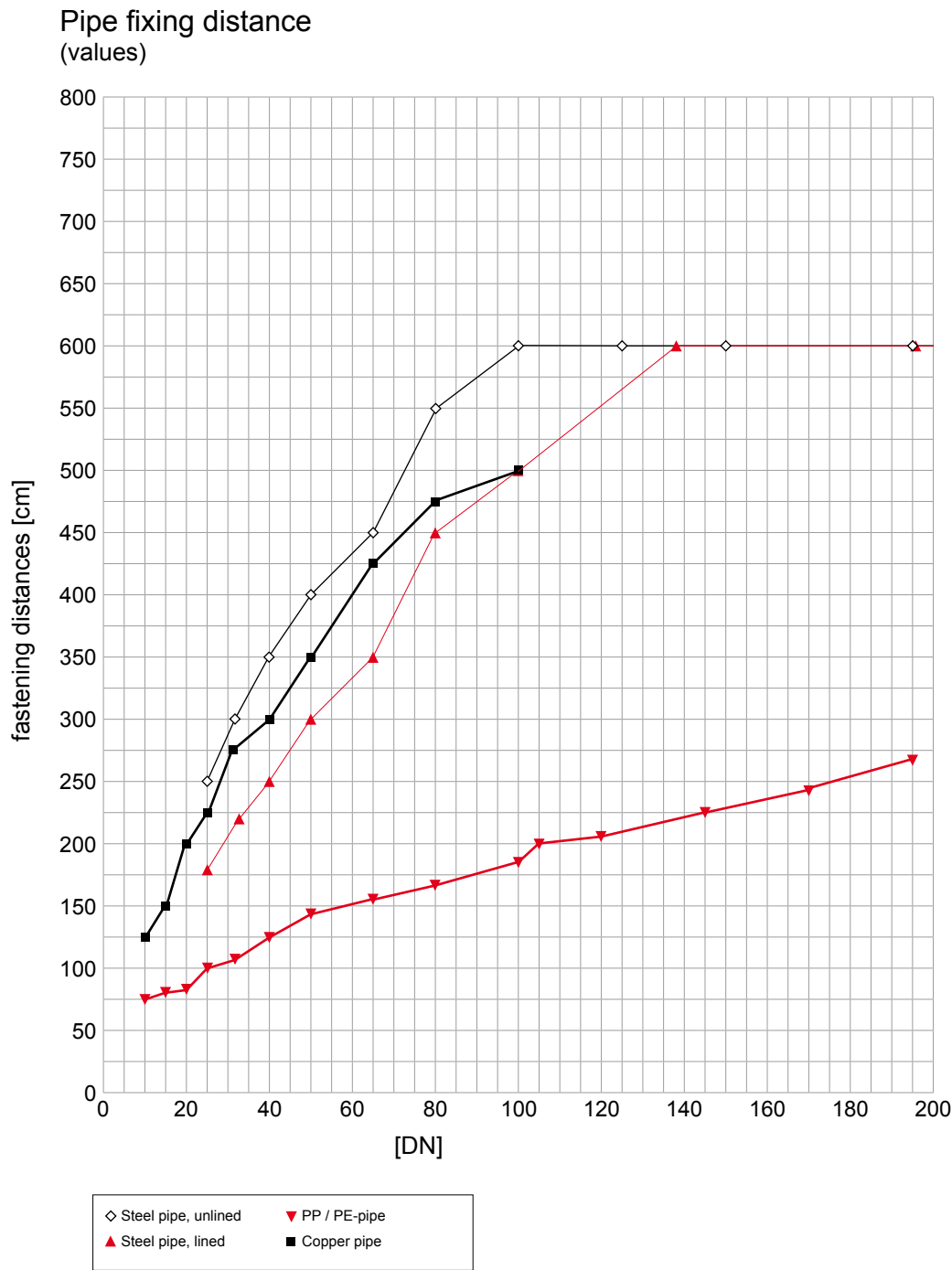
Fastening distance

Preface:

Pipe supports of pipes, pipeline elements or e.g. fittings have to be mounted according to constructional facts, service conditions and environmental effects.

Distance of pipe clamps depending on weights and wall thickness of the conduit pipe, as well as of flow medium density and operating temperature.

Stated fastening distances are only recommended values and should be estimated for every static case of operation.



- Please note pipe manufacturer's specifications

Pipe expansion

When calculating, due to thermal fluctuation, elongations of pipes, following information should be noticed:

1. Mounting- or rather installation temperature (e.g. environmental effects)
2. Temperature of medium in pipeline

Determination of elongation

The elongation can be determined by:

ΔL = elongations mm

L = length of calculated pipe m

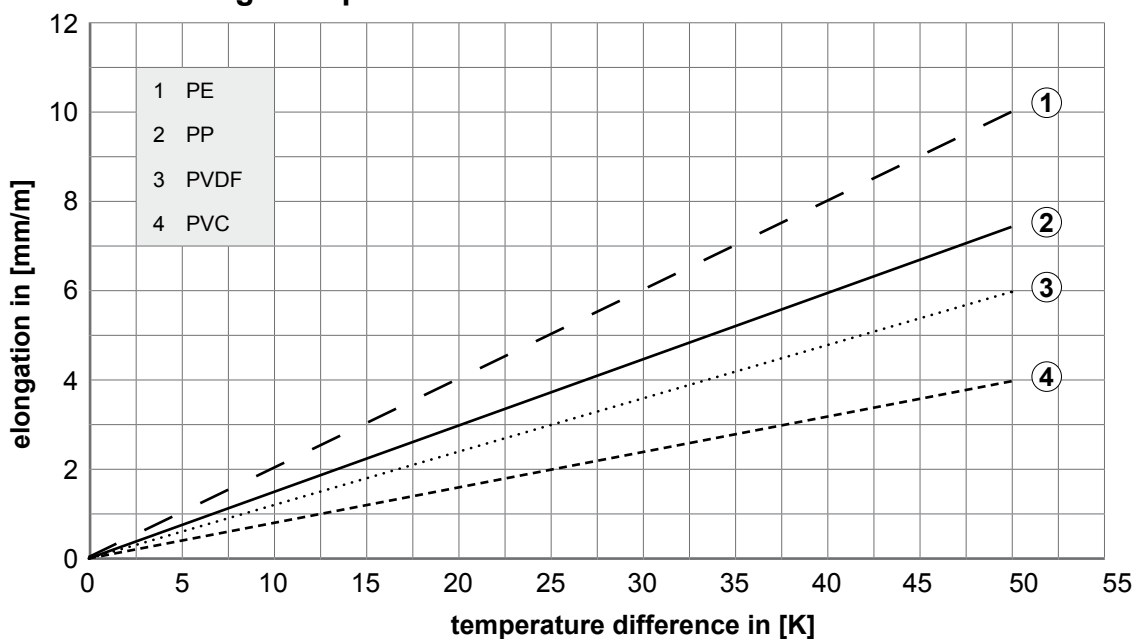
ΔT = temperature difference between medium- and installation temperature K

