

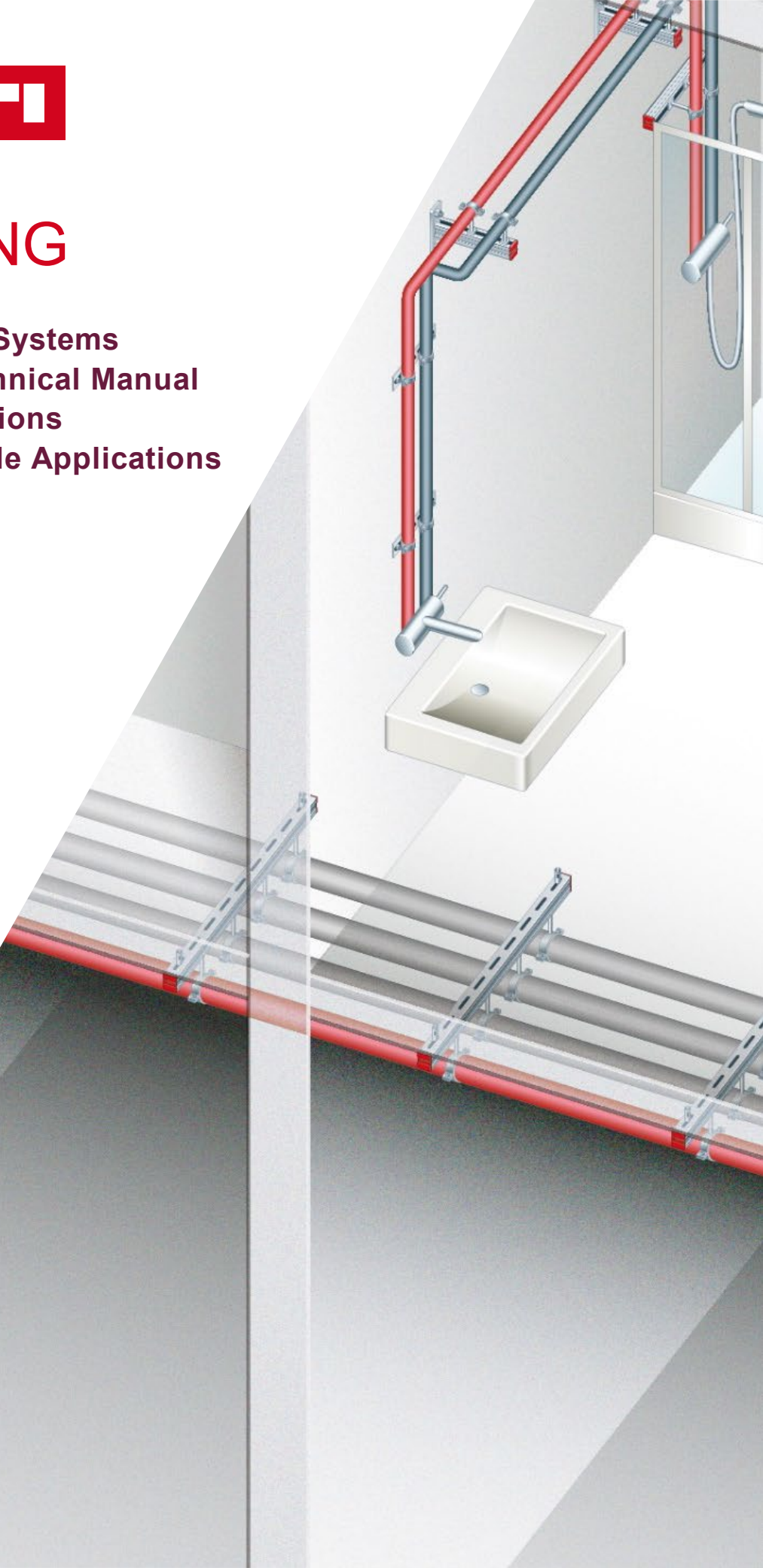


PLUMBING

BU Installation Systems
Installation Technical Manual
Typical Applications
Typical Sub-trade Applications

Version 5.0

04.2021

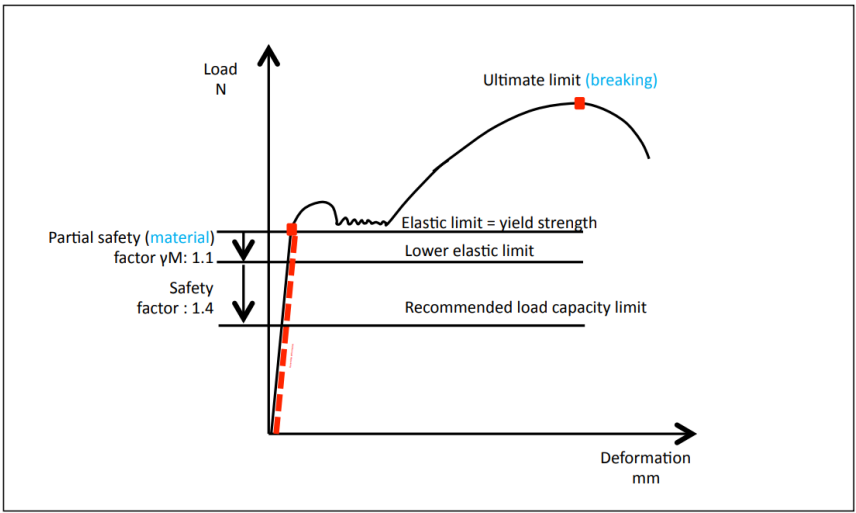
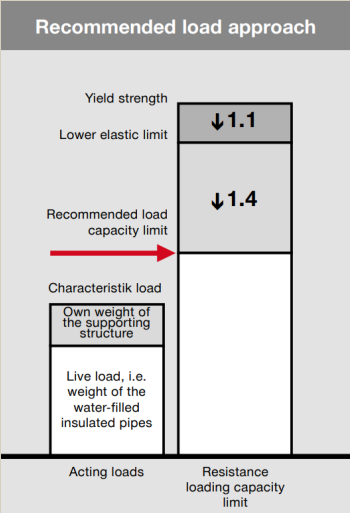


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LOADING CAPACITY LIMIT

All loading capacity limits in this manual are to be considered as recommended values. Recommended values are calculated from the elastic limit equal to yield strength, with an applied material safety factor of 1.1 and an applied additional safety factor of 1.4.

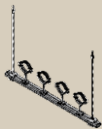


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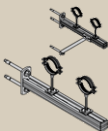
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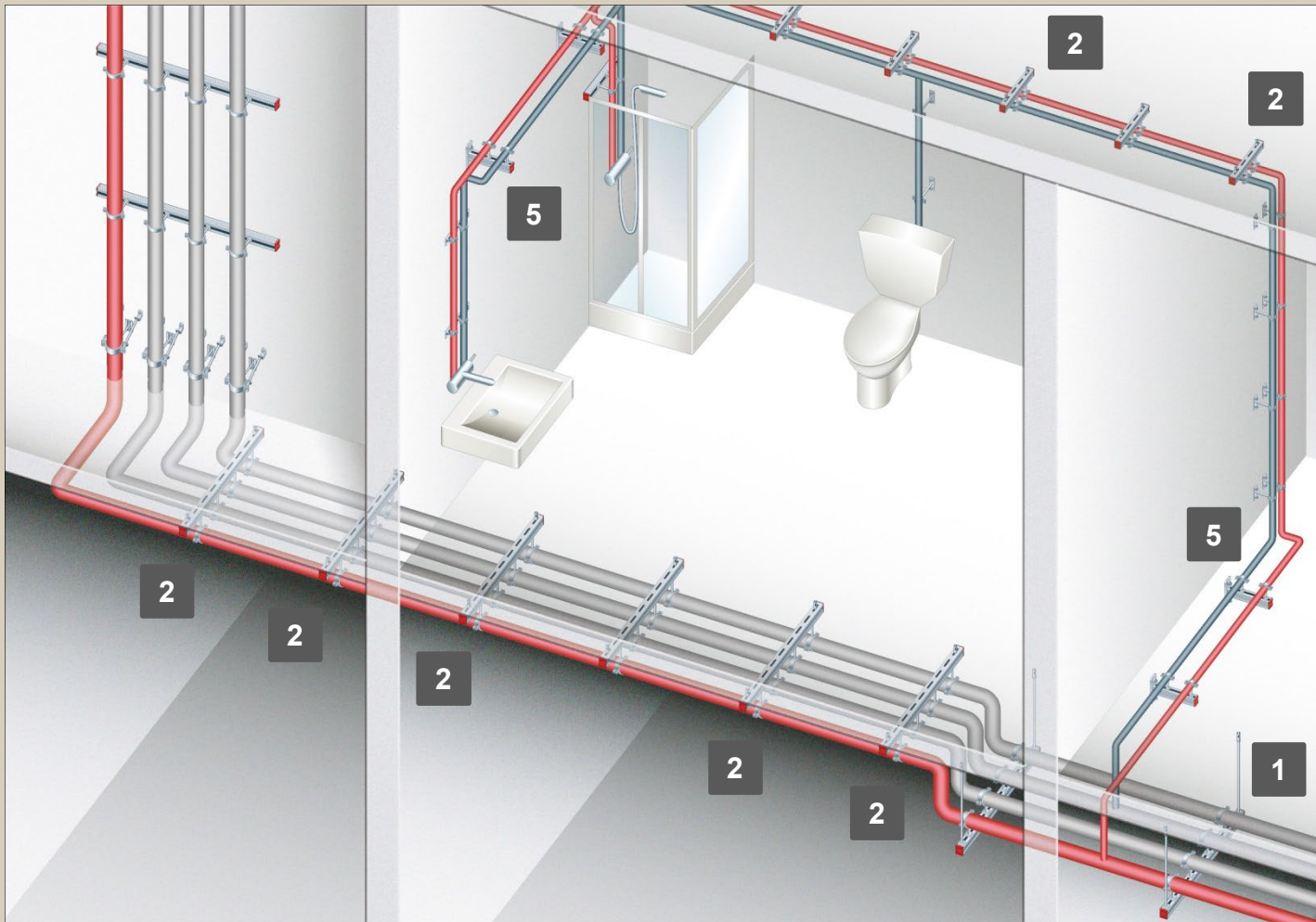
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PLUMBING APPLICATION OVERVIEW



Plumbing is the general term applied to the piping systems used to distribute hot and cold water through a building to facilities such as:

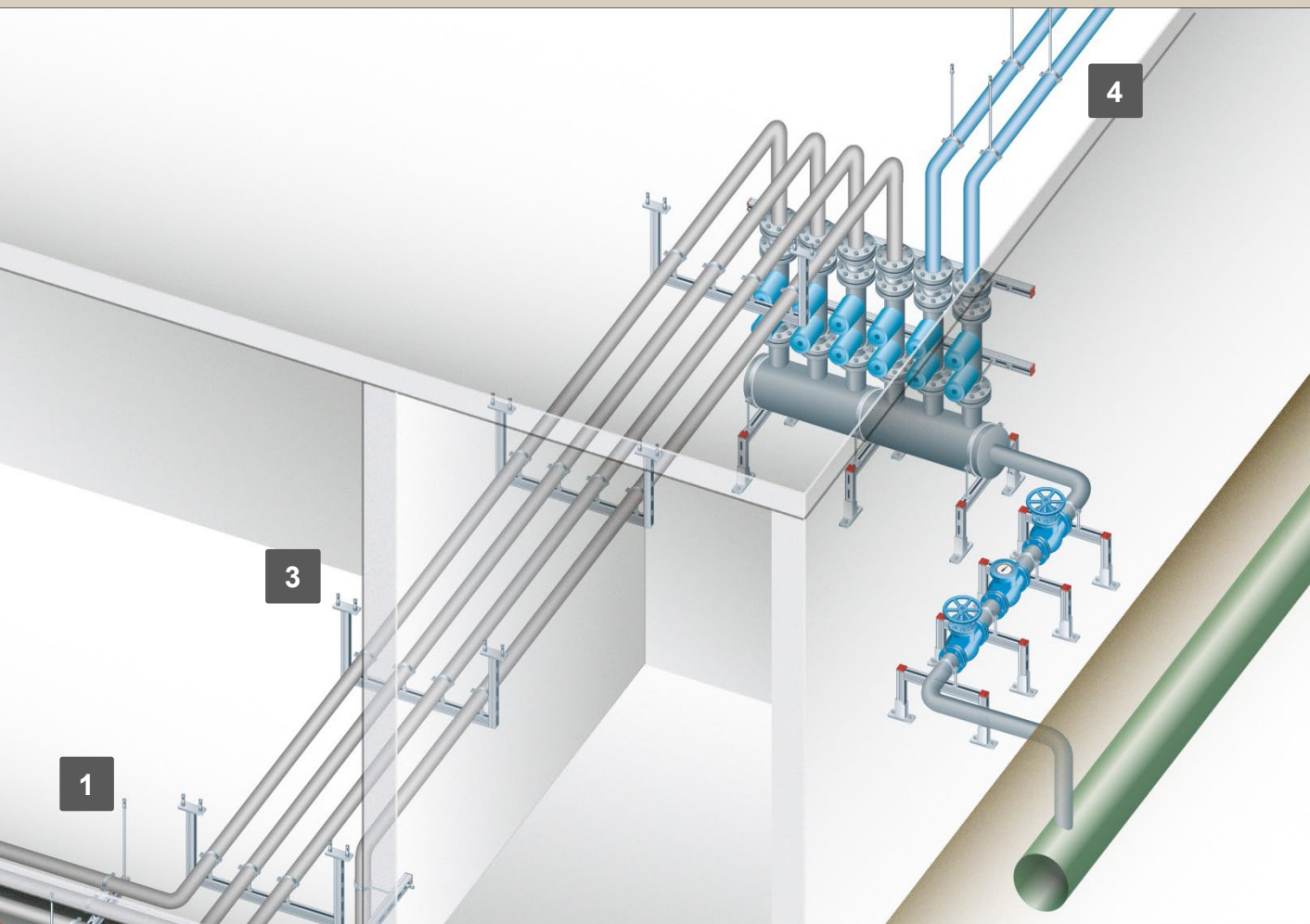
- Bathroom washbasins and Toilets
- Kitchen washbasins and Kitchen dishwashers
- Baths and showers
- Plant rooms – boilers
- Plant rooms – other piping systems for water supply

Fresh water is taken from the public distribution network, and it then passes through measuring and regulation devices.

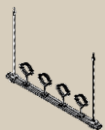
The water then goes to a device called a splitter which splits the water distribution system into many branches.

Each branch has a set of two valves and a pump on outlets from the splitter. Branches in the form of backbone pipes usually then go to pipe corridors where they have either common or individual supports. Pipes in small sizes, in pairs for hot and cold, branch off from the backbone pipe with the purpose of distributing water to the places of final consumption. The hot water system is not directly connected to the public network and starts at the boiler before going to a splitter – which is different from the fresh water splitter but works in a very similar way. In most cases these lie parallel to the fresh water splitter.

The plumbing is installed in pipe corridors on common supports together with other services.



1



Trapeze On Rods

A length of channel suspended on two or more threaded rods supporting a group of suspended pipes.

2



Head Rail

A length of channel directly attached to the ceiling through bolted by anchors (various options) set in the base material. The pipes are suspended from the channel on saddle nuts and threaded rods.

3



Trapeze Frame

A length of channel fastened to two or more vertical upright channels supporting a group of suspended pipes.

4



Single Fastening Point

A pipe clamp hanger suspended on a threaded rod anchored to the base material either directly, using an internally threaded anchor, or from a base plate anchored to the base material.

5



Bracket

Cantilever arm supporting pipes (standing or suspended) in the form of a preassembled / pre-welded unit or assembled from individual parts, with or without brace.

