

TECHNICAL
INFORMATION
MT 04-E



HALFEN FRAMING CHANNELS AND ACCESSORIES

FRAMING



HALFEN·DEHA
YOUR BEST CONNECTIONS

HALFEN FRAMING SYSTEMS

Product range - Overview

1 Framing Channels, Bolts			
2 Accessories			
3 Design Properties			
4 Support Structures			
5 Cantilevers			
6 Pipe Clamps, Pipe Supports			
7 Notes, Work aid			

HALFEN FRAMING SYSTEMS

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HALFEN FRAMING SYSTEMS

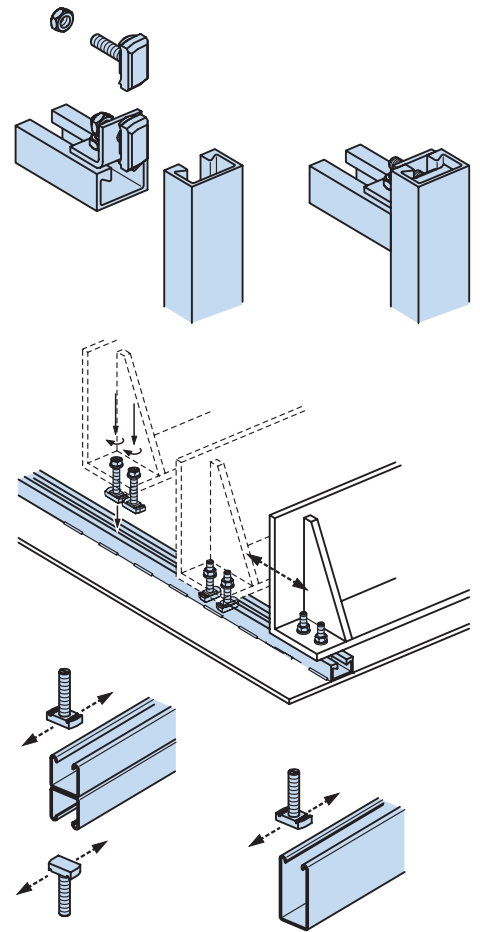
Channel Fixing (Introduction)

Adjustable HALFEN channel fixing systems

offer a whole range of benefits:

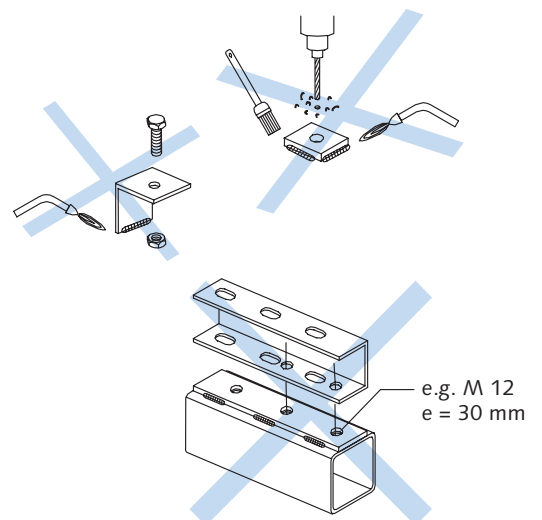
- Non-slip bolting at any point with Halfen T-head bolts.
- Corrosion protection remains intact after bolting.
- Can be adjusted or extended on site without any need for machining (it is therefore not restricted by different hole settings when changes are made to components).
- Several different thread diameters can be used in one channel.
- High corrosion protection of structural components through hot-dip galvanising (piece galvanisation). Alternatively, pre-galvanised versions are available for lower corrosion protection requirements.
- A large selection of standard channels with excellent load bearing characteristics. HALFEN Framing channels represent support structures and fixing materials all in one.

- HALFEN Quality Management System certified acc. to DIN EN 9001, Certificate no. QS 281 HH for the locations in Germany, Switzerland and Poznan / Poland.



Using HALFEN Framing channels uneconomic procedures are avoided such as:

- costly machining and corrosion protection on finished structural units during retrofitting or on-site adaptation.
- time-consuming hole setting calculations for structural parts requiring large numbers of bolts.
- costly manufacture of purpose-made bolted structures.



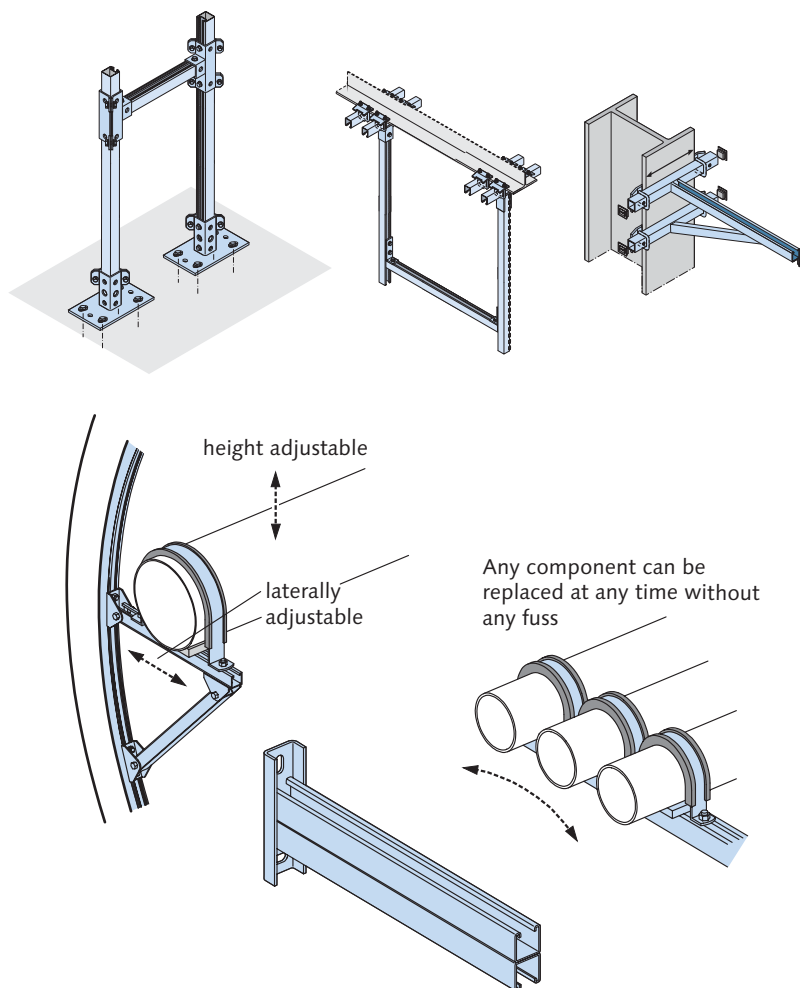
HALFEN FRAMING SYSTEMS

Steel Support Structures (Introduction)

Adjustable HALFEN support structures

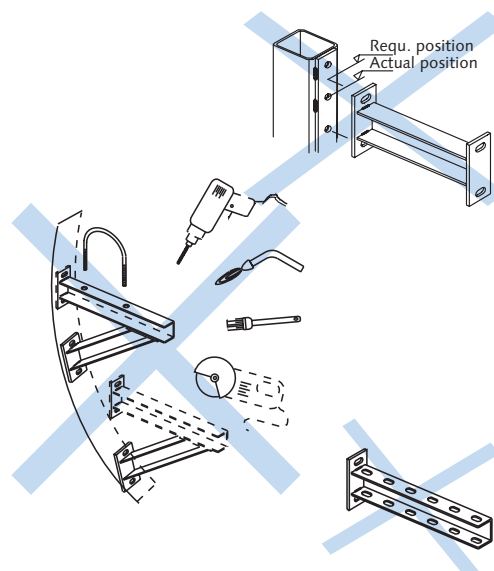
offer a whole range of benefits:

- Efficient and economical production of modular system support structures, made-to-measure and supplied with all the necessary bolts and fittings.
- Precision on-site adaptation made simple (reducing time needed for planning and observing production tolerances).
- Low-cost fully adjustable standard products which can replace a whole range of expensive structural parts. Special designs are possible for all structural parts depending on the quantities involved.



Using HALFEN Support structures uneconomic procedures are avoided such as:

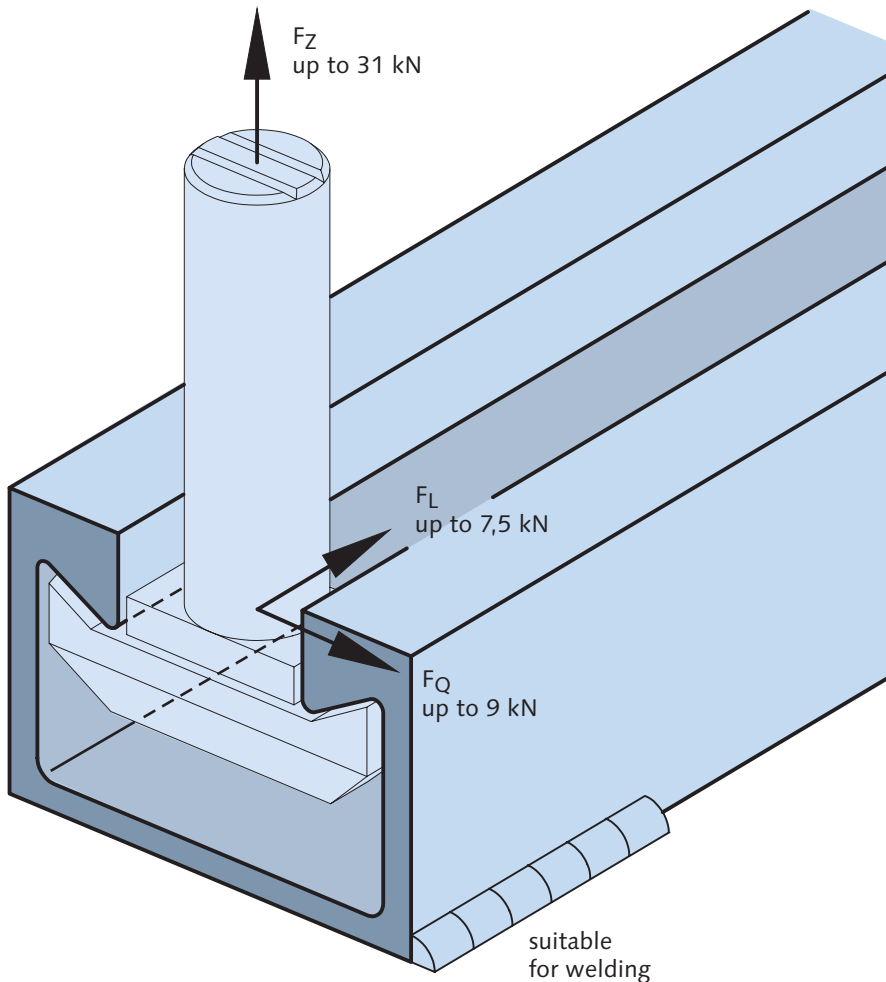
- complex design work on constructions where conditions are subject to change or in cases where structural components need to be mounted so as to be easily replaceable.
- elaborate adaptation work where wide construction tolerances or on-site retrofitting is required.
- uneconomical purpose-made structural components.



HALFEN FRAMING CHANNELS AND ACCESSORIES

Heavy Duty Framing Channels

Halfen hot rolled channels

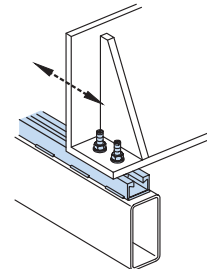


Product features

The hot rolling process makes these Halfen channels ideally suitable for:

- dynamic loads
- welding
- heavy loads

Due to their ability to withstand dynamic loads the hot rolled HALFEN Channels are also well suited to flexible mounting of components in machines, vehicles etc.



High load distribution, shear force F_Q up to 9 kN, tensile force F_z up to 31 kN and force in longitudinal direction F_L up to 7,5 kN.

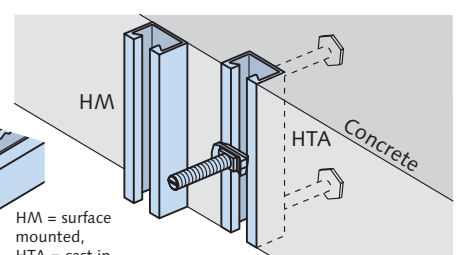
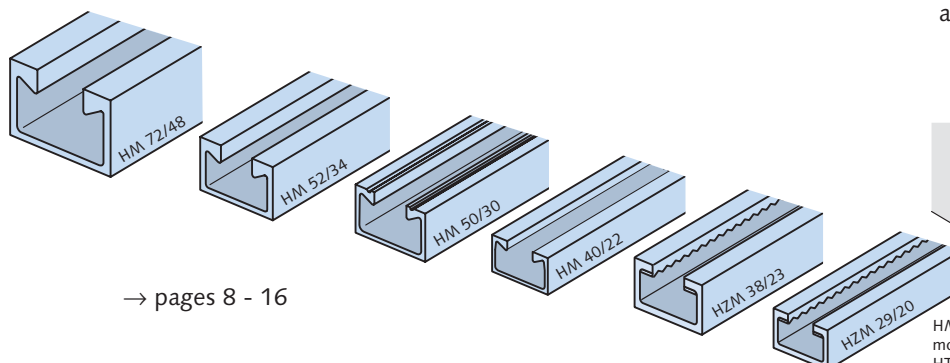
Material/construction:

Mild steel, hot-dip galvanised (fv),
Zinc coating $\geq 50 \mu\text{m}$ or mill finish (wb).

Stainless steel version: W 1.4571/
1.4401 (A4)

All hot rolled HALFEN Channels are available both as framing channels and **also as HTA cast-in channels** ($\rightarrow$ p. 94). Both versions use the same bolts and thread plates.

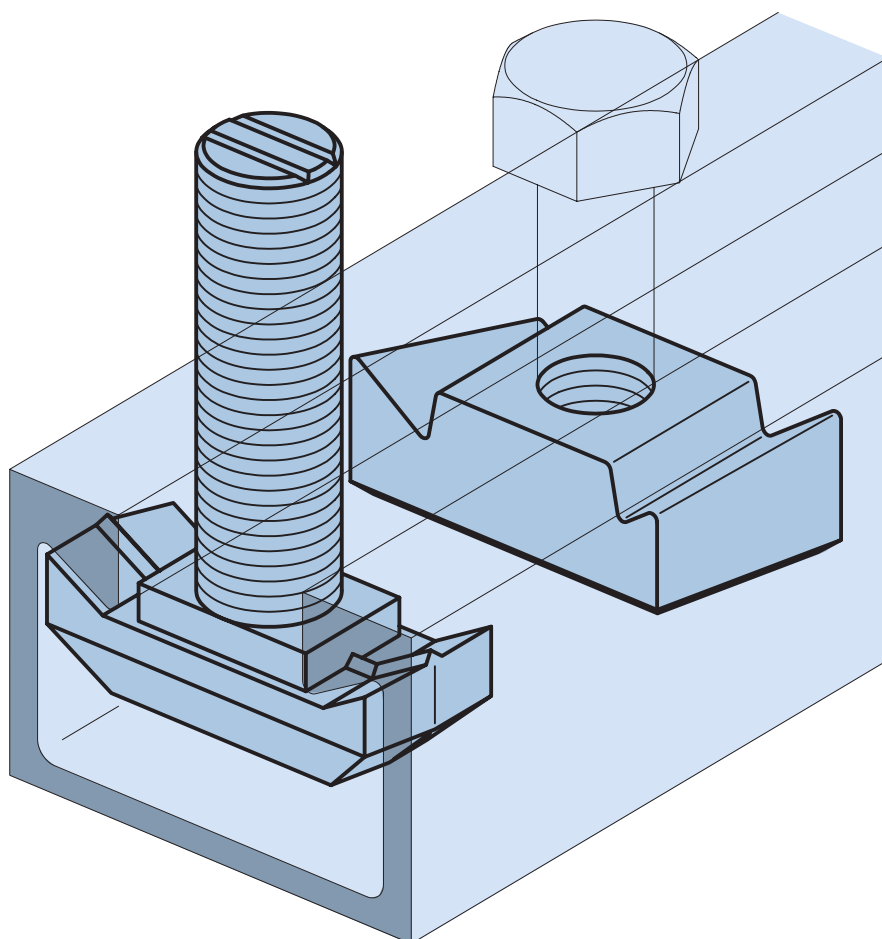
Select the most economic channel depending on the loading.



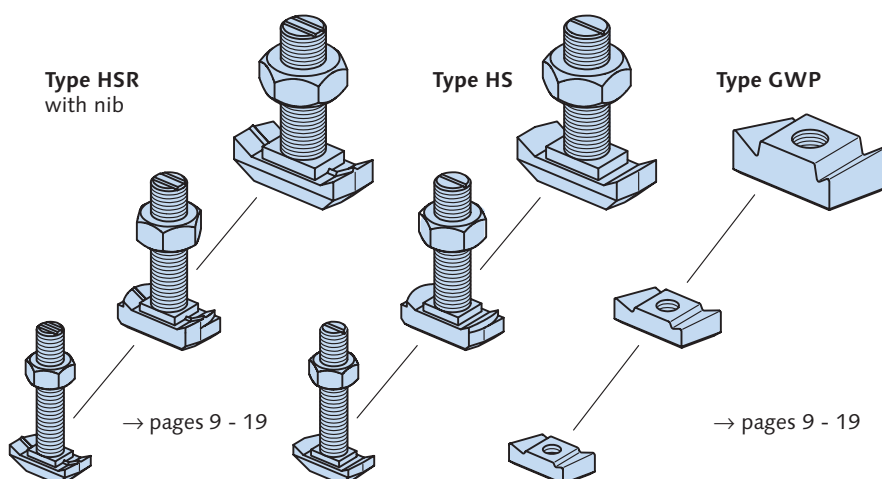
HALFEN FRAMING CHANNELS AND ACCESSORIES

Heavy Duty Framing Channels

Accessories for hot rolled Halfen channels

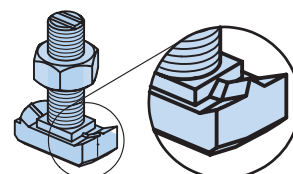


Selection of HALFEN T-head bolts and locking plates



Product features

For every hot rolled HALFEN Channel there are matching Halfen T-head bolts and locking plates (from M 6 up to M 30, depending on channel).

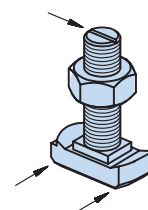


High degree of safety:

HSR - HALFEN T-head bolts are nibbed and therefore **non-slip**. Up to 7,5 kN (with safety factor $n = 3$) per bolt when used in mild steel channels (material quality **fv** = hot-dip galvanised and **wb** = mill finish).

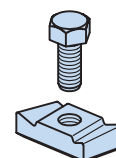
Corrosion protection provided by galvanising **remains** fully intact even **after assembly**.

There is a large selection of Stainless steel HS HALFEN T-head bolts and GWP locking plates (from M 8 up to M 20, depending on section) for all Stainless steel channels.



Twist protection

due to the hook-head shape of the profile lips in conjunction with the hook-head bolts and locking plates. Unintentional twisting of the bolts resp. locking plates, e.g. due to vibrations, is impossible.



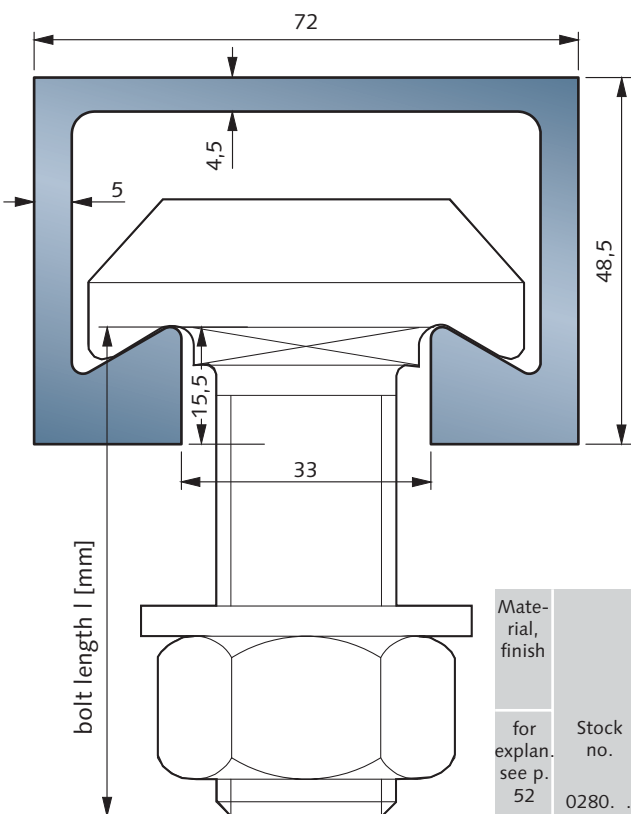
HALFEN locking plates allow the use of any kind of bolts.

HALFEN FRAMING CHANNELS

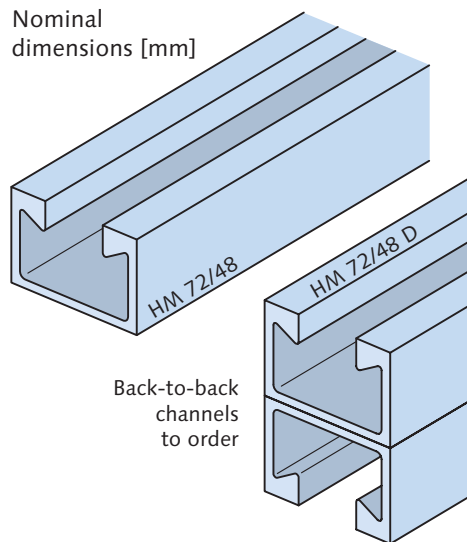
Channel 72/48

HM 72/48

hot rolled



Nominal dimensions [mm]



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52	0280. ...	To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] ① ≤ L [cm]	0,50 1,00 1,50 F [kN]
HM 72/48								
wb	180-00002	●	8,82	11,23	34,99 83,07	14,33 23,08	31,0 32,0	21,0 11,3 7,6
fv	180-00003	●						
A4	180-00001	●						

Length: 6070 mm

Order example: HM 72/48 - fv - 6070

or Stock no. 0280-180.00003

① see note ③ on p. 55

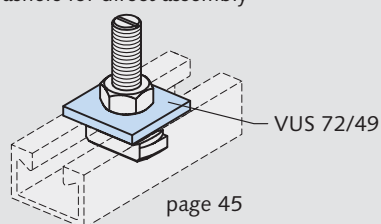
Other channel data, design properties

Channel data	Max. tensile / transverse load	Max. load compression member
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Bolt-accessories

VUS 72/49

Washers for direct assembly



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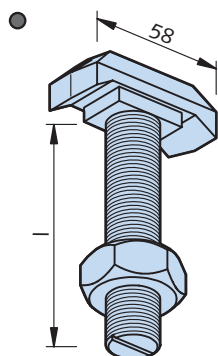
Subject to alterations

HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channel 72/48

HS 72/48

Halfen T-head bolt
incl. nut



Length l [mm]	M 20 Length l Mat.	M 24 Length l Mat.	M 27 Length l Mat.	M 30 Length l Mat.	M 24 Length l Mat.
50	50 fv	50 fv			50 A4-50
75	75 fv	75 fv 75 fv 8.8	75 fv	75 fv	
100	100 fv	100 fv	100 fv 100 fv 8.8	100 fv	100 A4-50
150	150 fv	150 fv		150 fv	
200	200 fv	200 fv		200 fv	

Order example: HS 72/48 - M 24 x 100 - fv

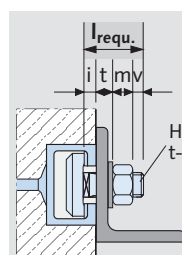
Material/finish Halfen T-head bolts (→ S. 53):

fv = h.d. galvanised, strength grade 4.6

gv = electroplated, strength grade 4.6

fv 8.8 = h.d. galvanised, strength grade 8.8

A4-50 = Stainless steel grade A4-50

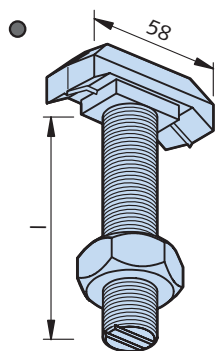


**Calculation of
bolt length $l_{requ.}$
for Halfen T-head bolts:**

$l_{requ.}$ = required bolt length
 i = profile lip
 m = nut
 v = spare ~5 mm
 t = clamping thickness
 $(t \leq l_{required} - l_{deduct.})$

HSR 72/48

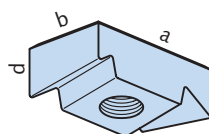
Halfen T-head bolt
with nibs
incl. nut



Length l [mm]	M 20 Length l Mat.
50	50 fv 8.8

Order example:
HSR 72/48 - M 20x50 - fv 8.8

GWP 72/48 Locking plates



gv ●	A4 ●	a [mm]	b [mm]	d [mm]
Thread	Thread			
M 12	M 12	62	31	22
M 16	M 16	62	31	22
M 20	M 20	62	31	22

Order example:
GWP 72/48 - M 20 - gv

perm. load	Thread	loading capacity [kN]
	M 12	9,3
	M 16	17,3
	M 20	22,0

Halfen T-head bolts - load capa- cities ①

Thread Ø	for mild steel channels						for stainless steel channels		
	Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt				Max. pull out per T-head bolt	Max. longitudinal load per Halfen T-head bolt	
	Grade 4.6 [kN]	Grade 8.8 [kN]	Type HS, grade 4.6 tightening torque [Nm]	Type HS, grade 8.8 tightening torque [Nm]	Type HSR, grade 8.8 (v = 3) tightening torque [Nm]		Grade A4 - 50 [kN]	Grade A4 - 50 [kN]	tightening torque [Nm]
M 20	27,0	56,4	1,4	120	4,7	400			
M 24	38,8	81,2	2,0	200	6,8	680			
M 27	50,5	106,0	2,6	300	8,9	1000			
M 30	61,7	129,0	3,2	400	10,9	1400			
							38,8	2,0	200

① Note: Do not exceed channel load capacity! See also p. 54 - 59 (design properties).