α = coefficient of linear expansion mm/m * K

Formula:

$$\Delta L = L \times \Delta T \times \alpha$$

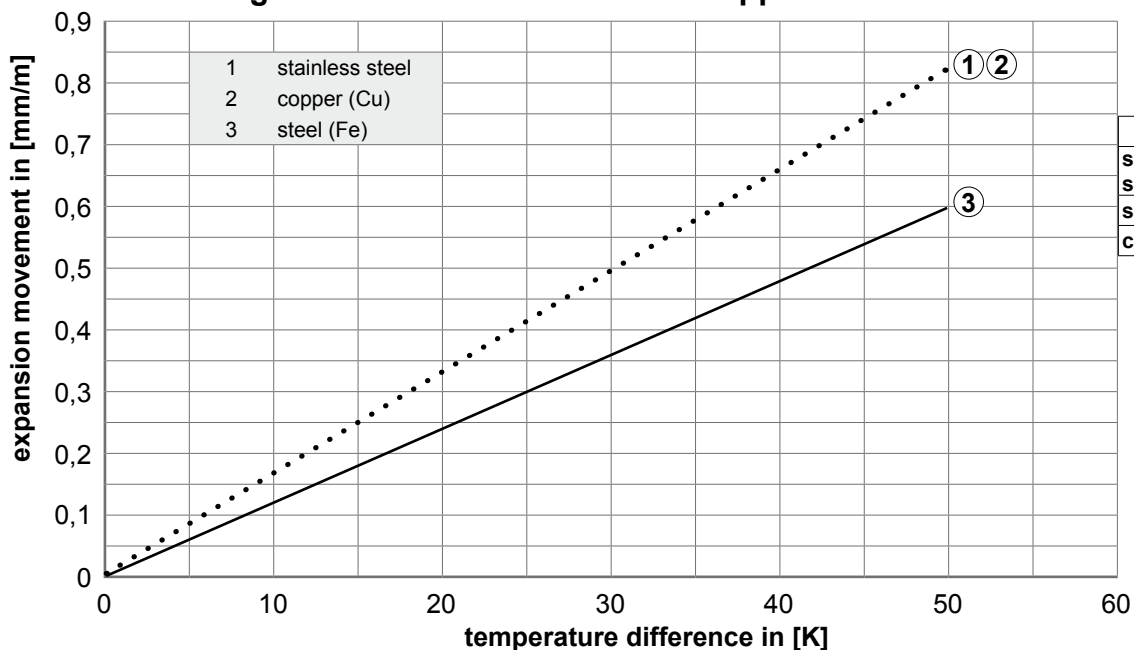
Strain diagram - plastics



tool specific
expansion coefficients
(rec. values)

	mm/mK
PVC	0,0800
PE	0,2000
PP	0,1500
PVDF	0,1200

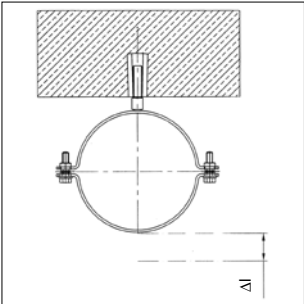
Strain diagram - stainless steel / steel / copper



tool specific
expansion
coefficients

	mm/mK
stainless steel	0,0165
steel (Fe)	0,0120
copper (Cu)	0,0166

■ Maximum fire load for pipe clamps Omnia MB



Δl = elongation



Identification	Diameter range [mm]
Pipe clamp Omnia MB, lined	15 - 125

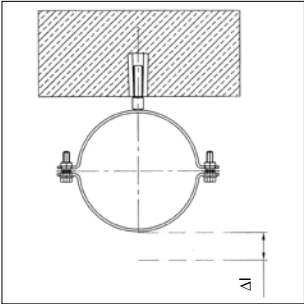
Summary: Admissible fire loads (RAL GZ 656)

Admissible loads $F_{zul, Rd}$ and elongation Δl for Omnia MB pipe clamp (ceiling-mounted)

Diameter range Pipe [mm]	fire resistance period					
	30 min		60 min		90 min	
	$F_{zul, Rd}$ [kN]	Δl [mm]	$F_{zul, Rd}$ [kN]	Δl [mm]	$F_{zul, Rd}$ [kN]	Δl [mm]
15 bis 35	0,20	30	0,11	30	0,08	30
38 bis 83	0,35	27	0,23	46	0,17	46
84 bis 125	0,62	47	0,36	47	0,25	47

$F_{zul, Rd}$ = max. admissible central tensile load on Omnia MB pipe clamp
 Δl = vertical elongation of Omnia MB pipe clamp

■ Maximum fire load for pipe clamps Heavy-Duty



Δl = elongation



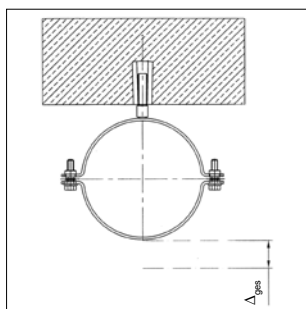
Identification	Diameter range [mm]
Pipe clamp Heavy-Duty, lined	64 - 368
Pipe clamp Heavy-Duty, unlined	64 - 368

Summary: Admissible fire loads (RAL GZ 656)

Admissible loads $F_{zul, Rd}$ and elongation Δl for Omnia MB pipe clamp (ceiling-mounted)

Diameter range pipe [mm]	fire resistance period					
	30 min		60 min		90 min	
	$F_{zul, Rd}$ [kN]	Δl [mm]	$F_{zul, Rd}$ [kN]	Δl [mm]	$F_{zul, Rd}$ [kN]	Δl [mm]
64 bis 168	2,49	45	1,57	88	1,16	88
177 bis 368	3,01	40	1,88	75	1,39	75

■ Maximum fire load for pipe clamps Standard PSM



Identification	Diameter range [mm]
Pipe clamp Standard PSM, lined	15 - 275
Pipe clamp Standard PSM, unlined	15 - 275

Δl_{ges} = elongation of system (pipe clamp and hanger)

Summary: Admissible loads (as per MPA test report 901 1118 000 /La/PK)

Table 1 Admissible loads F_{zul} and elongation Δl for Standard PSM pipe clamp (ceiling-mounted)

Diameter range pipe [mm]	fire resistance period 30 min	
	F_{zul} [kN]	Δl_s [mm]
15 bis 64	1,25	50
65 bis 117	1,25	50
120 bis 223	2,60	55
225 bis 275	2,60	70

Table 4 Admissible loads F_{zul} and elongation Δl for Standard PSM pipe clamp (suspended with threaded rod)

Diameter range pipe [mm]	thread rod-length [mm]	fire resistance period 30 min	
		F_{zul} [kN]	Δl_s [mm]
65 bis 117	≤ 500	1,25	57
	$> 500/ \leq 1000$		64
120 bis 223	≤ 500	1,80	62
	$> 500/ \leq 1000$		69
225 bis 275	≤ 500	1,80	77
	$> 500/ \leq 1000$		84

Table 2 Admissible loads F_{zul} and elongation Δl for Standard PSM pipe clamp (suspended with threaded rod)

Diameter range pipe [mm]	thread rod-length [mm]	Feuerwiderstandsdauer 30 min	
		F_{zul} [kN]	Δl_s [mm]
15 bis 64	≤ 500	0,80	57
	$> 500/ \leq 1000$		64