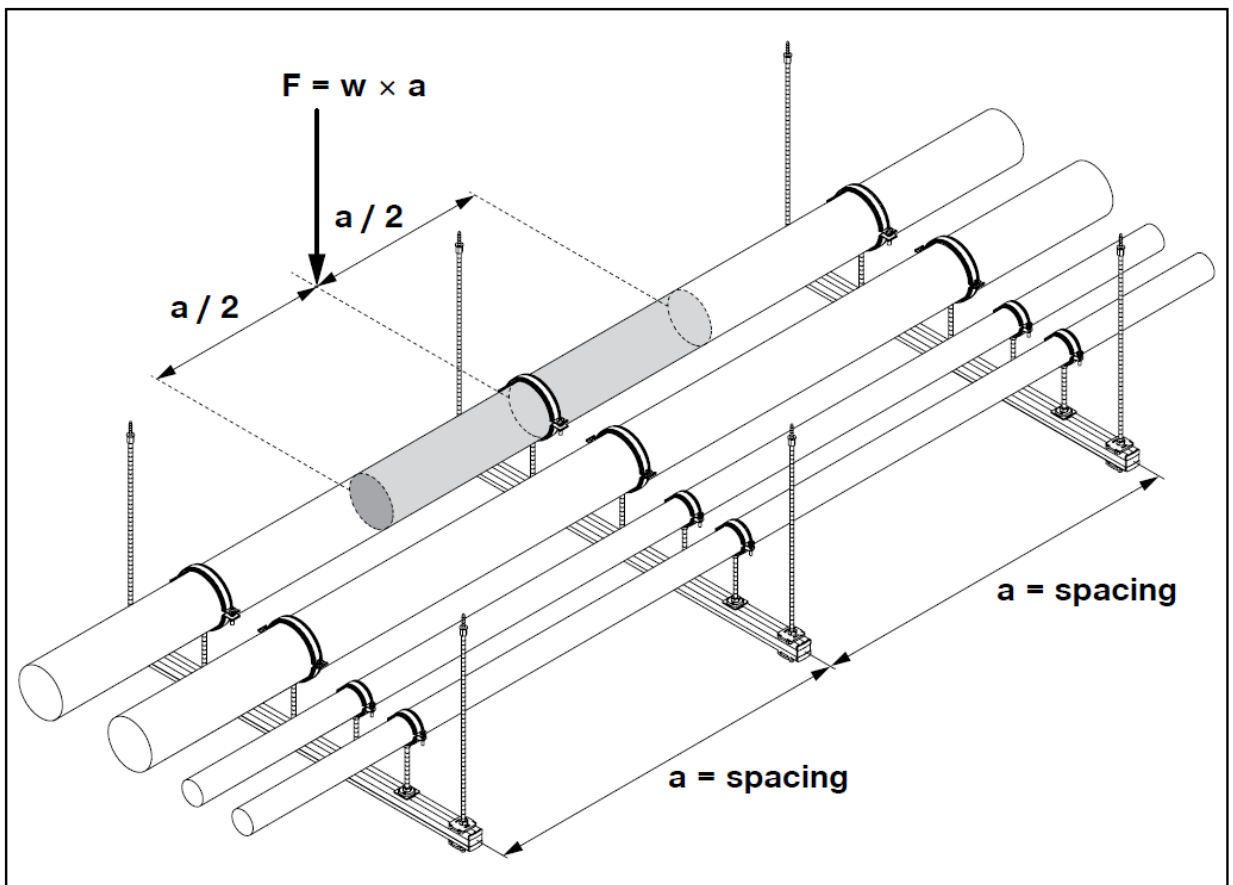
TECHNICAL BACKGROUND INFORMATION

Technical challenges and how these dictate the product requirements

Plumbing

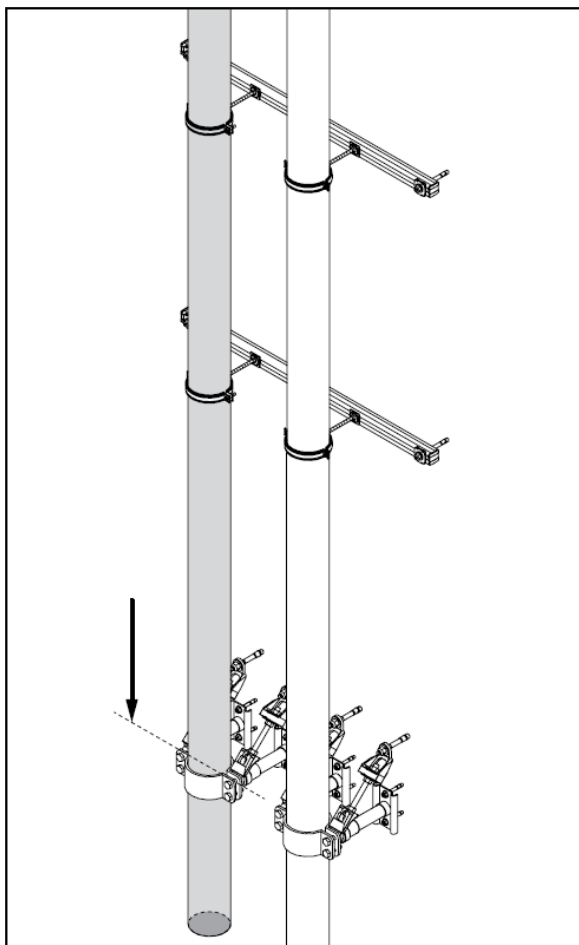
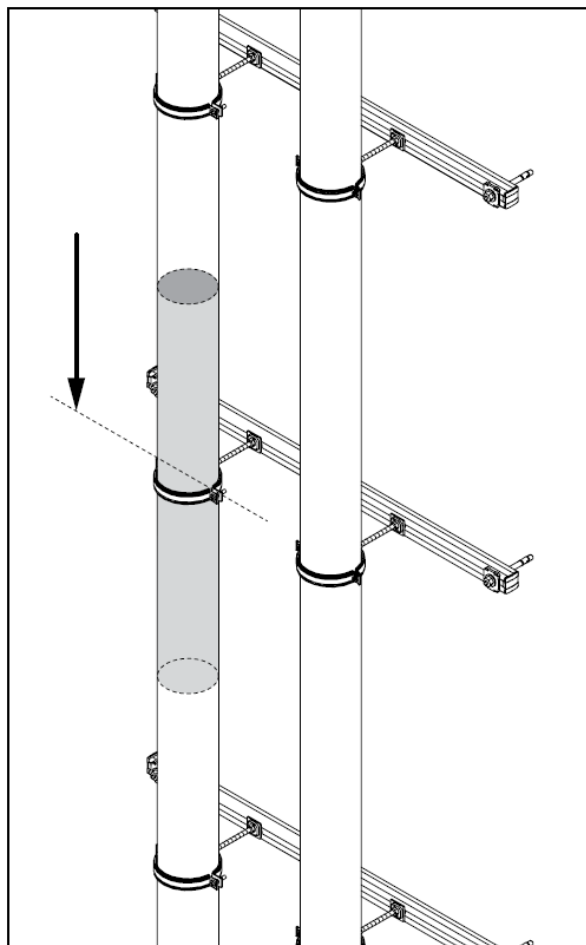
The major challenge when fastening pipes is to successfully transfer the weight of the pipe to the base material while preventing or reducing noise transmission (vibration, flow noises...).

The weight may act as follows:



TECHNICAL BACKGROUND INFORMATION

It is also necessary to find a balance between the classical solution and the need for loadbearing fixed points.



DESIGN PROCESS

1. Spacing

Distance between pipe supports

- a. Usual spacing - every 2.5 - 3 m (might not be suitable for all small pipes or e.g. plastic pipes)
- b. Max. spacing - (spacing of common supports defined by pipe with shortest max. spacing)

Piping: Bulk, weights, mounting distances

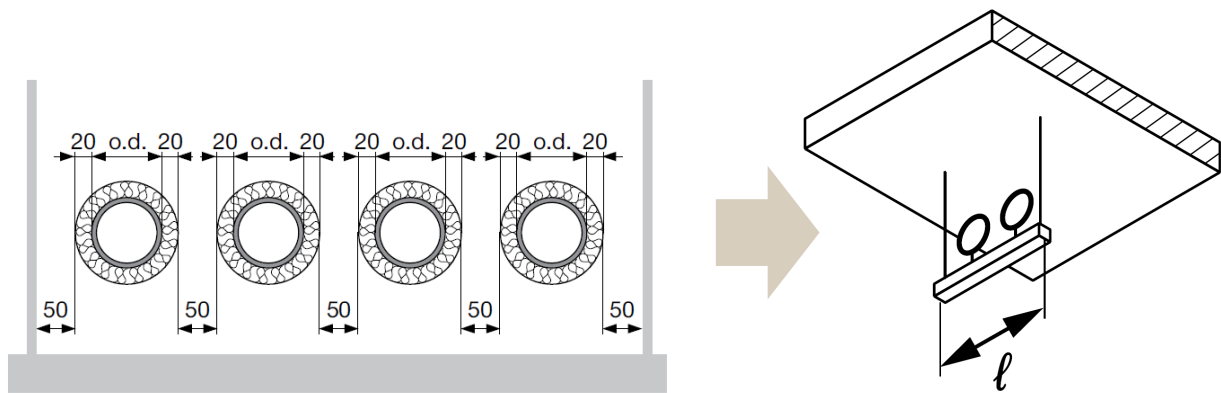
Steel pipes, common steel pipes										Steel pipes, stainless steel pipes									
DN	Size	Tube outside diameter	Channel width	empty	weight	max. supporting distance	weight	max. supporting distance	weight	DN	Size	Tube outside diameter	Channel width	empty	weight	max. supporting distance	weight	max. supporting distance	weight
NW	mm	mm	mm	mm	kg/m	m	kg/m	m	kg/m	NW	mm	mm	mm	mm	kg/m	m	kg/m	m	kg/m
Frequently used pipes according to DIN EN 10268 (medium pressure pipes for DIN 2443)										Stainless steel pipes according to DIN EN 10268 (medium pressure pipes for DIN 2443)									
5	100	102	2.0	2.4	0.4	0.8	1.60			15	100	102	2.0	2.4	0.7	0.9	2.25		
10	150	152	2.5	3.0	0.7	1.0	1.25			20	150	152	2.5	3.0	1.0	1.3	1.8	2.75	
15	200	203	3.0	3.6	1.0	1.3	1.00			25	200	203	3.0	3.6	1.3	1.7	1.5	2.75	
20	250	254	3.6	4.3	1.3	1.7	0.75			30	250	254	3.6	4.3	1.6	2.1	1.2	2.75	
25	300	305	4.2	5.0	1.6	2.1	0.50			35	300	305	4.2	5.0	1.9	2.5	0.9	2.75	
30	350	355	4.8	5.8	1.9	2.5	0.35			40	350	355	4.8	5.8	2.2	2.9	0.7	2.75	
35	400	406	5.4	6.5	2.2	2.9	0.25			45	400	406	5.4	6.5	2.5	3.3	0.5	2.75	
40	450	457	6.0	7.2	2.5	3.3	0.18			50	450	457	6.0	7.2	2.9	3.7	0.4	2.75	
45	500	508	6.6	7.9	2.8	3.7	0.13			55	500	508	6.6	7.9	3.2	4.1	0.3	2.75	
50	550	559	7.2	8.6	3.1	4.1	0.1			60	550	559	7.2	8.6	3.6	4.5	0.2	2.75	
55	600	610	7.8	9.3	3.4	4.5	0.08			65	600	610	7.8	9.3	3.9	4.9	0.15	2.75	
60	650	660	8.4	10.1	3.7	4.9	0.06			70	650	660	8.4	10.1	4.3	5.3	0.1	2.75	
65	700	711	9.0	10.9	4.0	5.3	0.05			75	700	711	9.0	10.9	4.7	5.7	0.08	2.75	
70	750	762	9.6	11.7	4.3	5.7	0.04			80	750	762	9.6	11.7	5.1	6.1	0.06	2.75	
75	800	813	10.2	12.5	4.6	6.1	0.03			85	800	813	10.2	12.5	5.5	6.5	0.05	2.75	
80	850	864	10.8	13.3	4.9	6.5	0.02			90	850	864	10.8	13.3	5.9	6.9	0.04	2.75	
85	900	914	11.4	14.1	5.2	6.9	0.02			95	900	914	11.4	14.1	6.3	7.3	0.03	2.75	
90	950	967	12.0	14.9	5.5	7.3	0.02			100	950	967	12.0	14.9	6.7	7.7	0.02	2.75	
95	1000	1016	12.6	15.7	5.8	7.7	0.02			110	1000	1016	12.6	15.7	7.1	8.1	0.02	2.75	
100	1050	1067	13.2	16.5	6.1	8.1	0.02			120	1050	1067	13.2	16.5	7.5	8.5	0.02	2.75	
105	1100	1118	13.8	17.3	6.4	8.5	0.02			130	1100	1118	13.8	17.3	7.9	8.9	0.02	2.75	
110	1150	1169	14.4	18.1	6.7	8.9	0.02			140	1150	1169	14.4	18.1	8.3	9.3	0.02	2.75	
115	1200	1219	15.0	18.9	7.0	9.3	0.02			150	1200	1219	15.0	18.9	8.7	9.7	0.02	2.75	
120	1250	1270	15.6	19.7	7.3	9.7	0.02			160	1250	1270	15.6	19.7	9.1	10.1	0.02	2.75	
125	1300	1320	16.2	20.5	7.6	10.1	0.02			170	1300	1320	16.2	20.5	9.5	10.5	0.02	2.75	
130	1350	1371	16.8	21.3	7.9	10.5	0.02			180	1350	1371	16.8	21.3	9.9	10.9	0.02	2.75	
135	1400	1421	17.4	22.1	8.2	10.9	0.02			190	1400	1421	17.4	22.1	10.3	11.3	0.02	2.75	
140	1450	1472	18.0	22.9	8.5	11.3	0.02			200	1450	1472	18.0	22.9	10.7	11.7	0.02	2.75	
145	1500	1523	18.6	23.7	8.8	11.7	0.02			210	1500	1523	18.6	23.7	11.1	12.1	0.02	2.75	
150	1550	1575	19.2	24.5	9.1	12.1	0.02			220	1550	1575	19.2	24.5	11.5	12.5	0.02	2.75	
155	1600	1627	19.8	25.3	9.4	12.5	0.02			230	1600	1627	19.8	25.3	11.9	12.9	0.02	2.75	
160	1650	1678	20.4	26.1	9.7	12.9	0.02			240	1650	1678	20.4	26.1	12.3	13.3	0.02	2.75	
165	1700	1729	21.0	26.9	10.0	13.3	0.02			250	1700	1729	21.0	26.9	12.7	13.7	0.02	2.75	
170	1750	1781	21.6	27.7	10.3	13.7	0.02			260	1750	1781	21.6	27.7	13.1	14.1	0.02	2.75	
175	1800	1831	22.2	28.5	10.6	14.1	0.02			270	1800	1831	22.2	28.5	13.5	14.5	0.02	2.75	
180	1850	1883	22.8	29.3	10.9	14.5	0.02			280	1850	1883	22.8	29.3	13.9	14.9	0.02	2.75	
185	1900	1933	23.4	30.1	11.2	14.9	0.02			290	1900	1933	23.4	30.1	14.3	15.3	0.02	2.75	
190	1950	1985	24.0	30.9	11.5	15.3	0.02			300	1950	1985	24.0	30.9	14.7	15.7	0.02	2.75	
195	2000	2035	24.6	31.7	11.8	15.7	0.02			310	2000	2035	24.6	31.7	15.1	16.1	0.02	2.75	
200	2050	2085	25.2	32.5	12.1	16.1	0.02			320	2050	2085	25.2	32.5	15.5	16.5	0.02	2.75	
205	2100	2135	25.8	33.3	12.4	16.5	0.02			330	2100	2135	25.8	33.3	15.9	16.9	0.02	2.75	
210	2150	2185	26.4	34.1	12.7	16.9	0.02			340	2150	2185	26.4	34.1	16.3	17.3	0.02	2.75	
215	2200	2235	27.0	34.9	13.0	17.3	0.02			350	2200	2235	27.0	34.9	16.7	17.7	0.02	2.75	
220	2250	2285	27.6	35.7	13.3	17.7	0.02			360	2250	2285	27.6	35.7	17.1	18.1	0.02	2.75	
225	2300	2335	28.2	36.5	13.6	18.1	0.02			370	2300	2335	28.2	36.5	17.5	18.5	0.02	2.75	
230	2350	2385	28.8	37.3	13.9	18.5	0.02			380	2350	2385	28.8	37.3	17.9	18.9	0.02	2.75	
235	2400	2435	29.4	38.1	14.2	18.9	0.02			390	2400	2435	29.4	38.1	18.3	19.3	0.02	2.75	
240	2450	2485	30.0	38.9	14.5	19.3	0.02			400	2450	2485	30.0	38.9	18.7	19.7	0.02	2.75	
245	2500	2535	30.6	39.7	14.8	19.7	0.02			410	2500	2535	30.6	39.7	19.1	20.1	0.02	2.75	
250	2550	2585	31.2	40.5	15.1	20.1	0.02			420	2550	2585	31.2	40.5	19.5	20.5	0.02	2.75	
255	2600	2635	31.8	41.3	15.4	20.5	0.02			430	2600	2635	31.8	41.3	19.9	20.9	0.02	2.75	
260	2650	2685	32.4	42.1	15.7	20.9	0.02			440	2650	2685	32.4	42.1	20.3	21.3	0.02	2.75	
265	2700	2735	33.0	42.9	16.0	21.3	0.02			450	2700	2735	33.0	42.9	20.7	21.7	0.02	2.75	
270	2750	2785	33.6	43.7	16.3	21.7	0.02			460	2750	2785	33.6	43.7	21.1	22.1	0.02	2.75	
275	2800	2835	34.2	44.5	16.6	22.1	0.02			470	2800	2835	34.2	44.5	21.5	22.5	0.02	2.75	
280	2850	2885	34.8	45.3	16.9	22.5	0.02			480	2850	2885	34.8	45.3	21.9	22.9	0.02	2.75	
285	2900	2935	35.4	46.1	17.2	22.9	0.02			490	2900	2935	35.4	46.1	22.3	23.3	0.02	2.75	
290	2950	2985	36.0	46.9	17.5	23.3	0.02			500	2950	2985	36.0	46.9	22.7	23.7	0.02	2.75	
295	3000	3035	36.6	47.7	17.8	23.7	0.02			510	3000	3035	36.6	47.7	23.1	24.1	0.02	2.75	
300	3050	3085	37.2	48.5	18.1	24.1	0.02			520	3050	3085	37.2	48.5	23.5	24.5	0.02	2.75	
305	3100	3135	37.8	49.3	18.4	24.5	0.02			530	3100	3135	37.8	49.3	23.9	24.9	0.02	2.75	
310	3150	3185	38.4	50.1	18.7	24.9	0.02			540	3150	3185	38.4	50.1	24.3	25.3	0.02	2.75	
315	3200	3235	39.0	50.9	19.0	25.3	0.02			550	3200	3235	39.0	50.9	24.7	25.7	0.02	2.75	
320	3250	3285	39.6	51.7	19.3	25.7	0.02			560	3250	3285	39.6	51.7	25.1	26.1	0.02	2.75	
325	3300	3335	40.2	52.5	19.6	26.1	0.02			570	3300	3335	40.2	52.5	25.5	26.5	0.02	2.75	
330	3350	3385	40.8	53.3	19.9	26.5	0.02			580	3350	3385	40.8	53.3	25.9	26.9	0.02	2.75	
335	3400	3435	41.4	54.1	20.2	26.9	0.02			590	3400	3435	41.4	54.1	26.3	27.3	0.02	2.75	
340	3450	3485	42.0	54.9	20.5	27.3	0.02			600	3450	3485	42.0	54.9	26.7	27.7	0.02	2.75	
345	3500	3535	42.6	55.7	20.8	27.7	0.02			610	3500	3535	42.6	55.7	27.1	28.1	0.02	2.75	
350	3550	3585	43.2	56.5	21.1	28.1	0.02			620	3550	3585	43.2	56.5	27.5	28.5	0.02	2.75	
355	3600	3635	43.8	57.3	21.4	28.5	0.02			630	3600	3635	43.8	57.3	27.9	28.9	0.02	2.75	
360	3650	3685	44.4	58.1	21.7	28.9	0.02			640	3650	3685	44.4	58.1	28.3	29.3	0.02	2.75	
365	3700	3735	45.0	58.9															

DESIGN PROCESS

2. Span

Span of the pipe support (length of the channel).

Taking into account all pipe outer diameters, insulation thicknesses and manipulation space e.g. for welding and wrapping the insulation around the pipe.