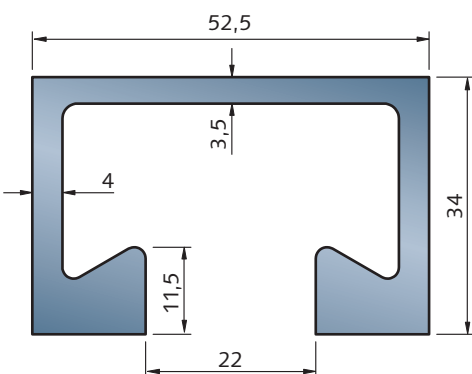
● = Standard

○ = To order

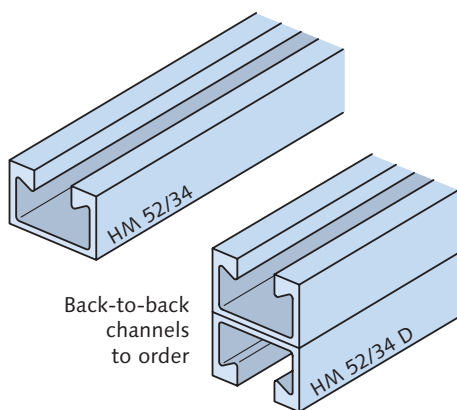
HALFEN FRAMING CHANNELS

Channel 52/34

HM 52/34 hot rolled



Nominal dimensions
[mm]



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52	0280. . .	To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] ① ≤L [cm]	0,50 1,00 1,50 F [kN]
HM 52/34								
wb	190-00002	●	4,96	6,32	9,42 24,13	5,49 9,19	17,0 21,0	8,7 4,4 2,2
fv	190-00003	●						
A4	190-00001	●						

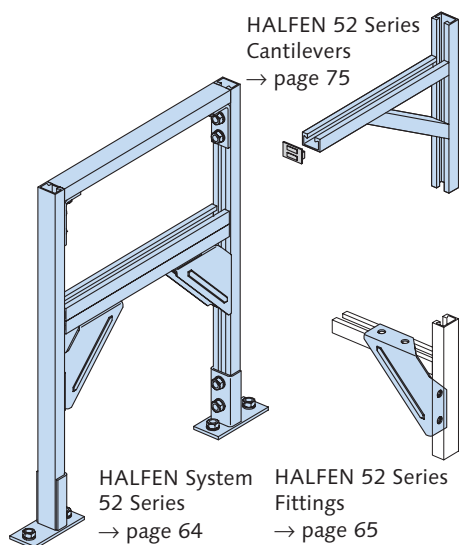
Length: **6070 mm**

Order example: **HM 52/34 - fv - 6070** or Stock no. **0280.190-00003**
① see note ③ on p. 55

Other channel data, design properties

Channel data	Max. tensile / transverse load	Max. load compression member
pages 54 - 55	page 58	page 59

Base channel for System 52 Series

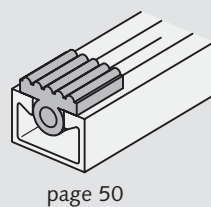


Subject to alterations

Channel-accessories

SDM 41/8

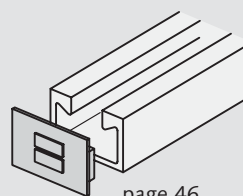
Sound attenuator



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HPE 52/34

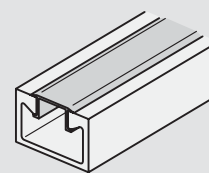
Channel end cap



page 46

PA - 22

Channel closer strip

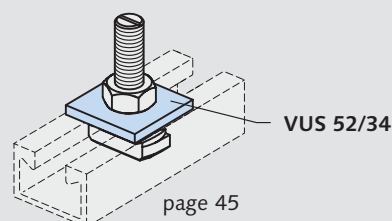


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Bolt-accessories

VUS 52/34

Washer for direct assembly



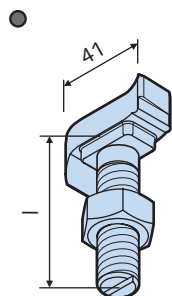
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HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channel 52/34

HS 50/30

Halfen T-head bolt
incl. nut



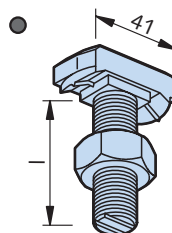
Length l [mm]	M10 Length l Mat.	M12 Length l Mat.	M16 Length l Mat.	M20 Length l Mat.	M12 Length l Mat.	M16 Length l Mat.	M20 Length l Mat.
30	30 gv 30 fv	30 gv	30 gv		30 A4-50	30 A4-50	
35				35 gv			
40	40 gv	40 gv 40 fv	40 gv 40 fv		40 A4-50	40 A4-50	
45				45 gv			45 A4-50
50	50 gv	50 gv	50 gv 50 fv		50 A4-50	50 A4-50	
55				55 gv 55 fv			55 A4-50
60		60 gv	60 gv			60 A4-50	
65				65 gv			
75				75 gv			75 A4-50
80		80 gv	80 gv			80 A4-50	
100		100 gv	100 gv 100 fv	100 gv 100 fv	100 A4-50		100 A4-50
125		125 gv	125 gv	125 gv			125 A4-50
150		150 gv	150 gv 150 fv	150 gv		150 A4-50	150 A4-50
200		200 gv	200 gv	200 gv			
300			300 gv	300 gv			

Order example: HS 50/30 - M 16 x 50 - gv

Calculation of
bolt length $l_{requ.}$
→ p. 9

HSR 50/30

Halfen T-head bolt
with nibs
incl. nut



Length l [mm]	M16 Length l Mat.	M20 Length l Mat.
40	40 fv 8.8	
45		45 gv 8.8
60	60 gv 8.8	60 gv 8.8
75		75 gv 8.8

Material / finish Halfen T-head bolts (→ p. 53):

fv = h.d. galvanised, strength grade 4.6

gv = electroplated, strength grade 4.6

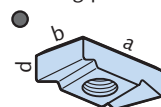
fv 8.8 = h.d. galvanised, strength grade 8.8

gv 8.8 = electroplated, strength grade 8.8

A4-50 = Stainless steel grade A4-50

GWP 50/30

Locking plates



gv Thread	A4 Thread	a [mm]	b [mm]	d [mm]
M 8	M 8	43,5	21	12
M 10	M 10	43,5	21	12
M 12	M 12	43,5	21	12
M 16	M 16	43,5	21	12

Order example: GWP 50/30 - M 12 - gv

perm. load	Thread	loading capacity [kN]
	M 8	4,0
	M 10	6,4
	M 12	9,3
	M 16	9,3

Halfen T-head bolts - load capacities ①

Thread Ø	for mild steel channels						for stainless steel channels		
	Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt				Max. pull out per T-head bolt	Max. longitudinal load per Halfen T-head bolt	
	Grade 4.6 [kN]	Grade 8.8 [kN]	Type HS, grade 4.6 [kN]	tightening torque [Nm]	Type HSR, grade 8.8 (v = 3) [kN]	tightening torque [Nm]	Grade A4 - 50 [kN]	Grade A4 - 50 [kN]	tightening torque [Nm]
M 10	6,4	13,3	0,3	15	—	—	6,4	0,3	15
M 12	9,3	19,4	0,5	25	—	—	9,3	0,5	25
M 16	17,3	36,1	0,9	60	5,0	200	17,3	0,9	60
M 20	27,0	56,4	1,4	120	7,5	400	27,0	1,4	120

① Note: Do not exceed channel load capacity! See also p. 54 - 59 (design properties).

● = Standard

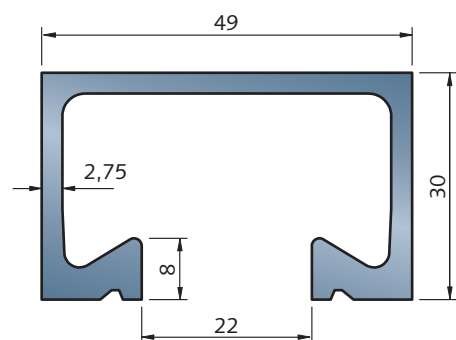
○ = To order

HALFEN FRAMING CHANNELS

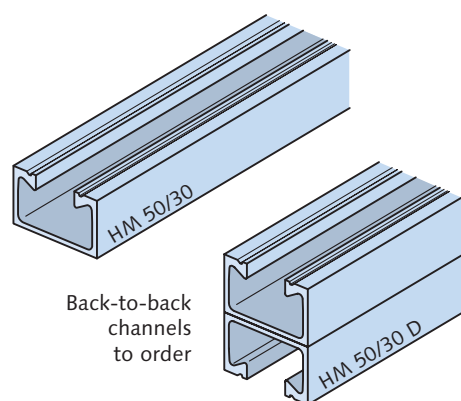
Channels 50/30 and 49/30

HM 50/30

hot rolled

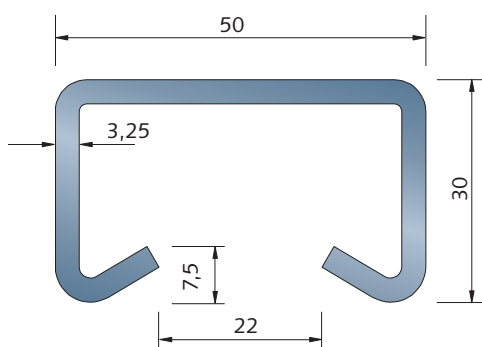


Nominal dimensions [mm]

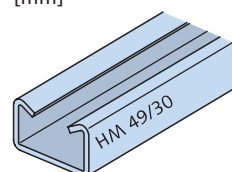


HM 49/30

cold rolled



Nominal dimensions [mm]



Subject to alterations

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52	0280. ...	To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] max F [kN] L [cm]	0,50 1,00 1,50 F [kN]
HM 50/30								
wb	200-00002	●	3,23	4,11	5,23 14,15	3,35 5,78	11,0 19,0	5,4 2,7 1,2
fv	200-00003	●						
A4	200-00001	●						
HM 49/30								
wb	220-00001	●	3,07	3,91	4,32 13,92	2,44 5,57	4,9 46	4,5 2,3 1,0
fv	220-00002	●						
A2	220-00003	●						
A4	220-00004	●						

Length: 6070 mm

Order example: HM 50/30 - fv - 6070

or Stock no.

0280.200-00003

② Material: Stainless steel W 1.4547,
Material order code HCR, on request.

① see note ③ on p. 55

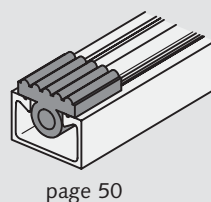
Other channel data, design properties

Channel data	Max. tensile / transverse load	Max. load compression member
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Channel-accessories

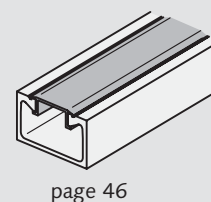
SDM 41/8

Sound attenuator



PA - 41

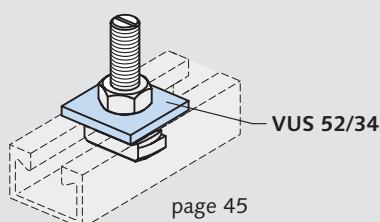
Channel closer strip



Bolt-accessories

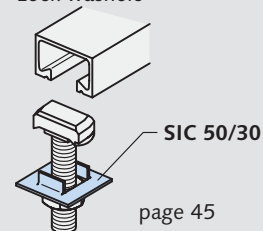
VUS 52/34

Washer for direct assembly



SIC 50/30

Lock washers

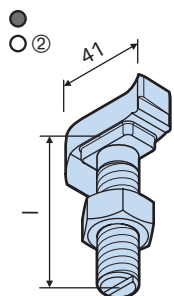


HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channels 50/30 (hot rolled) and 49/30 (cold rolled)

HS 50/30

Halfen T-head bolt
incl. nut



Length l [mm]	M10 Length l Mat.	M12 Length l Mat.	M16 Length l Mat.	M20 Length l Mat.	M12 Length l Mat.	M16 Length l Mat.	M20 Length l Mat.
30	30 gv 30 fv	30 gv	30 gv		30 A4-50	30 A4-50	
35				35 gv			
40	40 gv	40 gv 40 fv	40 gv 40 fv		40 A4-50	40 A4-50	
45				45 gv			45 A4-50
50	50 gv	50 gv	50 gv 50 fv		50 A4-50	50 A4-50	
55				55 gv 55 fv			55 A4-50
60		60 gv	60 gv			60 A4-50	
65				65 gv			
75				75 gv			75 A4-50
80		80 gv	80 gv			80 A4-50	
100		100 gv	100 gv 100 fv	100 gv 100 fv	100 A4-50		100 A4-50
125		125 gv	125 gv	125 gv			125 A4-50
150		150 gv	150 gv 150 fv	150 gv		150 A4-50	150 A4-50
200		200 gv	200 gv	200 gv			
300			300 gv	300 gv			

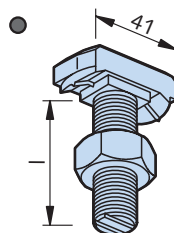
Order example: HS 50/30 - M 16 x 50 - gv

② High corrosion resistant Stainless steel T-head bolts
HS 50/30, material order code HCR, on request.

Calculation of
bolt length $l_{requ.}$
→ p. 9

HSR 50/30

Halfen T-head bolt
with nibs
incl. nut



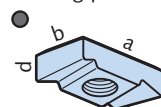
Length l [mm]	M16 Length l Mat.	M20 Length l Mat.
40	40 fv 8.8	
45		45 gv 8.8
60	60 gv 8.8	60 gv 8.8
75		75 gv 8.8

Material / finish Halfen T-head bolts (→ p. 53):

fv = h.d. galvanised, strength grade 4.6
gv = electroplated, strength grade 4.6
fv 8.8 = h.d. galvanised, strength grade 8.8
gv 8.8 = electroplated, strength grade 8.8
A4-50 = Stainless steel grade A4-50

GWP 50/30

Locking plates



gv Thread	A4 Thread	a [mm]	b [mm]	d [mm]
M 8	M 8	43,5	21	12
M 10	M 10	43,5	21	12
M 12	M 12	43,5	21	12
M 16	M 16	43,5	21	12

Order example: GWP 50/30 - M 12 - gv

perm. load	Thread	loading capacity [kN]
	M 8	4,0
	M 10	6,4
	M 12	9,3
	M 16	9,3

Halfen T-head bolts - load capacities ①

Thread Ø	for mild steel channels						for stainless steel channels		
	Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt				Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt
	Grade 4.6 [kN]	Grade 8.8 [kN]	Type HS, grade 4.6 [kN]	tightening torque [Nm]	Type HSR, grade 8.8 (v = 3) [kN]	tightening torque [Nm]	Grade A4 - 50 [kN]	Grade A4 - 50 [kN]	tightening torque [Nm]
M 10	6,4	13,3	0,3	15	—	—	6,4	0,3	15
M 12	9,3	19,4	0,5	25	—	—	9,3	0,5	25
M 16	17,3	36,1	0,9	60	5,0	200	17,3	0,9	60
M 20	27,0	56,4	1,4	120	7,5	400	27,0	1,4	120

① Note: Do not exceed channel load capacity! See also p. 54 - 59 (design properties).

● = Standard

○ = To order

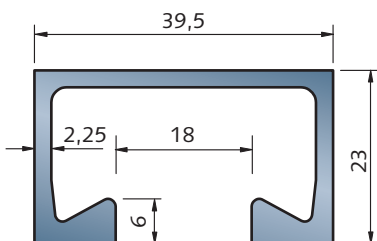
HALFEN FRAMING CHANNELS

Channels 40/22, 40/25 and 422

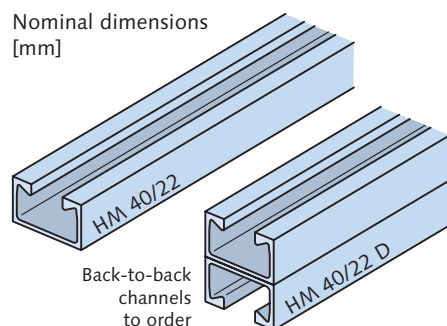
1 Framing Channels, Bolts

HM 40/22

hot rolled



Nominal dimensions [mm]

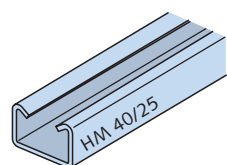
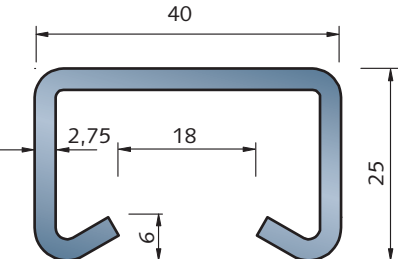


2 Accessories

3 Design Properties

HM 40/25

cold rolled

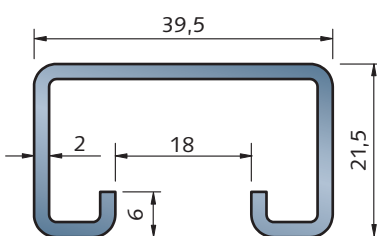


4 Support Structures

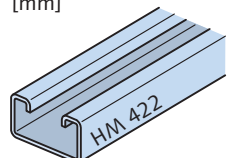
5 Cantilevers

HM 422 (C 40)

cold rolled



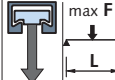
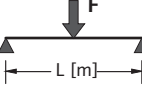
Nominal dimensions [mm]



Subject to alterations

6 Pipe Clamps, Pipe Supports

7 Notes, Work aid

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading		Bending capacity at span L		
		To order =											
for explan. see p. 52	0280. . .		G [kg/m]	A [cm ²]	I _y [cm ⁴]	I _z [cm ⁴]	W _y [cm ³]	W _z [cm ³]	max F ① [kN]	max F ≤L [cm]	0,50	1,00	1,50
HM 40/22													
wb	210-00002	●											
fv	210-00003	●	2,12	2,70	2,02	5,85	1,65	2,96	5,7	21,0	2,7	1,1	0,5
A4	210-00001	●											
HM 40/25													
wb	230-00001	●											
fv	230-00002	●	2,08	2,66	2,01	6,06	1,36	3,03	3,8	33,0	2,5	1,0	0,4
A2	230-00003	●											
A4	230-00004	●											

Length: 6070 mm

Order example: HM 40/22 - fv - 6070

or Stock no. 0280.210-00003

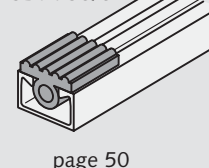
① see note ③ on p. 55

Other channel data, design properties

Channel data	Max. tensile / transverse load	Max. load compression member
pages 54 - 55	page 58	page 59

Channel-accessories

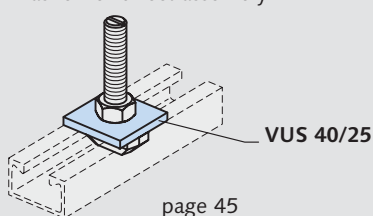
Sound attenuator
SDM 36/6



page 50

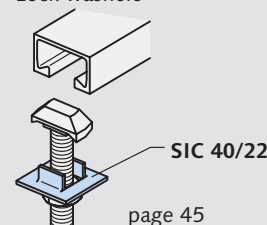
Bolt-accessories

VUS 40/25
Washer for direct assembly



page 45

SIC 40/22
Lock washers



page 45

The cold rolled profile HM 422 is intended to be used for pre-dominantly static loads. For dynamic load the profile HM 40/22 is to be used.

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading	Bending capacity at span L			
		To order =											
for explan. see p. 52	0280. ...		G [kg/m]	A [cm ²]	I _y [cm ⁴]	I _z [cm ⁴]	W _y [cm ³]	W _z [cm ³]	 max F ① ≤L [cm]	0,50	1,00	1,50	
HM 422													
wb	110-00001		1,55	1,98	1,27	4,29	1,04	2,17	2,5	36,0	1,8	0,8	0,3
fv	110-00002												

Length: 6000 mm

Order example: HM 422 - fv - 6000

or Stock no. 0280.110-00002

① see note ③ on p. 55

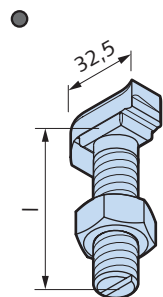
Further design properties: pages 54 - 59; Channel accessories: same as HM 40/22 (see above)

HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channels 40/22 and 422

HS 40/22

Halfen T-head bolt
incl. nut



Li = Left hand thread

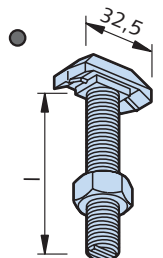
Length l [mm]	M 10 Length l Mat.	M 12 Length l Mat.	M 16 Length l Mat.	M 10 Length l Mat.	M 12 Length l Mat.	M 16 Length l Mat.
20	20 gv	20 gv				
30	30 gv	30 gv 30 fv	30 gv	30 A4-50	30 A4-50	30 A4-50
40	40 gv	40 gv	40 gv	40 A4-50	40 A4-50	40 A4-50
50	50 gv	50 gv 50 fv	50 gv 50 fv	50 A4-50	50 A4-50	50 A4-50
50 Li						50Li A4-50
60	60 gv	60 gv	60 gv			60 A4-50
80	80 gv	80 gv	80 gv		80 A4-50	80 A4-50
80 Li					80Li A4-50	80Li A4-50
100	100 gv	100 gv	100 gv 100 fv		100 A4-50	100 A4-50
125		125 gv	125 gv			
150		150 gv	150 gv		150 A4-50	150 A4-50
200		200 gv	200 gv			200 A4-50
250			250 gv			
300			300 gv			

Order code: HS 40/22 - M 12 x 50 - gv

Calculation of
bolt length $l_{requ.}$
→ p. 9

HSR 40/22

Halfen T-head bolt
with nibs
incl. nut



Length l [mm]	M 16 Length l Mat.
40	40 gv 8.8
60	60 gv 8.8

Order code:

HSR 40/22 - M 16 x 60 - gv 8.8

Material/finish Halfen T-head bolts (→ p. 53):

fv = h.d. galvanised, strength grade 4.6

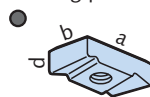
gv = electroplated, strength grade 4.6

gv 8.8 = h.d. galvanised, strength grade 8.8

A4-50 = Stainless steel grade A4-50

GWP 40/22

Locking plates



gv Thread	A4 Thread	a [mm]	b [mm]	d [mm]
M 6		35	17	10
M 8	M 8	35	17	10
M 10	M 10	35	17	10
M 12	M 12	35	17	11,5

Order code: GWP 40/22 - M 10 - gv

perm. load	Thread	loading capacity [kN]
	M 6	2,2
	M 8	4,0
	M 10	6,4
	M 12	9,3

Halfen T-head bolts - load capacities ①

Halphen T-head bolts - load capacities ①	for mild steel channels						for stainless steel channels				
	Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt				Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt		
	grade 4.6 [kN]	grade 8.8 [kN]	Typ HS, grade 4.6 tightening torque [Nm]	Typ HS, grade 8.8 tightening torque [Nm]	Typ HSR, grade 8.8 (v = 3) [kN]	Typ HSR, grade 8.8 tightening torque [Nm]	grade A4 - 50 [kN]	grade A4 - 50 [kN]	tightening torque [Nm]		
	Thread Ø										
M 10	6,4	13,3	0,3	15	1,1	48	—	—	6,4	0,3	15
M 12	9,3	19,4	0,6	25	1,6	70	—	—	9,3	0,6	25
M 16	17,3	36,1	0,9	60	3,0	200	5,0	200	17,3	0,9	60

① Note: Do not exceed channel load capacity! See also p. 54 - 59 (design properties).

● = Standard

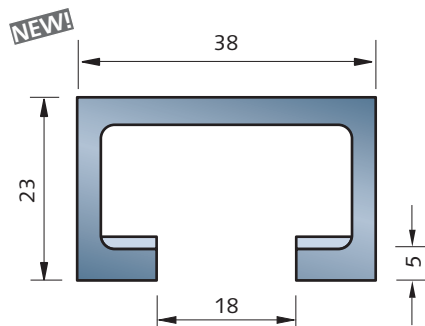
○ = To order

HALFEN FRAMING CHANNELS

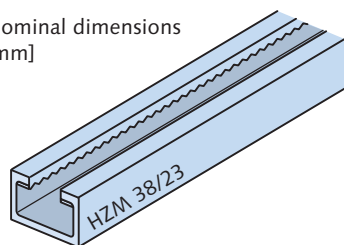
Channels HZM 38/23 and 29/20

HZM 38/23

toothed, hot rolled



Nominal dimensions [mm]



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52	0284. ...	To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] ① ≤L [cm]	0,50 1,00 1,50 F [kN]
HZM 38/23			2,42	3,09	2,11 6,17	1,59 3,25	12,0 20	4,1 1,4 0,6
wb	060-00001	●						
fv	060-00003	●						

Length: 6070 mm

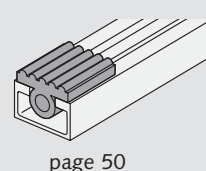
Order example: HZM 38/23 - fv - 6070 or Stock no. 0284.060-00003
① see note ③ on p. 55

Other channel data, design properties

Channel data	Max. tensile / transverse load	Max. longitud. tensile load	Toothing
pages 54 - 55	page 58	page 58	

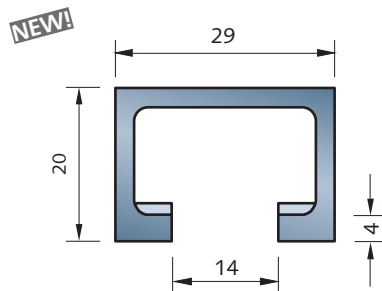
Channel-accessories

SDM 36/6
Sound attenuator

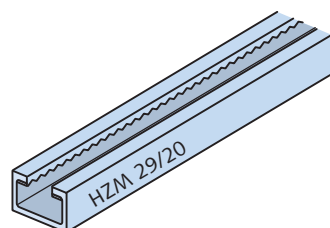


HZM 29/20

toothed, hot rolled



Nominal dimensions [mm]



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52	0284. ...	To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] ① ≤L [cm]	0,50 1,00 1,50 F [kN]
HZM 29/20			1,51	1,98	1,02 2,42	0,91 1,67	8,0 15	2,3 0,6 0,3
wb	050-00001	●						
fv	050-00003	●						

Length: 6070 mm

Order example: HZM 29/20 - fv - 6070 or Stock no. 0284.050-00003
① see note ③ on p. 55

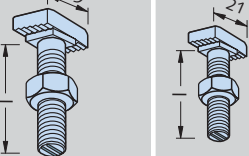
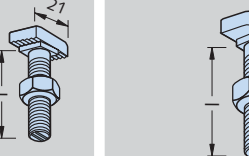
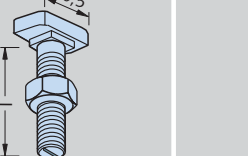
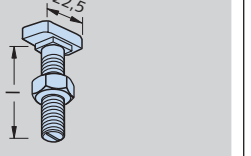
Other channel data, design properties

Channel data	Max. tensile / transverse load	Max. longitud. tensile load	Toothing
pages 54 - 55	page 58	page 58	

Subject to alterations

HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channels HZM 38/23 and 29/20

Toothed bolts incl. nut load in all directions				Hammer-head bolts incl. nut Load vertical to longitudinal direction								position marking at shank end of Halfen bolts:					
for Channel 38/23				for Ch. 29/20				for Channel 38/23				for Channel 29/20				2 notches = Type HZS, toothed 1 notch = Typ HS, smooth	
																	
Length l [mm]	HZS 38/23		HZS 29/20		HS 38/17 ①		HS 38/23		HS 28/15		HS 29/20						
	M 12	M 16	M 12		M 10	M 12	M 16		M 6	M 8	M 10	M 12					
																	
Material	Material	Material	Material		Material	Material	Material	Material	Material	Material	Material	Material					
30	gv8.8	gv8.8	gv8.8		gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6				
40	gv8.8	gv8.8	gv8.8		gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6				
50	gv8.8	gv8.8	gv8.8		gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6				
60	gv8.8	gv8.8	gv8.8		gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6	gv4.6				
80	gv8.8	gv8.8	gv8.8		gv4.6	gv4.6	gv4.6			gv4.6	gv4.6	gv4.6	gv4.6				
100	gv8.8	gv8.8	gv8.8		gv4.6	gv4.6	gv4.6			gv4.6	gv4.6	gv4.6	gv4.6				
125	gv8.8	gv8.8	gv8.8			gv4.6	gv4.6			gv4.6	gv4.6	gv4.6	gv4.6				
150	gv8.8	gv8.8	gv8.8			gv4.6	gv4.6				gv4.6	gv4.6	gv4.6				
200	gv8.8	gv8.8	gv8.8				gv4.6					gv4.6					
250			gv8.8														
300	gv8.8	gv8.8	gv8.8														



























load ranges

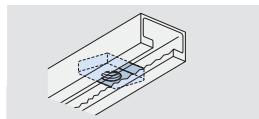


approved for
dynamic loads

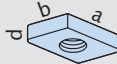
Note: **gv8.8** resp. **gv4.6** = galvanic special coating for particularly long-lasting corrosion protection, allowed to make up for hot-dip galvanised (cp. approval. DIBt Z-41.2-1691 Halfen Channels, Att. 7 Tab. 11); grade 8.8 resp. 4.6.