Table 5 Admissible loads F_{zul} and elongation Δl for Standard PSM pipe clamp (suspended with threaded rod)

Diameter range pipe [mm]	thread rod-length [mm]	fire resistance period 30 min	
		F_{zul} [kN]	Δl_s [mm]
102 bis 117	≤ 500	1,25	57
	$> 500/ \leq 1000$		64
120 bis 223	≤ 500	2,60	62
	$> 500/ \leq 1000$		69
225 bis 275	≤ 500	2,60	77
	$> 500/ \leq 1000$		84

Table 3 Admissible loads F_{zul} and elongation Δl for Standard PSM pipe clamp (suspended with threaded rod)

Diameter range pipe [mm]	thread rod-length [mm]	fire resistance period 30 min	
		F_{zul} [kN]	Δl_s [mm]
15 bis 64	≤ 500	1,20	57
	$> 500/ \leq 1000$		64
65 bis 117	≤ 500	1,20	57
	$> 500/ \leq 1000$		64
120 bis 223	≤ 500	1,20	62
	$> 500/ \leq 1000$		69
225 bis 275	≤ 500	1,20	77
	$> 500/ \leq 1000$		84

F_{zul} = max. admissible central tensile load on Standard PSM pipe clamp

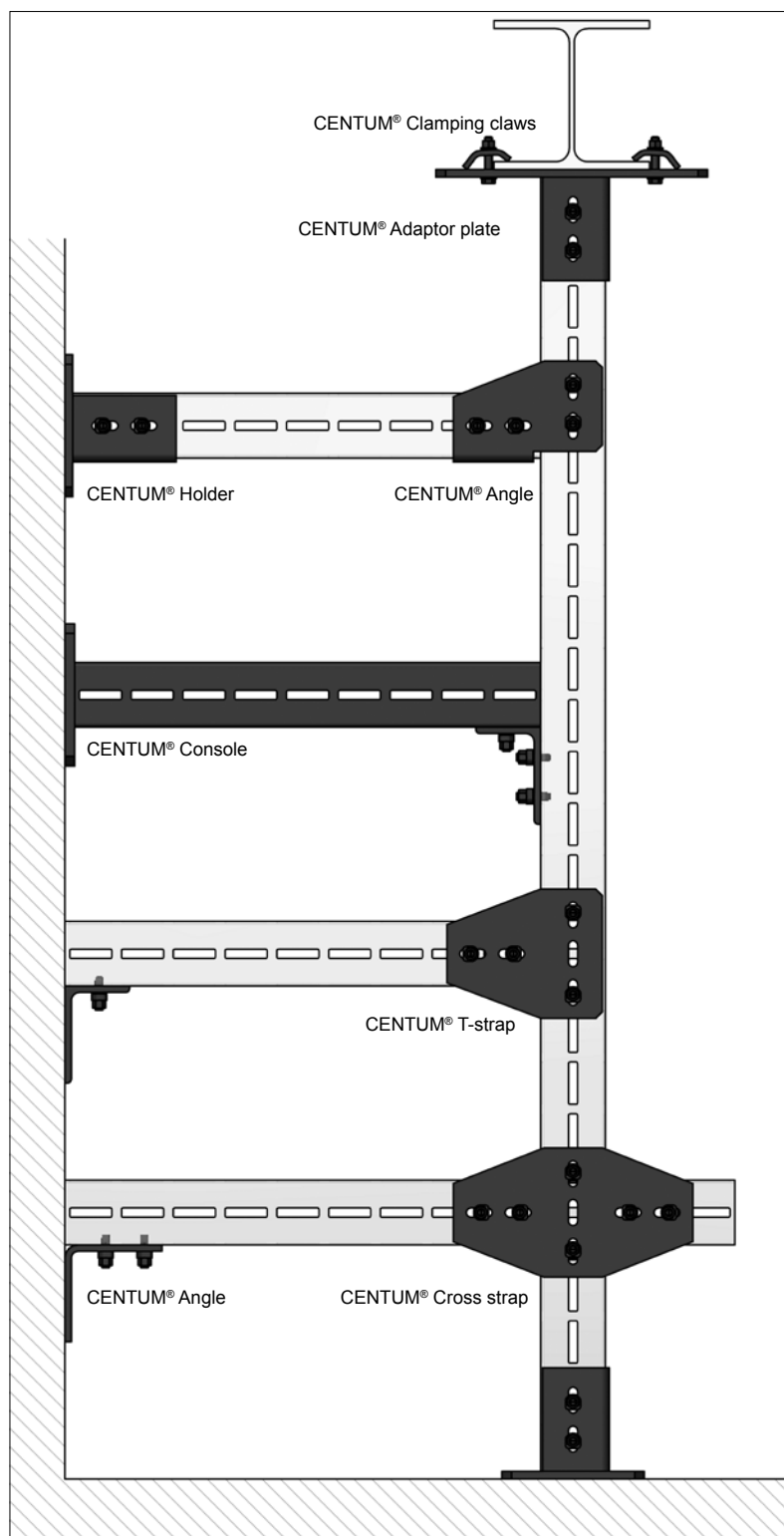
Δl_s = vertical elongation of Standard PSM pipe clamp

Δl_{ges} = vertical elongation of Standard PSM pipe clamp incl. Suspension

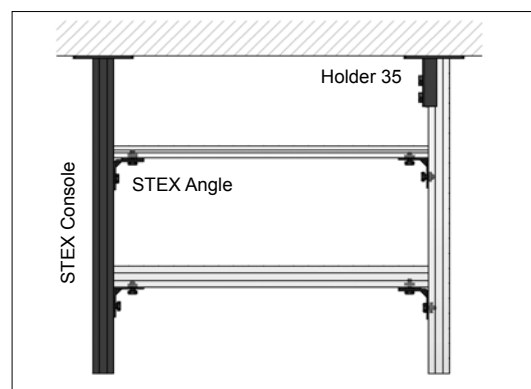
Construction examples for pipe installations

With application of MEFA profile rail system pipe bridges, frame- and supporting structures can be designed easily and in a short time on site. Due to the flexibility of the system all tolerances on site can be balanced. All units are galvanized or hot-dip galvanized.