3. Loads

Loads acting on the pipe support are based on the weight of 1 meter of pipe multiplied by the spacing.

$$F = w \text{ (weight in kg/m) } \times a \text{ (spacing in m)}$$

Pipe, Insulation, Spacing

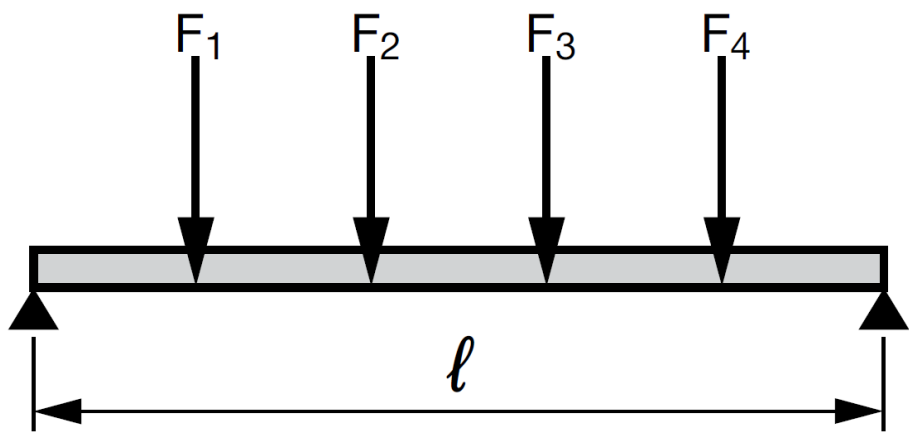
Pipe	Insulation	Spacing	Weight	Load
100	10	1.0	100	100
100	20	1.0	120	120
100	30	1.0	140	140
100	40	1.0	160	160
100	50	1.0	180	180
100	60	1.0	200	200
100	70	1.0	220	220
100	80	1.0	240	240
100	90	1.0	260	260
100	100	1.0	280	280
100	110	1.0	300	300
100	120	1.0	320	320
100	130	1.0	340	340
100	140	1.0	360	360
100	150	1.0	380	380
100	160	1.0	400	400
100	170	1.0	420	420
100	180	1.0	440	440
100	190	1.0	460	460
100	200	1.0	480	480
100	210	1.0	500	500
100	220	1.0	520	520
100	230	1.0	540	540
100	240	1.0	560	560
100	250	1.0	580	580
100	260	1.0	600	600
100	270	1.0	620	620
100	280	1.0	640	640
100	290	1.0	660	660
100	300	1.0	680	680
100	310	1.0	700	700
100	320	1.0	720	720
100	330	1.0	740	740
100	340	1.0	760	760
100	350	1.0	780	780
100	360	1.0	800	800
100	370	1.0	820	820
100	380	1.0	840	840
100	390	1.0	860	860
100	400	1.0	880	880
100	410	1.0	900	900
100	420	1.0	920	920
100	430	1.0	940	940
100	440	1.0	960	960
100	450	1.0	980	980
100	460	1.0	1000	1000
100	470	1.0	1020	1020
100	480	1.0	1040	1040
100	490	1.0	1060	1060
100	500	1.0	1080	1080
100	510	1.0	1100	1100
100	520	1.0	1120	1120
100	530	1.0	1140	1140
100	540	1.0	1160	1160
100	550	1.0	1180	1180
100	560	1.0	1200	1200
100	570	1.0	1220	1220
100	580	1.0	1240	1240
100	590	1.0	1260	1260
100	600	1.0	1280	1280
100	610	1.0	1300	1300
100	620	1.0	1320	1320
100	630	1.0	1340	1340
100	640	1.0	1360	1360
100	650	1.0	1380	1380
100	660	1.0	1400	1400
100	670	1.0	1420	1420
100	680	1.0	1440	1440
100	690	1.0	1460	1460
100	700	1.0	1480	1480
100	710	1.0	1500	1500
100	720	1.0	1520	1520
100	730	1.0	1540	1540
100	740	1.0	1560	1560
100	750	1.0	1580	1580
100	760	1.0	1600	1600
100	770	1.0	1620	1620
100	780	1.0	1640	1640
100	790	1.0	1660	1660
100	800	1.0	1680	1680
100	810	1.0	1700	1700
100	820	1.0	1720	1720
100	830	1.0	1740	1740
100	840	1.0	1760	1760
100	850	1.0	1780	1780
100	860	1.0	1800	1800
100	870	1.0	1820	1820
100	880	1.0	1840	1840
100	890	1.0	1860	1860
100	900	1.0	1880	1880
100	910	1.0	1900	1900
100	920	1.0	1920	1920
100	930	1.0	1940	1940
100	940	1.0	1960	1960
100	950	1.0	1980	1980
100	960	1.0	2000	2000
100	970	1.0	2020	2020
100	980	1.0	2040	2040
100	990	1.0	2060	2060
100	1000	1.0	2080	2080
100	1010	1.0	2100	2100
100	1020	1.0	2120	2120
100	1030	1.0	2140	2140
100	1040	1.0	2160	2160
100	1050	1.0	2180	2180
100	1060	1.0	2200	2200
100	1070	1.0	2220	2220
100	1080	1.0	2240	2240
100	1090	1.0	2260	2260
100	1100	1.0	2280	2280
100	1110	1.0	2300	2300
100	1120	1.0	2320	2320
100	1130	1.0	2340	2340
100	1140	1.0	2360	2360
100	1150	1.0	2380	2380
100	1160	1.0	2400	2400
100	1170	1.0	2420	2420
100	1180	1.0	2440	2440
100	1190	1.0	2460	2460
100	1200	1.0	2480	2480
100	1210	1.0	2500	2500
100	1220	1.0	2520	2520
100	1230	1.0	2540	2540
100	1240	1.0	2560	2560
100	1250	1.0	2580	2580
100	1260	1.0	2600	2600
100	1270	1.0	2620	2620
100	1280	1.0	2640	2640
100	1290	1.0	2660	2660
100	1300	1.0	2680	2680
100	1310	1.0	2700	2700
100	1320	1.0	2720	2720
100	1330	1.0	2740	2740
100	1340	1.0	2760	2760
100	1350	1.0	2780	2780
100	1360	1.0	2800	2800
100	1370	1.0	2820	2820
100	1380	1.0	2840	2840
100	1390	1.0	2860	2860
100	1400	1.0	2880	2880
100	1410	1.0	2900	2900
100	1420	1.0	2920	2920
100	1430	1.0	2940	2940
100	1440	1.0	2960	2960
100	1450	1.0	2980	2980
100	1460	1.0	3000	3000
100	1470	1.0	3020	3020
100	1480	1.0	3040	3040
100	1490	1.0	3060	3060
100	1500	1.0	3080	3080
100	1510	1.0	3100	3100
100	1520	1.0	3120	3120
100	1530	1.0	3140	3140
100	1540	1.0	3160	3160
100	1550	1.0	3180	3180
100	1560	1.0	3200	3200
100	1570	1.0	3220	3220
100	1580	1.0	3240	3240
100	1590	1.0	3260	3260
100	1600	1.0	3280	3280
100	1610	1.0	3300	3300
100	1620	1.0	3320	3320
100	1630	1.0	3340	3340
100	1640	1.0	3360	3360
100	1650	1.0	3380	3380
100	1660	1.0	3400	3400
100	1670	1.0	3420	3420
100	1680	1.0	3440	3440
100	1690	1.0	3460	3460
100	1700	1.0	3480	3480
100	1710	1.0	3500	3500
100	1720	1.0	3520	3520
100	1730	1.0	3540	3540
100	1740	1.0	3560	3560
100	1750	1.0	3580	3580
100	1760	1.0	3600	3600
100	1770	1.0	3620	3620
100	1780	1.0	3640	3640
100	1790	1.0	3660	3660
100	1800	1.0	3680	3680
100	1810	1.0	3700	3700
100	1820	1.0	3720	3720
100	1830	1.0	3740	3740
100	1840	1.0	3760	3760
100	1850	1.0	3780	3780
100	1860	1.0	3800	3800
100	1870	1.0	3820	3820
100	1880	1.0	3840	3840
100	1890	1.0	3860	3860
100	1900	1.0	3880	3880
100	1910	1.0	3900	3900
100	1920	1.0	3920	3920
100	1930	1.0	3940	3940
100	1940	1.0	3960	3960
100	1950	1.0	3980	3980
100	1960	1.0	4000	4000
100	1970	1.0	4020	4020
100	1980	1.0	4040	4040
100	1990	1.0	4060	4060
100	2000	1.0	4080	4080
100	2010	1.0	4100	4100
100	2020	1.0	4120	4120
100	2030	1.0	4140	4140
100	2040	1.0	4160	4160
100	2050	1.0	4180	4180
100	2060	1.0	4200	4200
100	2070	1.0	4220	4220
100	2080	1.0	4240	4240
100	2090	1.0	4260	4260
100	2100	1.0	4280	4280
100	2110	1.0	4300	4300
100	2120	1.0	4320	4320
100	2130	1.0	4340	4340
100	2140	1.0	4360	4360
100	2150	1.0	4380	4380
100	2160	1.0	4400	4400
100	2170	1.0	4420	4420
100	2180	1.0	4440	4440
100	2190	1.0	4460	4460
100	2200	1.0	4480	4480
100	2210	1.0	4500	4500
100	2220	1.0	4520	4520
100	2230	1.0	4540	4540
100	2240	1.0	4560	4560
100	2250	1.0	4580	4580
100	2260	1.0	4600	4600
100	2270	1.0	4620	4620
100	2280	1.0	4640	4640
100	2290	1.0	4660	4660
100	2300	1.0	4680	4680
100	2310	1.0	4700	4700
100	2320	1.0	4720	4720
100	2330	1.0	4740	4740
100	2340	1.0	4760	4760
100	2350	1.0	4780	4780
100	2360	1.0	4800	4800
100	2370	1.0	4820	4820
100	2380	1.0	4840	4840
100	2390	1.0	4860	4860
100	2400	1.0	4880	4880
100	2410	1.0	4900	4900
100	2420	1.0	4920	4920
100	2430	1.0	4940	4940
100	2440	1.0	4960	4960
100	2450	1.0	4980	4980
100	2460	1.0	5000	5000
100	2470	1.0	5020	5020
100	2480	1.0	5040	5040
100	2490	1.0	5060	5060
100	2500	1.0	5080	5080
100	2510	1.0	5100	5100
100	2520	1.0	5120	5

DESIGN PROCESS

4. Defining the loading case

Span of the pipe support (length of the channel).

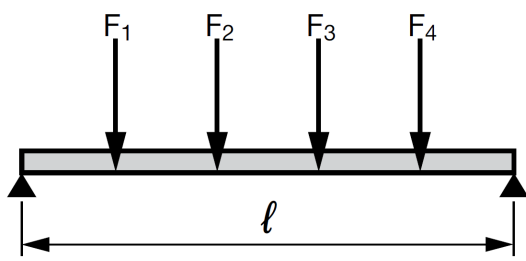
Taking into account all pipe outer diameters, insulation thicknesses and manipulation space e.g. for welding and wrapping the insulation around the pipe.



5. Finding (calculating) the appropriate channel size

5.a. Simple on-site assessment:

Simplifying the case and using various selection tables from the catalogue.



Technical data for channel profiles MQ (max. span width/deflection at single load)

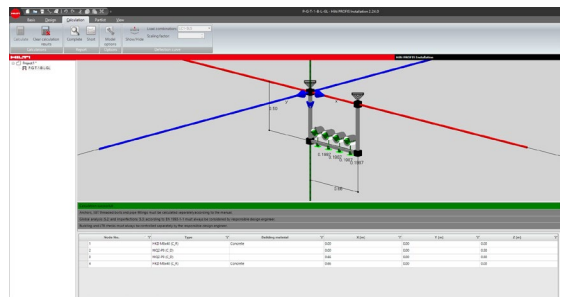
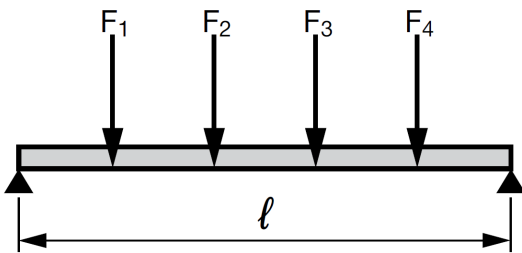
	MQ-41-L	MQ-41	MQ-41SLL	MQ-52	MQ-72	MQ-41D	MQ-41D-L	MQ-52-TO	MQ-104D													
	Load F [kN]	Load F [kN]	Load F [kN]	Load F [kN]	Load F [kN]	Load F [kN]	Load F [kN]	Load F [kN]	Load F [kN]													
0.25	133	8.7	285	14.2	218	15.9	281	17.5	425	21.7	600	27.9	295	14.7	850	27.0	591	29.6	600	9.1	600	6.9
0.50	66	4.8	226	10.4	234	11.7	266	13.3	324	16.7	496	24.9	221	11.0	557	25.2	488	23.2	600	13.6	600	9.6
0.75	44	3.9	172	8.6	192	9.7	221	11.1	279	15.9	429	21.3	164	9.2	434	21.6	394	19.7	600	18.0	600	13.6
1.00	33	3.0	148	7.8	166	8.4	184	9.7	243	12.3	377	16.8	160	8.0	386	19.2	347	17.4	600	22.4	600	10.4
1.25	28	2.9	129	6.8	151	7.5	174	8.7	203	11.0	342	17.1	144	7.2	348	17.4	313	15.7	600	26.8	600	16.2
1.50	24	2.4	109	5.8	133	6.2	159	8.0	182	10.1	314	15.7	127	6.8	321	16.0	286	14.4	586	29.3	600	21.0
1.75	21	2.1	90	5.0	114	4.8	148	7.4	167	9.4	282	14.8	109	4.3	288	14.9	260	12.3	553	27.8	600	23.8
2.00	18	1.8	79	4.2	100	4.1	130	6.7	149	8.3	250	13.0	96	3.7	260	14.0	229	9.3	523	28.1	600	28.6
2.25	16	1.6	70	3.7	89	3.6	118	6.0	131	7.5	220	11.0	86	3.3	238	11.9	204	7.6	497	24.8	600	29.4
2.50	14	1.4	63	3.3	80	3.2	104	5.7	118	6.1	200	10.0	77	3.1	220	10.7	184	6.2	474	23.7	580	29.0
2.75	12	1.2	57	3.0	73	2.9	96	5.1	104	5.2	182	9.0	70	2.8	201	9.1	168	5.1	454	22.7	580	27.9
3.00	11	1.1	52	2.7	67	2.6	87	4.6	94	4.7	166	8.2	64	2.6	184	8.6	154	4.3	437	21.8	537	28.9
3.50	9	0.9	45	2.3	57	2.2	74	3.9	81	4.0	144	7.0	55	2.2	161	7.4	132	3.2	402	19.5	503	25.1
4.00	8	0.8	39	2.0	50	1.9	66	3.4	71	3.5	125	6.2	48	2.0	146	6.6	116	2.4	385	15.2	472	23.5
4.50	7	0.7	35	1.8	45	1.7	59	3.1	64	3.2	110	5.6	43	1.8	130	6.0	103	2.1	357	12.1	429	16.9
5.00	6	0.6	31	1.6	40	1.5	52	2.8	58	2.9	100	5.1	39	1.6	117	5.5	93	1.9	327	9.9	380	10.9
6.00	5	0.5	26	1.3	34	1.2	44	2.3	49	2.4	85	4.2	33	1.3	98	4.6	78	1.5	240	7.0	325	11.0
7.00	4	0.4	23	1.2	30	1.1	39	2.0	43	2.1	75	3.7	30	1.2	84	4.1	67	1.4	207	5.1	280	8.2
8.00	3	0.3	20	1.1	25	1.0	33	1.8	37	1.9	64	3.2	26	1.1	72	3.6	58	1.2	181	4.0	248	6.3

Selection example:
A 1.0 m in 100 mm should be carried by a channel with a channel span width L = 100 mm (single span simply supported).
Solution:
Select the line with the load, F = 1.0 kN.
* The channel MQ-41-L to MQ-104D can be used because the permissible span width (table value) is larger or equal to the required span width of L = 100 mm.
Load tables are based on stress and deflection calculations, lateral torsional buckling is not considered.

DESIGN PROCESS

5.b. Precise calculation:

Using PROFIS Installation application for evaluation of all used components.



Plumbing - MQ System Trapeze Rods On Concrete

1	MP-PI pipe clamps	
MP-PI 11-15 1/4" M8/M10	2126900	
MP-PI 16-20 3/4" M8/M10	2126901	
MP-PI 20-24 1/2" M8/M10	2126902	
MP-PI 25-28 3/4" M8/M10	2126903	
MP-PI 32-36 1" M8/M10	2126904	
MP-PI 38-46 1 1/4" M8/M10	2126905	
MP-PI 48-53 1 1/2" M8/M10	2126906	
MP-PI 54-58 M8/M10	2126907	
MP-PI 59-66 2" M8/M10	2126908	
MP-PI 67-73 M8/M10	2073470	
MP-PI 75-80 2 1/2" M8/M10	2073471	
MP-PI 81-87 M8/M10	2073472	
MP-PI 87-92 3" M8/M10	2073473	
For further sizes go to www.hilti.com		

2	MP-U-I pipe clamps	
MP-U-I 9-13 1/8" M8/M10	2242258	
MP-U-I 13-17 1/4" M8/M10	2242259	
MP-U-I 17-21 3/8" M8/M10	2242260	
MP-U-I 21-25 1/2" M8/M10	2242261	
MP-U-I 25-29 M8/M10	2242262	
MP-U-I 29-33 M8/M10	2242263	
MP-U-I 33-37 1" M8/M10	2242264	
MP-U-I 37-42 M8/M10	2242265	
MP-U-I 42-47 1 1/4" M8/M10	2242266	
MP-U-I 47-52 1 1/2" M8/M10	2242267	
MP-U-I 52-57 M8/M10	2242268	
MP-U-I 57-62 2" M8/M10	2242269	
MP-U-I 62-67 M8/M10	2242270	
MP-U-I 67-72 M8/M10	2242271	
MP-U-I 72-77 2 1/2" M8/M10	2242272	
MP-U-I 78-84 M8/M10	2242273	
MP-U-I 84-90 3" M8/M10	2242274	
For further sizes go to www.hilti.com		

3	Height Adjustable Pipe Clamp Saddle	
M8		
1x MQA-H M8 saddle nut	2184830	
1x M8 nut	2184504	
1x M8 Threaded bolt	various	
M10		
1x MQA-H M10 saddle nut	2184831	
1x M10 nut	2184505	
1x M10 threaded bolt	various	

4	Hammer Head Bolts	
HHK 41 M8X40	312361	
HHK 41 M8X50	312362	
HHK 41 M8X60	312363	
HHK 41 M8X80	312365	
HHK 41 M8X100	312367	
HHK 41 M8X120	312368	
HHK 41 M8X150	312369	

5	Pre-assembled Saddle Nuts	
MQA-ST M8 x 40	2184833	
MQA-ST M8 x 60	2184834	
MQA-ST M8 x 80	2184835	
MQA-ST M8 x 100	2184836	
MQA-ST M10 x 40	2184837	
MQA-ST M10 x 60	2184838	
MQA-ST M10 x 80	2184839	
MQA-ST M10 x 100	2184840	

6	Saddle Nuts	
M8		
1x MQA-S-M8 pipe ring saddle	2141906	
1x M8 nut	2184504	
1x M8 Threaded bolt	various	
M10		
1x MQA-S-M10 piperling s.	2141907	
1x M10 nut	2184505	
1x M10 Threaded bolt	various	

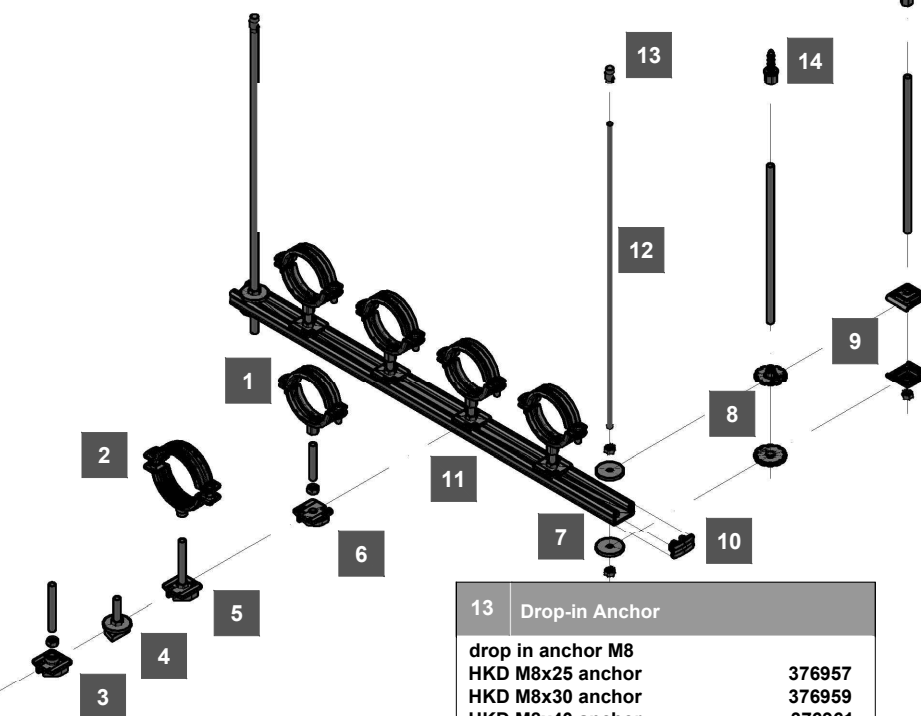
7	Connection of the vertical Rod	
M8		
2x A 8,4/40 washer	282856	
2x M8 nut	2184504	
1x AM8 threaded rod	various	
M10		
2x A 10,5/40 washer	282857	
2x M10 nut	2184505	
1x AM10 threaded rod	various	