Calculation of
bolt length $l_{\text{requ.}}$
→ p. 9

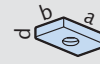
Locking plates GWP



for Channel 38/23 **GWP 38/17**
→ page 35 o. 37



for Channel 29/20 **GWP 28/15**
→ page 39 o. 41



Perm. load capacities for Halfen T-head bolts, requ. tightening torque, perm. bending moment

Halfen T-head bolts: HZS, grade 8.8				HS, grade 4.6 ④			
Thread	tightening torque [Nm]	Perm. F in all directions [kN]	Perm. bending moment per bolt ③ [Nm]	tightening torque [Nm]	Perm. tensile/transverse load [kN]	Perm. bending moment per bolt ③ [Nm]	requ. hole adjacent element [mm]
M 6				3	2,2	2,0	7
M 8				8	4,0	5,0	9
M 10				15	6,4	10,0	12
M 12	80	19,4 ⑤	43,7	25	9,3 ⑤	17,5	14
M 16	120	36,1 ⑤	111	60	17,3 ⑤	44,4	18

① fits to Channel 38/23
② fits to Channel 29/20
③ Referred to leading edge of channel resp. concrete. In case of bending with additional tensile load, calculate with superposition:

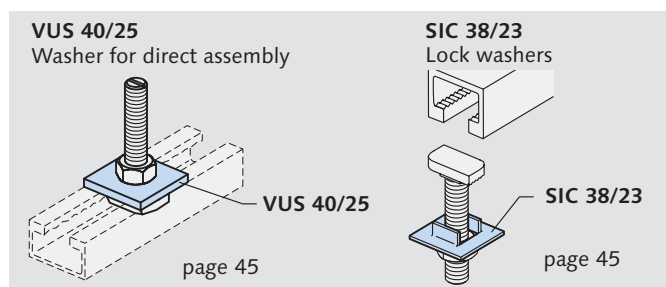
$$F \leq \text{perm.F} \cdot (1 - M/\text{perm.M})$$

perm. F = perm. tensile force
perm. M = perm. bending moment
F = existing tensile force
M = existing bending moment

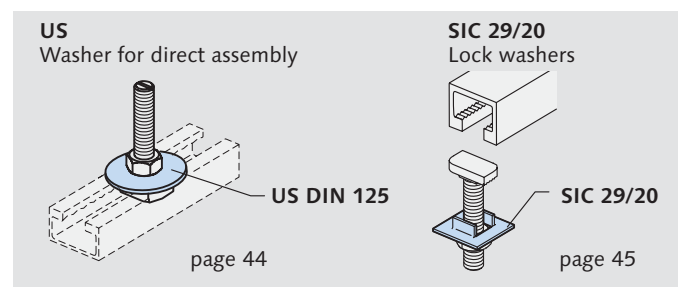
④ T-head bolts HS (= smooth) are **not** suitable to loading direction **F_x** (loads in longitudinal direction).

⑤ Do not exceed channel load capacity (→ pages 54 - 59).

Bolt-accessories for Channels HZM 38/23



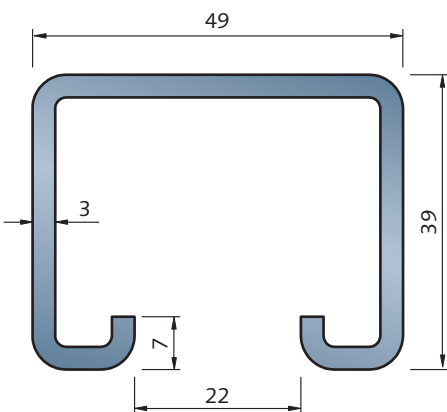
Bolt-accessories for Channels HZM 29/20



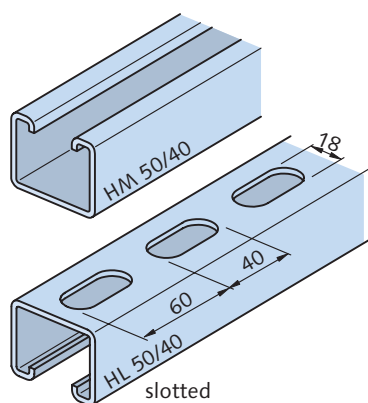
HALFEN FRAMING CHANNELS

Channels 50/40 and 486

HM bzw. HL 50/40 cold rolled



Nominal dimensions
[mm]



Cold rolled profiles are intended to be used for pre-dominantly static loads. For dynamic load hot-rolled profiles (pages 8 - 16) are to be used.

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] L [cm]	0,50 1,00 1,50 F [kN]
HM 50/40	0280. . .							
wb	090-00002	●	3,35	4,27	8,66 15,50	3,97 6,33	5,4 63,0	6,9 3,4 2,0
fv	090-00003	●						
A4	090-00001	●						
HL 50/40	0281. . .							
wb	100-00001	●	3,15	3,73	7,14 15,36	3,65 6,27	5,4 53,0	5,8 2,9 1,7
fv	100-00002	●						
A4	100-00003	●						

Length: **6000** mm

Order example: **HM 50/40 - A4 - 6000** or Stock no. **0281.090-00001**

① see note ③ on p. 55

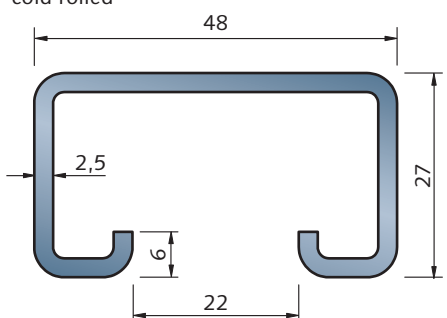
Other channel data, design properties

Channel data	Max. tensile / transverse load	Max. load compression member
pages 54 - 57	page 58	page 59

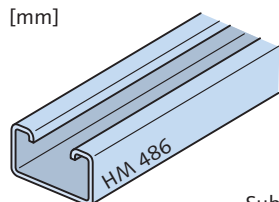
Channel-accessories

SDM 41/8 Sound attenuator	PA 41 Channel closer strip	HPE 50/40 Channel end cap
page 50	page 46	page 46

HM 486 cold rolled



Nominal dimensions
[mm]



Subject to alterations

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] L [cm]	0,50 1,00 1,50 F [kN]
HM 468	0280. . .							
wb	100-00001	●	2,31	2,95	2,97 9,62	1,92 4,01	3,5 47,0	3,3 1,6 0,7
fv	100-00002	●						

Length: **6000** mm

Order example: **HM 486 - fv - 6000** or Stock no. **0280.100-00002**

① see note ③ on p. 55

Other channel data, design properties

Channel data
pages 54 - 55

Channel-accessories

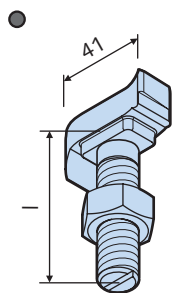
SDM 41/8 Sound attenuator	PA 41 Channel closer strip
page 50	page 46

HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channels 50/40 and 486

HS 50/30

Halfen T-head bolt
incl. nut



Li = left hand thread

Length l [mm]	M 10	M 12	M 16	M 20	M 12	M 16	M 20
	Length l Mat.	Length l Mat.	Length l Mat.	Length l Mat.	Length l Mat.	Length l Mat.	Length l Mat.
30	30 gv 30 fv	30 gv	30 gv		30 A4-50	30 A4-50	
35		35		35 gv			
40	40 gv	40 gv 40 fv	40 gv 40 fv		40 A4-50	40 A4-50	
45				45 gv			45 A4-50
50	50 gv	50 gv	50 gv 50 fv		50 A4-50	50 A4-50	
55				55 gv 55 fv			55 A4-50
60		60 gv	60 gv			60 A4-50	
65				65 gv			
75				75 gv			75 A4-50
80		80 gv	80 gv			80 A4-50	
100		100 gv	100 gv 100 fv	100 gv 100 fv	100 A4-50		100 A4-50
125		125 gv	125 gv	125 fv			125 A4-50
150		150 gv	150 gv 150 fv	150 gv		150 A4-50	150 A4-50
200		200 gv	200 gv	200 gv			
300		300 gv	300 gv	300 gv			

Order code: HS 50/30 - M 16 x 50 - gv

Material / finish Halfen T-head bolts (→ p. 53)

gv = electroplated, str. gr. 4.6

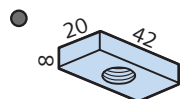
fv = h.d. galvanised, str. gr. 4.6

A4-50 = Stainless steel A4-50

Calculation of
bolt length $l_{\text{requ.}}$
→ p. 9

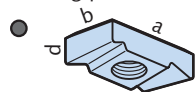
GWP 50/40

Locking plates



GWP 50/30

Locking plates



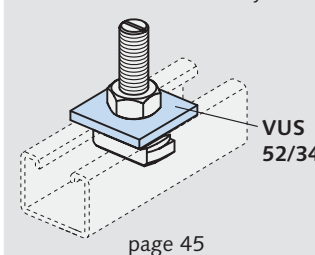
gv Thread	A4 Thread	loading capacity	
			Thread [kN]
M 6			M 6 2,2
M 8	M 8		M 8 4,0
M 10	M 10		M 10 6,4
M 12	M 12		M 12 6,4
M 16	M 16		M 16 6,4
Thread	Thread	a x b x d [mm]	Thread [kN]
M 8	M 8	43,5 x 21 x 12	M 8 4,0
M 10	M 10	43,5 x 21 x 12	M 10 6,4
M 12	M 12	43,5 x 21 x 12	M 12 9,3
M 16	M 16	43,5 x 21 x 12	M 16 9,3

Order code: GWP 50/40 - M 12 - gv

Bolt-accessories

VUS 52/34

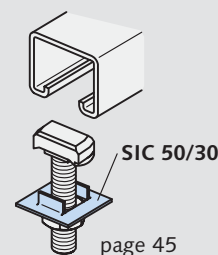
Washer for direct assembly



page 45

SIC 50/30

Lock washers



page 45

Halfen T-head bolts - load capa- cities ①

Thread Ø	for mild steel channels				for stainless steel channels		
	Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt		Max. pull out per T-head bolt	Max. longitudinal load per Halfen T-head bolt	
	grade 4.6 [kN]	grade 8.8 [kN]	Typ HS, grade 4.6 tightening torque [Nm]		grade A4 - 50 [kN]	grade A4 - 50 [kN]	tightening torque [Nm]
M 10	6,4	13,3	0,3	15	6,4	0,3	15
M 12	9,3	19,4	0,5	25	9,3	0,5	25
M 16	17,3	36,1	0,9	60	17,3	0,9	60
M 20	27,0	56,4	1,4	120	27,0	1,4	120

① Note: Do not exceed channel load capacity! See also p. 54 - 59 (design properties).

● = Standard

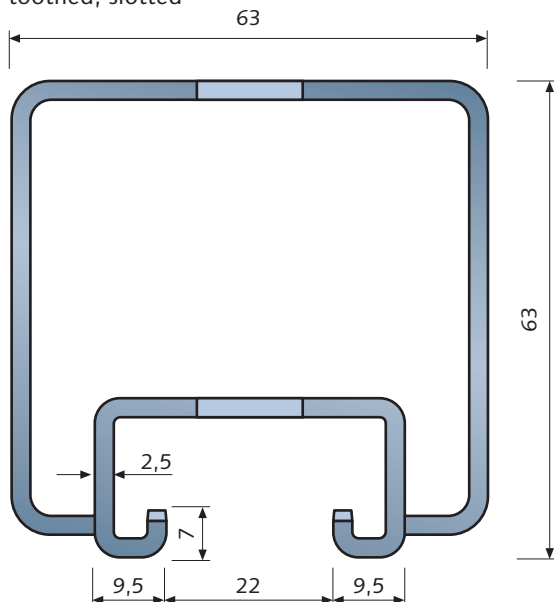
○ = To order

HALFEN FRAMING CHANNELS

Channel 63/63

Channel HZL 63/63

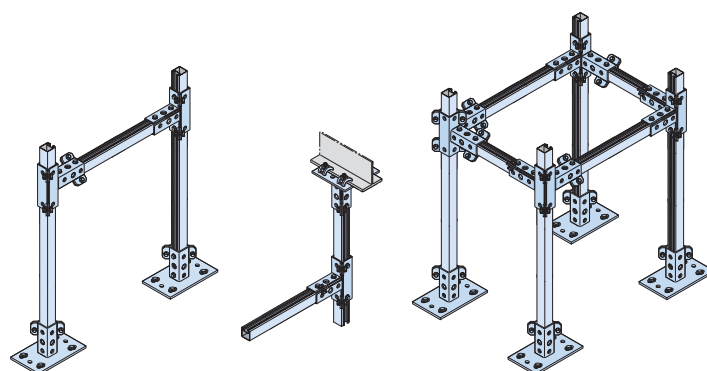
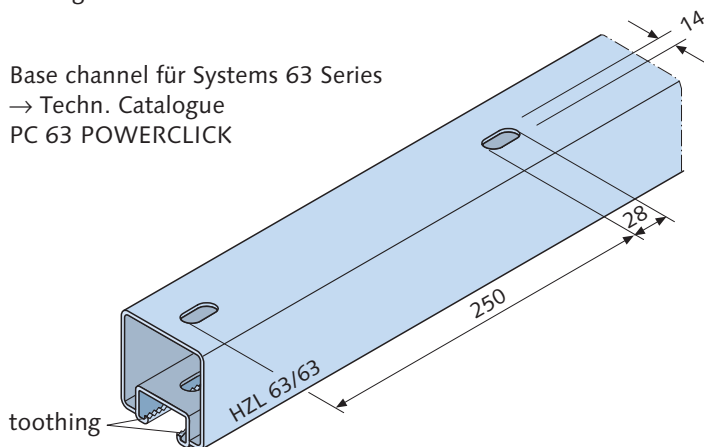
toothed, slotted



Nominal dimensions [mm]

Due to the toothed profile lips the channel is suitable for high loadings also in longitudinal direction.

Base channel für Systems 63 Series
→ Techn. Catalogue
PC 63 POWERCLICK



Product data

Material, finish	Stock no.	Standard	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52	0283. ...	●	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] ① ≤L [cm]	F [kN] L [m]
								0,50 1,00 1,50 F [kN] F [kN] F [kN]
HZL 63/63								
- toothed, slotted			6,35	7,09	33,07 42,95	10,06 13,63	5,6 134	16,2 8,3 5,5
fv ②	030-00001	●						
fv ③	030-00003	●						

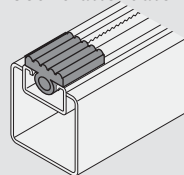
- ① see note ③ on p. 55
② Length: 3000 mm
③ Length: 6000 mm

Order example:
HZL 63/63 - fv - 3000
or Stock no.
0283.030-00001

Channel accessories

SDM 41/8

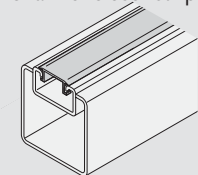
Sound attenuator



page 50

PA 41

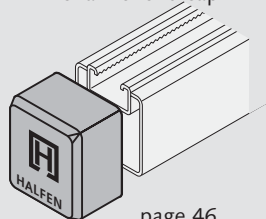
Channel closer strip



page 46

HPE 63/63

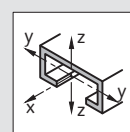
Channel end cap



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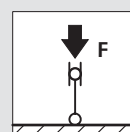
Other channel data, design properties

Channel data



pages 56 - 57

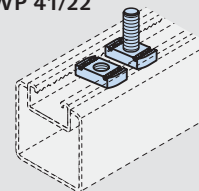
Max. load compression member



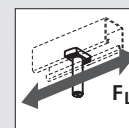
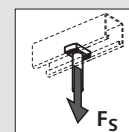
page 59

Locking plates, Halfen T-head bolts

HZS 41/22
GWP 41/22



page 31



Subject to alterations

HALFEN FRAMING SYSTEM ACCESSORIES

for Channel 63/63

3 Basic channels

Channel 63/63	
Channel 41/41	
Channel 41/22	

POWERCLICK bolt set pre-assembled in all fittings

All locking plates and bolts of System 41 fit to System 63 as well
→ page 31

GWP 41/41

GWP 41/41SN

HZS 41/41

Product range, technical details
→ see Techn. catalogue **PC 63 HALFEN POWERCLICK**

HALFEN POWERCLICK
ONE COMBINED SYSTEM for economical supports

- Heavy duty support system 63/63
- Medium duty support system 41/41
- Light duty support system 41/22

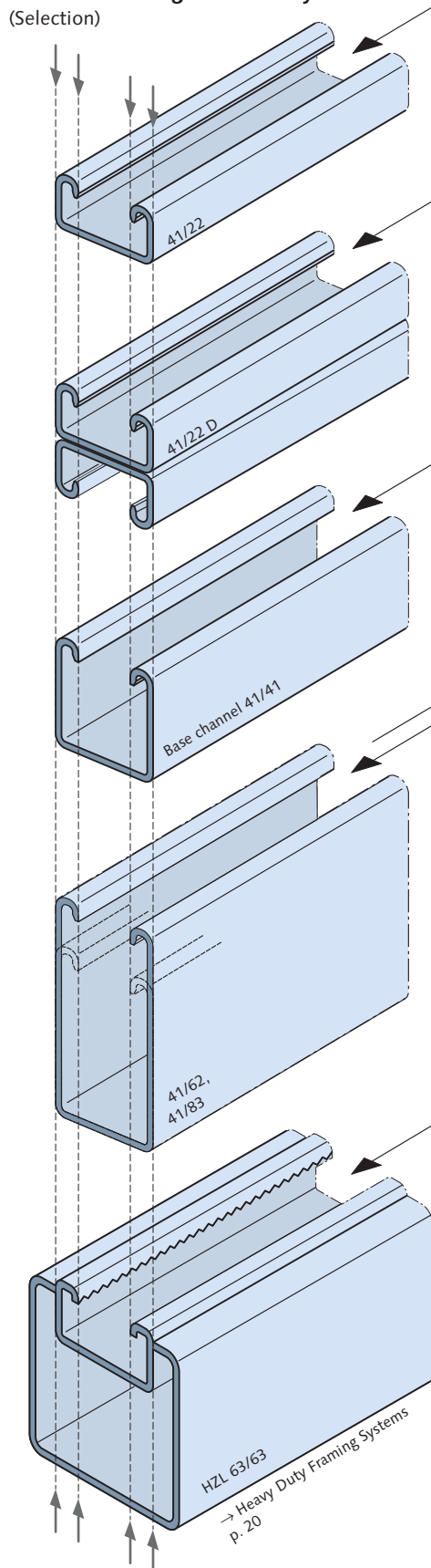
→ pages 66 - 69

Framing Channels, Bolts	1
Accessories	2
Design Properties	3
Support Structures	4
Cantilevers	5
Pipe Clamps, Pipe Supports	6
Notes, Work aid	7

HALFEN FRAMING CHANNELS AND ACCESSORIES

Medium Duty Framing Systems

HALFEN Framing Channels System 41 Series (Selection)



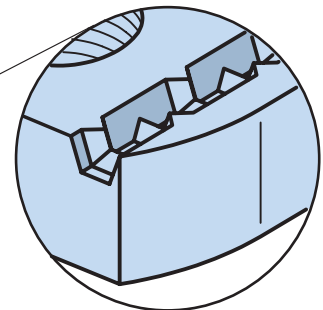
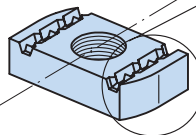
Product features

With its numerous connecting parts and identical-format channels this system is especially suitable for

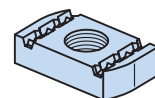
- **complete assemblies**
(→ HALFEN POWERCLICK Framing System)
- **low cost in-house stock-keeping**

One locking plate fits all System 41 HALFEN Channels - both standard or toothed.

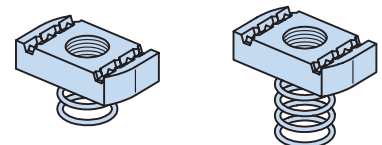
Locking plate
GWP 41/41



- Locking plate with 'bite'. The flame-hardened teeth bite into the channel lips.
- High longitudinal loading capacity.
- Corrosion protection remains intact even after assembly.
- Suitable for all bolts with metric standard thread.



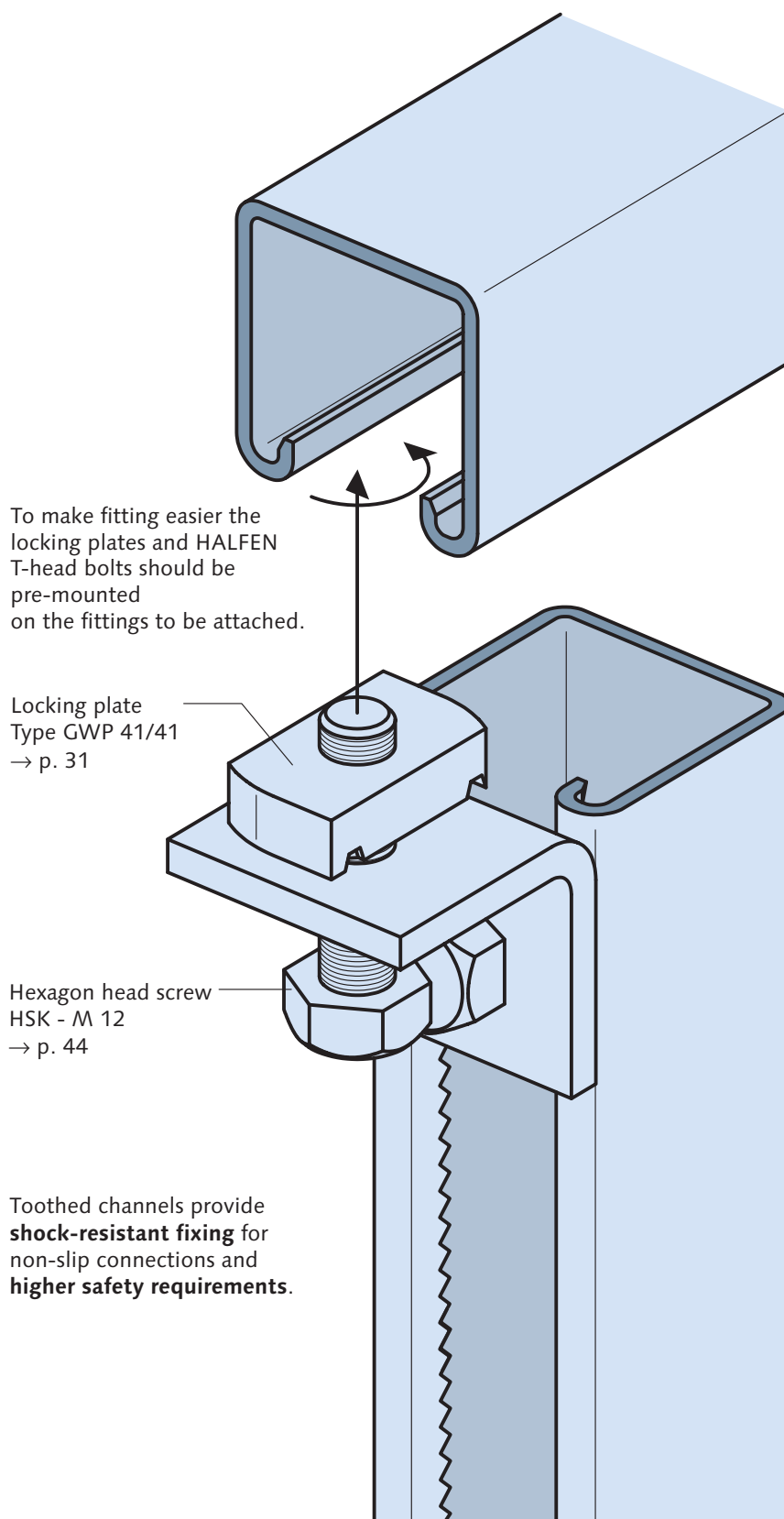
When fitting smaller components (e.g. HALFEN Fittings) it is recommended that pre-assembled springless locking plates are used (→ p. 31).