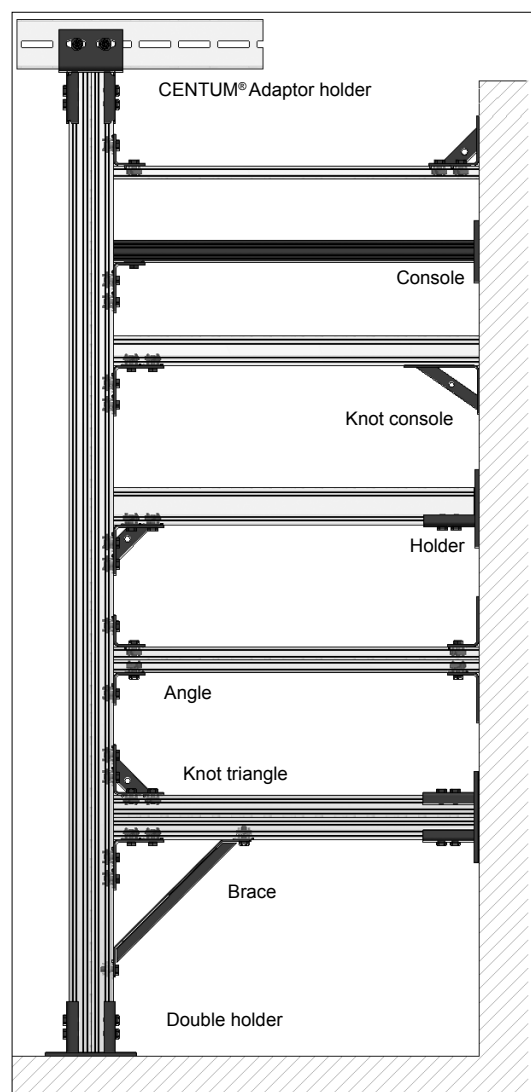
If there are any problems, MEFA guarantees to find the best solution to resolve and present suitable suggestions for occurred problem.



Construction example CENTUM



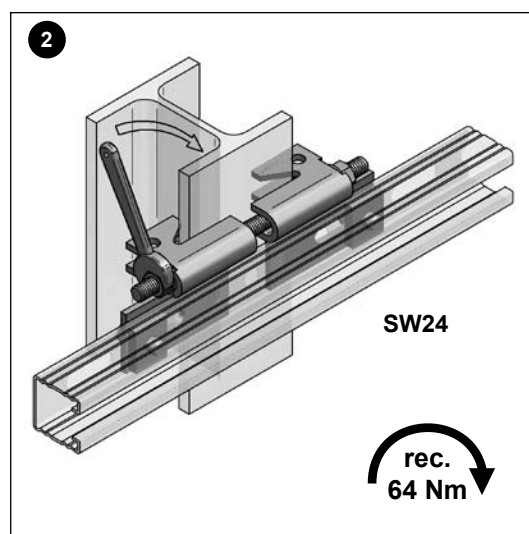
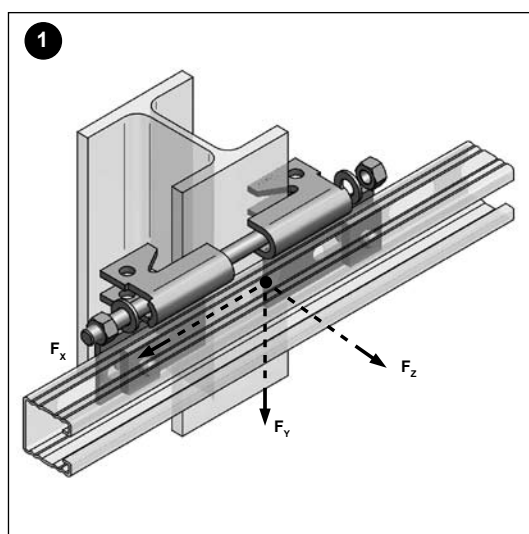
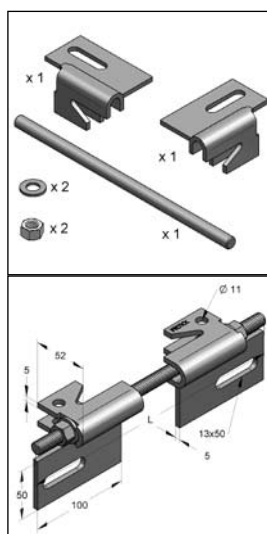
Construction example STEX 35



Construction example STEX 45

■ Assembly instructions Girder connection vertical

Resilient, vertical clamping connection of c-profile rails to steel girder



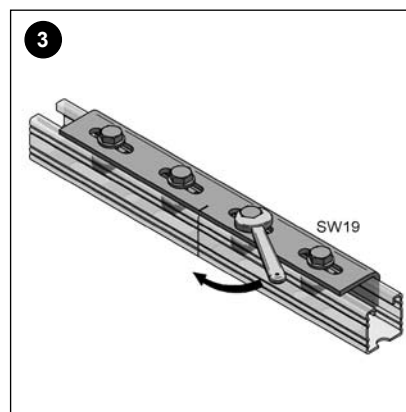
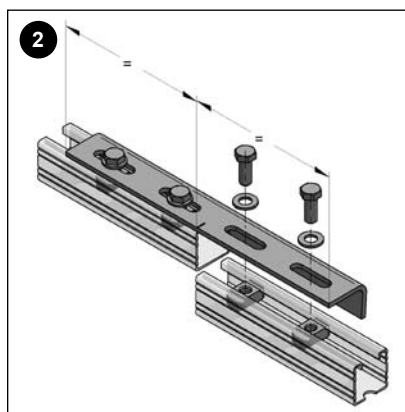
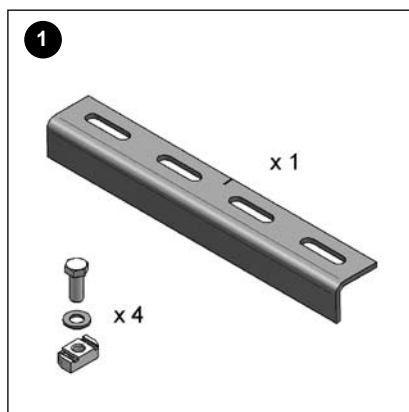
Identification	max. load			for girder		Weight	Part-No.
	F_x	F_y	F_z	HEA	HEB		
	[kN]	[kN]	[kN]			[kg/pc.]	
Girder connection vertical type D III	4,0	4,0	4,0	100-220	100-200	1,10	08146103
Girder connection vertical type D IV	4,0	4,0	4,0	280-360	160-300	1,99	08146104

Important:

Please note recommended torques!

■ Assembly instructions connector 45

Element to connect profile rails 45/26, 45/45, 45/60, 45/52, 45/90, 45/120



Accessory:
Connector 45

Accessory (not included):

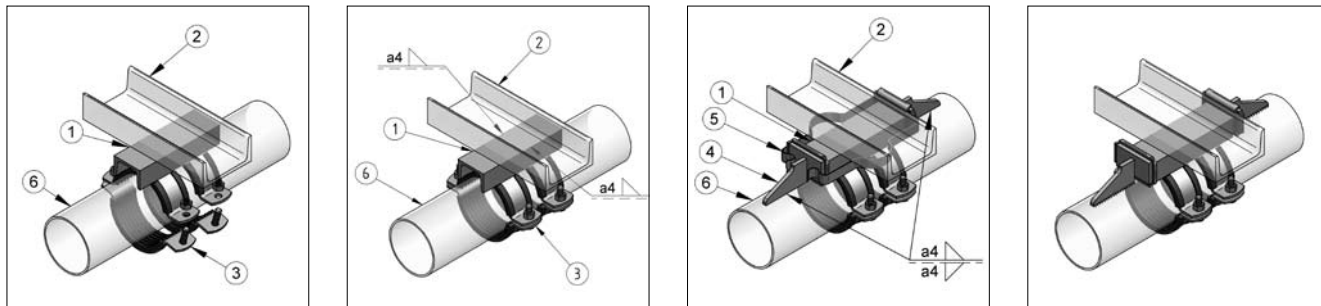
- 4 x tooth plate S M12 or Stex MP/MTB M12
- 4 x hexagon screw M12 x 25
- 4 x washer DIN 7089-12

Center connector element between both ends of profile rails (consider central mark).
To reach similar load capacity like a complete rail, mount connector on top of rail (equal if slot is on top or bottom side).
For double profile rails two connectors shall be taken.