8	Connection of the vertical Rod	
M8		
2x MQZ-TW-M8 trapeze wheel	2142030	
1x AM8 threaded rod	various	
M10		
2x MQZ-TW-M10 trapeze wheel	2142031	
1x AM10 threaded rod	various	

9	Connection of the vertical Rod	
M8		
2x MQZ-P9 square washer	2141908	
2x M8 nut	2184504	
1x AM8 threaded rod	various	
M10		
2x MQZ-P11 square washer	2141909	
2x M10 nut	2184505	
1x AM10 threaded rod	various	

10	Channel End Caps	
MQZ-E21 end cup	370598	
MQZ-E41 end cup	369685	
For further sizes go to www.hilti.com		

11	Channels	
MQ-21.5 channel		
MQ-21.5 2m channel	2184771	
MQ-21.5 3m channel	2184772	
MQ-21.5 6m channel	2184773	
MQ-41 channel		
MQ-41-L 2m channel	2141966	
MQ-41-L 3m channel	2141965	
MQ-41-L 6m channel	2141964	
MQ-41 2m channel	304559	
MQ-41 3m channel	369591	
MQ-41 6m channel	369592	
For further sizes go to www.hilti.com		



13	Drop-in Anchor	
drop in anchor M8		
HKD M8x25 anchor	376957	
HKD M8x30 anchor	376959	
HKD M8x40 anchor	376961	
drop in anchor M10		
HKD M10x25 anchor	2037453	
HKD M10x30 anchor	376965	
HKD M10x40 anchor	376967	

14	Internally Threaded Screw Anchor	
screw anchor		
HUS-I 6x35 M8/M10 anchor	416740	
HUS-I 6x55 M8/M10 anchor	423180	

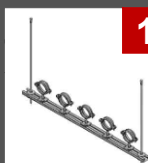
Application description

Plumbing applications - Trapeze Rods

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



1

Product lines

MQ System

Anchors

Accessories

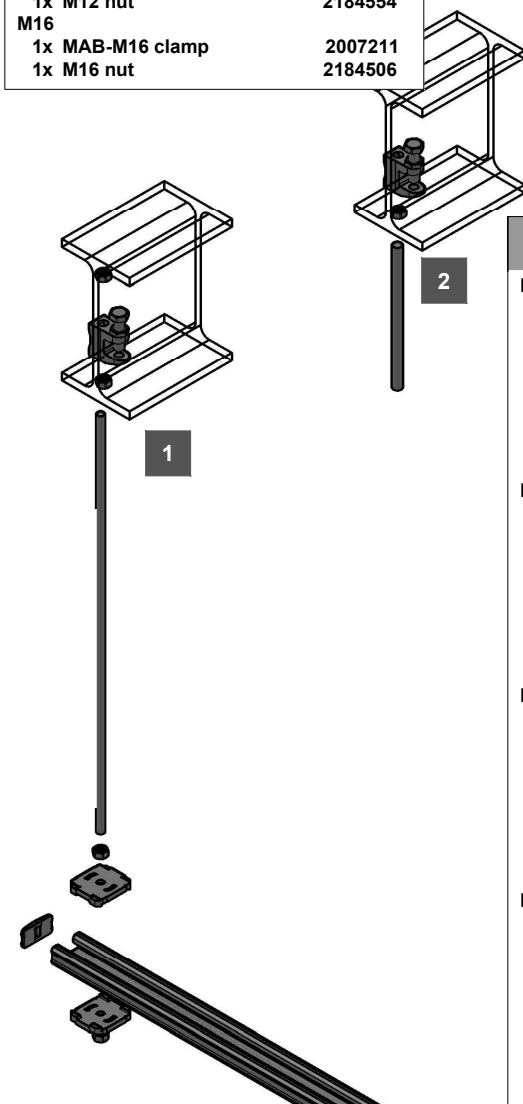
Base material

Concrete

Plumbing - MQ System Trapeze Rods On Steel

1	Connection to Steel - Unthreaded Clamp	
M8		
1x MAB-9 clamp		375956
2x M8 nut		2184504
M10		
1x MAB-11 clamp		375957
2x M10 nut		2184505
M12		
1x MAB-13 clamp		375958
2x M12 nut		2184554
M16		
1x MAB-17 clamp		228155
2x M16 nut		2184506

2	Connection to steel - threaded clamp	
M8		
1x MAB-M8 clamp		2006878
1x M8 nut		2184504
M10		
1x MAB-M10 clamp		2006879
1x M10 nut		2184505
M12		
1x MAB-M12 clamp		2007210
1x M12 nut		2184554
M16		
1x MAB-M16 clamp		2007211
1x M16 nut		2184506



3	Connection to steel - centric on channel	
M8		
2x MQT-U clamp		2115454
1x MQ-41...m channel		369591
1x M8 threaded rod		
AM8x1000 4.8 t-rod		339793
AM8x2000 4.8 t-rod		339794
AM8x3000 4.8 t-rod		216415
1x MQA-S-M8 saddle nut		2141906
1x M8 nut		2184504
M10		
2x MQT-U clamp		2115454
1x MQ-41...m channel		369591
1x M10 threaded rod		
AM10x1000 4.8 t-rod		339795
AM10x2000 4.8 t-rod		339796
AM10x3000 4.8 t-rod		216418
1x MQA-S-M10 saddle nut		2141907
1x M10 nut		2184505
M12		
2x MQT-U clamp		2115454
1x MQ-41...m channel		369591
1x M12 threaded rod		
AM12x1000 4.8 t-rod		339797
AM12x2000 4.8 t-rod		216420
AM12x3000 4.8 t-rod		216421
1x MQA-S-M12B saddle nut		2199453
1x M12 nut		2184554
M16		
2x MQT-U clamp		2115454
1x MQ-41...m channel		369591
1x M16 threaded rod		
AM16x1000 4.8 t-rod		216422
AM16x2000 4.8 t-rod		216423
AM16x3000 4.8 t-rod		216424
1x MQA-S-M16B saddle nut		2199454
1x M16 nut		2184506

4	Connection to steel - centric on channel	
M8		
2x MQT 21-41 clamp		369675
1x MQ-41...m channel		369591
1x M8 threaded rod		
AM8x1000 4.8 t-rod		339793
AM8x2000 4.8 t-rod		339794
AM8x3000 4.8 t-rod		216415
1x MQA-S-M8 saddle nut		2141906
1x M8 nut		2184504
M10		
2x MQT 21-41 clamp		369675
1x MQ-41...m channel		369591
1x M10 threaded rod		
AM10x1000 4.8 t-rod		339795
AM10x2000 4.8 t-rod		339796
AM10x3000 4.8 t-rod		216418
1x MQA-S-M10 saddle nut		2141907
1x M10 nut		2184505
M12		
2x MQT 21-41 clamp		369675
1x MQ-41...m channel		369591
1x M12 threaded rod		
AM12x1000 4.8 t-rod		339797
AM12x2000 4.8 t-rod		216420
AM12x3000 4.8 t-rod		216421
1x MQA-S-M12B saddle nut		2199453
1x M12 nut		2184554
M16		
2x MQT 21-41 clamp		369675
1x MQ-41...m channel		369591
1x M16 threaded rod		
AM16x1000 4.8 t-rod		216422
AM16x2000 4.8 t-rod		216423
AM16x3000 4.8 t-rod		216424
1x MQA-S-M16B saddle nut		2199454
1x M16 nut		2184506

Application description

Plumbing applications - Trapeze Rods

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



1

Product lines

MQ System

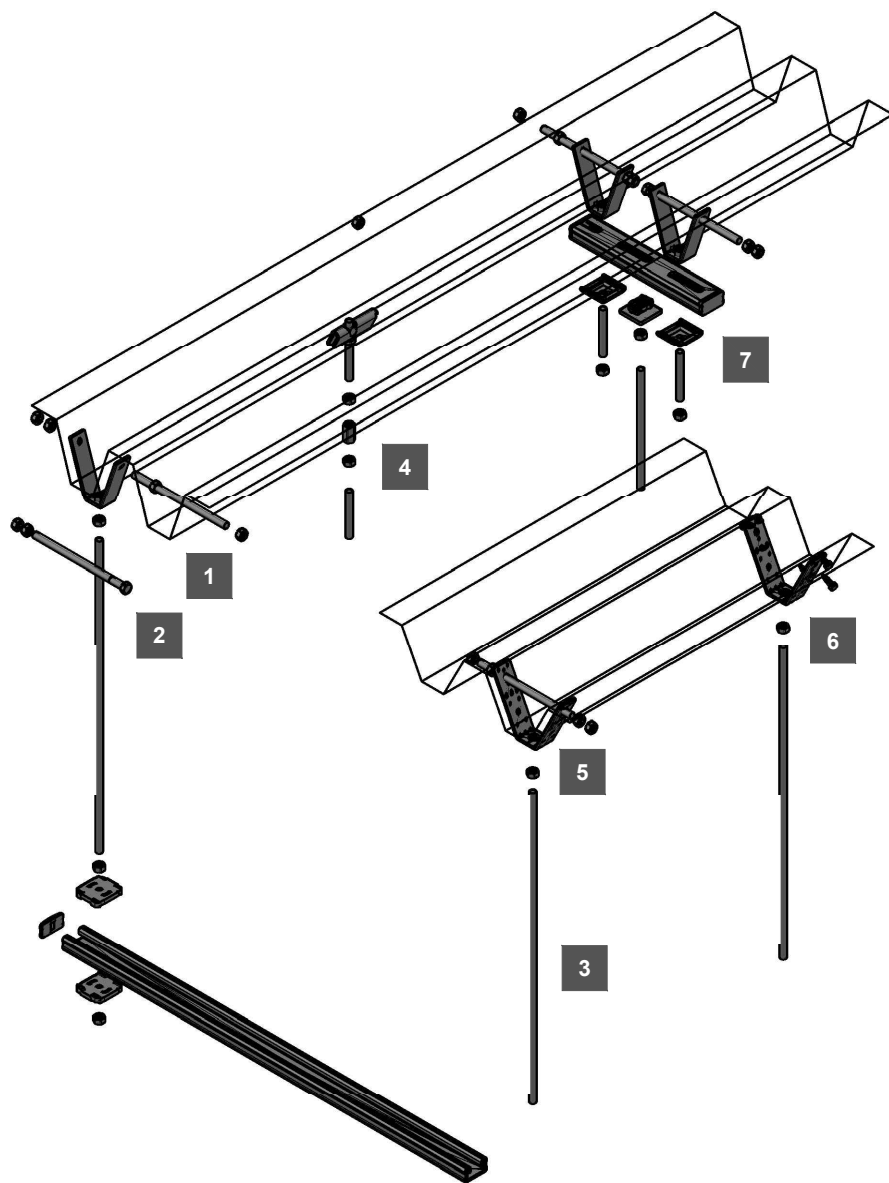
Anchors

Accessories

Base material

Steel

Plumbing - MQ System Trapeze Rods On Metal Deck



Connection to Metal Deck - Through-bolted V-hanger		
1		
M8		
1x MF-TSH M8 V-hanger		229006
5x M8 nut		2184504
2x AM 8x1000...m t-rod		339793
M 10		
1x MF-TSH M10 V-hanger		229007
1x M10 nut		2184505
4x M8 nut		2184504
1x AM 8x1000...m t-rod		339793
1x AM10x1000...m t-rod		339795

2	Alternative Through-bolt	
1x M8x120 4.8 hex-head screw		2063165
2x M8 nut		2184504

7	Channel connection to Metal Deck - 2x V-hanger	
M8		
2x	MF-TSH M8 V-hanger	229006
11x	M8 nut	2184504
5x	AM 8x1000...m t-rod	339793
2x	MQZ-P9 square washer	2141908
1x	MQA-S-M8 saddle nut	2141906
M 10		
2x	MF-TSH M10 V-hanger	229007
4x	M8 nut	2184504
2x	AM 8x1000...m t-rod	339793
3x	AM10x1000...m t-rod	339795
2x	MQZ-L11 square washer	369679
3x	M10 nut	2184505
1x	MQA-S- M10 saddle nut	2141907

6	Connection to Metal Deck - V & self tapping screws	
M8		
1x	MVA-MS M8 V-hanger	386558
6x	S-MS 01Z 4.0x13 S-screw	406471
1x	AM 8x1000...m t-rod	339793
1x	M8 nut	2184504
M10		
1x	MVA-MS M10 V-hanger	386559
6x	S-MS 01Z 4.0x13 S-screw	406471
1x	AM10x1000...m t-rod	339795
1x	M10 nut	2184505

5	Connection to Metal Deck - through-bolted V-hanger	
M8		
1x	MVA-MS M8 V-hanger	386558
5x	M8 nut	2184504
1x	AM8x1000 4.8 t-rod	339793
M10		
1x	MVA-MS M10 V-hanger	386559
1x	AM8x1000 4.8 t-rod	339793
4x	M8 nut	2184504
1x	AM10x1000 4.8 t-rod	339795
1x	M10 nut	2184505

4	Connection to Metal Deck - toggle anchor	
M8		
1x MF-SKD M8/100 t-anchor		230604
2x M8 nut		2184504
1x AM 8x1000...m t-rod		339793
1x M8x40 hex-coupler		432188
M 10		
1x MF-SKD M10/100 t-anchor		230608
2x M10 nut		2184505
2xM10x30 hex.coupler		216704
1xAM10x1000...m t-rod		339795

3	Threaded Rods	
M8		
AM8x1000 4.8 t-rod		339793
AM8x2000 4.8 t-rod		339794
AM8x3000 4.8 t-rod		216415
M 10		
AM10x1000 4.8 t-rod		339795
AM10x2000 4.8 t-rod		339796
AM10x3000 4.8 t-rod		216418

Application description

Plumbing applications - Trapeze Rods

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



1

Product lines

MQ System

Anchors

Accessories

Base material

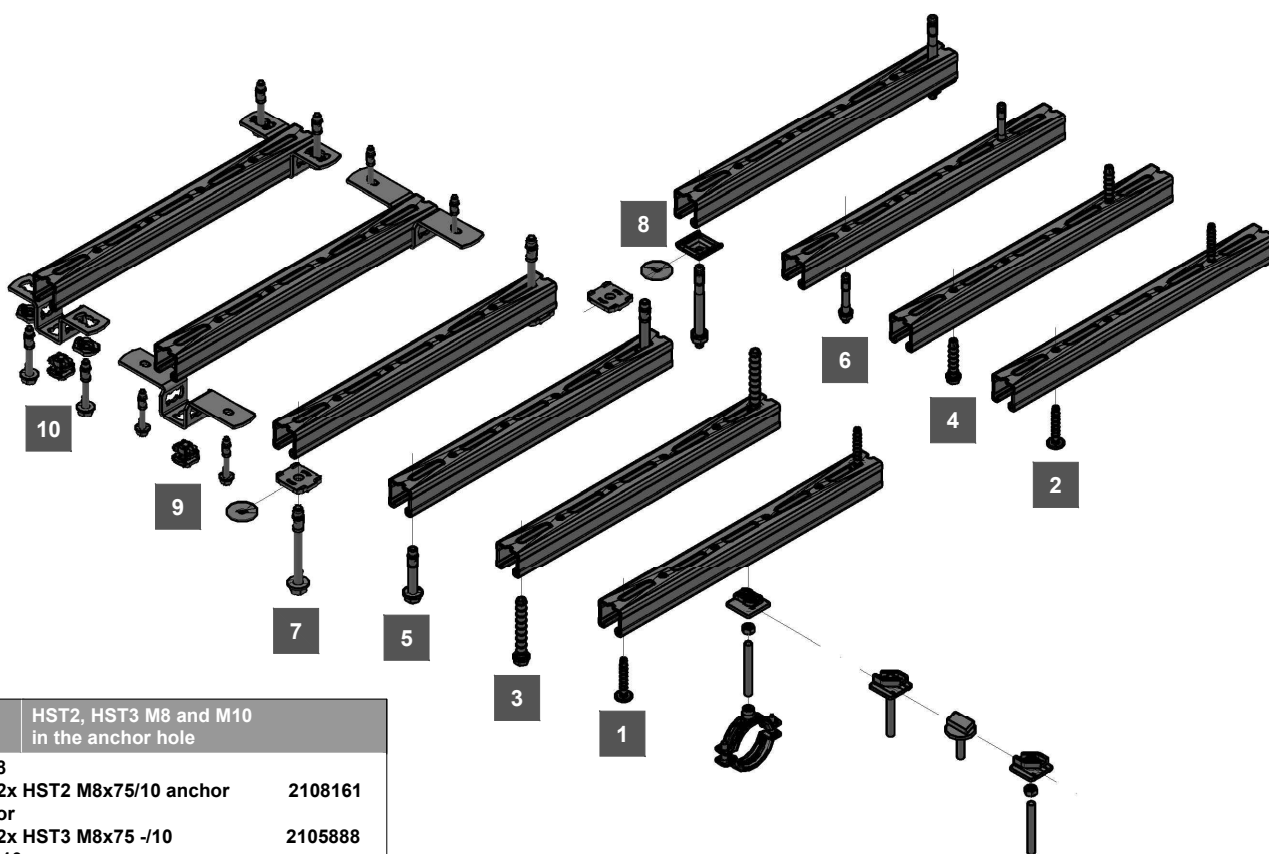
Metal Deck

Plumbing - MQ System Headrail on Concrete

1	HUS-3PL 6 Screw Anchor in the slot	
2x	HUS-3PL 6 screw anchor	2195766
2	HUS-3PL 6 Screw Anchor in the anchor hole	
2x	HUS-3PL 6 screw anchor	2195766
3	HUS-3H 10 Screw Anchor in the slot	
2x	HUS3-H 10x60 5/- anchor	2079911
4	HUS-3H 8 Screw Anchor in the anchor hole	
2x	HUS3-H 8x55 5/- anchor	2079794
5	HST2, HST3 M10 in the slot	
2x	HST3 M10x90 30/10	2105712
or	2x HST2 M10x90/10	2107847
Tip:	Wrench to fit 41 mm channel : SI-S 1/2"-17 L	2070404