Locking plates **with springs** or HALFEN Bolts are best suited for all fixing situations, especially for larger structures.

HALFEN FRAMING CHANNELS AND ACCESSORIES

Medium Duty Framing Systems



Base channel 41/41

Material / finish:

wb = mill finish

fv = hot-dip galvanised,
zinc coating > 50 µm,

sv = pre-galvanised
zinc coating > 20 µm,

A4 = A4 stainless steel

(Material data → p. 52)

Associated framing systems:

- HALFEN Fittings → p. 67

- HALFEN POWERCLICK

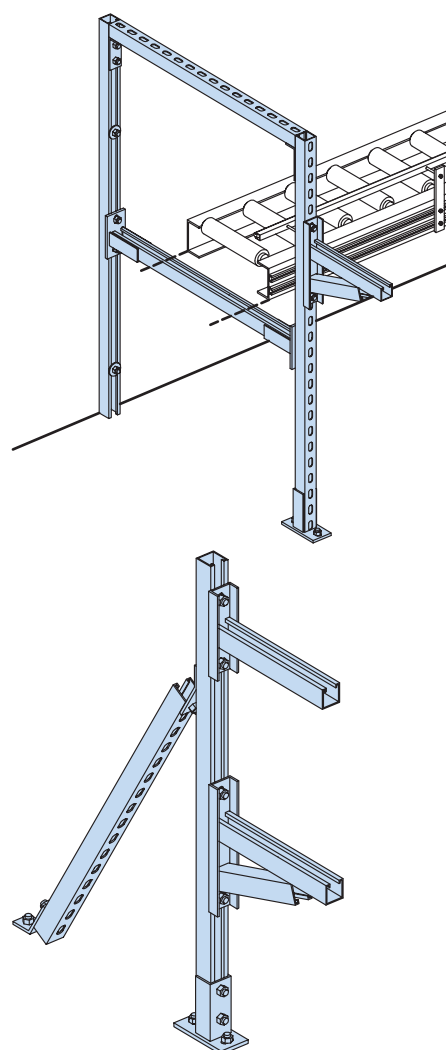
Framing System 41

(Techn. catalogue

HALFEN POWERCLICK

Framing System, → Notes p. 66)

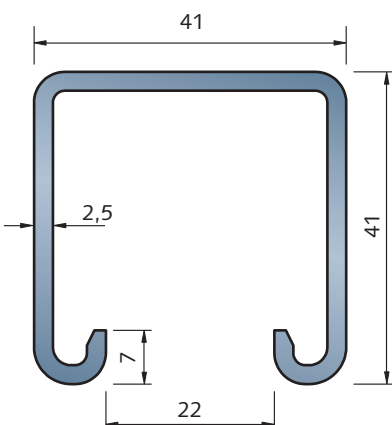
- HALFEN Cantilevers → p. 76



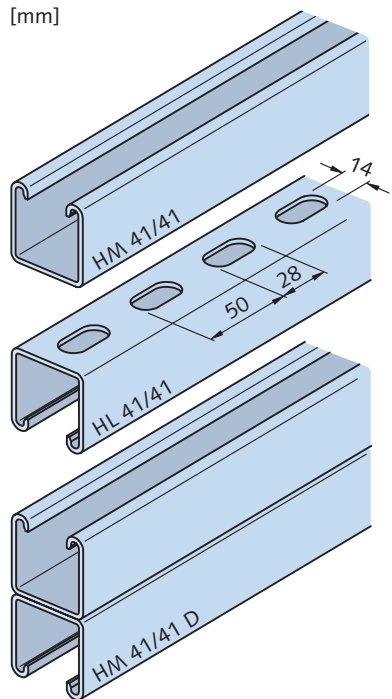
HALFEN FRAMING CHANNELS

Channel 41/41

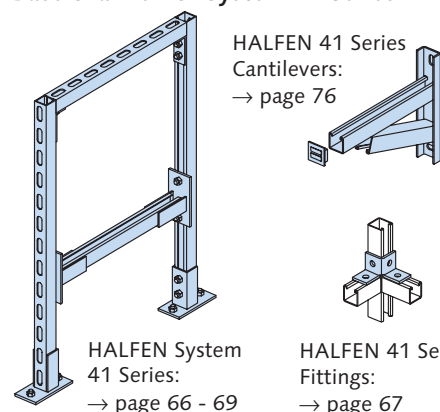
HM resp. HL 41/41



Nominal dimensions [mm]



Base channel for System 41 Series



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading		Bending capacity at span L		
					I_y	I_z	W_y	W_z	$\max F$	$\leq L$	0,50	1,00	1,50
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]	[cm ⁴]	[cm ⁴]	[cm ³]	[cm ³]	[kN]		F [kN]		
HM 41/41 0280. . .													
wb	080-00001	●	2,61	3,33	7,16	9,22	3,06	4,46	5,6	58,0	5,4	2,7	1,7
sv	080-00002	●											
fv	080-00003	●											
A4	080-00004	●											
HL 41/41 0281. . .													
wb	010-00001	●	2,46	2,98	6,07	9,16	2,84	4,43	5,6	42,0	4,7	2,3	1,4
sv	010-00003	●											
fv	010-00002	●											
A4	010-00004	●											
HM 41/41 D 0280. . .													
wb	150-00001	○	5,23	6,67	35,81	18,44	8,67	8,93	5,6	132,0	14,9	7,4	4,9
fv	150-00003	●											
A4	150-00002	○											

Length: 6000 mm

Order example: HL 41/41 - fv - 6000

or Stock no.

0281.010-00002

① see note ③ on p. 55

Note:

Toothed profiles 41/41

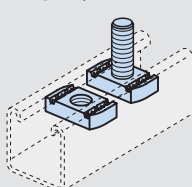
→ page 26

Other channel data, design properties

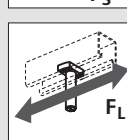
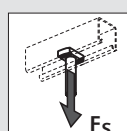
Channel data	Max. tensile / transverse load	Max. load compression member
pages 54 - 57	page 58	page 59

Locking plates, Halfen T-head bolts

GWP 41/41
HZS 41/41

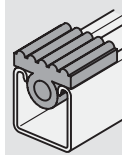


page 31



Channel-accessories

SDM 41/8
Sound attenuator



page 50

PA 41
Channel closer strip



page 46

HPE 41/41
Channel end cap

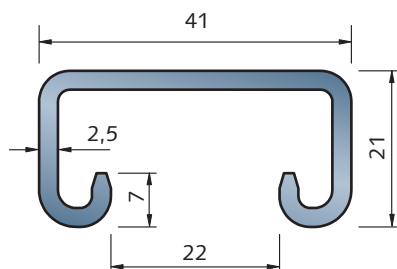


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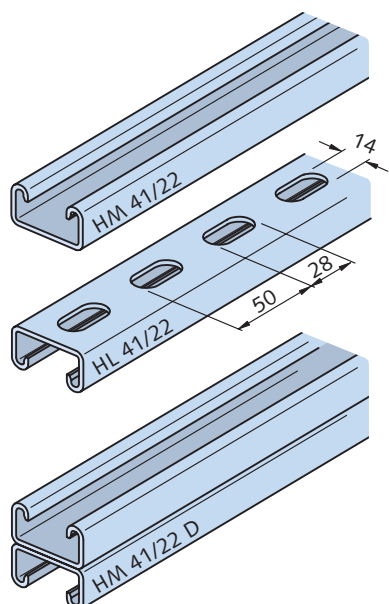
HALFEN FRAMING CHANNELS

Channel 41/22

HM resp. HL 41/22



Nominal dimensions [mm]



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] ① ≤L [cm]	0,50 1,00 1,50 F [kN]
HM 41/22 0280. . .								
wb	120-00001	●	1,80	2,30	1,19 5,32	0,97 2,58	5,6 15,0	1,8 0,6 0,2
sv	120-00002	●						
fv	120-00003	●						
A4	120-00004	●						
HL 41/22 0281. . .								
wb	020-00001	●	1,57	1,95	0,99 5,27	0,89 2,55	5,6 12,0	1,5 0,5 0,2
sv	020-00003	●						
fv	020-00002	●						
A4	020-00004	●						
HM 41/22D 0280. . .								
wb	160-00001	○	3,60	4,59	5,55 10,64	2,69 5,15	5,6 42,0	4,7 2,3 1,3
fv	160-00002	●						
A4	160-00003	○						

Length: 6000 mm

Order example: HL 41/22 - fv - 6000

or Stock no.

0281.020-00002

① see note ③ on p. 55

Note:

Toothed profile 41/22

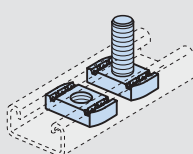
→ page 27

Other channel data, design properties

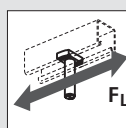
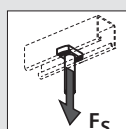
Channel data	Max. tensile / transverse load
pages 54 - 57	page 58

Locking plates, Halfen T-head bolts

GWP 41/41 and 41/22
HZS 41/41 and 41/22

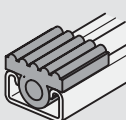


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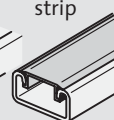
Channel-accessories

SDM 41/8
Sound attenuator



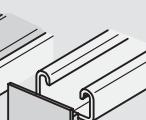
page 50

PA 41
Channel closer strip



page 46

HPE 41/22
Channel end cap



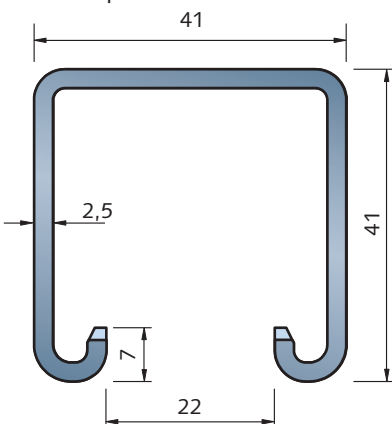
page 46

Subject to alterations

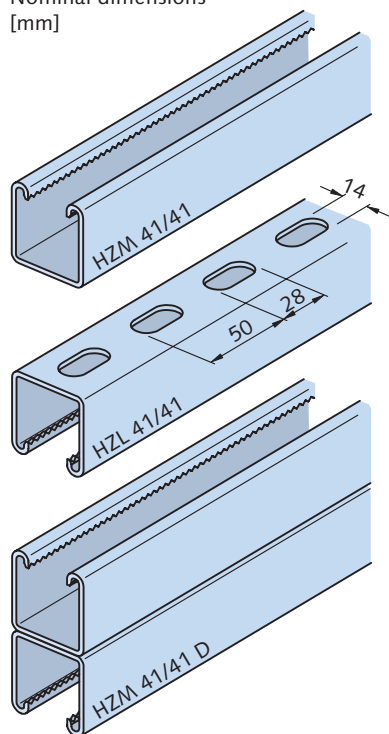
HALFEN FRAMING CHANNELS

Channel 41/41, toothed

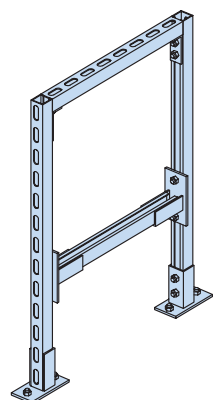
HZM resp. HZL 41/41 toothed



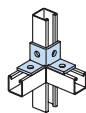
Nominal dimensions [mm]



Base channel for System 41 Series, toothed

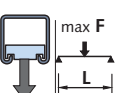
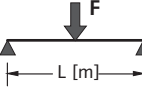


HALFEN POWERCLICK Framing System 41:
→ page 66 - 69



HALFEN 41 Series Fittings:
→ page 67

Due to positive locking the profile is especially suited when increased loading capacities in longitudinal direction are required, particularly in Stainless steel.

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading		Bending capacity at span L		
		To order =											
for explan. see p. 52			G [kg/m]	A [cm ²]	I _y [cm ⁴]	I _z [cm ⁴]	W _y [cm ³]	W _z [cm ³]	max F ① [kN]	max F ≤L [cm]	0,50	1,00	1,50
F [kN]													
HZM 41/41 0284. . .													
wb	010-00001	●	2,63	3,25	6,91	9,10	2,91	4,41	5,6	47,0	5,3	2,6	1,6
fv	010-00002	●											
A4	010-00003	●											
HZL 41/41 0283- . .													
wb	010-00001	●	2,46	2,90	5,87	9,04	2,69	4,38	5,6	41,0	4,6	2,3	1,4
fv	010-00002	●											
A4	010-00003	●											
HZM 41/41D 0284. . .													
wb	030-00001	○	5,11	6,51	33,74	18,38	8,16	8,90	5,6	126,0	13,8	7,0	4,7
fv	030-00002	○											
A4	030-00003	○											

Length: 6000 mm

Order example: HZM 41/41 - A4 - 6000 or Stock no.

0284.010-00003

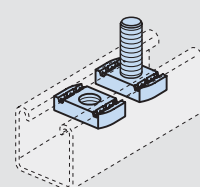
① see note ③ on p. 55

Other channel data, design properties

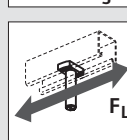
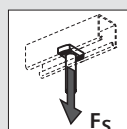
Channel data	Max. tensile / transverse load	Max. load compression member
pages 54 - 57	page 58	page 59

Locking plates, Halfen T-head bolts

GWP 41/41 and 41/22
HZS 41/41 and 41/22

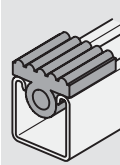


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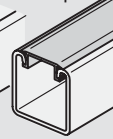
Channel-accessories

SDM 41/8
Sound attenuator



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PA 41
Channel closer strip



page 46

HPE 41/41
Channel end cap

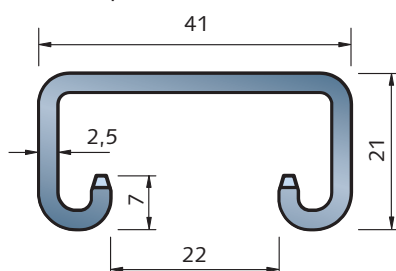


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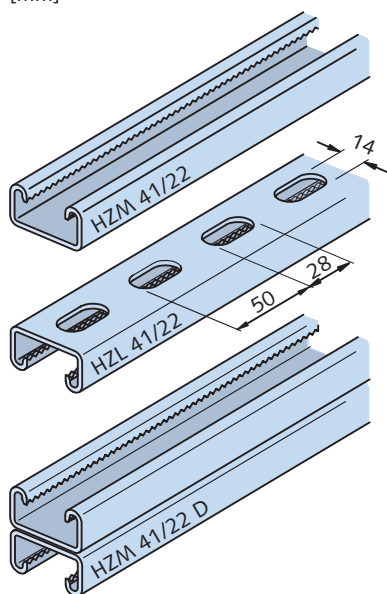
HALFEN FRAMING CHANNELS

Channel 41/22, toothed

HZM resp. HZL 41/22, toothed



Nominal dimensions
[mm]



Due to positive locking the profile is especially suited when increased loading capacities in longitudinal direction are required, particularly in Stainless steel.

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading		Bending capacity at span L		
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴]	I _z [cm ⁴]	W _y [cm ³]	W _z [cm ³]	max F [kN]	max F ≤ L [cm]	0,50	1,00	1,50
											F [kN]		
HZM 41/22 0284. . .													
	wb 020-00001	●											
	fv 020-00002	●	1,79	2,22	1,16	5,21	0,92	2,52	5,6	14,0	1,7	0,6	0,2
	A4 020-00003	●											
HZL 41/22 0283. . .													
	wb 020-00001	●											
	fv 020-00002	●	1,57	1,87	0,97	5,15	0,86	2,49	5,6	12,0	1,5	0,5	0,2
	A4 020-00003	●											
HZM 41/22D 0284. . .													
	wb 040-00001	○											
	fv 040-00002	●	3,58	4,66	5,64	11,00	2,68	5,33	5,6	42,0	4,6	2,3	1,3
	A4 040-00003	○											

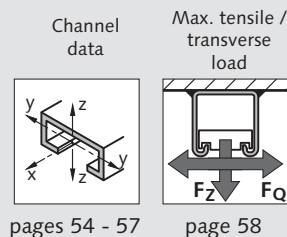
Length:

- HZM 41/22: 6070 mm
- HZL 41/22: 6000 mm
- HZM 41/22D: 6070 mm

Order example: **HZM 41/22 - A4 - 6070** or Stock no. **0284.020-00003**

① see note ③ on p. 55

Other channel data, design properties

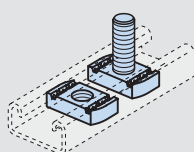


pages 54 - 57

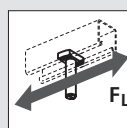
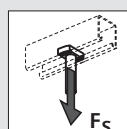
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Locking plates, Halfen T-head bolts

GWP 41/41 and 41/22
HZS 41/41 and 41/22

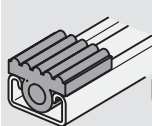


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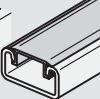
Channel-accessories

SDM 41/8
Sound
attenuator



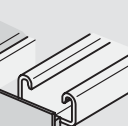
page 50

PA 41
Channel
closer
strip



page 46

HPE 41/22
Channel
end cap



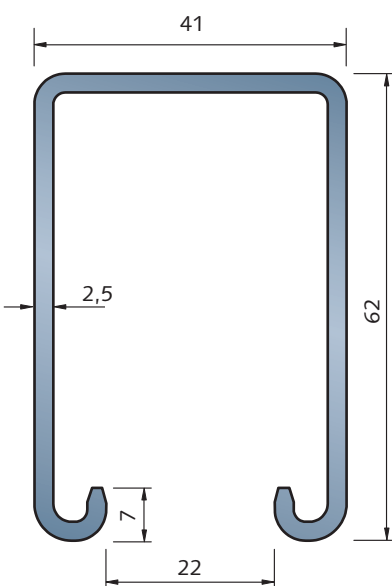
page 46

Subject to alterations

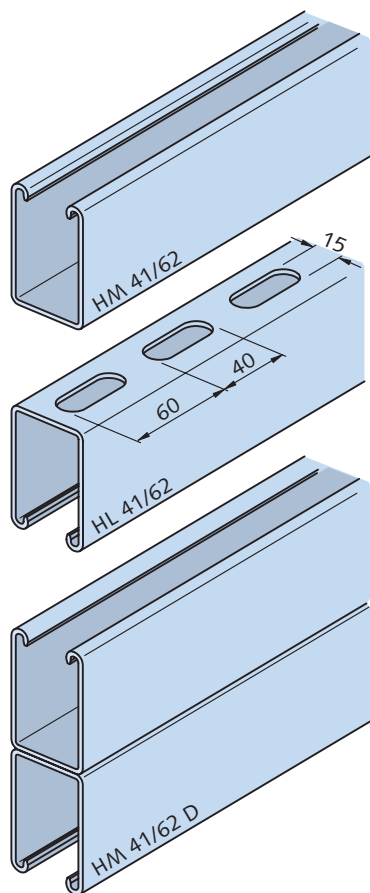
HALFEN FRAMING CHANNELS

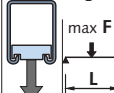
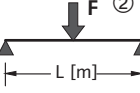
Channel 41/62

HM resp. HL 41/62



Nominal dimensions [mm]



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading		Bending capacity at span L		
		To order =											
for explan. see p. 52			G [kg/m]	A [cm²]	I _y [cm⁴]	I _z [cm⁴]	W _y [cm³]	W _z [cm³]	max F ① [kN]	≤L [cm]	1,00	2,00	3,00
F [kN]													
HM 41/62 0280. . .													
wb	140-00002	●	3,42	4,36	20,18	13,10	5,92	6,35	5,6	92,0	5,2	2,6	1,2
sv	140-00001	●											
fv	140-00003	●											
HL 41/62 0281. . .													
wb	040-00001	●	3,14	3,99	17,27	13,03	5,47	6,31	5,6	81,0	4,5	2,2	1,0
sv	040-00003	○											
fv	040-00002	●											
HM 41/62 D 0280. . .													
wb	170-00001	○	6,84	8,72	108,11	26,21	17,45	12,69	5,6	269,0	15,1	7,5	5,0
fv	170-00002	○											

Length: 6000 mm

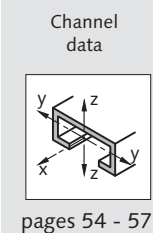
Order example: HM 41/62 - fv - 6000 or Stock no.

0280.140-00003

① see note ③ on p. 55

② Possible bulging, tilting and buckling must be prevented by appropriate measurements.

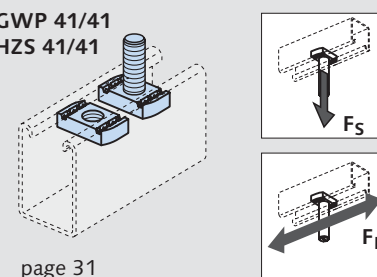
Other channel data, design properties



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Locking plates, Halfen T-head bolts

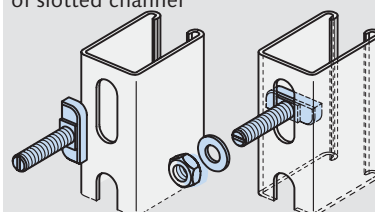
GWP 41/41
HZS 41/41



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Halfen T-head bolts HS 41/41

for mounting to the back of slotted channel

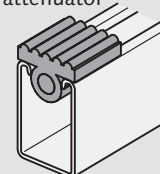


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Channel-accessories

SDM 41/8

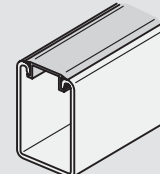
Sound attenuator



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PA 41

Channel closer strip



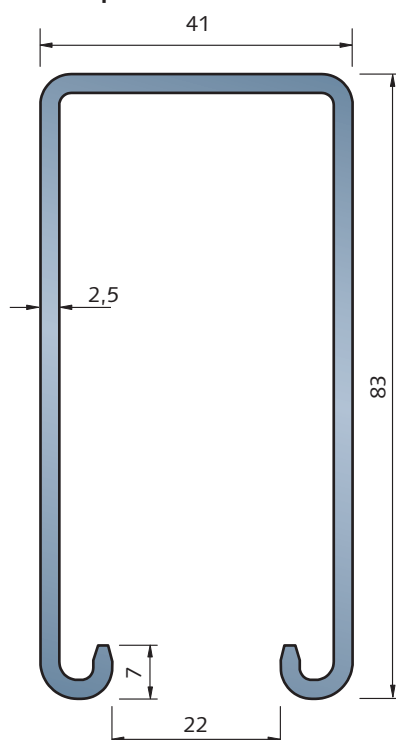
page 46

Subject to alterations

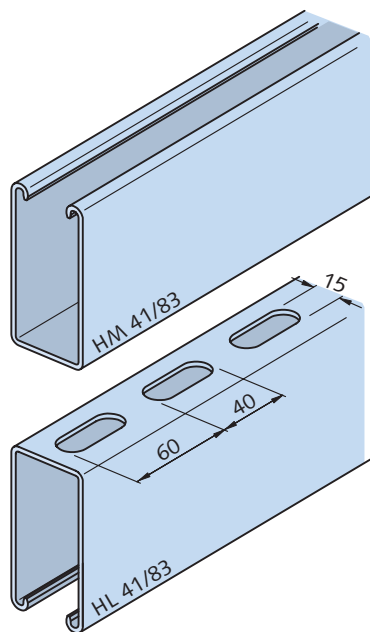
HALFEN FRAMING CHANNELS

Channel 41/83

HM resp. HL 41/83



Nominal dimensions
[mm]



Subject to alterations

Material, finish	Stock no.	Standard =  To order = 	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading		Bending capacity at span L			
														
for explan. see p. 52			G [kg/m]	A [cm²]	I _y [cm⁴]	I _z [cm⁴]	W _y [cm³]	W _z [cm³]	max F [kN] ①	max F [kN] ②	max F [kN] ③	max F [kN] ④		
												1,00	2,00	3,00
												F [kN]		
HM 41/83 0280. . .														
wb	130-00002		4,23	5,39	42,50	17,00	9,52	8,23	5,6	148,0	8,3	4,1	2,5	
sv	130-00001													
fv	130-00003													
HL 41/83 0281. . .														
wb	030-00001		3,93	5,02	37,07	16,93	8,85	8,20	5,6	133,0	7,5	3,7	2,2	
sv	030-00003													
fv	030-00002													

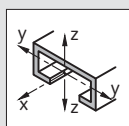
Length: **6000 mm** Order example: **HM 41/83 - fv - 6000** or Stock no. **0280.130-00003**

① see note ③ on p. 55

② Possible bulging, tilting and buckling must be prevented by appropriate measurements.