Please consider recommended torques of tooth plates / stex elements (see MEFA catalogue).

Identification	H	B	L	Weight	Part-No.
	[mm]	[mm]	[mm]	[kg/Set]	
Connector 45	39,7	50	350	1,05	08162001

■ Assembly instructions of fixpoints



Version I: Pipe not installed yet

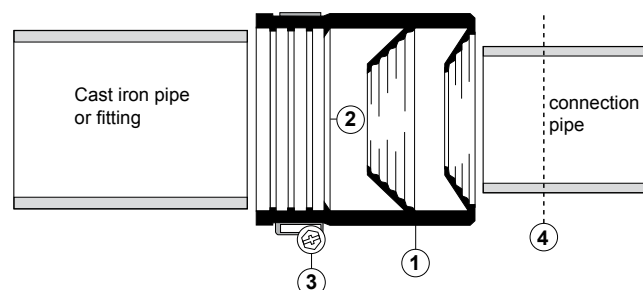
1. Mount body material of fixpoint (1) on supporting structure (2) (e.g. by welding)
2. When installing pipe, fix pipe (6) in fixpoint clamps (3).
3. Put pressure pads (4) on body material of fixpoint (1) and fix pairwise with mounting clamps (5).
4. Weld pressure pads (4) with pipe (6).
5. After succesful welding remove mounting clamps (5). These are reusable.

Version II: Pipe is installed yet

1. Screw fixpoint clamps (3) of fixpoint structure (1) on pipe (6).
2. Straight body material of fixpoint (1) and fix with supporting structure (2) (e.g. by welding).
3. Put pressure pads (4) on body material of fixpoint (1) and fix pairwise with mounting clamps (5).
4. Weld pressure pads (4) with pipe (6).
5. After succesful welding remove mounting clamps (5). These are reusable.

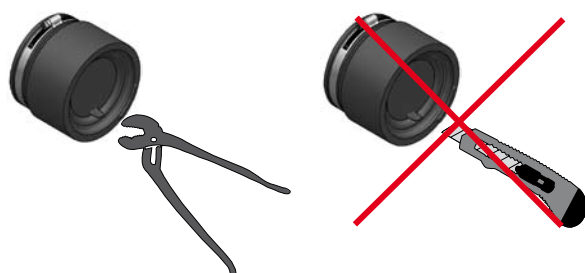
① mounting clamps for fixing pressure pads have to be ordered separately

■ Assembly instructions SIMA-CON



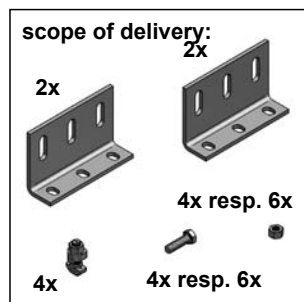
1. Put completely delivered SIMA-CON (1) onto tube end or fitting up to distance ring (2). Fix with tensioning strap (3) (cross slot, SW 7, rec. torque 2 Nm).
2. Sign connecting pipe for required plug-in module depth (4), if necessary use lubricant for insection.

15 **⚠ Attention:** Do not use sharp-edged items. To pull out opening pin just use gripper.

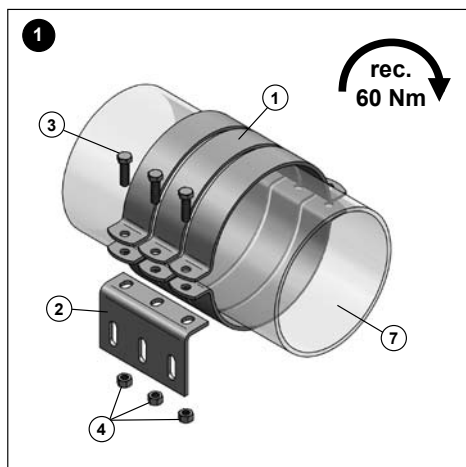


■ Assembly instructions fixpoint bracket HV

for height adjustable bracket of pipes, without sound insulation

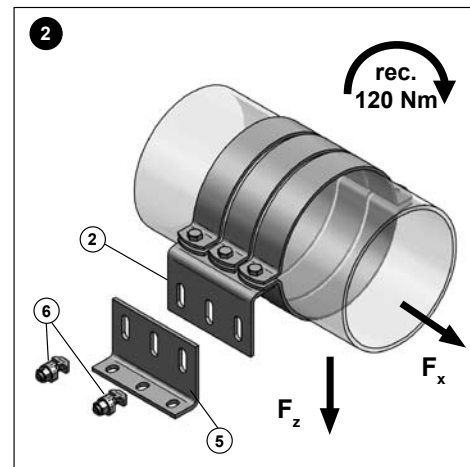


Technical data see catalogue chapter 3a.



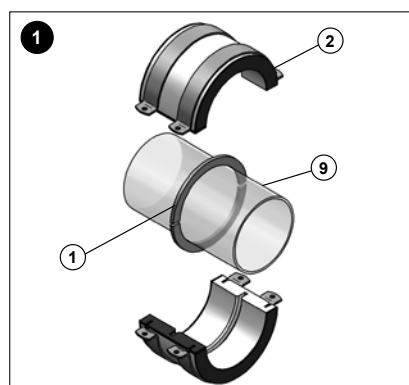
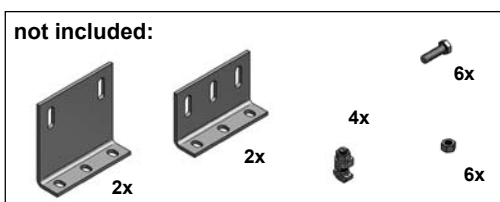
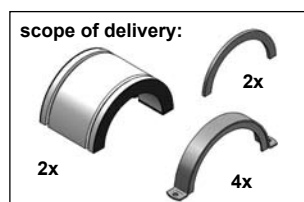
1.) Fix suitable MEFA fixpoint clamp (1) on pipe (7). Mount side part (2) under straps of pipe clamp. Attract screws (3) and nuts (4) with torque of 60 Nm.

Important:
Please note recommended torque!



2.) Install stilt (5) using T-lock heads (6) on side panel (2). Adjust desired height and attract with torque of 120 Nm. Fix entire construction on any suitable substructure (e.g. C-profile rail, CENTUM, steel girder).

■ Assembly instructions insulated fixpoint



1.) Weld inner split rings (1) of insulated fixpoint to steel pipe (9).
• Ø 76,1 to Ø 114,3 per split ring with 3 segments a3 60 mm alternated weld
• Ø139,7 to Ø 406,4 per split ring with 4 segments a3 60 mm alternated weld
Raw parts e.g. inner split rings, should be coated after welding. Stick PU-halfshell (2) across inner split ring (1).