7	HST2 M12, HST3 M12 through bolted through the slot	
Anchor		
2x	HST3 M12x145 70/50 anchor	2105851
or	2x HST2 M12x145/50	2227480
Load distribution washer		
2x	MQZ-L13 boss plate	2199456
or	2x 13,0x40x3 A2K Sim.ISO708 washer	2184518
8	HST2 M10, HST3 M10 through bolted through the slot	
Anchor		
2x	HST3 M10x130 70/50 anchor	2105715
or	2x HST2 M10x130/50 anchor	2227089
Washer		
2x	MQZ-L11 boss plate	2199455
or	2x MQZ-P11 boss plate	2141909
or	2x 10,5x40x3 A2K Sim.ISO708 washer	2184517

9	MQB-G ceiling clamp for 41mm format channel	
2x	MQB-G41 clamp	369674
2x	MQN-C pushbutton	2184368
Screw anchor		
4x	HUS3-H 8x55 5/- anchor	2079794
Stud anchor		
4x	HST3 M10x90 30/10	2105712
or	4x HST2 M10x90/10	2107847
10	MQB clamp for 41mm format channel	
For M10 only		
2x	MQB-41 clamp	369668
2x	MQN-C pushbutton	2184368
4x	MQZ-U reduction	369692
Screw anchor		
4x	HUS3-H 8x55/- anchor	2079794
Stud anchor		
4x	HST3 M10x90 30/10	2105712
or	4x HST2 M10x90/10	2107847



Pipe fastening:
please see trapeze application

6	HST2, HST3 M8 and M10 in the anchor hole	
M8		
2x	HST2 M8x75/10 anchor	2108161
or	2x HST3 M8x75 -/10	2105888
M 10		
2x	HST3 M10x90 30/10	2105712
or	2x HST2 M10x90/10	2107847
Tip:	Wrench to fit 41 mm channel : SI-S 1/2"-17 L	2070404

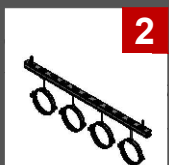
Application description

Plumbing applications - Headrail

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



Product lines

MQ System

Anchors

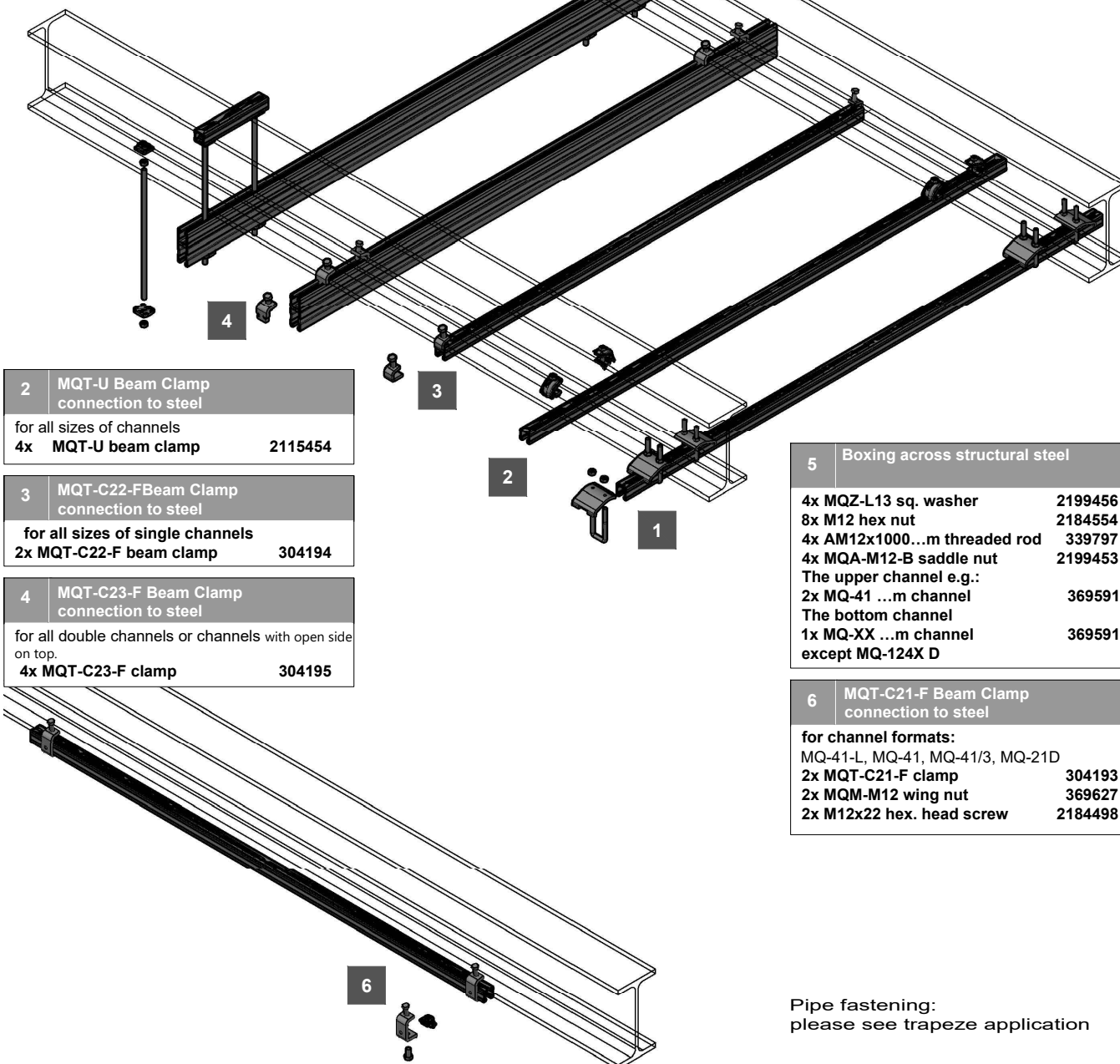
Accessories

Base material

Concrete

Plumbing - MQ System Headrail on Steel

1	MQT window clamp connection to steel
for channel formats : MQ-21.5, MQ-21D, MQ-41, MQ-41/3, MQ-41-L	
4x MQT 21-41 clamp	369675
for channel formats: MQ-41, MQ-41/3, MQ-41-L, MQ-41D, MQ-41D-L, MQ-52, MQ-72	
4x MQT-41-82	369676
for channel formats: MQ-41D, MQ-41D-L, MQ-52-72 D, MQ-124X D	
4x MQT-82-124	369677



5	Boxing across structural steel
4x MQZ-L13 sq. washer	2199456
8x M12 hex nut	2184554
4x AM12x1000...m threaded rod	339797
4x MQA-M12-B saddle nut	2199453
The upper channel e.g.:	
2x MQ-41 ...m channel	369591
The bottom channel	
1x MQ-XX ...m channel	369591
except MQ-124X D	

6	MQT-C21-F Beam Clamp connection to steel
for channel formats: MQ-41-L, MQ-41, MQ-41/3, MQ-21D	
2x MQT-C21-F clamp	304193
2x MQM-M12 wing nut	369627
2x M12x22 hex. head screw	2184498

Pipe fastening:
please see trapeze application

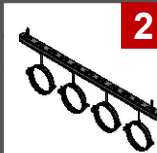
Application description

Plumbing applications - Headrail

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



2

Product lines

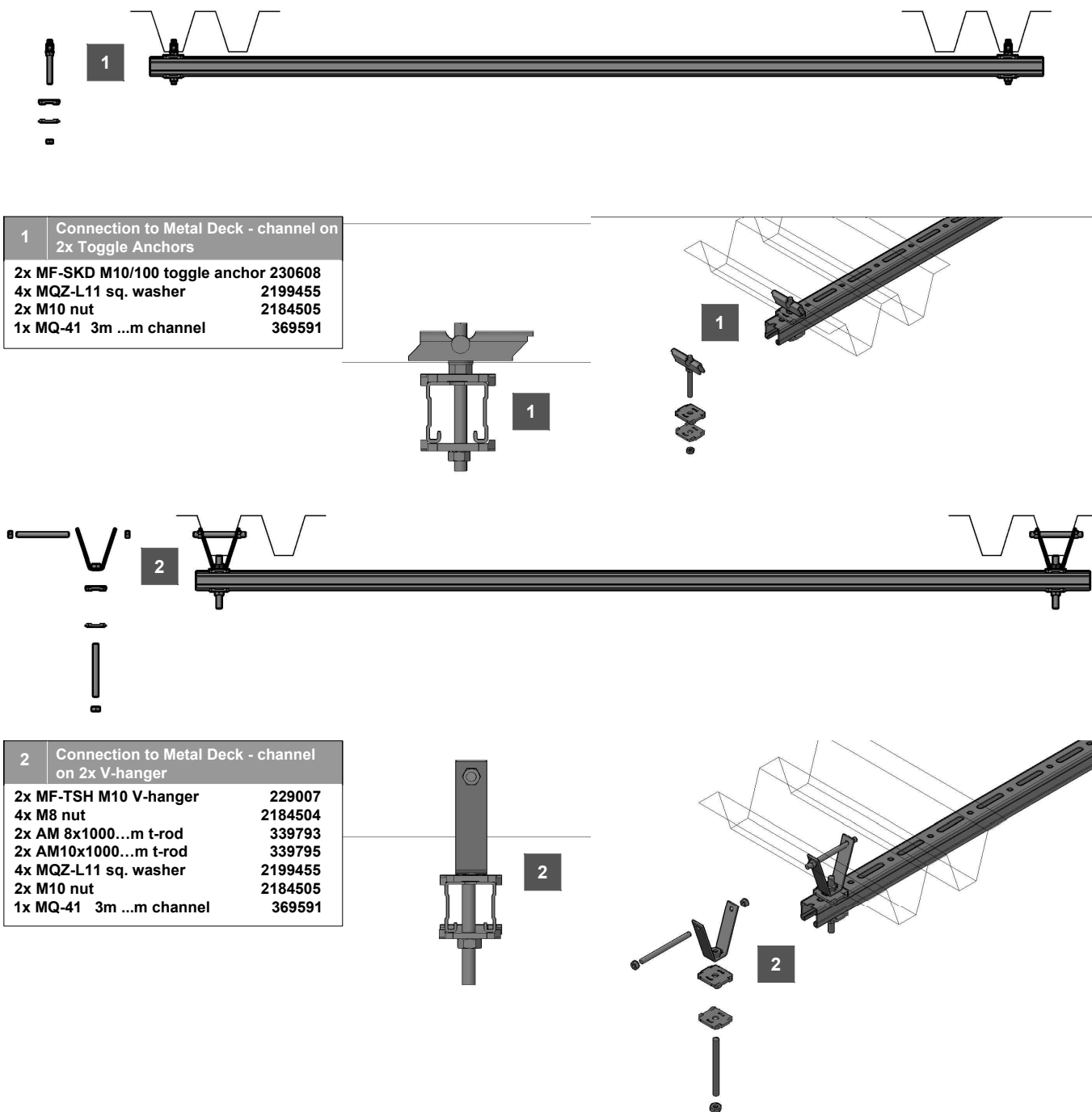
MQ System

Accessories

Base material

Steel

Plumbing - MQ System Headrail on Metal Deck



Pipe fastening:
please see trapeze application

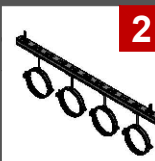
Application description

Plumbing applications - Headrail

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



Product lines

MQ System

Accessories

Base material

Metal Deck

Plumbing - Trapeze Frame On Concrete

1	MP-PI pipe clamps
MP-PI 11-15 ¼" M8/M10	2126900
MP-PI 16-20 ¾" M8/M10	2126901
MP-PI 20-24 ½" M8/M10	2126902
MP-PI 25-28 ¾" M8/M10	2126903
MP-PI 32-36 1" M8/M10	2126904
MP-PI 38-46 1 ¼" M8/M10	2126905
MP-PI 48-53 1 ½" M8/M10	2126906
MP-PI 54-58 M8/M10	2126907
MP-PI 59-66 2" M8/M10	2126908
MP-PI 67-73 M8/M10	2073470
MP-PI 75-80 2 ½" M8/M10	2073471
MP-PI 81-87 M8/M10	2073472
MP-PI 87-92 3" M8/M10	2073473

3	Angle
1x MQW-L-1/1 angle	2142020
2x M10x20 hex. screw	216453
2x MQM-M10 wing nut	369626

4	Angle
1x MQW-L-2/1 angle	2142021
3x M10x20 hex. screw	216453
3x MQM-M10 wing nut	369626

5	Angle
1x MQW-Q2 angle	369655

6	Angle
1x MQW-H2 angle	2141929
2x MQN-C pushbutton or pre-fab version	2184368
1x MQW-H2-CPpre-fab angle	2184851

7	Height Adjustable Pipe Clamp Saddle
M8	
1x MQA-H M8 saddle nut	2184830
1x M8 nut	2184504
1x M8 Threaded bolt	various
M10	
1x MQA-H M10 saddle nut	2184831
1x M10 nut	2184505
1x M10 threaded bolt	various

8	Hammer Head Bolts
HHK 41 M8X40	312361
HHK 41 M8X50	312362
HHK 41 M8X60	312363
HHK 41 M8X80	312365
HHK 41 M8X100	312367
HHK 41 M8X120	312368
HHK 41 M8X150	312369

9	Pre-assembled Saddle Nuts
MQA-ST M8 x 40	2184833
MQA-ST M8 x 60	2184834
MQA-ST M8 x 80	2184835
MQA-ST M8 x 100	2184836
MQA-ST M10 x 40	2184837
MQA-ST M10 x 60	2184838
MQA-ST M10 x 80	2184839
MQA-ST M10 x 100	2184840

For further sizes go to www.hilti.com

2	MP-U-I pipe clamps
MP-U-I 9-13 ½" M8/M10	2242258
MP-U-I 13-17 ¼" M8/M10	2242259
MP-U-I 17-21 ¾" M8/M10	2242260
MP-U-I 21-25 ½" M8/M10	2242261
MP-U-I 25-29 M8/M10	2242262
MP-U-I 29-33 M8/M10	2242263
MP-U-I 33-37 1" M8/M10	2242264
MP-U-I 37-42 M8/M10	2242265
MP-U-I 42-47 1 ¼" M8/M10	2242266
MP-U-I 47-52 1 ½" M8/M10	2242267
MP-U-I 52-57 M8/M10	2242268
MP-U-I 57-62 2" M8/M10	2242269
MP-U-I 62-67 M8/M10	2242270
MP-U-I 67-72 M8/M10	2242271
MP-U-I 72-77 2 ½" M8/M10	2242272
MP-U-I 78-84 M8/M10	2242273
MP-U-I 84-90 3" M8/M10	2242274

For further sizes go to www.hilti.com

15	Base Material Connector
1x MQP-41 base m. c.	2141927
2x MQN-C pushbutton or pre-fab version	2184368
1x MQP-41-CP	2184852
2x anchor	
HST3 M10x90 30/10 or HUS3-H 8x55	2105712 2079794

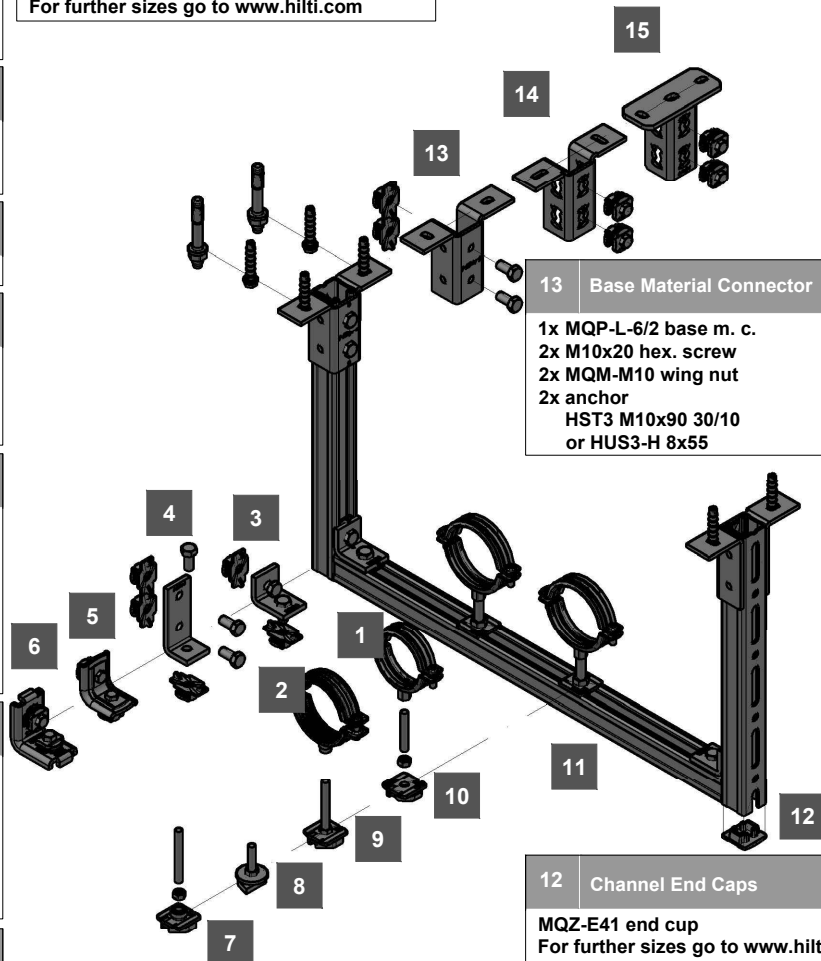
14	Base Material Connector
1x MQV-2/2D-14 base c.	369639
2x MQN-C pushbutton	2184368
2x anchor	
HST3 M12x105 30/10 or HUS3-H 10x70	2105718 2079912

13	Base Material Connector
1x MQP-L-6/2 base m. c.	2141928
2x M10x20 hex. screw	216453
2x MQM-M10 wing nut	369626
2x anchor	
HST3 M10x90 30/10 or HUS3-H 8x55	2105712 2079794

12	Channel End Caps
MQZ-E41 end cup	369685

11	Channels
MQ-41 channel	
MQ-41-L 2m channel	2141966
MQ-41-L 3m channel	2141965
MQ-41-L 6m channel	2141964
MQ-41 2m channel	304559
MQ-41 3m channel	369591
MQ-41 6m channel	369592