Other channel data, design properties

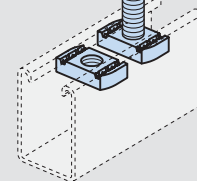
Channel
data



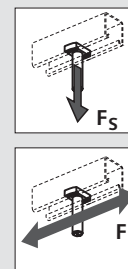
pages 54 - 57

Locking plates, Halfen T-head bolts

GWP 41/41
HZS 41/41

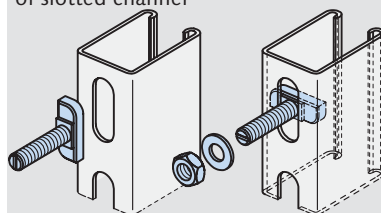


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Halfen T-head bolts HS 41/41

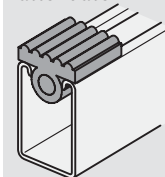
for mounting to the back
of slotted channel



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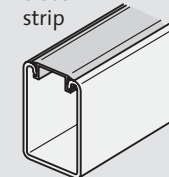
Channel-accessories

SDM 41/8
Sound
attenuator



page 50

PA 41
Channel
closer
strip



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Framing Channels, Bolts

1

Accessories

2

Design Properties

3

Support Structures

4

Cantilevers

5

Pipe Clamps, Pipe Supports

6

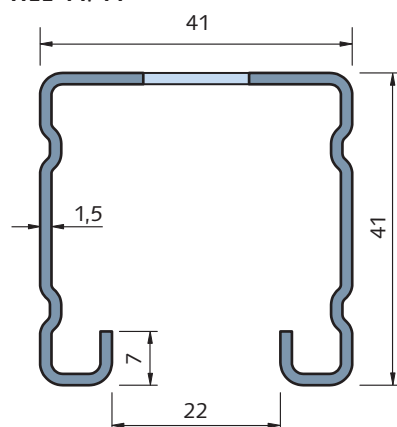
Notes, Work aid

7

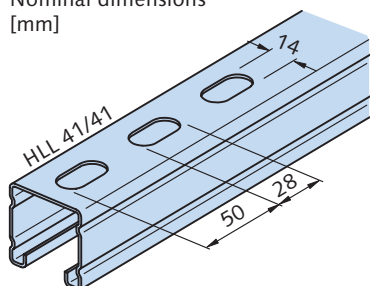
HALFEN FRAMING CHANNELS

Channels HLL 41/41 and 41/22

HLL 41/41



Nominal dimensions [mm]



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] max F [kN] L [m]	0,50 1,00 1,50 F [kN]
HLL 41/41	0282. ...		1,61	1,92	4,24 6,10	2,04 2,95	1,8 91,0	3,2 1,6 1,0
sv	010-00002							

Length: 6000 mm

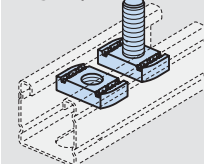
Order example: HLL 41/41 - sv - 6000

or Stock no. 0282.010-00002

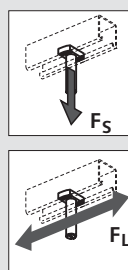
① see note ③ on p. 55

Locking plates, Halfen T-head bolts

GWP 41/41
HZS 41/41

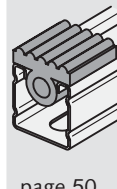


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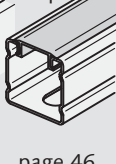
Channel-accessories

SDM 41/8
Sound attenuator



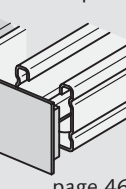
page 50

PA 41
Channel closer strip



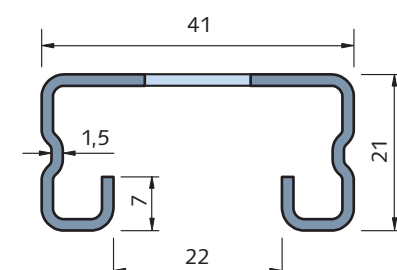
page 46

HPE 41/41
Channel end cap

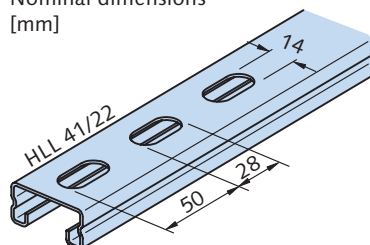


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HLL 41/22



Nominal dimensions [mm]



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] max F [kN] L [m]	0,50 1,00 1,50 F [kN]
HLL 41/22	0282. ...		1,14	1,33	0,75 3,67	0,71 1,78	1,8 31,0	1,1 0,4 0,2
sv	010-00003							

Length: 6000 mm

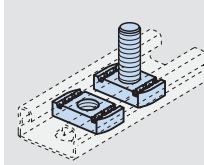
Order example: HLL 41/22 - sv - 6000

or Stock no. 0282.010-00003

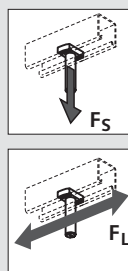
① see note ③ on p. 55

Locking plates, Halfen T-head bolts

GWP 41/41
HZS 41/41

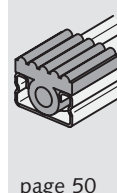


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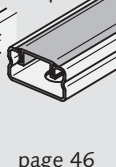
Channel-accessories

SDM 41/8
Sound attenuator



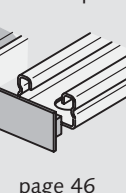
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PA 41
Channel closer strip



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HPE 41/22
Channel end cap

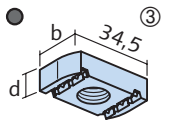
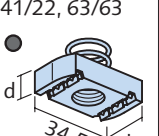
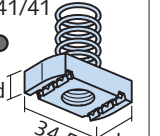
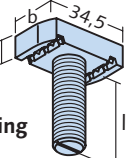
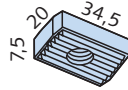
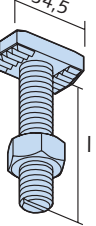


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Subject to alterations

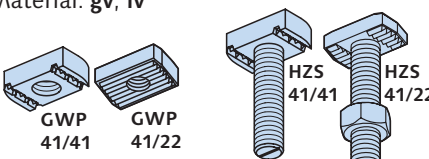
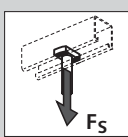
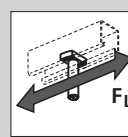
HALFEN T-HEAD BOLTS AND LOCKING PLATES

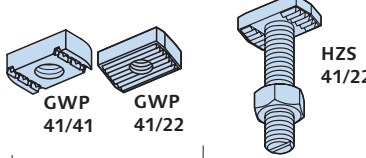
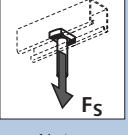
for Channels 41/22 to 41/83

GWP 41/41 for all Channels 41 and 63 Series 		GWP 41/41SN with short spring for Channels 41/22, 63/63 		GWP 41/41SH with long spring for Channels 41/41 		HZS 41/41 ● for all Channels 41 Series (order nut separately) (Note: Type HS 41/41 without toothing → p. 47) 		GWP 41/22 ● for toothed Chs. 41/22 and 41/41 		HZS 41/22 ● incl. nut, for toothed Channels 41/22 and 41/41 (Note: Type HS 41/41 without toothing → S. 47) 	
gv	A4	gv	gv	gv	gv	Dim.	Dim.	gv	A4	fv 8.8	A4
Thread	Thread	Thread	Thread	Thr. x l [mm]	Thr. x l [mm]	GWP and HZS 41/41	GWP and HZS 41/41	Thread	Thread	Thr. x l [mm]	Thr. x l [mm]
M 6	M 6	M 6	M 6	M 8 x 30	M 8 x 50	d / b [mm]	d / b [mm]	M 6	M 8	M 12 x 35	M 12 x 35
M 8	M 8	M 8	M 8	M 10 x 30	M 10 x 50	6/20	6/20	M 8	M 8	M 12 x 50	M 12 x 50
M 10	M 10	M 10	M 10	M 12 x 30	M 12 x 50	8/20	8/20	M 10	M 10		M 12 x 80
F M 12*	F M 12	F M 12		M 12 x 75	M 12 x 100	9/20	9/20	M 12	M 12		M 16 x 35
						9/20	9/20			M 16 x 50	M 16 x 50
M 12 ①			M 12			11/20	11/20			M 16 x 100	
M 16 ①	M 16 ① ②			M 16 x 63 ① ②	M 16 x 102 ① ②	12/30	12/30	M 16	M 16		

Perm. load capacities of Locking plates and Halfen T-head bolts System 41 Series

Calculation of bolt length $l_{req.}$ → p. 9

for mild steel channels Material: gv, fv					Max. pull out per Halfen T-head bolt Note: Do not exceed channel load capacity! for all channels 41 a. 63 Series		Max. longitudinal load per Halfen T-head bolt resp. locking plate Types GWP 41/41 (not for thread M16) and HZS 41/41		
									
	Locking plates		Halfen T-head bolts				for Channels	for Channels	at tightening torque
Thread	GWP 41/41 -SH, -SN	GWP 41/22	HZS 41/41	HZS 41/22	[kN]		HM/HL 41/22, 41/41, 41/62, 41/83	HZM/HZL 41/22, 41/41, 63/63	[Nm]
M 6	●	●	●	—	5,0		1,0	2,2	12
M 8	●	●	●	—	6,0		2,4	4,0	28
M 10	●	●	●	—	7,0		3,5	5,0	55
M 12	● ①				9,0 ①		5,0 ①	5,0 ①	75
F M 12	●	●	●	●	7,0		4,0	5,0	60
M 16	② ● ①	●	●	●	12,0 ①		7,5 ①	7,5 ①	125 ①

for Stainless Steel Channels Material: Stainless Steel A4					Max. pull out per Halfen T-head bolt Note: Do not exceed channel load capacity!		Max. longitudinal load per Halfen T-head bolt			
										
	Locking plates		Halfen T-head bolts				for Channels 41	at tightening torque	for Channels 41	at tightening torque
Thread	GWP 41/41	GWP 41/22	HZS 41/22		[kN]		HM/HL	[Nm] ③	HZM/HZL	[Nm] ③
M 6	●	●	—		5,0		0,3	6,5	2,2	6,5
M 8	●	●	—		6,0		0,6	16,0	4,0	16,0
M 10	●	●	—		7,0		1,2	31,5	5,0	31,5
F M 12	●	●	●		7,0		1,7	55,0 (50)	5,0	55,0 (50)
M 16	② ● ①	●	●		12,0 ①		4,0	125,0 (80)	5,0 ①	125,0 (80)

F = plain form, fits to all Channels 41 Series ① Does not fit to Channel 41/22

③ Values in brackets for Types GWP 41/22 and HZS 41/22

② Insert dimension M16 (b = 30mm) from channel end

④ d = 6 mm at material A4

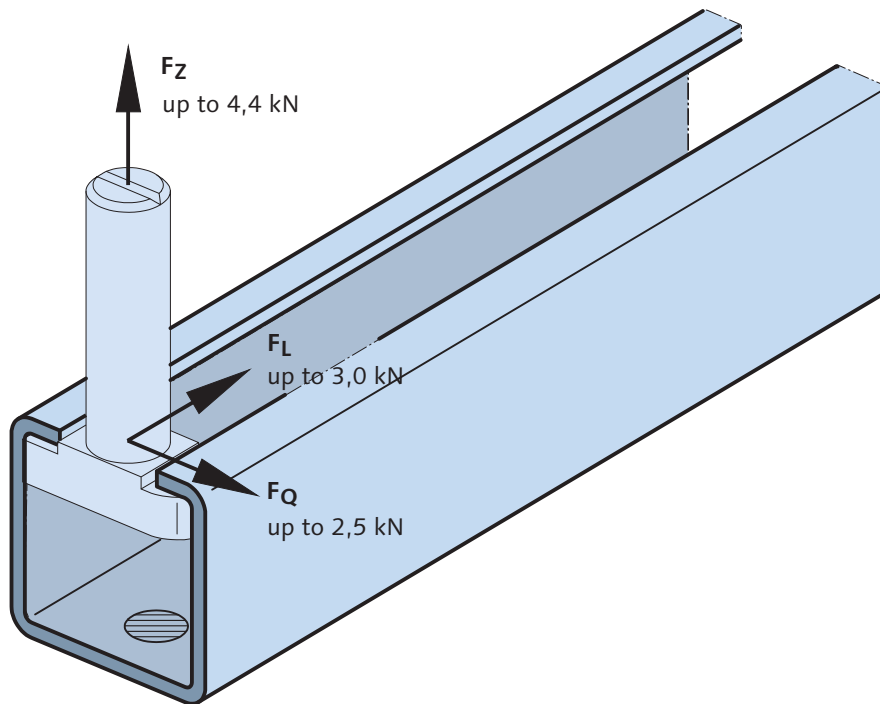
● = Standard

* = also deliverable in h.d. galvanised (fv)

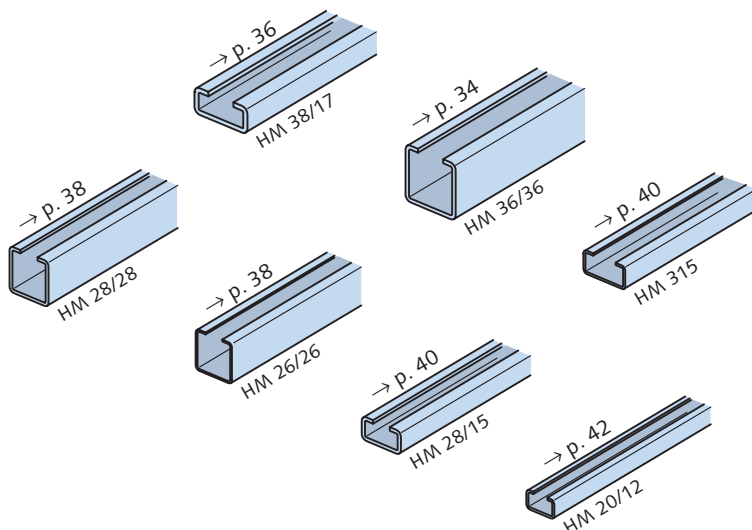
HALFEN FRAMING CHANNELS AND ACCESSORIES

Light Duty Framing Systems

Cold rolled HALFEN Framing Channels



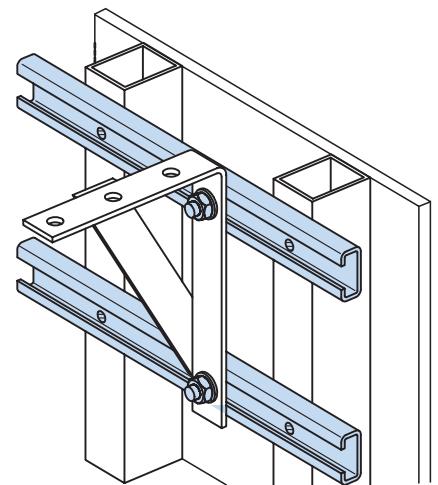
Select the most economic channel depending on the loading
→ pages 54 - 59



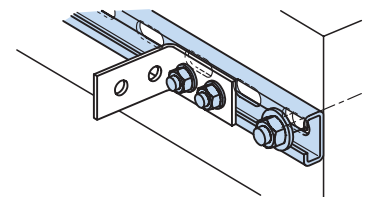
Product features

The light duty HALFEN Framing channels generally have a flat profile shape. They are particularly well suited for:

- combinations bolt / channel, where the materials and fittings are supplied by yourself - the channels will be typically integrated in your own construction,
- for optimum construction! A large range of channels (HM 38/17 to HM 20/12) plus locking plates (M 5 to M 12) is available.
- suitable for contact welding due to easy access from above.



Welded or bolted-on HALFEN Framing channels allow easy assembly on-site as well as for 'construction kit' structures.

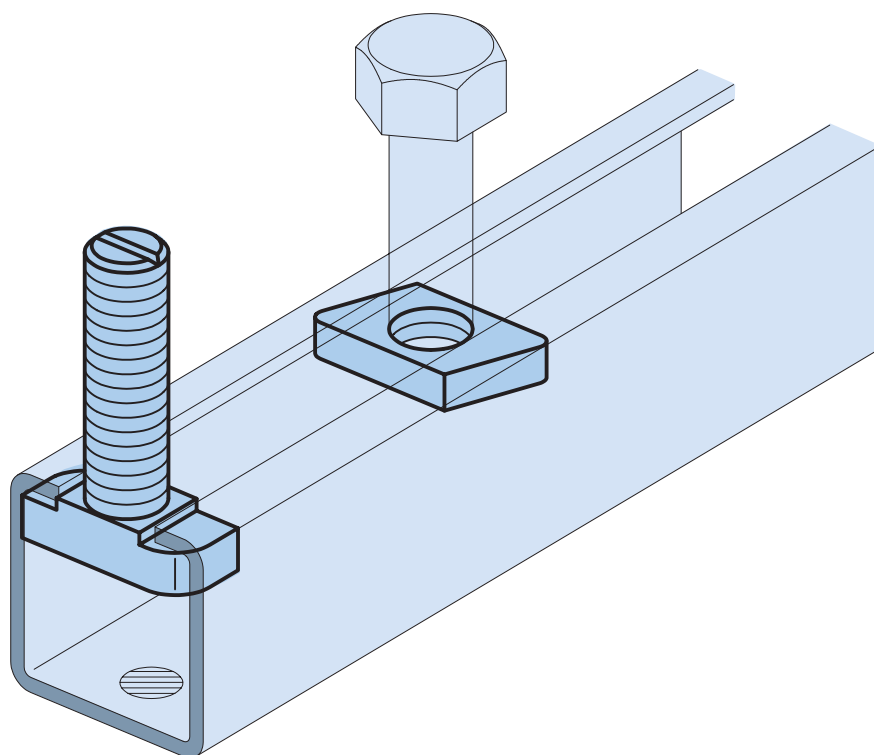


Note: If high load alternation (dynamic loads) occurs, hot rolled channels, e.g. HM 40/22, are to be used.

HALFEN FRAMING CHANNELS AND ACCESSORIES

Light Duty Framing Systems

Accessories for Light Duty HALFEN Channels

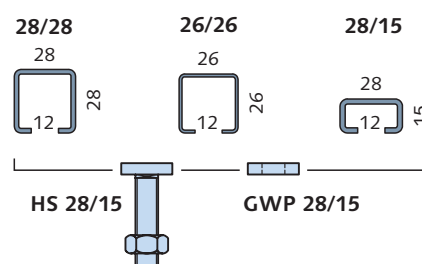


Product features

There are matching HALFEN T-head bolts and locking plates in a range of sizes for all HALFEN Channels.

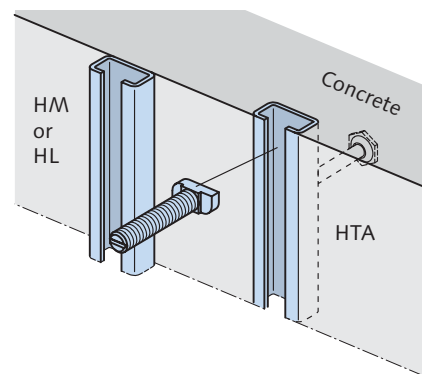
Several HALFEN Channels take the same type of HALFEN T-head bolt.

For example:

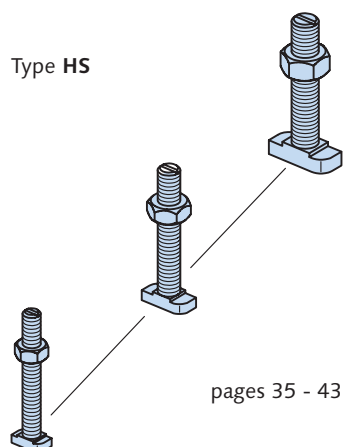


A number of light duty HALFEN Framing channels are also available as HTA Channels for casting into concrete.

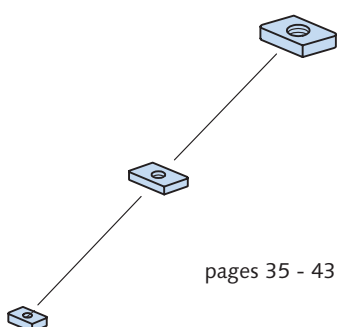
→ page 94



Selection of HALFEN T-head bolts and locking plates



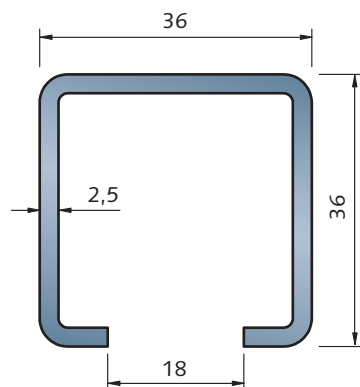
Type GWP



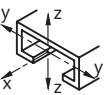
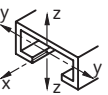
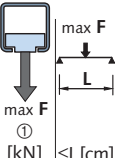
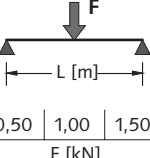
HALFEN FRAMING CHANNELS

Channel 36/36

HM 36/36 = plain back
HL 36/36 = slotted back



Nominal dimensions
[mm]

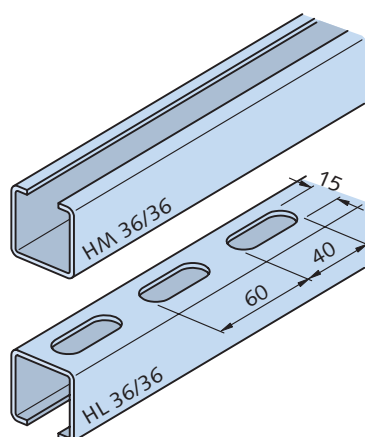
Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading	Bending capacity at span L				
		To order =												
for explan. see p. 52			G [kg/m]	A [cm ²]	I _y [cm ⁴]	I _z [cm ⁴]	W _y [cm ³]	W _z [cm ³]	max F Ⓢ [kN]	≤L[cm]	0,50	1,00	1,50	
											F [kN]			
HM 36/36 0280-..														
wb	070-00001	●	2,19	2,79	4,51	5,85	2,18	3,25	4,4	44,0	3,9	1,9	1,0	
fv	070-00002	●												
A4	070-00003	●												
HL 36/36 0281-..														
wb	050-00001	●	2,00	2,42	3,65	5,78	1,97	3,21	4,4	36,0	3,3	1,6	0,8	
fv	050-00003	●												
A4	050-00002	●												

Length: **6000** mm

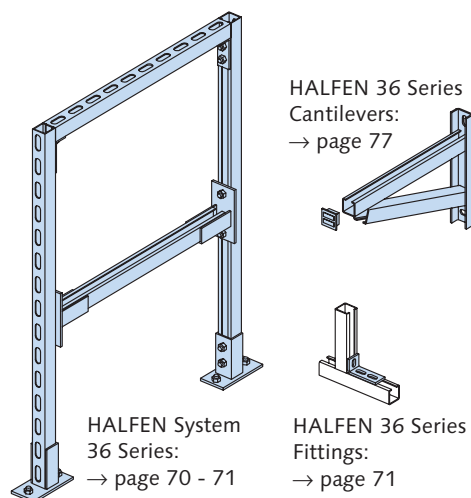
Order example: **HM 36/36 - fv - 6000** or Stock no.

0280.070-00002

① see note ③ on p. 55



Base channel for System 36 Series



HALFEN System
36 Series:
→ page 70 - 71

HALFEN 36 Series
Cantilevers:
→ page 77

HALFEN 36 Series
Fittings:
→ page 71

Subject to alterations

Other channel data, design properties

Channel data	Max. tensile / transverse load	Max. load compression member
pages 54 - 57	page 58	page 59

Channel-accessories

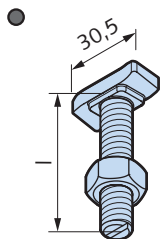
SDM 36/6	PA 18 H	HPE 36/36
Sound attenuator	Channel closer strip	Channel end cap
page 50	page 46	page 46

HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channel 36/36

HS 38/17

Halfen T-head bolts
incl. nut



Li = Left hand thread

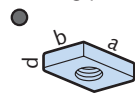
Length l [mm]	M 10 Length l Mat.	M 12 Length l Mat.	M 16 Length l Mat.	M 10 Length l Mat.	M 12 Length l Mat.	M 16 Length l Mat.
20	20 gv	20 gv	20 gv			
25					25 A4-70	25 A4-50
30	30 gv 30 fv	30 gv 30 fv	30 gv 30 fv	30 A4-70	30 A2-70 30 A4-70	30 A2-50 30 A4-50
40	40 gv	40 gv	40 gv 40 fv	40 A4-70	40 A2-70 40 A4-70	40 A2-50 40 A4-50
50	50 gv	50 gv 50 fv	50 gv 50 fv	50 A4-70	50 A2-70 50 A4-70	50 A2-50 50 A4-50
50 Li					50Li A4-50	50Li A2-50
60	60 gv	60 gv	60 gv 60 fv 8.8	60 A4-70	60 A4-70	60 A4-50
70		70 fv 8.8			80 A4-70	80 A4-50
80	80 gv	80 gv	80 gv		80Li A4-50	80Li A4-50
80 Li					100 A4-50	100 A4-50
100	100 gv	100 gv	100 gv 100 fv			
125		125 gv	125 gv			
150	150 gv	150 gv 150 fv	150 gv		150 A4-50	150 A4-50
200		200 gv	200 gv		200 A4-50	200 A4-50

Order example: HS 38/17 - M 10 x 80 - gv - M 10 x 80

Calculation of
bolt length $l_{requ.}$
→ p. 9

GWP 38/17

Locking plates



gv Thread	A4 Thread	a [mm]	b [mm]	d [mm]
M 6	M 6	33,5	17,5	6
M 8	M 8	33,5	17,5	6
M 10	M 10	33,5	17,5	6
M 12	M 12	33,5	17,5	6

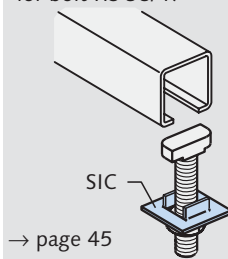
Order example: GWP 38/17 - M 10 - gv

perm. load	Thread	loading capacity [kN]
	M 6	2,2
	M 8	4,0
	M 10	5,7
	M 12	5,7

Bolt-accessories

SIC

Lock washers
for bolt HS 38/17



Material/finish T-head bolts (→ S. 53)

fv	= h.d. galvanised, strength grade 4.6
gv	= electroplated, strength grade 4.6
fv 8.8	= h.d. galvanised, strength grade 8.8
gv 8.8	= electroplated, strength grade 8.8
A4-50	= Stainless steel grade A4-50
A4-70	= Stainless steel grade A4-70
A2-50	= Stainless steel grade A2-50
A2-70	= Stainless steel grade A2-70

Halfen T-head bolts - load capa- cities ①

Thread Ø	for mild steel channels						for stainless steel channels			
	Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt				Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt	
	grade 4.6 [kN]	grade 8.8 [kN]	grade 4.6 [kN]	tightening torque [Nm]	grade 8.8 [kN]	tightening torque [Nm]	grade A2/A4 - 50 [kN]	grade A2/A4 - 70 [kN]	grade A2/A4 - 50/70 [kN]	tightening torque [Nm]
M 10	6,4	13,3	0,3	15	1,1	48	6,4	8,7	0,3	15
M 12	9,3	19,4	0,5	25	1,6	70	9,3	12,6	0,5	25
M 16	17,3	36,1	0,9	60	3,0	200	17,3	23,6	0,9	60

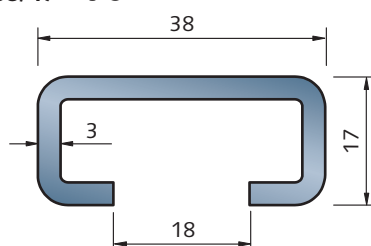
① Note: Do not exceed channel load capacity! See also p. 54 - 59 (design properties).