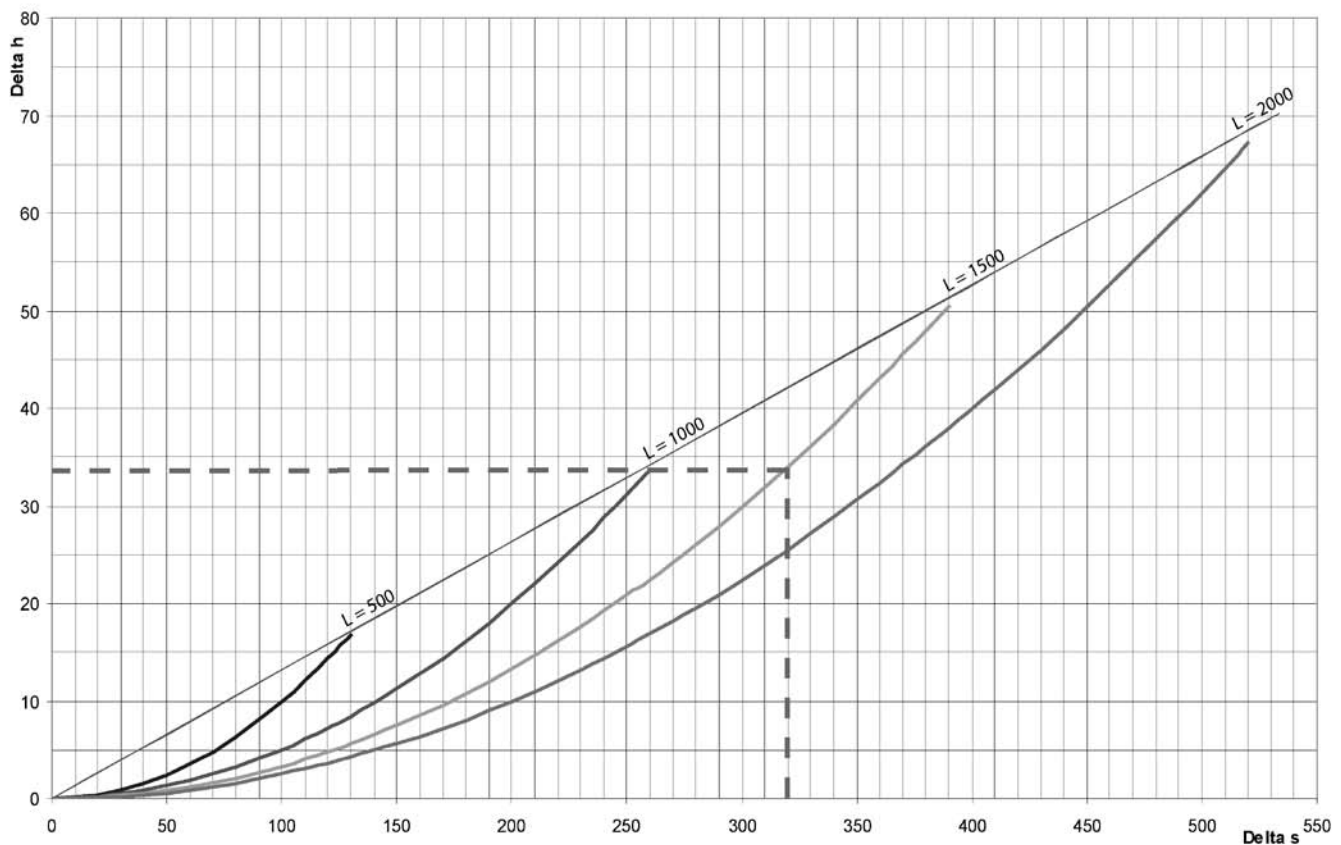


2.) Mount Side part (3) of recommended Fixpoint bracket HV under straps of outer split ring (4). Attract screws (5) and nuts (6) with torque of 10 Nm.



3.) Install stilt (7) using T-lock heads (8) on side panel (3). Adjust desired height and attract with torque of 120 Nm. Fix entire construction on any suitable substructure (e.g. C-profile rail, CENTUM, steel girder).

■ Max. absorptional pipe expansion of pendular pin joint

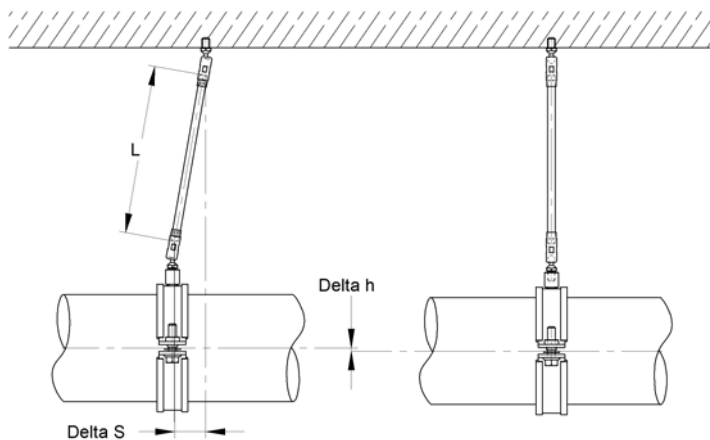


Example:

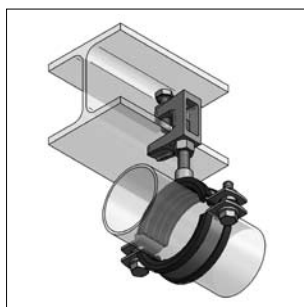
With threaded rod length of 1500 mm and pipe expansion of 320 mm, pipe is lifted about 34 mm. That means that the pendular stick joint can achieve the lifting, as no angle came up to $\geq 15^\circ$.

— Length threaded rod $L = 500$ mm
 — Length threaded rod $L = 1000$ mm
 — Length threaded rod $L = 1500$ mm
 — Length threaded rod $L = 2000$ mm
 — max. amplitude $= 15^\circ$

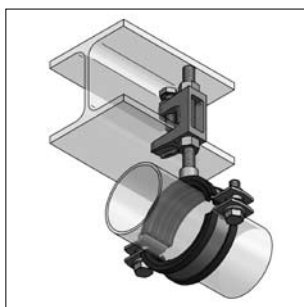
Example



■ Construction examples girder clamps



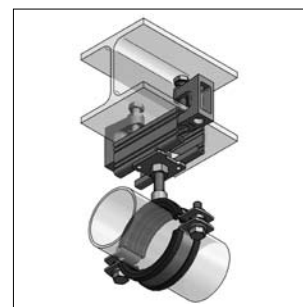
Single fixation of girder clamp underneath



Single fixation of girder clamp underneath with pass hole



girder clamp with safety lug



girder clamps combined with profile channel



Notice for mounting of girder clamp on girder:

Tighten screw of girder clamp manual; then tighten with open-end wrench by a half turn

For stationary sprinkler systems according to VdS, a safety lug has to be used in connection with a girder clamp for fixation on pipes > DN 50 mm. It should be noticed that girder clamps, suitable for pipes above DN 65 only can be mounted on girder with a bearing area, differing less than 10° of horizontal.