For further sizes go to www.hilti.com



Application description

Plumbing - Trapeze Frame

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



3

Product lines

MQ System

Anchors

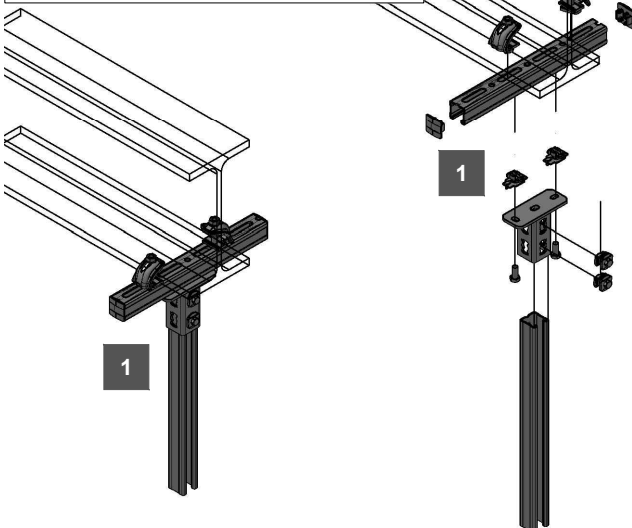
Accessories

Base material

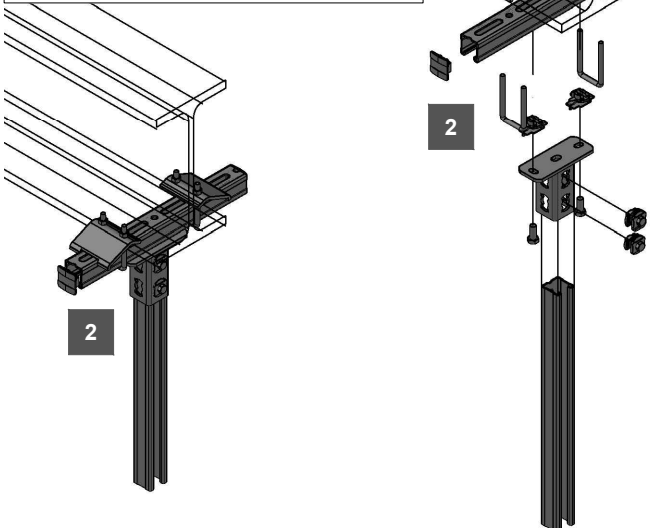
Concrete

Plumbing - Trapeze Frame On Steel 1

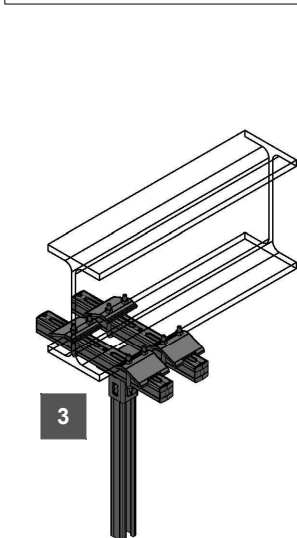
1	Vertical Upright Fixed on Structural Steel	
2x MQT-U beam clamp	2115454	
1x MQP-41	2141927	
2x MQN-C pushbutton	2184368	
2x M10x25 hex. head screw	2184495	
2x MQM-M10 wing nut	369626	
1x MQ-41 3m...m channel	369591	
2x MQZ-E41 end cap	369685	
1x MQ-41 3m...m channel	369591	



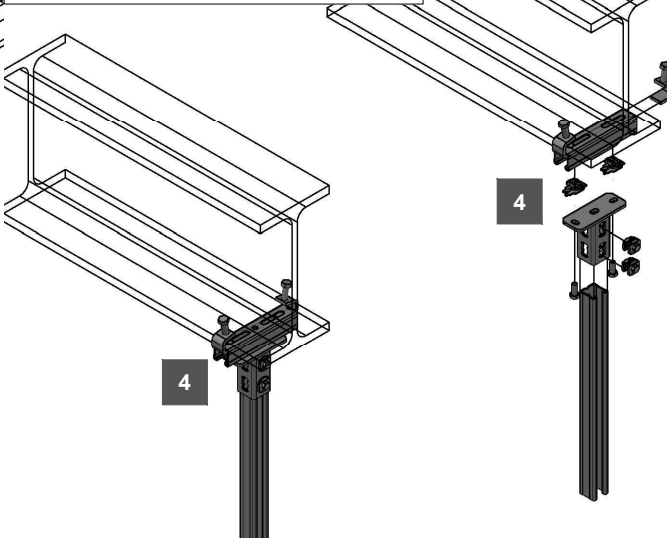
2	Vertical Upright Fixed on Structural Steel	
2x MQT-21-41	369675	
1x MQP-41	2141927	
2x MQN-C pushbutton	2184368	
2x M10x25 hex. head screw	2184495	
2x MQM-M10 wing nut	369626	
1x MQ-41 3m...m channel	369591	
2x MQZ-E41 end cap	369685	
1x MQ-41 3m...m channel	369591	



3	Vertical Upright Fixed on Structural Steel	
4x MQT-21-41	369675	
1x MQP-41	2141927	
2x MQN-C pushbutton	2184368	
2x M10x25 hex. head screw	2184495	
2x MQM-M10 wing nut	369626	
2x MQ-41 3m...m channel	369591	
4x MQZ-E41 end cap	369685	
1x MQ-41 3m...m channel	369591	



4	Vertical Upright Fixed on Structural Steel	
2x MQT-C22-F beam clamp	304194	
1x MQP-41	2141927	
2x MQN-C pushbutton	2184368	
2x M10x25 hex. head screw	2184495	
2x MQM-M10 wing nut	369626	
1x MQ-41 3m...m channel	369591	
4x MQZ-E41 end cap	369685	
1x MQ-41 3m...m channel	369591	



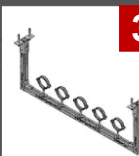
Application description

Plumbing - Trapeze Frame

General comments

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Application



3

Product lines

MQ System

Anchors

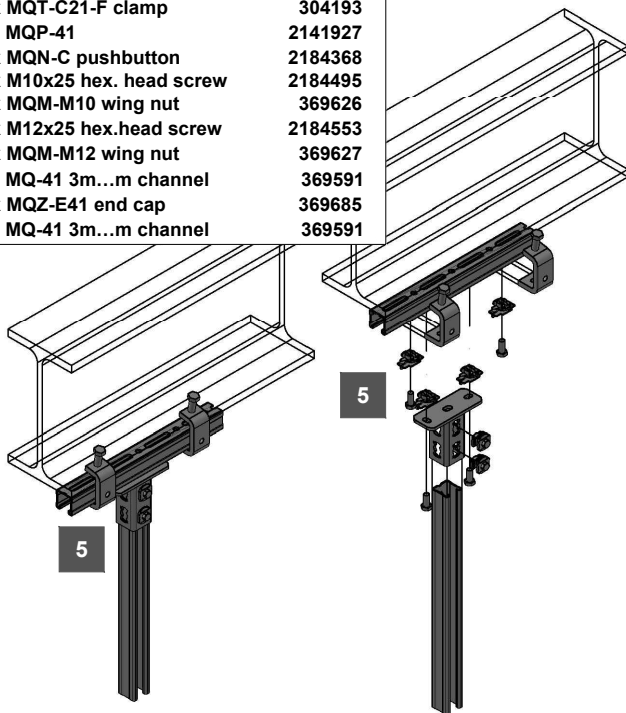
Accessories

Base material

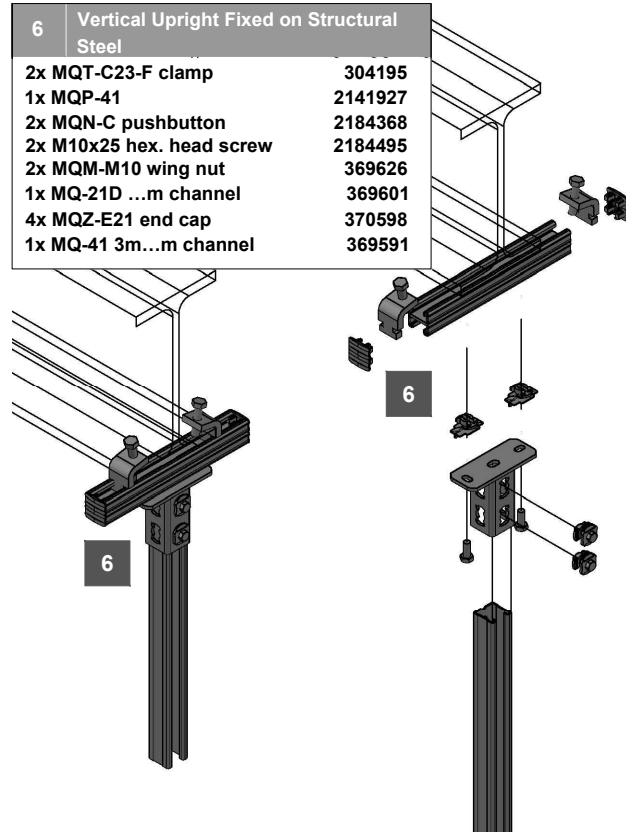
Steel

Plumbing - Trapeze Frame On Steel 2

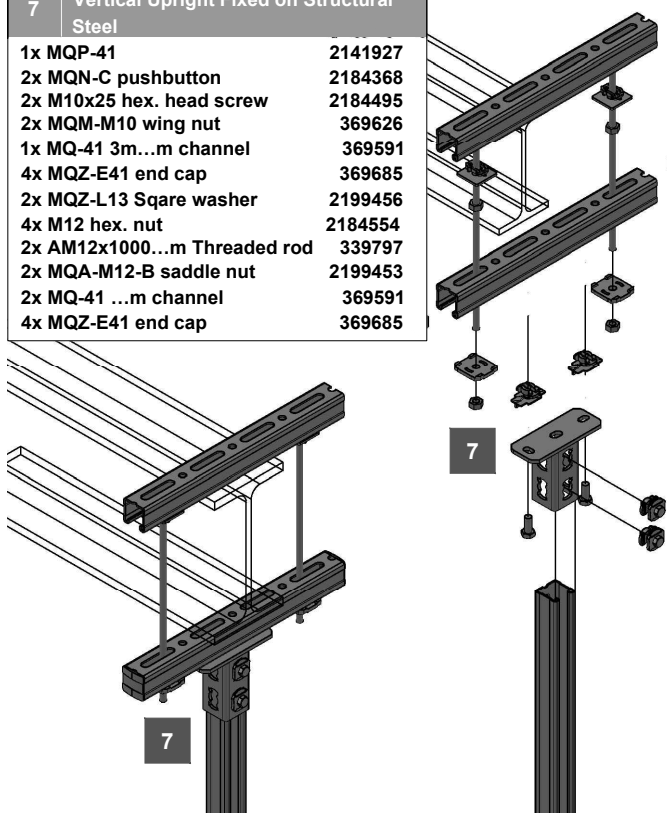
5	Vertical Upright Fixed on Structural Steel	
2x MQT-C21-F clamp	304193	
1x MQP-41	2141927	
2x MQN-C pushbutton	2184368	
2x M10x25 hex. head screw	2184495	
2x MQM-M10 wing nut	369626	
2x M12x25 hex.head screw	2184553	
2x MQM-M12 wing nut	369627	
1x MQ-41 3m...m channel	369591	
2x MQZ-E41 end cap	369685	
1x MQ-41 3m...m channel	369591	



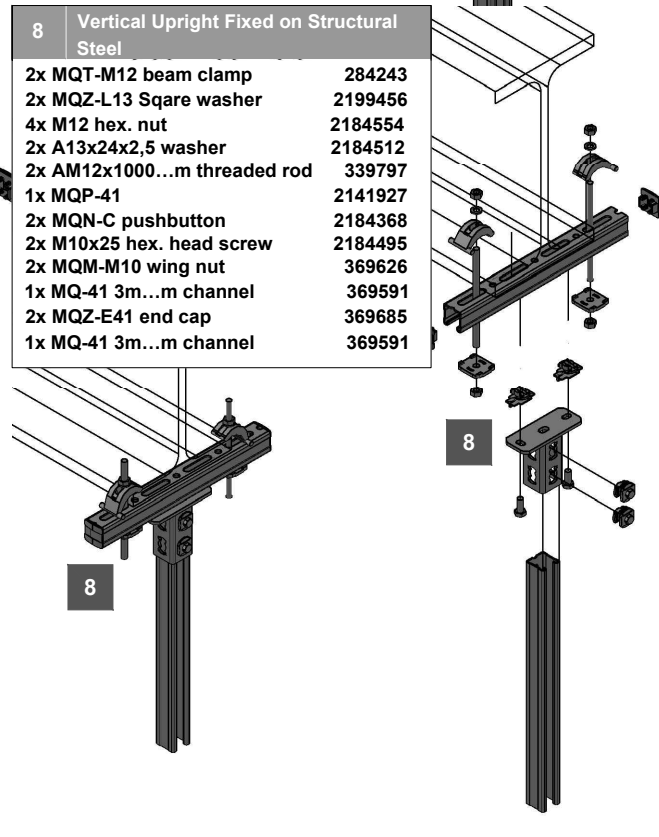
6	Vertical Upright Fixed on Structural Steel	
2x MQT-C23-F clamp	304195	
1x MQP-41	2141927	
2x MQN-C pushbutton	2184368	
2x M10x25 hex. head screw	2184495	
2x MQM-M10 wing nut	369626	
1x MQ-21D ...m channel	369601	
4x MQZ-E21 end cap	370598	
1x MQ-41 3m...m channel	369591	



7	Vertical Upright Fixed on Structural Steel	
1x MQP-41	2141927	
2x MQN-C pushbutton	2184368	
2x M10x25 hex. head screw	2184495	
2x MQM-M10 wing nut	369626	
1x MQ-41 3m...m channel	369591	
4x MQZ-E41 end cap	369685	
2x MQZ-L13 Square washer	2199456	
4x M12 hex. nut	2184554	
2x AM12x1000...m Threaded rod	339797	
2x MQA-M12-B saddle nut	2199453	
2x MQ-41 ...m channel	369591	
4x MQZ-E41 end cap	369685	



8	Vertical Upright Fixed on Structural Steel	
2x MQT-M12 beam clamp	284243	
2x MQZ-L13 Square washer	2199456	
4x M12 hex. nut	2184554	
2x A13x24x2,5 washer	2184512	
2x AM12x1000...m threaded rod	339797	
1x MQP-41	2141927	
2x MQN-C pushbutton	2184368	
2x M10x25 hex. head screw	2184495	
2x MQM-M10 wing nut	369626	
1x MQ-41 3m...m channel	369591	
2x MQZ-E41 end cap	369685	
1x MQ-41 3m...m channel	369591	



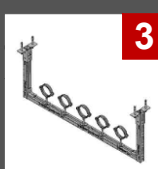
Application description

Plumbing - Trapeze Frame

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



3

Product lines

MQ System

Anchors

Accessories

Base material

Steel

Plumbing - Single Fastening Point On Concrete

1	M8 Screw Anchor
1x Screw anchor	
HUS-I 6x35 M8/M10 anchor	416740
HUS-I 6x55 M8/M10 anchor	423180
1x M8 hexagonal nut	2184504

2	M8 Drop-in anchor
1x Drop-in anchor	
HKD M8x25 anchor	376957
HKD M8x30 anchor	376959
HKD M8x40 anchor	376961
1x A 8,4/16 washer	282850
1x M8 hexagonal nut	2184504

3	M8 Stud Anchor
1x Stud anchor	
HST3 M8x95 -/30 anchor	2105889
1x M8x25 coupler	216703
1x M8 hexagonal nut	2184504

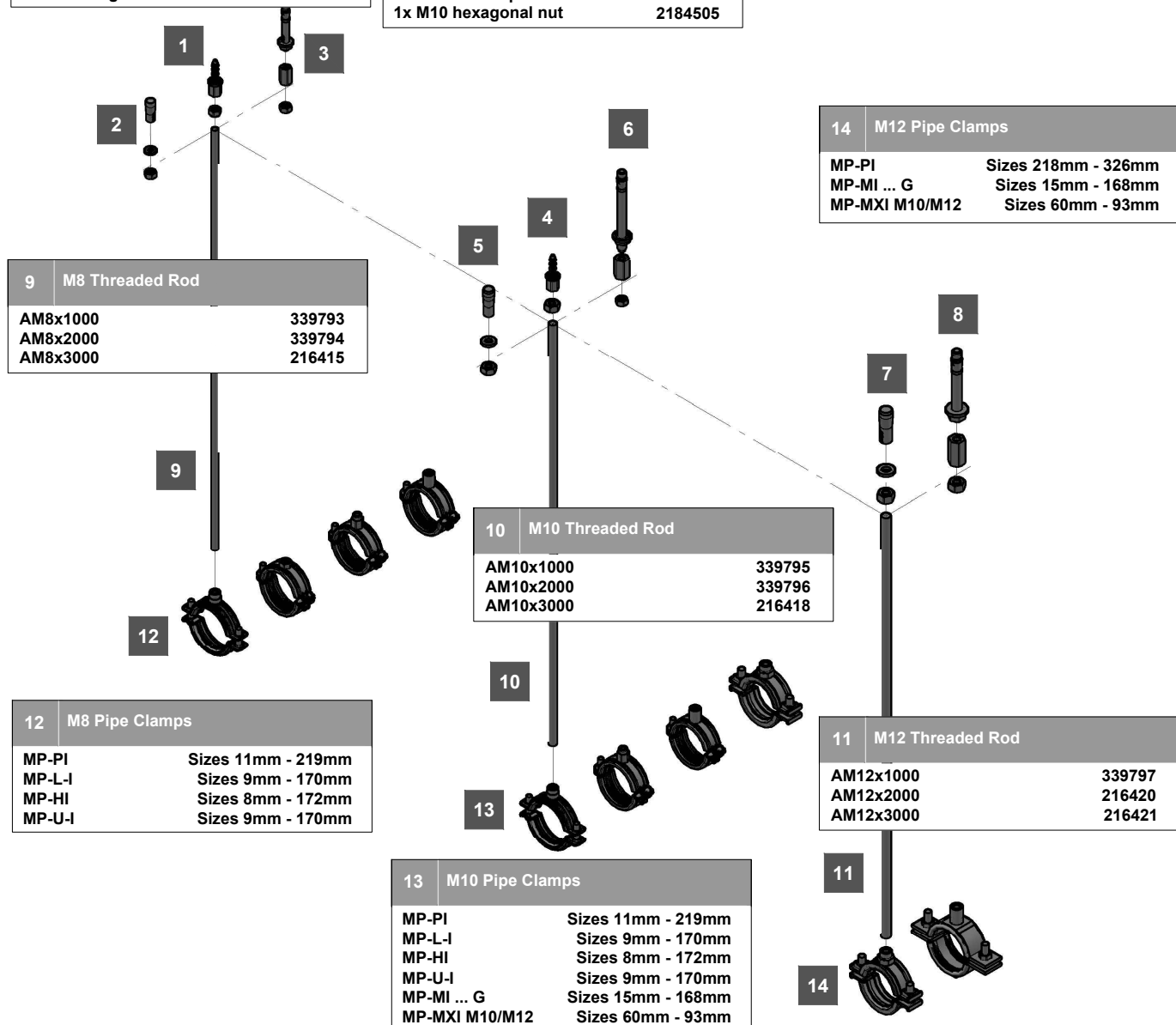
4	M10 Screw Anchor
1x Screw anchor	
HUS-I 6x35 M8/M10 anchor	416740
HUS-I 6x55 M8/M10 anchor	423180
1x M10 hexagonal nut	2184505

5	M10 Drop-in anchor
1x Drop-in anchor	
HKD M10x25 anchor	2037453
HKD M10x30 anchor	376965
HKD M10x40 anchor	376967
1x A 10,5/20 washer	282851
1x M10 hexagonal nut	2184505

6	M10 Stud Anchor
1x Stud anchor	
HST3 M10x100 40/20 anchor	2105713
HST2 M10x100/20 anchor	2107846
1x M10x30 coupler	216704
1x M10 hexagonal nut	2184505

7	M12 Drop-in anchor
1x Drop-in anchor	
HKD M12x25 anchor	378431
HKD M12x50 anchor	378544
1x A 13/24 washer	282852
1x M12 hexagonal nut	2184554