● = Standard ○ = to order

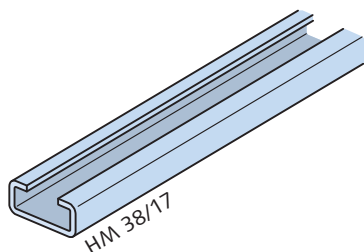
HALFEN FRAMING CHANNELS

Channel 38/17

HM 38/17 ○②



Nominal dimensions
[mm]



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] ① ≤L [cm]	0,50 1,00 1,50 F [kN]
HM 38/17	0280. . .							
wb	020-00001	●	1,77	2,26	0,79 4,05	0,78 2,16	4,8 11,0	1,4 0,4 0,19
fv	020-00002	●						
A2	020-00003	●						
A4	020-00004	●						

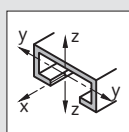
Length: **6000 mm** Order example: **HM 38/17 - fv - 6070** or Stock no. **0280.020-00002**

② Material: Stainless steel W 1.4547,
Material order code HCR, on request.

① see note ③ on p. 55

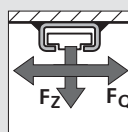
Other channel data, design properties

Channel
data



pages 54 - 55

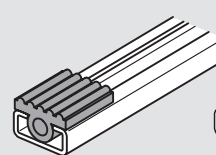
Max. tensile /
transverse
load



page 58

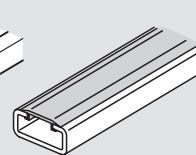
Channel-accessories

SDM 36/6
Sound
attenuator



page 50

PA 18 H
Channel closer
strip



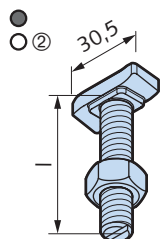
page 46

HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channel 38/17

HS 38/17

Halfen T-head bolts
incl. nut



Li = Left hand thread

Length l [mm]	M 10 Length l Mat.	M 12 Length l Mat.	M 16 Length l Mat.	M 10 Length l Mat.	M 12 Length l Mat.	M 16 Length l Mat.
20	20 gv	20 gv	20 gv			
25					25 A4-70	25 A4-50
30	30 gv 30 fv	30 gv 30 fv	30 gv 30 fv	30 A4-70	30 A2-70 30 A4-70	30 A2-50 30 A4-50
40	40 gv	40 gv	40 gv 40 fv	40 A4-70	40 A2-70 40 A4-70	40 A2-50 40 A4-50
50	50 gv	50 gv 50 fv	50 gv 50 fv	50 A4-70	50 A2-70 50 A4-70	50 A2-50 50 A4-50
50 Li					50Li A4-50	50Li A2-50
60	60 gv	60 gv	60 gv 60 fv 8.8	60 A4-70	60 A4-70	60 A4-50
70		70 fv 8.8				
80	80 gv	80 gv	80 gv		80 A4-70	80 A4-50
80 Li					80Li A4-50	80Li A4-50
100	100 gv	100 gv	100 gv 100 fv		100 A4-50	100 A4-50
125		125 gv	125 gv			
150	150 gv	150 gv 150 fv	150 gv		150 A4-50	150 A4-50
200		200 gv	200 gv		200 A4-50	200 A4-50

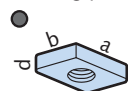
Order example: HS 38/17 - M 10 x 80 - gv - M 10 x 80

② High corrosion resistant Stainless steel T-head bolts
HS 38/17, order code HCR, on request.

Calculation of
bolt length $l_{requ.}$
→ p. 9

GWP 38/17

Locking plates



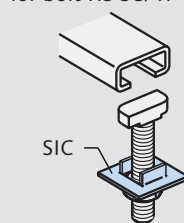
gv Thread	A4 Thread	a [mm]	b [mm]	d [mm]
M 6	M 6	33,5	17,5	6
M 8	M 8	33,5	17,5	6
M 10	M 10	33,5	17,5	6
M 12	M 12	33,5	17,5	6

Order example: GWP 38/17 - gv - M 10

perm. load	Thread	loading capacity [kN]
	M 6	2,2
	M 8	4,0
	M 10	5,7
	M 12	5,7

Bolt-accessories

SIC
Lock washers
for bolt HS 38/17



→ page 45

Material/finish T-head bolts (→ S. 53)

fv = h.d. galvanised, strength grade 4.6
gv = electroplated, strength grade 4.6
fv 8.8 = h.d. galvanised, strength grade 8.8
gv 8.8 = electroplated, strength grade 8.8
A4-50 = Stainless steel grade A4-50
A4-70 = Stainless steel grade A4-70
A2-50 = Stainless steel grade A2-50
A2-70 = Stainless steel grade A2-70
HCR = Stainless steel W1.4529 HCR-50

Halfen T-head bolts - load capacities ①

Thread Ø	for mild steel channels						for stainless steel channels			
	Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt				Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt	
	grade 4.6 [kN]	grade 8.8 [kN]	grade 4.6 [kN]	tightening torque [Nm]	grade 8.8 [kN]	tightening torque [Nm]	grade A2/A4 - 50 [kN]	grade A2/A4 - 70 [kN]	grade A2/A4 - 50/70 [kN]	tightening torque [Nm]
M 10	6,4	13,3	0,3	15	1,1	48	6,4	8,7	0,3	15
M 12	9,3	19,4	0,5	25	1,6	70	9,3	12,6	0,5	25
M 16	17,3	36,1	0,9	60	3,0	200	17,3	23,6	0,9	60

① Note: Do not exceed channel load capacity! See also p. 54 - 59 (design properties).

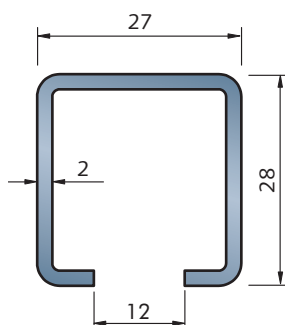
● = Standard ○ = to order

HALFEN FRAMING CHANNELS

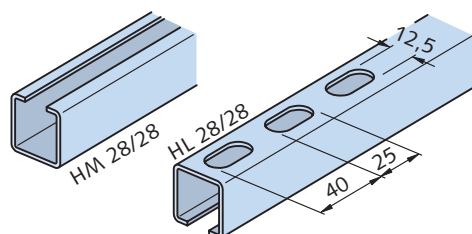
Channels 28/28 and 26/26

1 Framing Channels, Bolts

HM 28/28 HL 28/28



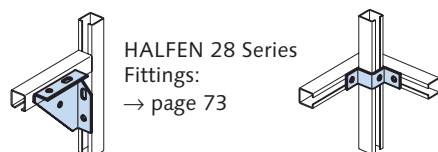
Nominal dimensions [mm]



2 Accessories

3 Design Properties

Base channel for System 28 Series

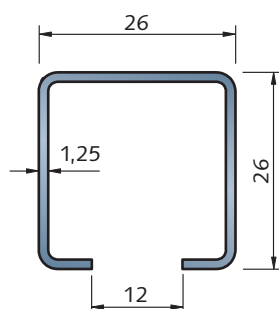


HALFEN 28 Series Fittings:
→ page 73

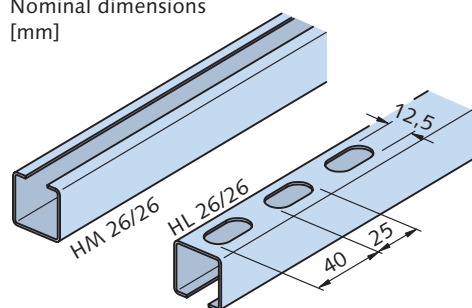
4 Support Structures

5 Cantilevers

HM 26/26 HL 26/26



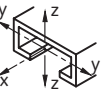
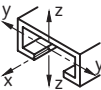
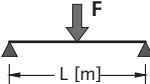
Nominal dimensions [mm]



Subject to alterations

6 Pipe Clamps, Pipe Supports

7 Notes, Work aid

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading		Bending capacity at span L		
		To order =											
for explan. see p. 52			G [kg/m]	A [cm ²]	I _y [cm ⁴]	I _z [cm ⁴]	W _y [cm ³]	W _z [cm ³]	 max F ① [kN]	 max F ≤L [cm]	0,50	1,00	1,50
F [kN]													
HM 28/28 0280. . .			1,36	1,73	1,70	2,01	1,08	1,49	3,0	31,0	1,9	0,9	0,4
wb	050-00001	●											
sv	050-00003	●											
fv	050-00002	●											
A4	050-00004	●											
HL 28/28 0281. . .			1,22	1,48	1,33	1,98	0,95	1,47	3,0	25,5	1,5	0,7	0,3
wb	060-00001	●											
sv	060-00003	●											
fv	060-00002	●											
A4	060-00004	●											

Length: 6000 mm

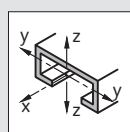
Order example: HM 28/28 - fv - 6000 or Stock no.

0280-050-00002

① see note ③ on p. 55

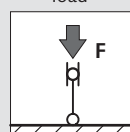
Other channel data, design properties

Channel data



pages 54 - 57

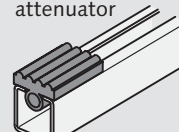
Max. tensile / transverse load



page 59

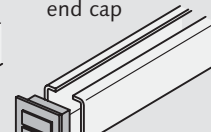
Channel-accessories

SDM 28/6
Sound attenuator



page 50

HPE 28/28
Channel end cap



page 46

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading		Bending capacity at span L		
		To order =											
for explan. see p. 52			G [kg/m]	A [cm²]	I _y [cm⁴]	I _z [cm⁴]	W _y [cm³]	W _z [cm³]	max F ① [kN]	≤L [cm]	0,50	1,00	1,50
F [kN]													
HM 26/26 0280. . .													
sv	040-00001	●	0,82	1,05	0,94	1,18	0,64	0,91	1,10	50,0	1,10	0,51	0,23
HL 26/26 0281. . .													
sv	070-00001	●	0,72	0,89	0,73	1,16	0,56	0,89	1,10	40,0	0,90	0,40	0,18

Length: 6000 mm

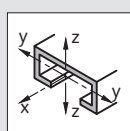
Order example: HM 26/26 - sv - 6000 or Stock no.

0280-040-00001

① see note ③ on p. 55

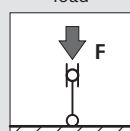
Other channel data, design properties

Channel data



pages 54 - 57

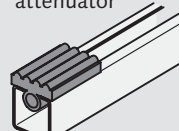
Max. tensile / transverse load



page 59

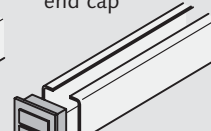
Channel-accessories

SDM 28/6
Sound attenuator



page 50

HPE 26/26
Channel end cap



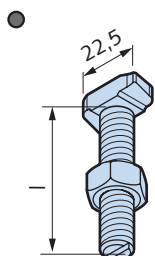
page 46

HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channels 28/28 and 26/26

HS 28/15

Halfen T-head bolts
incl. nut



Li = left hand thread

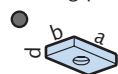
Length l [mm]	M 6 Length l Mat.	M 8 Length l Mat.	M 10 Length l Mat.	M 12 Length l Mat.	M 8 Length l Mat.	M 10 Length l Mat.
15	15 gv	15 gv	15 gv			
20	20 gv	20 gv	20 gv			20 A2-70 20 A4-70
25	25 gv	25 gv	25 gv			25 A2-70 25 A4-70
30	30 gv	30 gv	30 gv 30 fv	30 gv	30 A2-70 30 A4-70	30 A2-70 30 A4-70
40	40 gv	40 gv	40 gv 40 fv 8.8			40 A2-70 40 A4-70
50	50 gv	50 gv	50 gv 50 fv	50 gv		50 A2-70 50 A4-70
50 Li						50 Li A4-50
60	60 gv	60 gv	60 gv			60 A4-70
80		80 gv	80 gv	80 gv		80 A4-70
100		100 gv	100 gv			100 A4-50
125			125 gv			125 A4-50
150		150 gv	150 gv			150 A4-50
200			200 gv			200 A4-50

Order example: HS 28/15 - M 10 x 50 - gv

Calculation of
bolt length $l_{requ.}$
→ p. 9

GWP 28/15

Locking plate



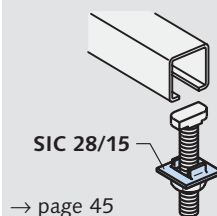
gv Thread	A4 Thread	a [mm]	b [mm]	d [mm]
M 6	M 6	24,5 (3)	13,0	4
M 8	M 8	24,5 (3)	13,0	4
M 10	M 10	33,5 (2)	17,5	5

Order example: GWP 28/15 - M 8 - gv

perm. load	Thread	loading capacity [kN]
	M 6	1,9
	M 8	2,8
	M 10	3,0

Bolt-accessories SIC

Lock washers
for bolt HS 28/15



→ page 45

Material/finish T-head bolts (→ S. 53)

fv	= h.d. galvanised, strength grade 4.6
gv	= electroplated, strength grade 4.6
fv 8.8	= h.d. galvanised, strength grade 8.8
gv 8.8	= electroplated, strength grade 8.8
A4-50	= Stainless steel grade A4-50
A4-70	= Stainless steel grade A4-70
A2-50	= Stainless steel grade A2-50
A2-70	= Stainless steel grade A2-70

Halfen T-head bolts - load capa- cities ①

	for mild steel channels						for stainless steel channels			
	Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt				Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt	
	grade 4.6 [kN]	grade 8.8 [kN]	grade 4.6 [kN]	tightening torque [Nm]	grade 8.8 [kN]	tightening torque [Nm]	grade A2/A4 - 50 [kN]	grade A2/A4 - 70 [kN]	grade A2/A4 - 50/70 [kN]	tightening torque [Nm]
M 6	2,2	4,6	0,1	3	0,4	10	2,2	3,0	0,1	3
M 8	4,0	8,4	0,2	8	0,7	24	4,0	5,5	0,2	8
M 10	6,4	13,3	0,3	15	1,1	48	6,4	8,7	0,3	15
M 12	9,3	19,4	0,5	25	1,6	70	9,3	12,6	0,5	25

① Note: Do not exceed channel load capacity! See also p. 54 - 59 (design properties).

② Assembly note: First insert locking plate to channel, then screw in thread bar.

● = Standard ○ = to order

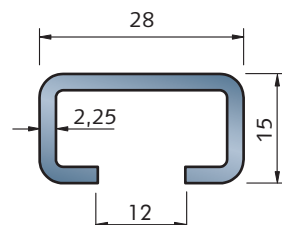
③ Assembly note: Insert locking plate inclined through channel chase.

HALFEN FRAMING CHANNELS

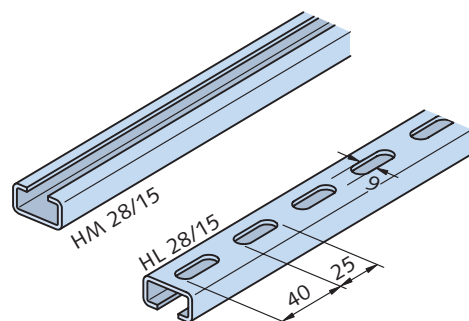
Channels 28/15 and HM 315

1 Framing Channels, Bolts

HM 28/15 HL 28/15



Nominal dimensions
[mm]



2 Accessories

3 Design Properties

4 Support Structures

5 Cantilevers

6 Pipe Clamps, Pipe Supports

7 Notes, Work aid

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] max F [kN] L [cm]	0,50 1,00 1,50 F [kN]
HM 28/15 0280. . .								
wb	010-00001	●	1,07	1,37	0,38 1,42	0,43 1,02	3,9 8,2	0,81 0,21 0,09
fv	010-00002	●						
A2	010-00004	●						
A4	010-00003	●						
HL 28/15 0281. . .								
wb	080-00001	●	0,86	1,16	0,32 1,35	0,40 0,98	3,9 7,0	0,69 0,17 0,08
fv	080-00004	●						
A2	080-00002	●						
A4	080-00003	●						

Length: **6070 mm** Order example: **HM 28/15 - fv - 6070** or Stock no. **0280.010-00002**
 ② Material: Stainless steel W 1.4547 / W 1.4529, ① see note ③ on p. 55
 Material order code HCR, on request.

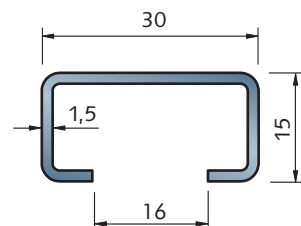
Other channel data, design properties

Channel data	Max. tensile / transverse load	Max. load compression member
pages 54 - 57	page 58	page 59

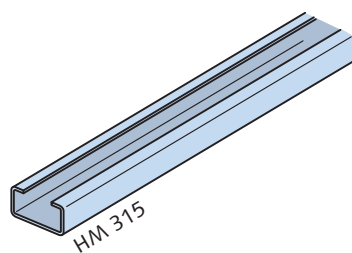
Channel-accessories

SDM 28/6 Sound attenuator
page 50

HM 315 (C 30)



Nominal dimensions
[mm]



Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia	Section modulus	Max. perm. point loading	Bending capacity at span L
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]	I _y [cm ⁴] I _z [cm ⁴]	W _y [cm ³] W _z [cm ³]	max F [kN] max F [kN] L [cm]	0,50 1,00 1,50 F [kN]
HM 315 0280. . .								
wb	060-00001	●	0,77	0,97	0,30 1,26	0,32 0,84	1,66 17,7	0,59 0,16 0,07
fv	060-00002	●						

Length: **6000 mm** Order example: **HM 315 - fv - 6000** or Stock no. **0280.060-00002**
 ① see note ③ on p. 55

Other channel data, design properties: pages 54 - 55

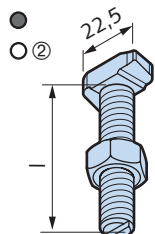
Subject to alterations

HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channels 28/15 and 315

HS 28/15

Halfen T-head bolts
incl. nut
(not for HM 315)



Li = left hand thread

Length l [mm]	M 6 Length l Mat.	M 8 Length l Mat.	M 10 Length l Mat.	M 12 Length l Mat.	M 8 Length l Mat.	M 10 Length l Mat.
15	15 gv	15 gv	15 gv			
20	20 gv	20 gv	20 gv			20 A2-70 20 A4-70
25	25 gv	25 gv	25 gv			25 A2-70 25 A4-70
30	30 gv	30 gv	30 gv 30 fv	30 gv	30 A2-70 30 A4-70	30 A2-70 30 A4-70
40	40 gv	40 gv	40 gv 40 fv 8.8			40 A2-70 40 A4-70
50	50 gv	50 gv	50 gv 50 fv	50 gv		50 A2-70 50 A4-70
50 Li						50Li A4-50
60	60 gv	60 gv	60 gv			60 A4-70
80		80 gv	80 gv	80 gv		80 A4-70
100		100 gv	100 gv			100 A4-50
125			125 gv			125 A4-50
150		150 gv	150 gv			150 A4-50
200			200 gv			200 A4-50

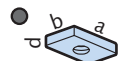
Order example: HS 28/15 - M 10 x 50 - gv

② High corrosion resistant Halfen T-head bolts
HS 28/15, order code HCR, on request.

Calculation of
bolt length $l_{\text{requ.}}$
→ p. 9

GWP 28/15

Locking plates
for Chs. 28/15
and 315 (C 30)



gv Thread	A4 Thread	a [mm]	b [mm]	d [mm]
M 6	M 6	24,5 ③	13,0	4
M 8	M 8	24,5 ③	13,0	4
M 10	M 10	33,5 ②	17,5	5

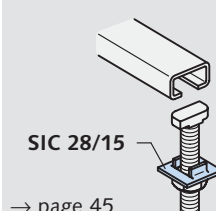
Order example: GWP 28/15 - M 8 - gv

perm. load	Thread	loading capacity [kN]
	M 6	1,9
	M 8	2,8
	M 10	3,0

Bolt-accessories

SIC

Lock washers
for bolt HS 28/15



→ page 45

Material/finish T-head bolts (→ S. 53)

fv	= h.d. galvanised, strength grade 4.6
gv	= electroplated, strength grade 4.6
fv 8.8	= h.d. galvanised, strength grade 8.8
gv 8.8	= electroplated, strength grade 8.8
A4-50	= Stainless steel grade A4-50
A4-70	= Stainless steel grade A4-70
A2-50	= Stainless steel grade A2-50
A2-70	= Stainless steel grade A2-70
HCR	= Stainless steel W1.4529 HCR-50

Halfen T-head bolts - load capacities ①

	for mild steel channels				for stainless steel channels			
	Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt		Max. pull out per T-head bolt		Max. longitudinal load per Halfen T-head bolt	
	grade 4.6 [kN]	grade 8.8 [kN]	grade 4.6 [kN]	tightening torque [Nm]	grade 8.8 [kN]	tightening torque [Nm]	grade A2/A4 - 50 [kN]	grade A2/A4 - 70 [kN]
M 6	2,2	4,6	0,1	3	0,4	10	2,2	3,0
M 8	4,0	8,4	0,2	8	0,7	24	4,0	5,5
M 10	6,4	13,3	0,3	15	1,1	48	6,4	8,7
M 12	9,3	19,4	0,5	25	1,6	70	9,3	12,6
							grade A2/A4 - 50/70 [kN]	tightening torque [Nm]
							0,1	3
							0,2	8
							0,3	15
							0,5	25

① Note: Do not exceed channel load capacity! See also p. 54 - 59 (design properties).

② Assembly note: First insert locking plate to channel, then screw in thread bar.

● = Standard ○ = to order

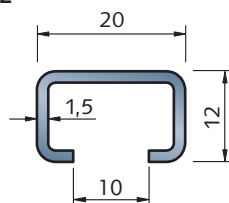
③ Assembly note: Insert locking plate inclined through channel chase.

HALFEN FRAMING CHANNELS

Channel 20/12

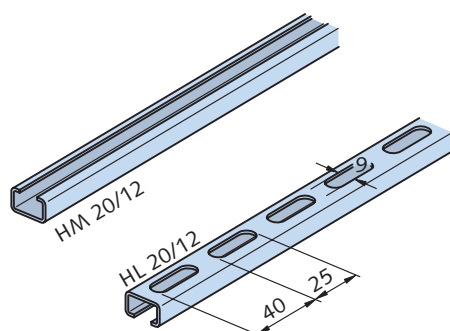
1 Framing Channels, Bolts

HM 20/12 HL 20/12



Nominal dimensions
[mm]

2 Accessories



3 Design Properties

4 Support Structures

5 Cantilevers

6 Pipe Clamps, Pipe Supports

7 Notes, Work aid

Material, finish	Stock no.	Standard =	Channel weight	Cross section	Moment of inertia		Section modulus		Max. perm. point loading		Bending capacity at span L		
					I_y [cm ⁴]	I_z [cm ⁴]	W_y [cm ³]	W_z [cm ³]	$\max F$ [kN]	$\leq L$ [cm]	0,50	1,00	1,50
for explan. see p. 52		To order =	G [kg/m]	A [cm ²]							F [kN]		
HM 20/12 0280 . .													
wb	030-00001	●	0,52	0,66	0,12	0,36	0,16	0,36	2,24	5,8	0,25	0,06	0,03
fv	030-00003	●											
A2	030-00002	●											
HL 20/12 0281 . .													
wb	090-00001	●	0,45	0,53	0,09	0,35	0,14	0,36	2,24	4,6	0,19	0,05	0,02
fv	090-00002	●											
A2	090-00003	●											

Length: 6000 mm

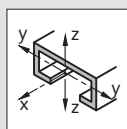
Order example: HM 20/12 - fv - 6000 or Stock no.

0280.030-00003

① see note ③ on p. 55

Other channel data, design properties

Channel
data



pages 54 - 57

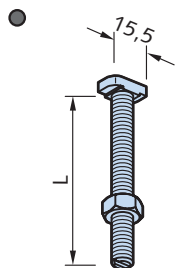
Subject to alterations

HALFEN T-HEAD BOLTS AND ACCESSORIES

for Channel 20/12

HS 20/12

Halfen T-head bolts
incl. nut



Length l [mm]	M 6	M 8	M 8
	Length l Mat.	Length l Mat.	Length l Mat.
15		15 gv	
20	25 gv	20 gv	20 A2-70
25		25 gv	
30	40 gv	30 gv	30 A2-70
40	50 gv	40 gv	40 A2-70
50	60 gv	50 gv	50 A2-70
60	80 gv	60 gv	
80		80 gv	
100		100 gv	

Order example: HS 20/12 - M 8 x 40 - gv

Material / finish Halfen T-head bolts (→ p. 53)

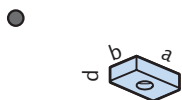
gv = electroplated, Strength grade 4.6

A2-70 = Stainless steel grade A2-70

Calculation of
bolt length $l_{\text{requ.}}$
→ p. 9

GWP 20/12

Locking plates
for Channel 20/12



gv Thread	A4 Thread	a [mm]	b [mm]	d [mm]
M 5	M 5	16	9	4
M 6	M 6	16	9	4

Order example: GWP 20/12 - M6 - gv

perm. load	Thread	loading capacity [kN]
	M 5	1,5
	M 6	1,9

Bolt-accessories

SIC 20/12

Lock washers



→ page 45

Halfen T-head bolts - load capa- cities ①

Thread Ø	for mild steel channels			for stainless steel channels		
	Max. pull out per T-head bolt	Max. longitudinal load per Halfen T-head bolt		Max. pull out per T-head bolt	Max. longitudinal load per Halfen T-head bolt	
	grade 4.6 [kN]	grade 4.6 [kN]	tightening torque [Nm]	grade A2 - 70 [kN]	grade A2 - 70 [kN]	tightening torque [Nm]
M 6	2,2	0,1	3	3,0	0,1	3
M 8	4,0	0,2	8	5,5	0,2	8

① Note: Do not exceed channel load capacity! See also p. 54 - 59 (design properties).