Clamps may only be loaded by vertical tension.

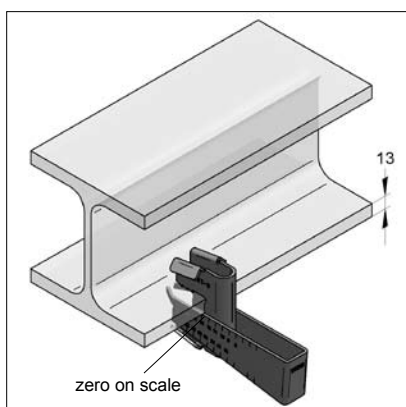
Clamping screws have to grip on inclined surface of girder.

Nominal pipe diameter (mm)	Safety lug
≤ DN 50	-
> DN 50 ≤ 100	S 3
> DN 100 ≤ 150	S 5

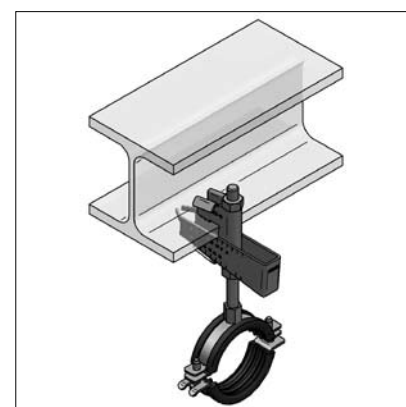
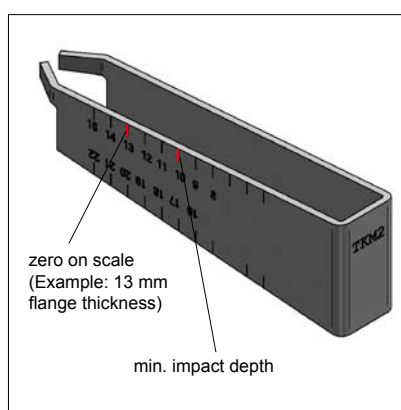


Construction examples are valid for girder clamps of cast iron and steel

■ Assembly instructions girder clamp TKM



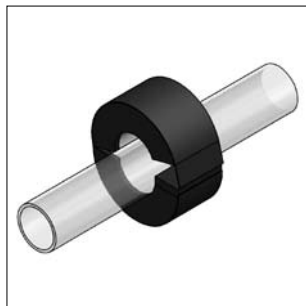
Girder clamp on girder



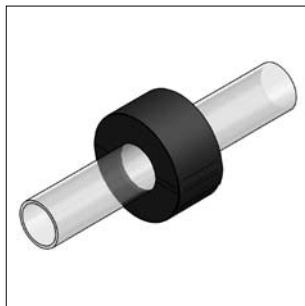
15

- Girder clamp suitable for clamp with parallel and inclined flanges (max. 14% inclination). For different thickness of flanges (8-15 mm or rather 16-22 mm) may turn girder clamp by 180°.
- Press clamp onto girder by hand until scaling is corresponding to flange thickness. Flange thickness = zero point. Wedge must be always placed underneath.
- Tap in with hammer (approx. 500 g) 3 units on scale.
- Girder clamp may only be loaded 90° to girder.

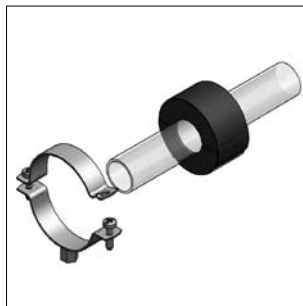
■ Assembly instructions HUSKY



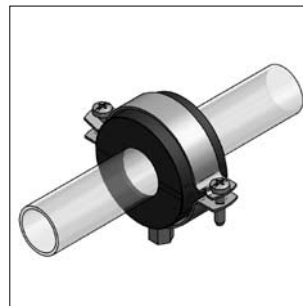
Position insulation body on pipe



Close insulation body and press overlap

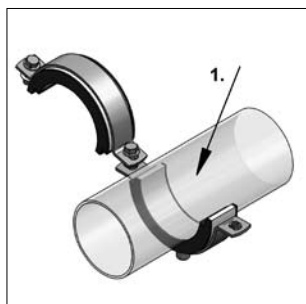


Position insulation body on pipe to pipe

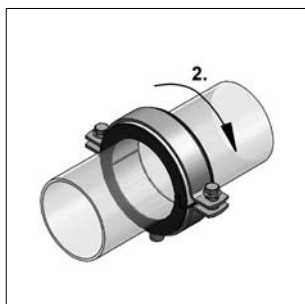


Close the clamp and adjust the closings parallel

■ Assembly instructions POLAR plus insulated pipe clamp

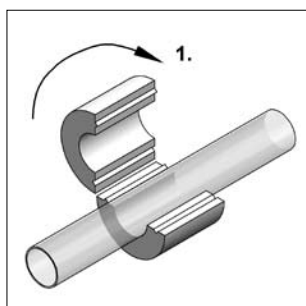


Position pipe in insulated pipe clamp

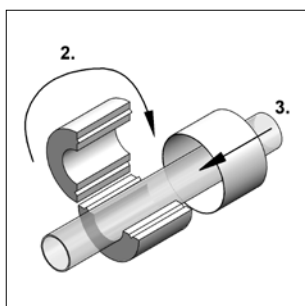


Close insulated pipe clamp

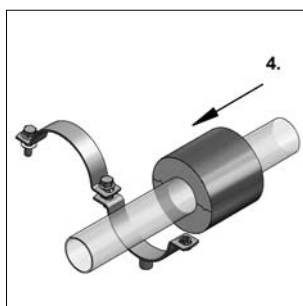
■ Assembly instructions ALU/PU >80< insulated pipe clamp



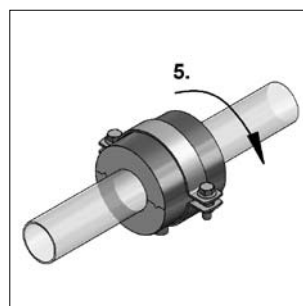
Enclose insulation body on pipe and close



Position insulation body on pipe.
optional: cover joining surface with sheet jacket



Position insulation body on pipe to pipe.
optional: with insulation.
protection shield



Close clamp and adjust closings parallel

MEFA-asurement: Insulated pipe clamp with insulated connection interface

Glueing of insulated pipe clamps with sound proofing, made of synthetic rubber or closed cell PE material can be executed easily with **"MEFA assembling glue"** see chapter 6 (with test report K 970373) or 'MEFA special adhesive' see chapter 9.

Notice:

1. MEFA special its is equates in ist characteristics customary dissolver containing adhesives for insulation made of closed-cell synthetic caoutchouc or closed-cell PE material. The emerging adherend is having a water vapour diffusion resistance.