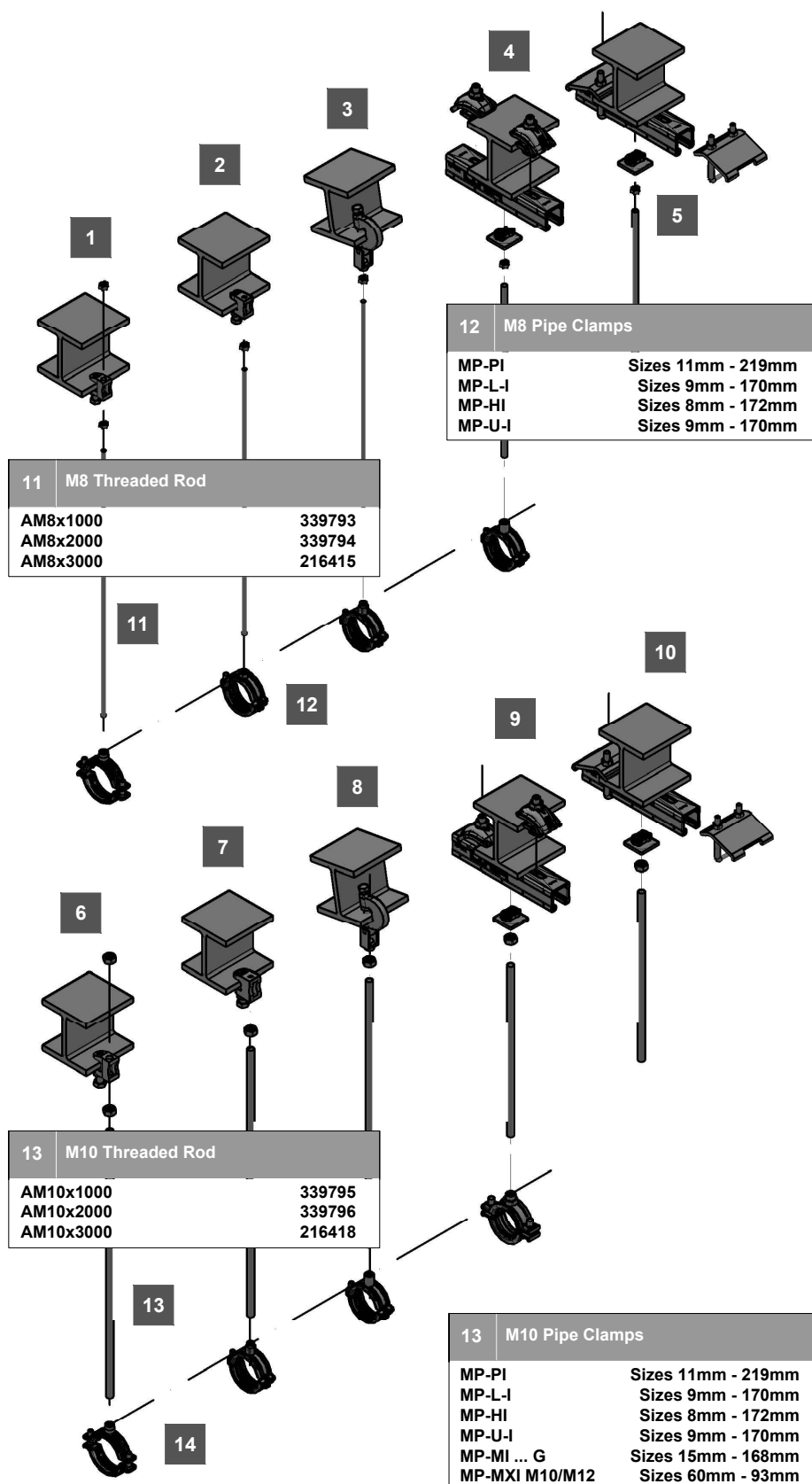
8	M12 Stud Anchor
1x Stud anchor	
HST3 M12x115 40/20 anchor	2105719
HST2 M12x115/20 anchor	2107849
1x M12x40 coupler	216705
1x M12 hexagonal nut	2184554



Application description	Application	Product lines	Base material
Plumbing applications - Single Fastening Point		4 Pipe Clamps	Concrete
General comments		Anchors	
These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.		Accessories	

Hilti strongly advises customers to verify the respective product application for the intended use by consulting a structural engineer and making the necessary calculations to ensure compliance with the applicable norms and standards. Failure to consult and heed the advice of a structural engineer will free Hilti from any liability. It is essential that the product is used strictly in accordance with the applicable Hilti instructions for use, within the application limits specified in the Hilti technical data sheets, technical specifications and supporting product literature, and that the relevant application limits are not exceeded at any time. All rights reserved by Hilti Corporation. Duplication, utilization and/or publication of drawings contained in this manual are not permitted unless expressly agreed by Hilti Corporation.

Plumbing - Single Fastening Point On Steel



1	Connecting M8 threaded rods to structural steel with unthreaded beam clamp
1x MAB-9 beam clamp	375956
2x M8 nut	2184504

2	Connecting M8 threaded rods to structural steel with threaded beam clamp
1x MAB-M8 beam clamp	2006878
1x M8 nut	2184504

3	Connecting M8 threaded rods to inclined str. steel with threaded beam clamp
1x MQT-G M8 beam clamp	284238
1x M8 nut	2184504

4	Connecting M8 threaded rods to structural steel centrally with channel
2x MQT-U beam clamp	2115454
1x MQ-41 3m channel	369591
1x MQA-S-M8 saddle nut	2141906
1x M8 nut	2184504

5	Connecting M8 threaded rods to structural steel centrally with channel
2x MQT-21-41 beam clamp	369675
1x MQ-41 3m ...m channel	369591
1x MQA-S-M8 saddle nut	2141906
1x M8 nut	2184504

6	Connecting M10 threaded rods to struct. steel with unthreaded beam clamp
1x MAB-11 beam clamp	375957
2x M10 nut	2184505

7	Connecting M10 threaded rods to structural steel with threaded beam clamp
1x MAB-M10 beam clamp	2006879
1x M10 nut	2184505

8	Connecting M10 threaded rods to inclined str. steel with threaded beam clamp
1x MQT-G M10 beam clamp	284239
1x M10 nut	2184505

9	Connecting M10 threaded rods to structural steel centrally with channel
2x MQT-U beam clamp	2115454
1x MQ-41 3m channel	369591
1x MQA-S10 saddle nut	2141907
1x M10 nut	2184505

10	Connecting M8 threaded rods to structural steel centrally with channel
2x MQT-21-41 beam clamp	369675
1x MQ-41 3m ...m channel	369591
1x MQA-S10 saddle nut	2141907
1x M10 nut	2184505

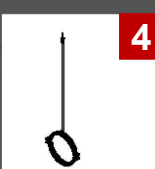
Application description

Plumbing applications - Single Fastening Point

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



4

Product lines

Pipe Clamps

Beam Clamps

Accessories

Base material

Steel

Plumbing - Single Fastening Point On Metal Deck

1	M8 Connection to Metal Deck - Through Bolted V-hanger
1x MF-TSH M8 V-hanger	229006
5x M8 hexagonal nut through bolt	2184504
1x AM8x1000...m t-rod vertical rod	339793
1x AM8x1000...m t-rod	339793

2	Alternative Through Bolt
1x M8x120 4.8 h-head screw	2063165
2x M8 hexagonal nut	2184504

3	M8 Connection to Metal Deck Through Bolted V-hanger
1x MVA-MS M8 V-hanger	386558
5x M8 hexagonal nut through bolt	216465
1x AM 8x1000...m t-rod vertical rod	339793
1x AM 8x1000...m t-rod	339793

4	M10 Connection to Metal Deck V-hanger with Self-tapping Screws
1x MVA-MS M8 V-hanger	386558
6x S-MS 01Z 4.0x13 S-screw	406471
1x M8 hexagonal nut vertical rod	2184504
1x AM 8x1000...m t-rod	339793

5	M8 Connection to Metal Deck Toggle Anchor
1x MF-SKD M8/100 t-anchor	230604
1x M8x25 coupler	216703
2x M8 hexagonal nut vertical rod	2184504
1x AM 8x1000...m t-rod	339793

6	M8 Connection to Metal Deck 2xV-Hanger and Channel
2x MF-TSH M8 V-hanger	229006
8x M8 hexagonal nut V-hanger through bolts	2184504
2x AM 8x1000...m t-rod vertical through bolts	339793
2x AM 8x1000...m t-rod	339793
2x MQZ-P9 square washer	2141908
2x M8 hexagonal nut channel	2184504
1x MQ-21 3m...m channel	369584
2x MQZ-E21 end cap vertical rod	370598
1x MQA-S-M8 saddle nut	2141906
1x AM 8x1000...m t-rod	339793
1x M8 hexagonal nut	2184504

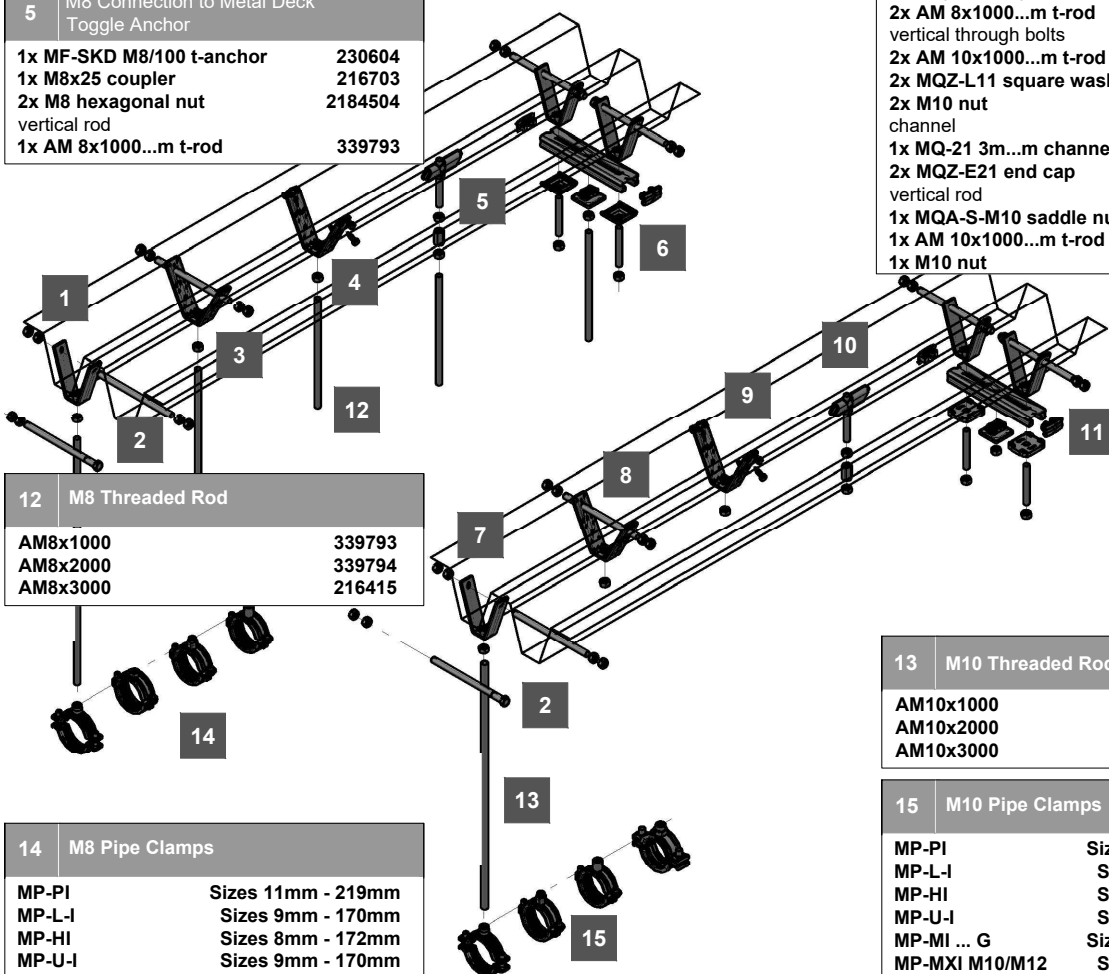
7	M10 Connection to Metal Deck - Through Bolted V-hanger
1x MF-TSH M10 V-hanger	229007
4x M8 hexagonal nut through bolt	2184504
1x AM8x1000...m t-rod vertical rod	339793
1x AM10x1000...m t-rod	339795
1x M10 nut	2184505

8	M10 Connection to Metal Deck Through Bolted V-hanger
1x MVA-MS M10 V-hanger	386559
4x M8 hexagonal nut through bolt	216465
1x AM 8x1000...m t-rod vertical rod	339793
1x AM10x1000...m t-rod	339795
1x M10 nut	2184505

9	M10 Connection to Metal Deck V-hanger with Self-tapping Screws
1x MVA-MS M10 V-hanger	386559
6x S-MS 01Z 4.0x13 S-screw	406471
1x M10 nut vertical rod	2184505
1x AM 10x1000...m t-rod	339795

10	M10 Connection to Metal Deck Toggle Anchor
1x MF-SKD M10/100 t-anchor	230608
1x M10x30 coupler	216704
2x M10 nut vertical rod	2184505
1x AM 10x1000...m t-rod	339795

11	M10 Connection to Metal Deck 2xV-Hanger and Channel
2x MF-TSH M10 V-hanger	229007
8x M8 nut	2184504
V-hanger through bolts	
2x AM 8x1000...m t-rod vertical through bolts	339793
2x AM 10x1000...m t-rod	339795
2x MQZ-L11 square washer	2199455
2x M10 nut channel	2184505
1x MQ-21 3m...m channel	369584
2x MQZ-E21 end cap vertical rod	370598
1x MQA-S-M10 saddle nut	2141907
1x AM 10x1000...m t-rod	339795
1x M10 nut	2184505



12	M8 Threaded Rod
AM8x1000	339793
AM8x2000	339794
AM8x3000	216415

14	M8 Pipe Clamps
MP-PI	Sizes 11mm - 219mm
MP-L-I	Sizes 9mm - 170mm
MP-HI	Sizes 8mm - 172mm
MP-U-I	Sizes 9mm - 170mm

13	M10 Threaded Rod
AM10x1000	339795
AM10x2000	339796
AM10x3000	216418

15	M10 Pipe Clamps
MP-PI	Sizes 11mm - 219mm
MP-L-I	Sizes 9mm - 170mm
MP-HI	Sizes 8mm - 172mm
MP-U-I	Sizes 9mm - 170mm
MP-MI ... G	Sizes 15mm - 168mm
MP-MXI M10/M12	Sizes 60mm - 93mm

Application description

Plumbing applications - Single Fastening Point

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



4

Product lines

Pipe Clamps
Metal Deck Connectors
Accessories

Base material

Metal Deck

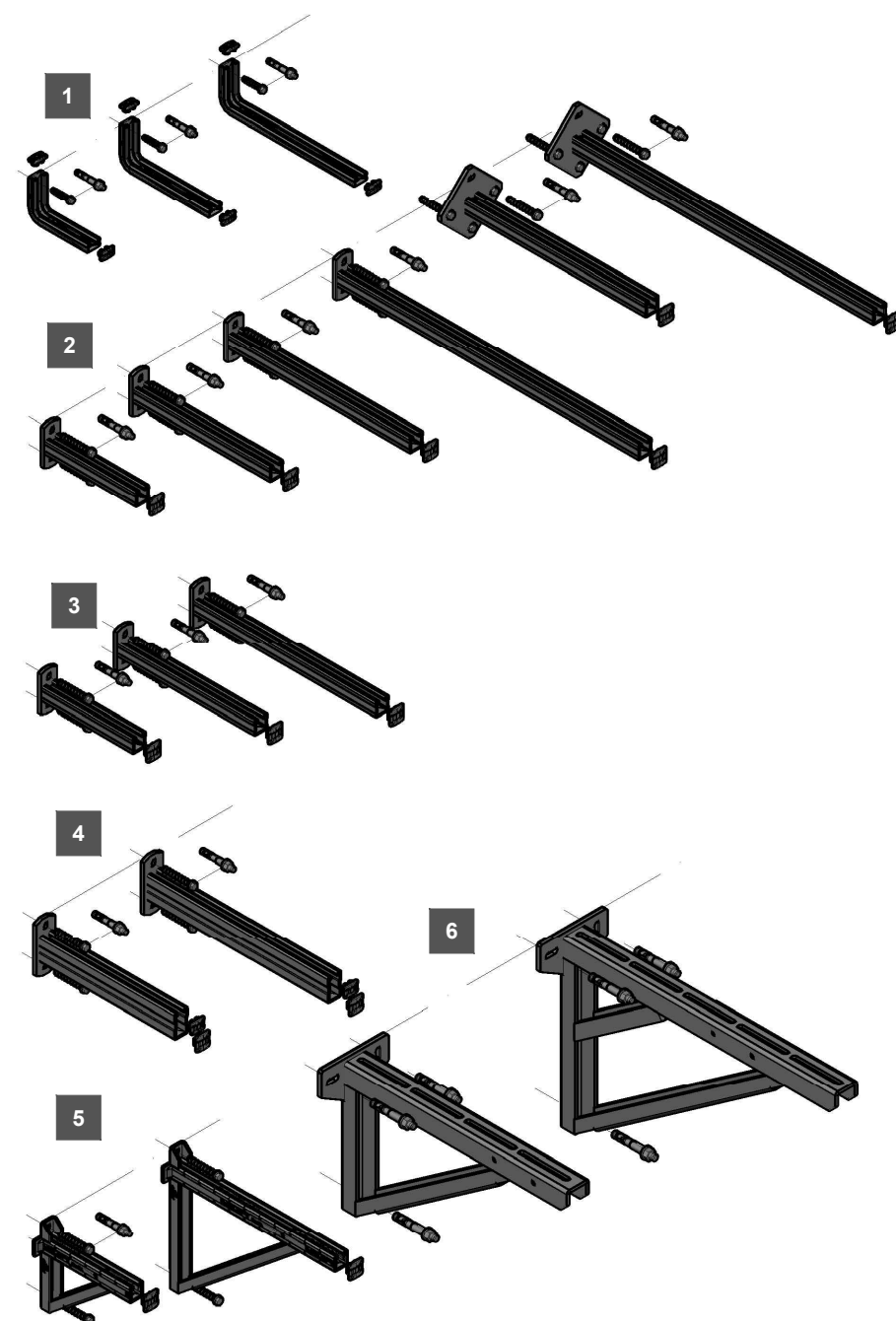
Plumbing - MQ System Brackets On Concrete

1	21mm Format Brackets	
1x	MQK-L-21/200 bracket	2141924
	MQK-L-21/300 bracket	2141925
	MQK-L-21/450 bracket	2141926
Relevant anchors		
2x	HUS3-H 8x55 5/- screw anchor	2079794
	or	
2x	HST3 M10x90 30/10 stud anchor	2105712
Relevant plastic end caps		
2x	MQZ-E21	370598

2	41mm Format Brackets - with wall thickness 2mm	
with 2 hole base plate		
1x	MQK-41/300	369609
	MQK-41/450	369610
	MQK-41/600	369611
	MQK-41/1000	369612
with 4 hole base plate		
	MQK-41/1000/4	369613
	MQK-41/1000/4	369614
Relevant anchors		
2x/4x	HUS3-H 10x90 35/15/5 screw anchor	2079914
	or	
	HST3 M12x105 30/10 stud anchor	2105718
	HST2 M12x105/10 stud anchor	2107848
Relevant plastic end caps		
1x	MQZ-E41	369685