● = Standard
○ = to order

Subject to alterations

HALFEN FRAMING SYSTEMS ACCESSORIES

Threaded Rods, Hexagon Head Bolts, Nuts, Washers

GWS

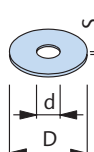
Threaded rod
DIN 975



gv electroplated strength grade 4.6 Thread	A4 Stainless steel A4 Thread	Length [mm]	Load cap. [kN]
M 6	M 6	1000	2,2
M 8	M 8	1000	4,0
M 10	M 10	1000	6,4
M 12	M 12	1000	9,3
M 16	M 16	1000	17,3
M 20	M 20	1000	27,0
M 24		1000	38,8

Order example:
GWS - M 12 x 1000 - gv

US
Washers
DIN 440,
9021

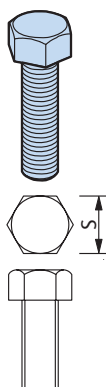


DIN	gv electroplated for bolt	A4 Stainless steel A4 for bolt	D [mm]	d [mm]	s [mm]
440	M 6		22	6,6	2
9021	M 8	M 8	24	8,4	2
9021	M 10	M 10	30	10,5	2,5
440	M 12		45	13,5	4
9021	M 12	M 12	37	13	3
9021	M 16	M 16	50	17	3
440	M 20		72	22	6

Order example:
US - M 12 - gv - DIN 9021

HSK

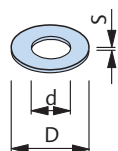
Hex head bolt
DIN 933 or
EN 24017
(without nut)



Hex head bolts are
used in combina-
tion with HALFEN
locking plates
(→ pages 9 - 43)

gv 8.8 electroplated, s.gr. 8.8 Dimension	A4 Stainless steel A4 Dimension	S DIN [mm]	S EN [mm]
M 6 x 12		10	10
M 6 x 25			
M 8 x 25	M 8 x 25	13	13
M 8 x 40			
M 10 x 20			
M 10 x 30	M 10 x 30		
M 10 x 45	M 10 x 45	17	16
M 10 x 60			
M 10 x 70			
M 12 x 22			
M 12 x 25	M 12 x 25		
M 12 x 30	M 12 x 30		
M 12 x 40	M 12 x 40	19	18
M 12 x 50			
M 12 x 60	M 12 x 60		
M 12 x 80	M 12 x 80		
M 12 x 90			
M 16 x 40	M 16 x 40	24	24
M 16 x 60	M 16 x 60		
M 16 x 90	M 16 x 90		

US
Washers
DIN 125

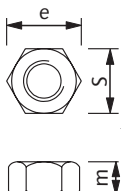


gv electroplated for bolt	A4 Stainless steel A4 for bolt	D [mm]	d [mm]	s [mm]
M 6	M 6	12	6,4	1,6
M 8	M 8	16	8,4	1,6
M 10	M 10	21	10,5	2
M 12	M 12	24	13	2,5
M 16	M 16	30	17	3
M 20	M 20	37	21	3
M 24	M 24	44	25	4
M 27		50	28	4
M 30		56	31	4
fv h.d. galvanised for bolt	A2 Stainless steel A2 for bolt	D [mm]	d [mm]	s [mm]
	M 8	17	8,4	1,6
	M 10	21	10,5	2
	M 12	24	13	2,5
	M 16	30	17	3

Order example:
US - gv - M 12 - DIN 125

MU

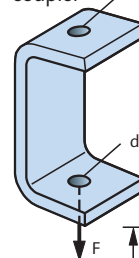
Hexagon nut
DIN 934 or
ISO 4032
(= DIN EN 24032)



gv electroplated s.gr. 8 Thread	A4 Stainless steel A4 Thread	S/m DIN [mm]	S/m ISO [mm]	e [mm]
M 6	M 6	10/ 5	10/ 6	11,5
M 8	M 8	13/6,5	13/7,5	15,0
M 10	M 10	17/ 8	16/ 9,5	19,6
M 12	M 12	19/10	18/12	21,9
M 16	M 16	24/13	24/15,5	27,7
M 20	M 20	30/16	30/19	34,6
M 24		36/19	36/22	41,5
	A2 Stainless steel A2 Thread	S/m DIN [mm]	S/m EN [mm]	e [mm]
	M 8	13/6,5	13/7,5	15,0
	M 10	17/ 8	16/ 9,5	19,6
	M 12	19/10	18/12	21,9
	M 16	24/13	24/15,5	27,7

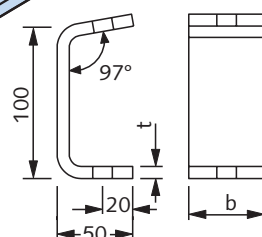
HJV

Adjustment
coupler

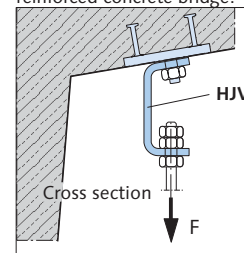


fv h.d. galvanised Type	A4 Stainless steel A4 Type	t [mm]	b [mm]	d [mm]	F [kN]
1	1	6	40	13	1,5
2	2	8	50	17	3,3
3	3	10	50	17	5,0

① Max. recomm. load



Typical installation: fixing of
a suspended load under a
reinforced concrete bridge.

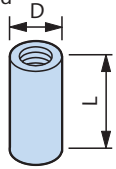


HALFEN FRAMING SYSTEMS ACCESSORIES

Coupler Sleeves, Ring Nuts, Square washers

VBM

Coupler sleeves, rounded

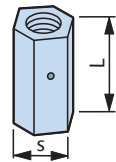


- gv electroplated Thread	-A4 Stainless steel A4 Thread	D ② [mm]	L [mm]	Load cap. ① [kN]
M 6	M 6	10/10	15	2,2
M 8	M 8	12/14	20	4,0
M 10	M 10	13/16	25	6,4
M 12	M 12	16/20	30	9,3
M 16	M 16	21/25	40	17,3
M 20	M 20	26/32	50	27,0

Order example: **VBM - A4 - M 16**

SKM

Hexagonal rod coupler with view hole

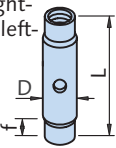


- fv h.d. galvanised Thread	-A4 Stainless steel A4 Thread	S [mm]	L [mm]	Load cap. ① [kN]
M 10	M 10	13	40	6,4
M 12	M 12	17	40	9,3
M 16	M 16	22	50	17,3

Order example: **SKM - fv - M 12**

SPH

Turnbuckle with right-hand / left-hand thread



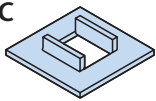
f = min.
Screw-in-depth
M12: 10 mm
M16: 13 mm

-A4 Stainless steel A4 Thread M 12 × Length L [mm]	-A4 Stainless steel A4 Thread M 16 × Length L [mm]	D für M12 [mm]	D für M16 [mm]
M12 × 60	M16 × 60	16	22
M12 × 75	M16 × 75	16	22
M12 × 95	M16 × 95	16	22
M12 × 115	M16 × 115	16	22
M12 × 135	M16 × 135	16	22

Perm. load: 5 kN Perm. load: 10 kN

Order example: **SPH - A4 - M 12 x 75**

SIC



Lock washer

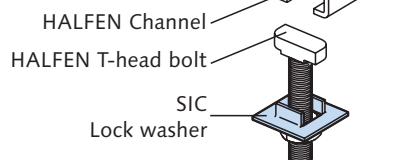
- gv electropl. Stock no.	-A4 Stainless steel A4 Stock no.	Fits to Halfen bolt	
		Type	Dimension
SIC-50/30 - gv	SIC-50/30-A4	50/30	M16, M20
SIC-40/22 - gv	SIC-40/22-A4	38/17 40/22	M16
SIC-38/23 - gv	SIC-38/23-A4	38/23	M16
SIC-29/20 - gv	SIC-29/20-A4	29/20	M12
SIC-38/17 - gv	SIC-38/17-A4	38/17 40/22	M12, M10
SIC-28/15 - gv	SIC-28/15-A4	28/15	M8, M10
SIC-20/12 - gv	SIC-20/12-A4	20/12	M8

Order example: **SIC - 38/17 - gv**

Application:

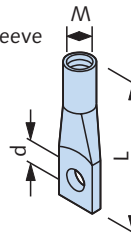
to secure HALFEN T-head bolts against unscrewing during fitting.

Assembly diagram:



OES

Eye sleeve



- gv electroplated Thread	d ② [mm]	L [mm]	Load cap. ① [kN]
M 6	6	35	1,65
M 8	8	57	2,00
M 10	10	57	4,00
M 12	12	57	4,65
M 16	16	80	8,30

Order example: **OES - gv - M 16**

RM

Ring nut
DIN 582



- gv C 15, electropl. Thread	d [mm]	Load cap. ③ [kN]
M 8	20	1,4
M 10	25	2,3
M 12	30	3,4
M 16	35	7,0
M 20	40	12,0

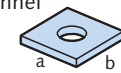
Order example: **RM - gv - M 12**

- ① Recomm. maximum working load with centre pull out
- ② Dimension D for finish - gv/-A4
- ③ Recomm. maximum centre pull out in accordance with DIN 582

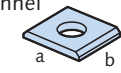
VUS

Square washers

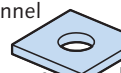
VUS 40/25
for channel
40/25;
HZA
41/22



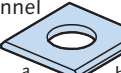
VUS 49/30
for channel
54/33,
49/30



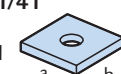
VUS 52/34
for channel
52/34,
50/30



VUS 72/49
for channel
72/48,
72/49



VUS 41/41
for all
Chs. 41
Series



- fv h.d. galvanised for bolts:	-A4 Stainless steel A4 for bolts:	a x b x d [mm]
M 10	M 10	40 x 40 x 5
M 12	M 12	40 x 40 x 5
M 16	M 16	40 x 40 x 5
M 10	M 10	37 x 37 x 5
M 12	M 12	37 x 37 x 5
M 16	M 16	37 x 37 x 5
M 20	M 20	37 x 37 x 5
M 16	M 16	50 x 50 x 6
M 20	M 20	50 x 50 x 6
M 20	M 20	54 x 54 x 6
M 24	M 24	54 x 54 x 6
M 27	M 27	54 x 54 x 6
M 30	M 30	54 x 54 x 6
M 6	M 6	40 x 40 x 6
M 10	M 10	40 x 40 x 6
M 12	M 12	40 x 40 x 6

Order example: **VUS 52/34 - fv - M 20**

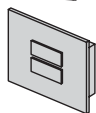
HALFEN FRAMING SYSTEMS ACCESSORIES

Channel End Cap, Channel Closer Strip

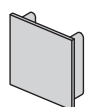
Channel end cap ● (plastic)



Type HPE 63/63
Colour: blue



Type HPE
Colour: black

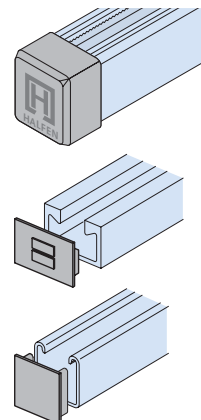


Type HPE 41/41
Type HPE 41/22
Colour: black

Designation	Stock no. 0318. ...	fits to Channel
HPE 63/63	000-00010	63/63
HPE 52/34	000-00001	52/34
HPE 50/40	000-00002	50/40
HPE 41/41	000-00003	41/41
HPE 41/22	000-00004	41/22
HPE 36/36	000-00005	36/36
HPE 28/28	000-00006	28/28
HPE 26/26	000-00007	26/26

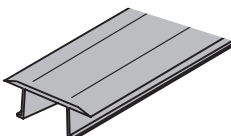
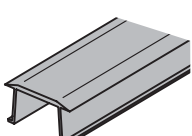
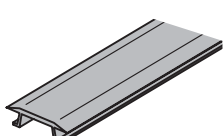
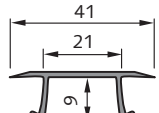
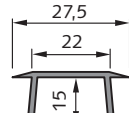
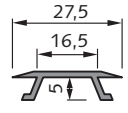
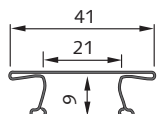
Order example: **HPE 36/36**
or Stock. no. **0318.000-00005**

Application of the Channel end cap:



PA

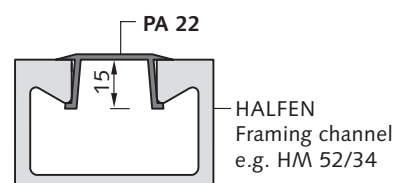
Channel closer strip

Type:	 PA 41	 PA 22	 PA 18 H
Qual. / finish: PVC, hard (KS) white	 white	 grey	 grey
Qual. / finish: steel, pre-galvanised (sv)	 fits to channel: 50/40, 50/30 486, all Chs. 41 Series	fits to channel: 52/34	fits to channel: 36/36, 38/17

Type	Length [mm]	Stock no. 0321.000-	= Stan- dard
PA - 41 - KS - 3000		00002	●
PA - 41 - sv - 3000		00001	●
PA - 22 - KS - 3000		00003	●
PA - 18H - KS - 3000		00004	●

Order example: **PA - 41 - KS - 3000**
or Stock no. **0321.000-00002**

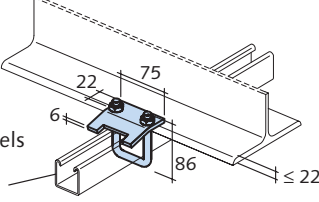
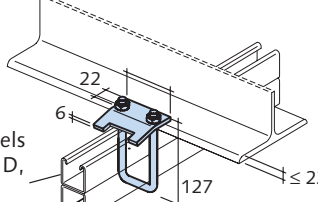
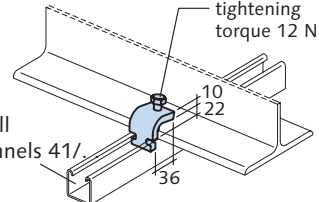
Assembly diagram:



Section slit to prevent
dirt getting into interior
of channel.

HALFEN FRAMING SYSTEMS ACCESSORIES

HALFEN Beam Clamps HVT, U-clamp Plate, Halfen T-head bolt for Channel-back Assembly

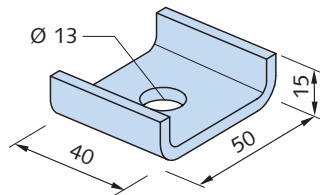
Beam clamp, used in pairs  for Channels 41/41, 41/22 and 41/22 D HVT 41 - 85				Beam clamp, used in pairs  for Channels 41/41 D, 41/62 and 41/83 HVT 41 - 86				Beam clamp, used in pairs  for all Channels 41/ HVT 41 - 89			
load capacity per clamp pair: 4,55 kN				load capacity per clamp pair: 4,55 kN				load capacity per clamp pair: 3,0 kN ②			
Clamp thickness: 22 mm				Clamp thickness: 22 mm				Clamp thickness: 22 mm			
Designation	Stock no.			Designation	Stock no.			Designation	Stock no.		
HVT 41 - 85 - fv	0312.030-00042	1	●	HVT 41 - 86 - fv	0312.030-00044	1	●	HVT 41 - 89 - fv	0312.030-00046	1	●
HVT 41 - 85 - A4	0312.030-00085	1	●	HVT 41 - 86 - A4	0312.030-00086	1	●	HVT 41 - 89 - A4	-	1	○

② for Channel HLL 41/41: 2,5 kN per clamp pair

fv = h.d. galv., str.gr. A4 = Stainless steel A4 = packing unit [pieces]

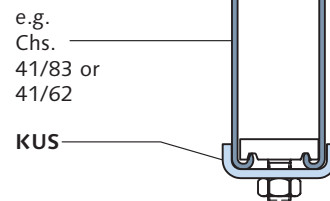
KUS ●

U-clamp plate,
fits to all HALFEN
Channels 41 Series



fv h.d. galv., str.gr.	
Type	Stock no.
KUS	0314.000-00001

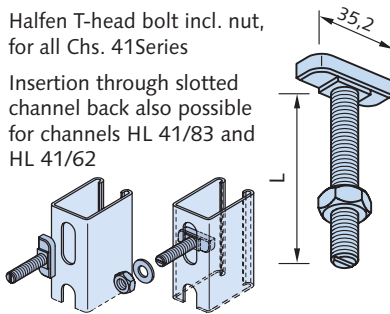
Assembly diagram U-clamp plate



HS 41/41 ●

Halfen T-head bolt incl. nut,
for all Chs. 41Series

Insertion through slotted
channel back also possible
for channels HL 41/83 and
HL 41/62



L [mm]	M 10		M 12		M 10		M 12	
	Length	Mat.	Length	Mat.	Length	Mat.	Length	Mat.
35	35	fv	35	fv	35	A4-50	35	A4-50
50			50	fv				

Note:
T-head bolts HZS 41/22 and 41/41 for
Channels 41/41 to 41/83 → page 31.

Material / finish Halfen T-head bolts

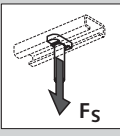
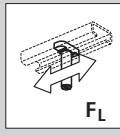
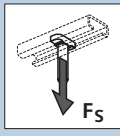
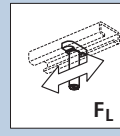
(→ p. 53)

fv = h.d. galv., str.gr. 4.6

gv = electropl., str.gr. 4.6

A4-50 = Stainless steel A4-50

Halfen T-head bolts - load capa- cities ①

Thread Ø	for mild steel channels			for stainless steel channels		
	Max. pull out per T-head bolt	Max. longitudinal load per Halfen T-head bolt		Max. pull out per T-head bolt	Max. longitudinal load per Halfen T-head bolt	
						
	grade 4.6 [kN]	grade 4.6 [kN]	tightening torque [Nm]	grade A4 - 50 [kN]	grade A4 - 50 [kN]	tightening torque [Nm]
M 10	6,4	0,3	15	6,4	0,3	15
M 12	8,0	0,5	25	9,3	0,5	25

① Note: Do not exceed channel load capacity! See also pages 54 - 59 (design properties).

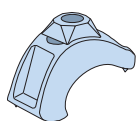
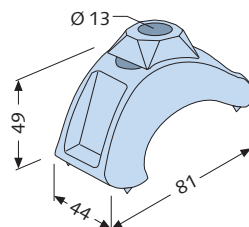
● = Standard
○ = to order

HALFEN FRAMING SYSTEMS ACCESSORIES

Beam Clamps

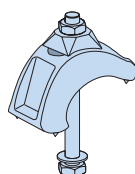
Beam clamps System 41 Series

Beam clamp with 4 teeth for interlocking load transmission, used in pairs



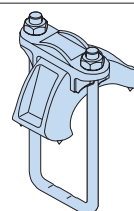
HCS TK

load cap. per clamp pair 6 - 8 kN, depending on bolt



HCS TK-L

load cap. per clamp pair 8 kN



HCS TK-63

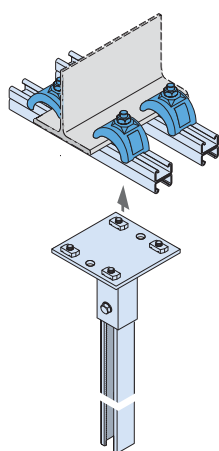
load cap. per clamp pair 6 kN

Designation	Stock no.			Designation	Stock no.			Designation	Stock no.		
HCS TK-fv	0308.030-00001	20	●	HCS TK-L-fv	0308.030-00002	20	●	HCS TK-63-fv	0308.030-00003	10	●

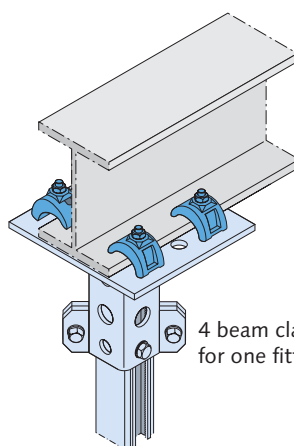


fv = h.d. galvanised
= packing unit [pieces]

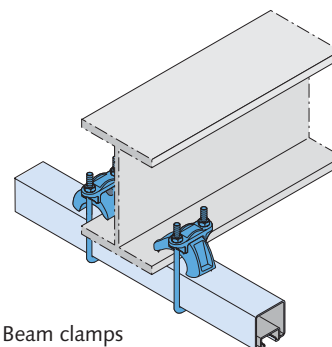
Application examples:



Max. tightening torque 60 - 90 Nm, depending on bolt



Max. tightening torque 90 Nm

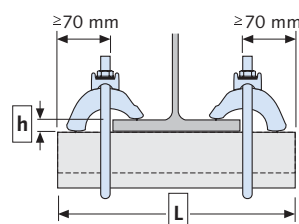


Max. tightening torque 45 Nm

Important for assembly:

h = 5-40 mm Flange thickness

L ≥ Beam flange width + (2 × 70 mm)

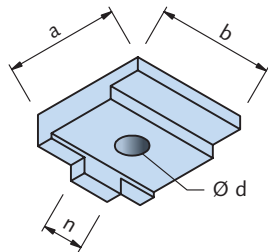


HALFEN FRAMING SYSTEMS ACCESSORIES

Beam Clamps

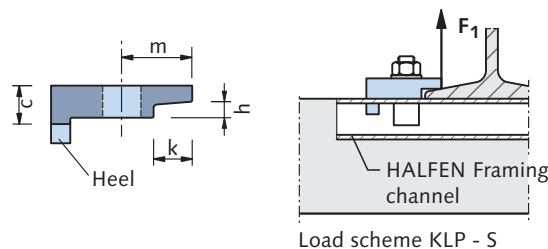
KLP - S

Beam clamps,
St 37-2 forged



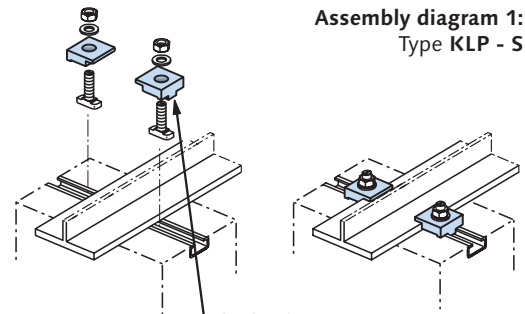
fv feuerverzinkt Typ	Bestell-Nr. 0325.010-	Heel- width n [mm]	for T-head bolt Ø x l [mm]	Dimensions [mm]								Perm. load at $\sigma_{perm.}$ = 125 N/mm ² F [kN]	recommended use with		
				a	b	c	Ø d	h	k	m			Standard Chs. I	other beams, flange thickn. t [mm]	Channels
No. 10	00001	16	M 16 x 60	44,0	45	12	18	5	12,0	22		3,5	80 - 140	4 - 6	-
No. 26	00002	without heel	M 16 x 60	62,5	64	21	18	9	16,5	34,5		3,5	160 - 240	7 - 9	S 24 A 45, A 55
No. 20	00003	20	M 20 x 65	50,0	52	18	22	8	15,0	22		10,0	160 - 240	7 - 9	S 24 - S 49
No. 30	00004	without heel	M 20 x 65	62,5	64	21	22	9	16,5	34,5		10,0	160 - 240	7 - 9	A - 45 A - 55 A - 65
No. 40①	00005	22	M 27 x 75	62,5	64	21	29	9	16,5	32,5		10,0			
No. 50①	00006	without heel	M 27 x 75	62,5	64	21	29	9	16,5	32,5		10,0			

Order example: KLP - S - Nr. 26 - fv or Stock no. 0325.010-00002



Load scheme KLP - S

Assembly diagram 1:
Type KLP - S

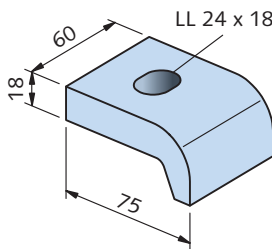


The heel prevents twisting
of the beam clamp by slotting
into the channel slit.

- ① To be discontinued
- ② T-head bolt M 16 x 80 is required
- ③ Do not exceed channel load capacity!
- ④ Check flange thickness first!

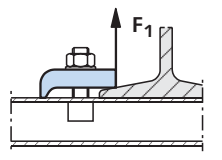
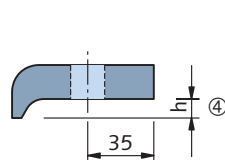
KLP - 60

Beam clamps
(formerly DIN 3568)

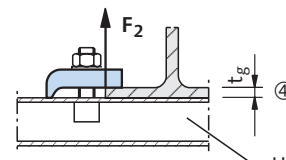


fv h.d. galvanised Type	Stock no. 0325.020-	Clamping height h [mm]	Perm. load ③ [kN]	recommended use with		
				Standard channel I	Standard channel I P B	crane / running rails ④
60/10	00001	10	F ₁ = 7,0 T-head bolt M 16 x 60, grade 4.6	120 - 160	100	A65, S 33, S 41
60/12	00002	12		220 - 240	140	A100, S 49, A75
60/14	00003	14		240 - 280	160 - 180	A120, S 54
60/16	00004	16	F ₂ = 11,25 T-head bolt M 16 x 60, grade 8.8	300 - 340	200 - 220	S 64
60/18	00005	18 ②		360 - 380	240 - 260	-
60/20	00006	20 ②		400 - 450	280 - 300	-

Order example: KLP - 60/10 - fv or Stock no. 0325.020-00001

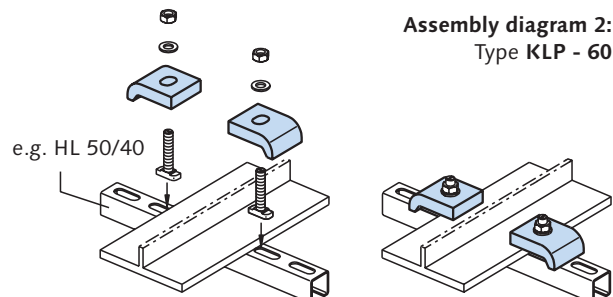
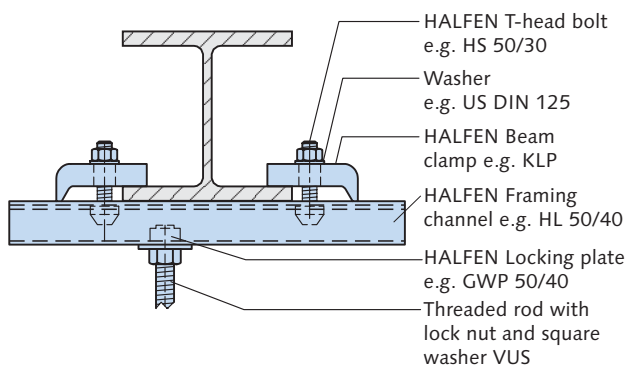


Load scheme KLP - 60



HALFEN Framing
channel

Assembly diagram 2:
Type KLP - 60

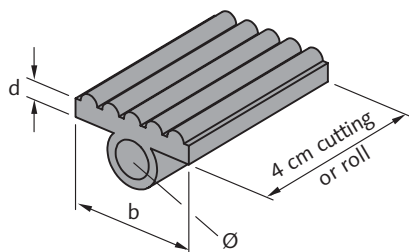


HALFEN FRAMING SYSTEMS ACCESSORIES

Sound Attenuator, Ductwork Suspensions

SDM

Sound attenuator



Material:

Elastomer - technical quality (EPDM)
45 ± 5 Shore

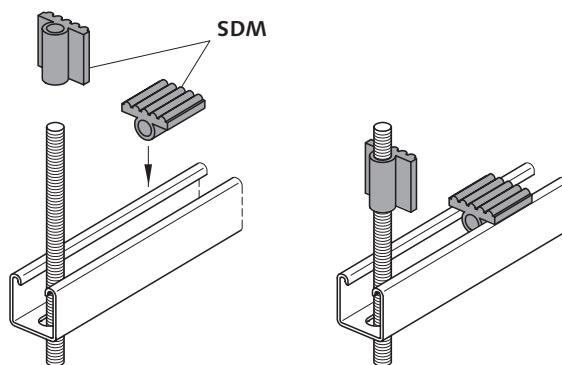
Type	b/d [mm]	Stock no.	Standard	Fits to Channel with slid width [mm]	Type	Fits to threaded rod
SDM 41/8 - roll	①	00001	●	22	50/40, 41/41 — 41/83	Ø M 12
SDM 41/8 - 4cm - piece		00002	●			
SDM 36/6 - roll	①	00003	●	18	36/36	Ø M 10
SDM 36/6 - 4cm - piece		00004	●			
SDM 28/6 - roll	①	00005	●	12 - 14	28/28, 26/ 26, 28/15	Ø M 8
SDM 28/6 - 4cm - piece		00006	●			

① Please indicate length [m] when ordering. The product is kept in stock length of 30m.