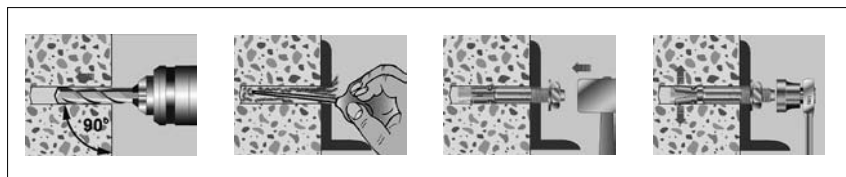
2. Insulated pipe clamp ALU/PU 80: lesser insulation thickness is recommended for the glueing with insulated connection interface

a) sealing via applying the frontsides completely with the assembling glue or

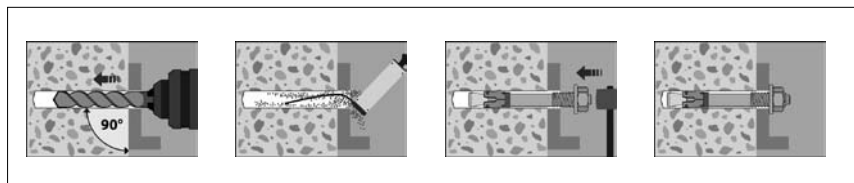
b) buildup the insulation at the connection field with the fitted insulation strips, to the insulation thickness of the PUR-field.

■ Assembly instructions anchor

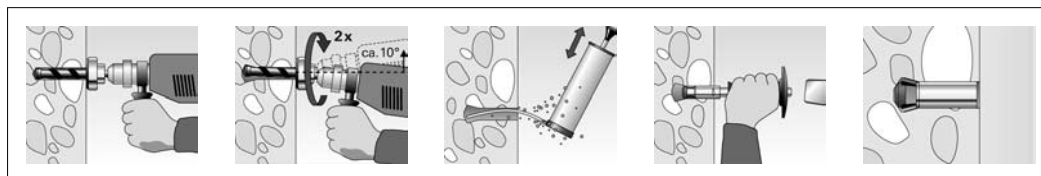
Bolt anchor BZ plus and BZ plus A4



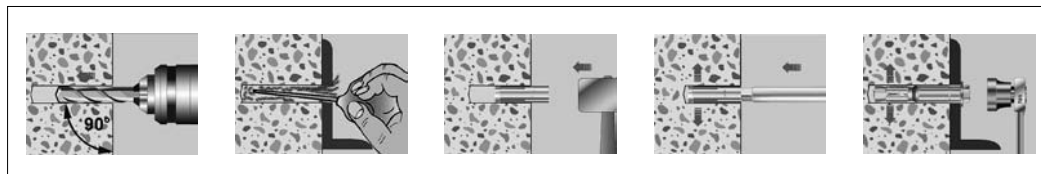
Nail anchor N and N-M



Zykon hammer-set anchor FZEA II

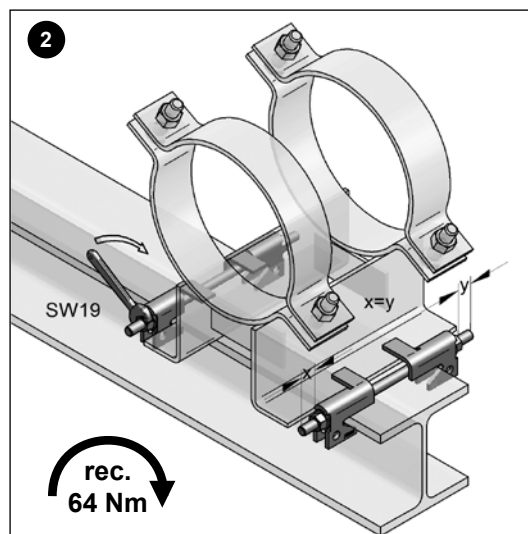
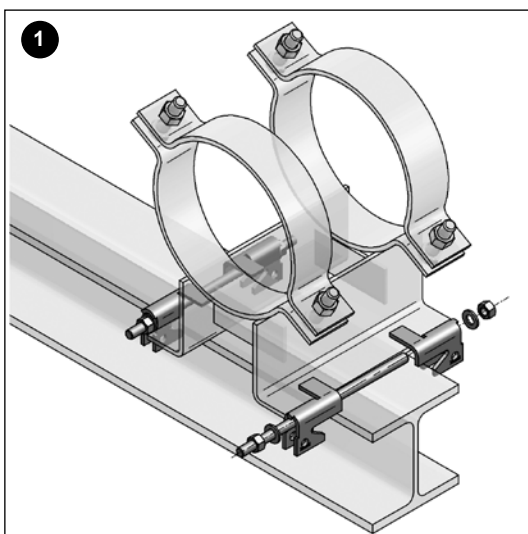
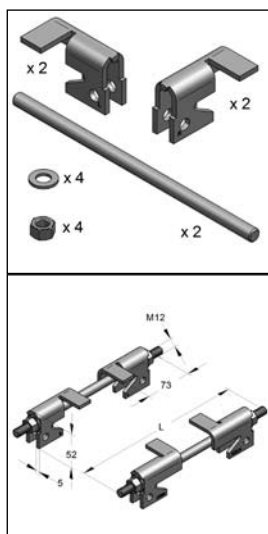


Impact anchor E and E A4



■ Assembly instructions Guiding Clamp Type A

For lateral guidance of sliding supports and sliding sledges on steel girder

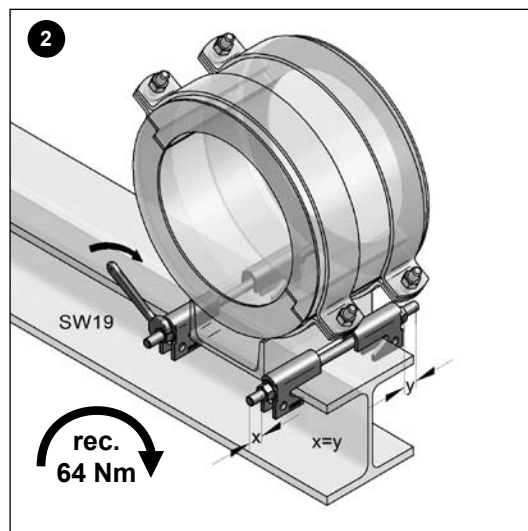
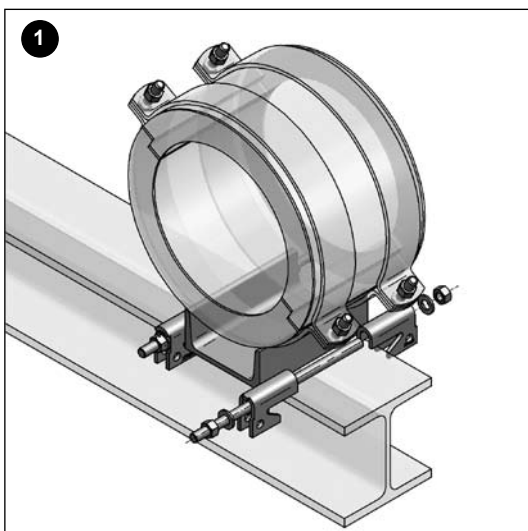


Important:

Please note the recommended tightening torques!

■ Assembly instructions Guiding Clamp Type B

For lateral guidance of sliding supports and sliding sledges (U-form) on steel girder



Important:

Please note the recommended tightening torques!