3	41mm Format Brackets - with wall thickness 3mm	
1x	MQK-41/3/300	370595
	MQK-41/3/450	370596
	MQK-41/3/600	370597
Relevant anchors		
2x	HUS3-H 10x90 35/15/5 screw anchor	2079914
	or	
	HST3 M12x105 30/10 stud anchor	2105718
	HST2 M12x105/10 stud anchor	2107848
Relevant plastic end caps		
1x	MQZ-E41	369685

4	72mm Format Brackets - with wall thickness 2.75mm	
1x	MQK-72/450	369615
	MQK-72/600	369616
Relevant anchors		
2x	HUS3-H 10x90 35/15/5 screw anchor	2079914
	or	
	HST3 M12x105 30/10 stud anchor	2105718
	HST2 M12x105/10 stud anchor	2107848
Relevant plastic end caps		
1x	MQZ-E31	369686
1x	MQZ-E41	369685



5	Heavy-Duty Brackets - Hot-dip Galvanized	
1x	MQK-H/300	2048096
	MQK-H/550	2048097
Relevant anchors		
2x	HUS3-H 10x90 35/15/5 screw anchor	2079914
	or	
2x	HST3 M12x105 30/10 stud anchor	2105718
2x	HST2 M12x105/10 stud anchor	2107848
Relevant plastic end caps		
1x	MQZ-E41	369685

6	Heavy-Duty Brackets - Hot-dip Galvanized	
1x	MQK-H/750	2048098
	MQK-H/900	2048099
Relevant anchors		
3x	HST3 M16x135 35/15 stud anchor	2105858
3x	HST2 M16x140/25 stud anchor	2108160

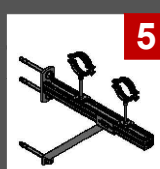
Application description

Plumbing applications - Bracket

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



5

Product lines

MQ System

Anchors

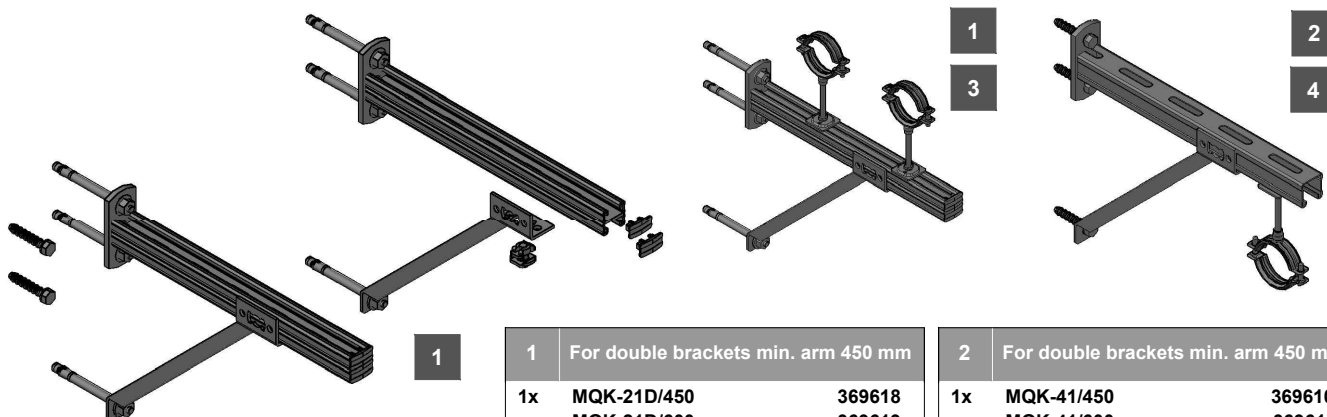
Accessories

Base material

Concrete

Plumbing - MQ System Brackets On Concrete - Bracing

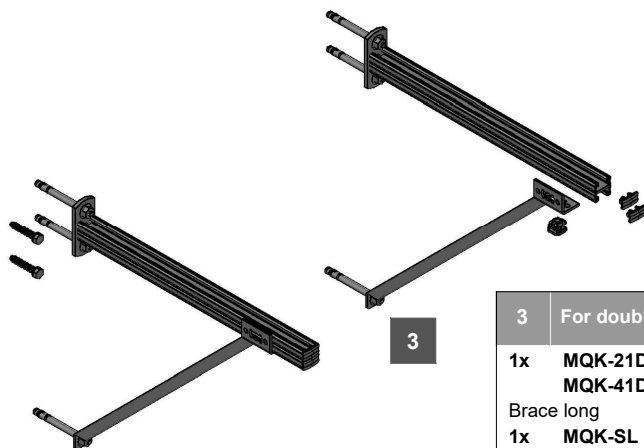
Brackets with short pre-assembled brace



1	For double brackets min. arm 450 mm	
1x	MQK-21D/450	369618
	MQK-21D/600	369619
	MQK-41D/1000	369620
Brace short		
1x	MQK-SK short brace	369622
Pushbutton		
1x	MQN-C pushbutton	2184368
Relevant anchors		
3x	HUS3-H 10x70/-/- screw anchor	2079912
	or	
	HST3 M12x115 40/20 stud anchor	2105719
Relevant plastic end caps		
2x	MQZ-E21	370598

2	For double brackets min. arm 450 mm	
1x	MQK-41/450	369610
	MQK-41/600	369611
	MQK-41/1000	369612
	MQK-41/3/450	370596
	MQK-41/3/600	370597
	MQK-41/600/4	369613
	MQK-41/1000/4	369614
	MQK-72/450	369615
	MQK-72/600	369616
Brace short		
1x	MQK-SK short brace	369622
Pushbutton		
1x	MQN-C pushbutton	2184368
Relevant anchors		
3x	HUS3-H 10x70/-/- screw anchor	2079912
	or	
	HST3 M12x115 40/20 stud anchor	2105719
Relevant plastic end caps		
1x	MQZ-E41	369685

Brackets with long pre-assembled brace



3	For double brackets min. arm 600mm	
1x	MQK-21D/600	369619
	MQK-41D/1000	369620
Brace long		
1x	MQK-SL long brace	369621
Pushbutton		
1x	MQN-C pushbutton	2184368
Relevant anchors		
3x	HUS3-H 10x70/-/- screw anchor	2079912
	or	
	HST3 M12x115 40/20 stud anchor	2105719
Relevant plastic end caps		
2x	MQZ-E21	370598

4	For double brackets min. arm 600mm	
1x	MQK-41/600	369611
	MQK-41/1000	369612
	MQK-41/3/600	370597
	MQK-41/600/4	369613
	MQK-41/1000/4	369614
	MQK-72/600	369616
Brace long		
1x	MQK-SL long brace	369621
Pushbutton		
1x	MQN-C pushbutton	2184368
Relevant anchors		
3x	HUS3-H 10x70/-/- screw anchor	2079912
	or	
	HST3 M12x115 40/20 stud anchor	2105719
Relevant plastic end caps		
1x	MQZ-E41	369685

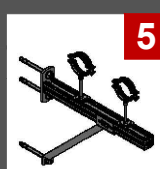
Application description

Plumbing applications - Bracket

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



5

Product lines

MQ System

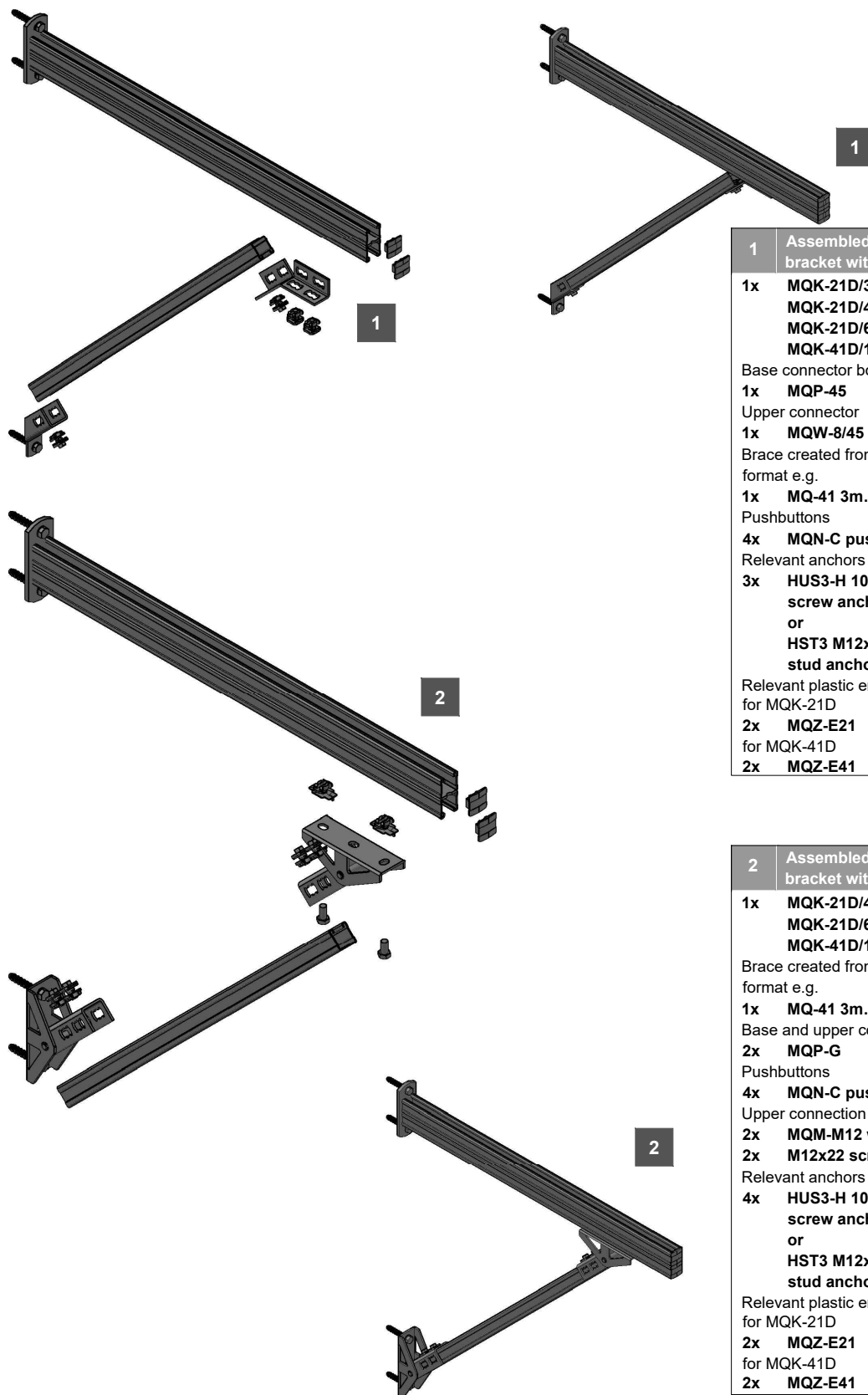
Anchors

Accessories

Base material

Concrete

Plumbing - MQ System Brackets On Concrete - Bracing



1	Assembled brace for pre-assembled bracket with min. arm 300 mm	
1x	MQK-21D/300	369617
	MQK-21D/450	369618
	MQK-21D/600	369619
	MQK-41D/1000	369620
Base connector bottom		
1x	MQP-45	369649
Upper connector		
1x	MQW-8/45	369660
Brace created from 41mm channel format e.g.		
1x	MQ-41 3m...m channel	369591
Pushbuttons		
4x	MQN-C pushbutton	2184368
Relevant anchors		
3x	HUS3-H 10x70/-/ screw anchor	2079912
or		
	HST3 M12x115 40/20 stud anchor	2105719
Relevant plastic end caps for MQK-21D		
2x	MQZ-E21	370598
for MQK-41D		
2x	MQZ-E41	369685

2	Assembled brace for pre-assembled bracket with min. arm 450 mm	
1x	MQK-21D/450	369618
	MQK-21D/600	369619
	MQK-41D/1000	369620
Brace created from 41mm channel format e.g.		
1x	MQ-41 3m...m channel	369591
Base and upper connector		
2x	MQP-G	369654
Pushbuttons		
4x	MQN-C pushbutton	2184368
Upper connection to channel		
2x	MQM-M12 wing nut	369627
2x	M12x22 screw	2184498
Relevant anchors		
4x	HUS3-H 10x70/-/ screw anchor	2079912
or		
	HST3 M12x115 40/20 stud anchor	2105719
Relevant plastic end caps for MQK-21D		
2x	MQZ-E21	370598
for MQK-41D		
2x	MQZ-E41	369685

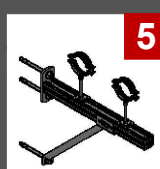
Application description

Plumbing applications - Bracket

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



Product lines

MQ System

Anchors

Accessories

Base material

Concrete

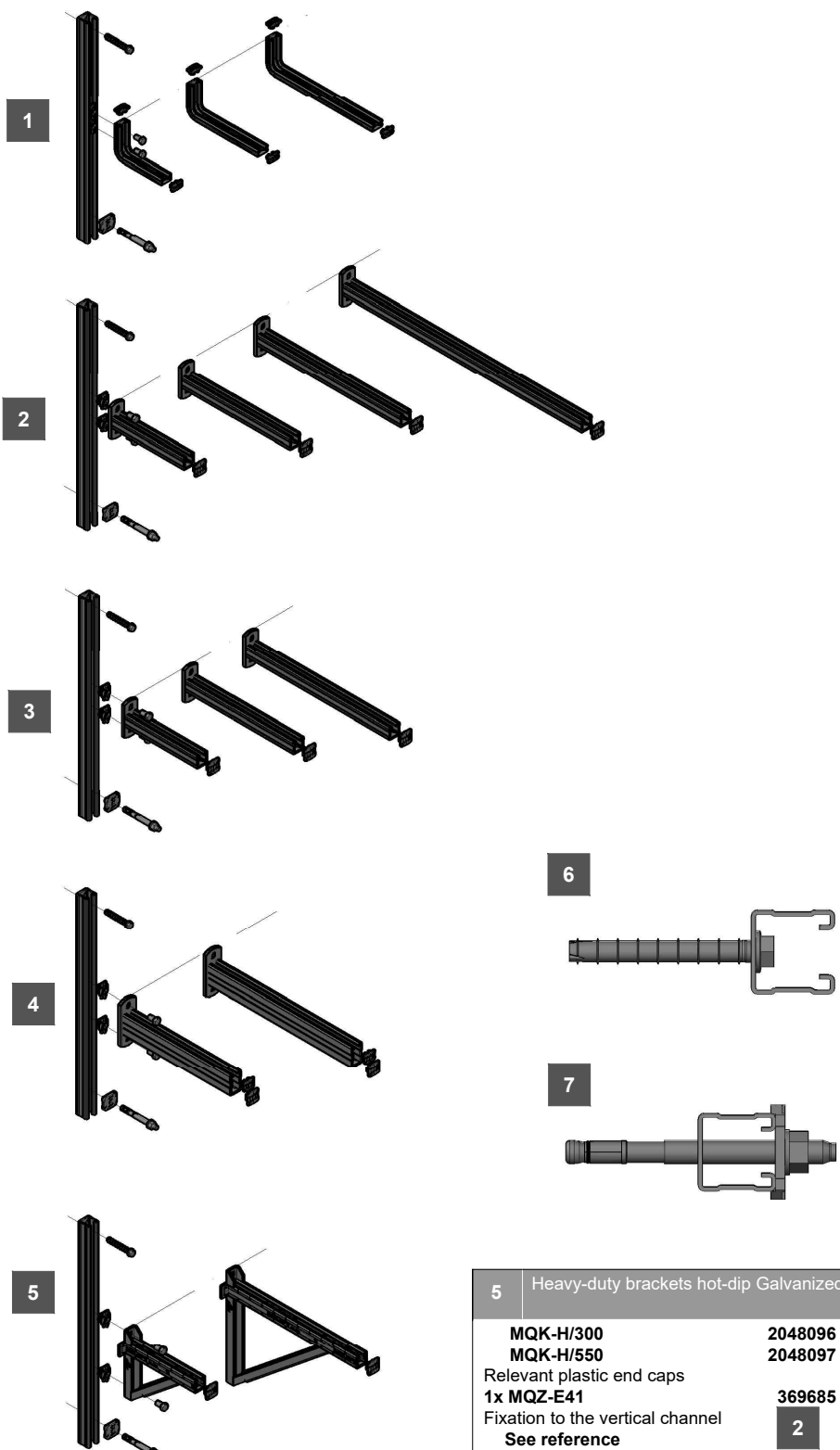
Plumbing - MQ System Brackets On Concrete - Vertical channel

1	21 mm format brackets	
1x	MQK-L-21/200 bracket	2141924
	MQK-L-21/300 bracket	2141925
	MQK-L-21/450 bracket	2141926
Relevant plastic end caps		
2x	MQZ-E21	370598
Fixation to the vertical channel		
2x	MQM-M10 wing nut	369626
2x	M10x25 hex head screw	216454
Vertical channel		
1x	MQ-21,41,52,72 channel	various
Fixation of vertical channel for the channel bottom		
2x	HUS3-H 10x90 35/15/5 screw anchor	2079914
6		
Fixation of vertical max. 41 channel square washer and through bolted anchor		
2x	MQZ-L13 square washer	2199456
2x	HST3 M12x145 70/50	
7	stud anchor	2105851

2	41 mm format brackets	
1x	MQK-41/300	369609
	MQK-41/450	369610
	MQK-41/600	369611
	MQK-41/1000	369612
Relevant plastic end caps		
2x	MQZ-E41	369685
Fixation to the vertical channel		
2x	MQM-M12 wing nut	369627
2x	M12x25 hex head screw	216458
Vertical channel		
1x	MQ-21,41,52,72 channel	various
Fixation of vertical channel for the channel bottom		
1x	HUS3-H 10x90 35/15/5 screw anchor	2079914
6		
Fixation of vertical max. 41 channel square washer and through bolted anchor		
2x	MQZ-L13 square washer	369680
2x	HST3 M12x145 70/50	
7	stud anchor	2105851

3	41/3 mm format brackets	
	MQK-41/3/300	370595
	MQK-41/3/450	370596
	MQK-41/3/600	370597
Relevant plastic end caps		
2x	MQZ-E41	369685
Fixation to the vertical channel		
	See reference	2

4	72 mm format brackets	
	MQK-41/3/300	370595
	MQK-41/3/450	370596
	MQK-41/3/600	370597
Relevant plastic end caps		
2x	MQZ-E41	369685
Fixation to the vertical channel		
	See reference	2



5	Heavy-duty brackets hot-dip Galvanized	
	MQK-H/300	2048096
	MQK-H/550	2048097
Relevant plastic end caps		
1x	MQZ-E41	369685
Fixation to the vertical channel		
	See reference	2

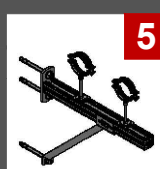
Application description

Plumbing applications - Bracket

General comments

These pictures do not show any loading capacity limits or exposure or limitation to any load combinations.

Application



5

Product lines

MQ System

Anchors

Accessories

Base material

Concrete



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