Order example meter length: **SDM 36/ 6 - roll, 16 m** or Stock no. **0319.000-00003, 16m**

Order example 4cm - piece: **SDM 36/ 6 - 4cm - piece** or Stock no. **0319.000-00004**

Assembly diagram SDM:



Fitting elements for ductwork suspensions

Fixing point

- to concrete constructions: HALFEN Framing channel (→ p. 94 - 96)
- to steel beam: beam clamp

Threaded rod

electroplated → Seite 44

Sound attenuator

Material: EPDM (see above)

HALFEN slotted channel

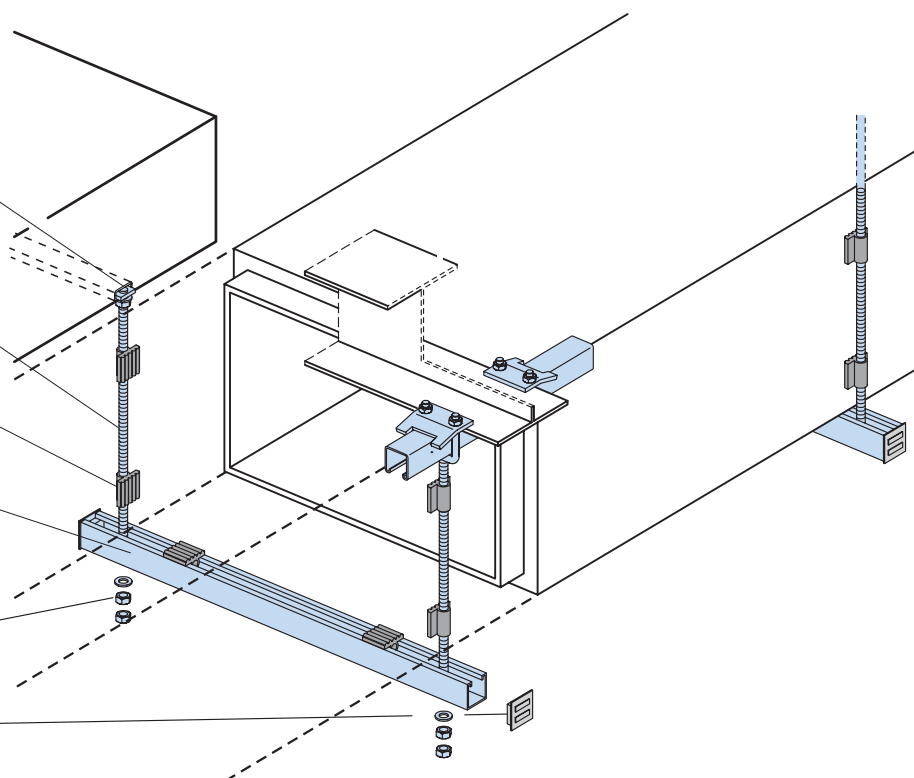
h.d. galvanised, pre-galvanised
Channel to accomodate load in accordance with table p. 56 - 57

Washers, nuts

electroplated
→ p. 44

Channel end cap

HPE → p. 46

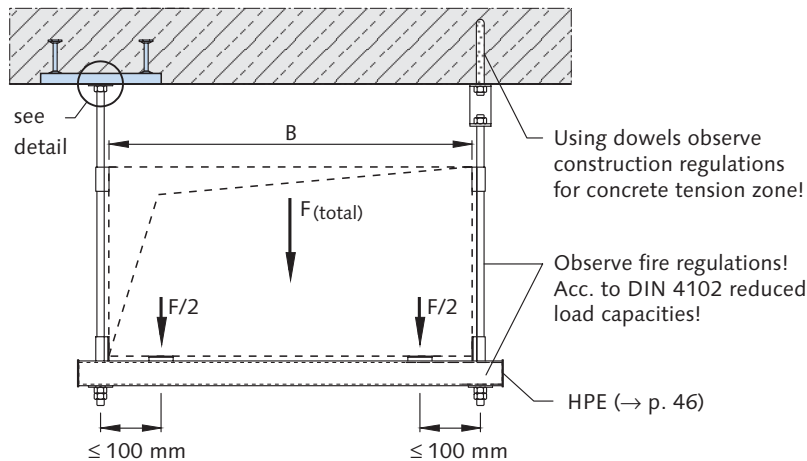


HALFEN FRAMING SYSTEMS

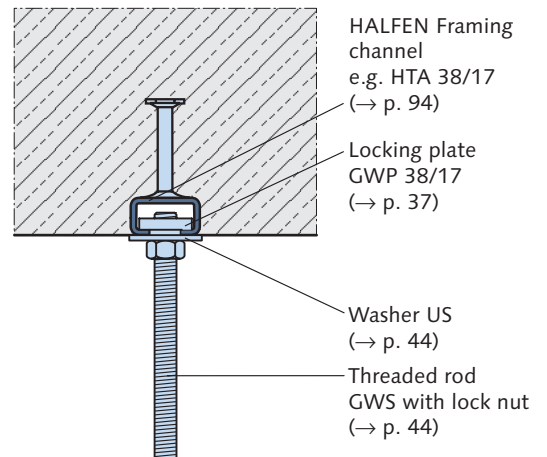
Ductwork Suspensions

Selection of Channels, perm. loads

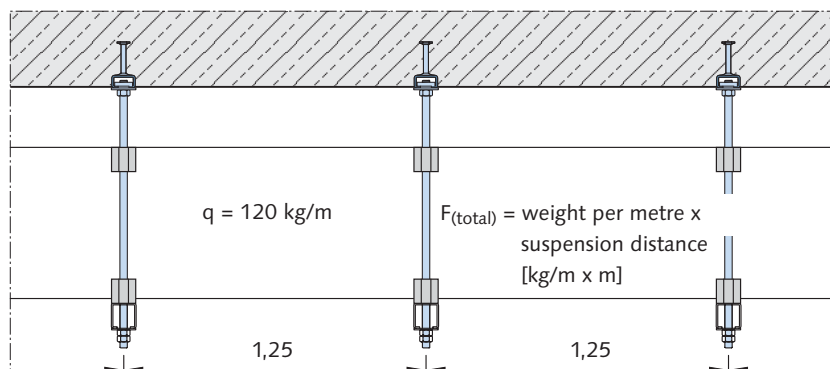
Assembly diagram:



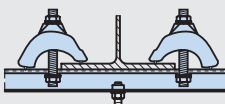
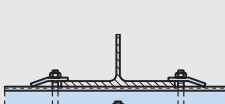
Detail: Fixing to HALFEN Framing channel

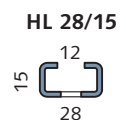
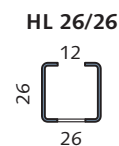
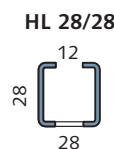
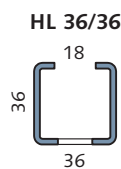
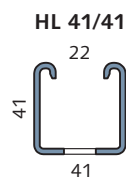
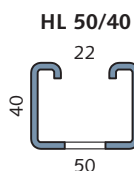


Example:



Ductwork 1000/ 500 mm
 Wall thickness 2 x 30 mm
 Weight per metre 120 kg/m
 Suspension distance 1,25 m
 $F_{(total)}$ 120,0 x 1,25
 150,0 kg ~ 1,5 kN
 selected:
 Ch. HL 28/28 (perm. $F_{(total)}$ = 3,0 kN)

Channel	F _(total)		Threaded rod	Sound attenuator	Ch. End cap	Fixing to concrete ≥ B 25			Fixing to Steel beam	
						HALFEN channels	Dowel (acc. to official approval certificate)			Beam clamp HCS TK-L (→ S. 48) HALFEN Framing Channel HL 50/40, HS 50/30 M12
Type	[kN]	[kg]	Thread	Type	Type		Type	Press. zone		
HL 50/40	10,0	1000	M 12 - M 16	SDM 41/8	HPE 50/40	HTA 40/22	M 12 - M 16	M 12 - M 16		
HL 41/41	8,0	800	M 12 - M 14	SDM 41/8	HPE 41/41	HTA 38/17	M 12	M 12		
HL 36/36	6,0	600	M 12 - M 14	SDM 36/6	HPE 36/36	HTA 38/17	M 12	M 12		
HL 28/28	3,0	300	M 10 - M 12	SDM 28/6	HPE 28/28	HTA 28/15	M 10	M 10		
HL 26/26	1,4	140	M 10 - M 12	SDM 28/6	HPE 26/26	HTA 28/15	M 10	M 10		
HL 28/15	1,2	120	M 8	SDM 28/6	—	HTA 28/15	M 8	M 8	 Beam clamp HVT 41- 85 (→ p. 47) HALFEN Framing Channel HL 41/41	



HALFEN FRAMING SYSTEMS

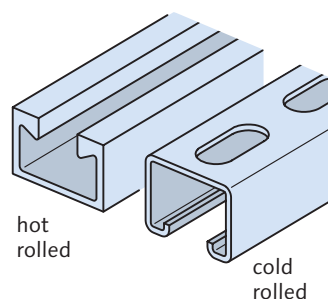
Materials, Finishes

HALFEN Channels

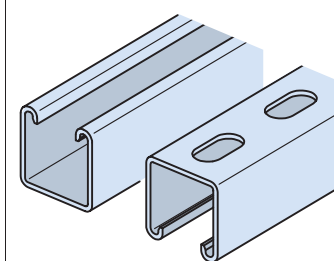
Heavy Duty Framing Systems

Medium Duty Framing Systems

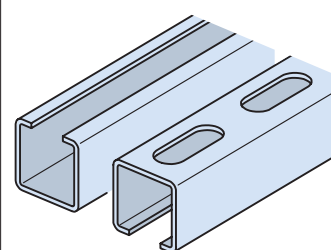
Light Duty Framing Systems



pages 6 - 21



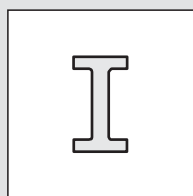
pages 22 - 31



pages 32 - 43

Material / finish:

Order code



mill finish

wb

Hot rolled:
Material S235JRG2 (RSt 37-2),
DIN EN 10025;
cold rolled:
Material S235JR (St 37-2),
DIN EN 10025

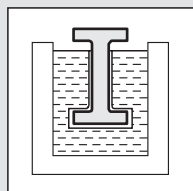
mill finish

Material S235JR (St 37-2),
DIN EN 10025
resp. equivalent steel grade
acc. to British Standard BS 1449,
Sect. 1.4, 1991

mill finish

Material S235JR (St 37-2),
DIN EN 10025

mill finish



hot-dip galvanised
DIN EN ISO 1461
suitable for outdoor applic.

fv

Hot rolled:
Material S235JRG2 (RSt 37-2),
DIN EN 10025;
Cold rolled:
Material S235JR (St 37-2),
DIN EN 10025

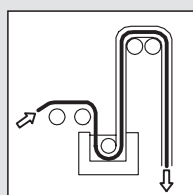
hot-dip galvanised,
zinc coating min. 50µm

Material S235JR (St 37-2),
DIN EN 10025
resp. equivalent steel grade
acc. to British Standard BS 1449,
Sect. 1.4, 1991

hot-dip galvanised,
zinc coating min. 50µm

Material S235JR (St 37-2),
DIN EN 10025

hot-dip galvanised,
zinc coating min. 50µm



pre-galvanised
EN 10142
suitable for indoor applic.

sv

Material Fe E 280 G Z 275 NA
EN 10147

pre-galvanised,
zinc coating min. 20µm

Material Fe E 280 G Z 275 NA
EN 10147

pre-galvanised,
zinc coating min. 20µm



Stainless steel
DIN EN 10088 resp. DIBt
approval certificate Z-30.3-6

A2

A4

HCR

Material 1.4571 / 1.4401,
DIN 17440

Material 1.4571 / 1.4401,
DIN 17440

Material 1.4301
DIN 17440

Material 1.4571 / 1.4401,
DIN 17440

HCR = high corrosion resistant
Stainless steel; Material 1.4529 or
1.4547, DIN EN 10088, for
Channels 28/15, 38/17 and 49/30
on request.

HALFEN FRAMING SYSTEMS

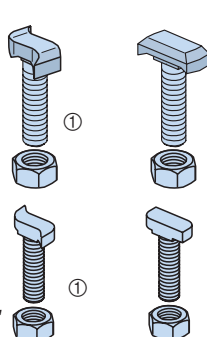
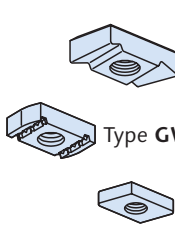
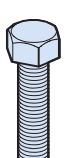
HALFEN T-head Bolts, Assembly Accessories

T-head bolts, Accessories:

① Halfen bolts for increased security during assembly: The new S- shape of the head provides additional security for correct locking of bolt inside the channel; avoiding any risk of turning during assembly, even when differing profile widths occur due to manufacturing tolerances. During the period of change to the new bolt shape, both bolts are supplied. Patents pending.

Material / finish:

Order code 

Halfen T-head bolts	Locking plates	Hexagon head bolts	Hexagon nut
Types HS, HSR, HZS  incl. nut pages 9 - 19, 31, 35 - 43	 Type GWP pages 9 - 19, 31, 35 - 43	 Type HSK DIN 933 resp. EN 24017 page 44	 Type MU DIN 934 or DIN EN 24032 page 44
hot dip galvanised, zinc coating min. 45 µm, strength grade 4.6 according to DIN ISO			hot dip galvanised, zinc coating min. 45 µm, strength grade 8 acc. to DIN ISO
hot dip galvanised, zinc coating min. 45 µm, strength grade 8.8 according to DIN ISO			
zinc electroplating, zinc coating min. 12 µm, strength grade 4.6 according to DIN ISO	zinc and chrome electroplating, zinc coating min. 5 µm		zinc and chrome electroplating, zinc coating min. 5 µm, strength grade 8 according to DIN ISO
zinc electroplating, zinc coating min. 12 µm, strength grade 8.8 according to DIN ISO		zinc electroplating, zinc coating approx. 5 µm, strength grade 8.8 according to DIN ISO	
			Stainless steel A2
Grade A2-50, DIN 267, Part 11			
Grade A2-70, DIN 267, Part 11			
	Stainless steel A4	Stainless steel A4 - 70	Stainless steel A4
Grade A4-50, DIN 267, Part 11			
Grade A4-70 DIN 267, Part 11			
Material No. 1.4529, grade HCR-50 acc. to DIN EN ISO 3506-1 (on req.)			

Framing Channels, Bolts

1

Accessories

2

Design Properties

3

Support Structures

4

Cantilevers

5

Pipe Clamps, Pipe Supports

6

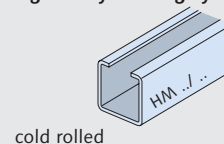
Notes, Work aid

7

HALFEN Framing Channels, plain back

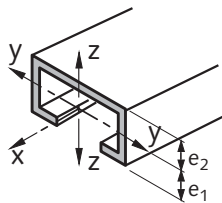
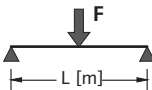
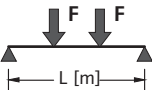
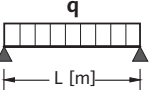
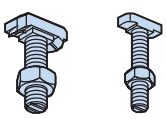
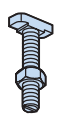
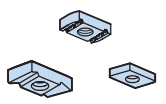
to follow see right page

Heavy Duty Framing Systems



HALFEN FRAMING SYSTEMS

HALFEN Framing Channels, plain back

			Bending load capacity at span L ②									matching HALFEN T-head bolts		matching Locking plates		Other accessories see page		
																		
			F [kN]	F [kN]	F [kN]	F [kN]	F [kN]	F [kN]	q [kN/m]	q [kN/m]	q [kN/m]						Type	Thread
L =			0,50m	1,00m	1,50m	0,50m	1,00m	1,50m	0,50m	1,00m	1,50m							
Heavy Duty Framing Systems		HM 72/48	21,0	11,3	7,6	15,2	8,5	5,0	44,0	22,0	9,0	HS / HSR 72/48	M20-M30	GWP 72/48	M12-M20	8-9		
		HM 52/34	8,7	4,4	2,2	6,2	3,0	1,3	16,4	8,2	2,4	HS / HSR 50/30	M10-M20	GWP 50/30	M 8-M16	10-11		
		HM 50/30	5,4	2,7	1,2	3,9	1,6	0,7	9,0	4,5	1,3	HS / HSR 50/30	M10-M20	GWP 50/30	M 8-M16	12-13		
		HM 40/22	2,7	1,1	0,49	2,0	0,65	0,29	3,4	1,7	0,52	HS / HSR 40/22	M10-M16	GWP 40/22	M 6-M12	14-15		
	L =			1,00m	2,00m	3,00m	1,00m	2,00m	3,00m	1,00m	2,00m	3,00m						
		HM 72/48 D *	34,2	17,1	11,4	25,4	12,9	7,29	34,2	17,1	6,5	HS / HSR 72/48	M20-M30	GWP 72/48	M12-M20	8-9		
		HM 52/34 D *	13,5	6,7	3,4	10,2	4,5	2,0	12,2	6,1	1,8	HS / HSR 50/30	M10-M20	GWP 50/30	M 8-M16	10-11		
		HM 50/30 D *	7,3	3,6	1,6	5,5	2,2	0,9	5,8	2,9	0,8	HS / HSR 50/30	M10-M20	GWP 50/30	M 8-M16	12-13		
		HM 40/22 D *	3,6	1,3	0,6	2,7	0,8	0,3	2,2	1,1	0,3	HS / HSR 40/22	M10-M16	GWP 40/22	M 6-M12	14-15		
	L =			0,50m	1,00m	1,50m	0,50m	1,00m	1,50m	0,50m	1,00m	1,50m						
		HZM 38/23	4,1	1,4	0,6	3,0	0,8	0,3	4,4	2,2	0,6	HZS / HS 38/23	M12-M16	GWP 38/17	M12-M20	16-17		
		HZM 29/20	2,3	0,6	0,3	1,6	0,4	0,1	2,0	1,0	0,3	HZS / HS 29/20	M12	GWP 28/15	M 8-M16	16-17		
		HM 49/30	4,5	2,3	1,0	3,3	1,3	0,6	7,4	3,7	1,1	HS 50/30	M10-M20	GWP 50/30	M 8-M16	12-13		
		HM 40/25	2,5	1,0	0,4	1,9	0,6	0,2	3,4	1,7	0,5	HS 40/22	M10-M16	GWP 40/22	M 6-M12	14-15		
		HM 50/40	6,9	3,4	2,0	5,2	2,6	1,2	13,8	6,9	2,2	HS 50/30	M10-M20	GWP 50/3(4)0	M 6-M16	18-19		
		HM 486	3,3	1,6	0,7	2,5	0,9	0,4	6,7	2,5	0,7	HS 50/30	M10-M20	GWP 50/3(4)0	M 6-M16	18-19		
		HM 422 (C40)	1,8	0,69	0,31	1,3	0,41	0,18	3,6	1,1	0,33	HS 40/22	M10-M16	GWP 40/22	M 6-M12	14		
Medium Duty Framing Systems	L =			0,50m	1,00m	1,50m	0,50m	1,00m	1,50m	0,50m	1,00m	1,50m						
		HM 41/41	5,4	2,7	1,7	4,0	2,0	1,0	11,0	5,5	1,8	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	24		
		HZM 41/41	5,3	2,6	1,6	4,0	2,0	0,9	10,6	5,3	1,7	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	26		
		HM 41/22	1,8	0,6	0,2	1,4	0,3	0,1	2,0	1,0	0,3	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	25		
		HZM 41/22	1,7	0,6	0,2	1,3	0,3	0,1	2,0	1,0	0,3	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	27		
		L =			1,00m	2,00m	3,00m	1,00m	2,00m	3,00m	1,00m	2,00m	3,00m					
		HM 41/83 *	8,3	4,1	2,5	6,3	3,1	1,5	8,2	4,1	1,3	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	29		
		HM 41/62 *	5,2	2,6	1,2	3,9	1,6	0,7	4,4	2,2	0,6	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	28		
		L =			1,00m	1,50m	2,00m	1,00m	1,50m	2,00m	1,00m	1,50m	2,00m					
			HM 41/41 D *	7,4	4,9	3,7	5,6	3,7	2,8	14,9	6,6	3,7	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	24	
			HZM 41/41 D *	7,0	4,7	3,5	5,2	3,5	2,6	14,1	6,2	3,5	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	26	
	HM 41/22 D *		2,3	1,3	0,7	1,7	0,7	0,4	2,8	1,4	0,6	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	25		
	HZM 41/22 D *		2,3	1,3	0,7	1,7	0,7	0,4	2,8	1,4	0,6	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	27		
	HM 41/62 D *		15,1	10,1	7,5	11,4	7,6	5,7	26,8	13,4	7,5	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	28		
Light Duty Framing Systems	L =			0,50m	1,00m	1,50m	0,50m	1,00m	1,50m	0,50m	1,00m	1,50m						
		HM 36/36	3,9	1,9	1,0	3,0	1,4	0,6	7,8	3,9	1,1	HS 38/17	M10-M16	GWP 38/17	M 6-M12	34-35		
		HM 38/17	1,4	0,4	0,19	1,0	0,25	0,11	2,7	0,69	0,20	HS 38/17	M10-M16	GWP 38/17	M 6-M10	36-37		
		HM 315 (C30)	0,59	0,16	0,07	0,38	0,09	0,04	1,03	0,26	0,08	–	–	GWP 28/15	M 6-M10	40-41		
		HM 28/28	1,9	0,93	0,41	1,45	0,55	0,24	3,8	1,4	0,44	HS 28/15	M 6-M12	GWP 28/15	M 6-M10	38-39		
		HM 26/26	1,1	0,51	0,23	0,84	0,30	0,17	2,2	0,82	0,24	HS 28/15	M 6-M12	GWP 28/15	M 6-M10	38-39		
		HM 28/15	0,81	0,21	0,09	0,49	0,12	0,05	1,33	0,33	0,10	HS 28/15	M 6-M12	GWP 28/15	M 6-M10	40-41		
		HM 20/12	0,25	0,06	0,03	0,15	0,04	0,02	0,4	0,10	0,03	HS 20/12	M 6-M 8	GWP 20/12	M 5-M 6	42-43		

- ① Observe minimum distance a_e between Channel end and load point (T-head bolt, locking plate):

• Heavy and medium duty framing systems: $a_e \geq 30 \text{ mm}$
• light duty framing systems: $a_e \geq 15 \text{ mm}$

- ② Do not exceed T-head bolt load capacity (p. 60 - 61) and max. point loading at channel slot (p. 54 + 56).
The lowest value is base of calculation.

- ③ Acc. to max. perm. point loading:
Max F = max. bending load capacity on the channel lips.

All load bearing values are calculated elastic-plastic according to DIN 18 800.

Part safety coefficient $\gamma_F = 1,4$. Deflexion $\geq 1/150$.

*) Possible bulging, tilting and buckling must be prevented by appropriate measurements.

HALFEN FRAMING SYSTEMS

HALFEN Framing Channels, slotted

			Type	● Standard ○ to order - not available					Channel weight G [kg/m]	Cross section A [cm²]	Centre of load		Moment of inertia		Section modulus			max. perm. point loading	
				wb = mill finish	sv = pre-galvan.	fv = h.d. galvan.	A2	A4			e ₁ [cm]	e ₂ [cm]	I _y [cm ⁴]	I _z [cm ⁴]	W _y [cm ³]	W _z [cm ³]	W _{pl, y} [cm ³]	max F ^③ [kN]	max F ^① [kN]
H.D. Fr. Sys.		HL 50/ 40	●	-	●	-	●	3,15	3,73	1,95	1,95	7,14	15,36	3,65	6,27	4,68	5,4	53,5	
		HZL 63/63	-	-	●	-	-	6,35	7,09	3,01	3,29	33,07	42,95	10,06	13,63	13,51	5,6	134,0	
Medium Duty Fr. Systems		HL 41/41	●	●	●	-	●	2,46	2,98	2,14	1,99	6,07	9,16	2,84	4,43	3,82	5,6	42,0	
		HZL 41/41	●	-	●	-	●	2,46	2,90	2,18	1,95	5,87	9,04	2,69	4,38	3,70	5,6	41,0	
		HL 41/22	●	●	●	-	●	1,57	1,95	1,11	0,96	0,99	5,27	0,89	2,55	1,27	5,6	12,0	
		HZL 41/22	●	-	●	-	●	1,57	1,87	1,13	0,94	0,97	5,15	0,86	2,49	1,23	5,6	12,0	
		HL 41/83	●	○	●	-	-	3,93	5,02	4,19	4,07	37,07	16,93	8,85	8,20	12,03	5,6	133,0	
		HL 41/62	●	○	●	-	-	3,14	3,99	3,16	3,04	17,27	13,03	5,47	6,31	7,35	5,6	81,0	
Light D. Fr. Sys.		HL 36/36	●	-	●	-	●	2,00	2,42	1,85	1,75	3,65	5,78	1,97	3,21	2,64	4,4	36	
		HL 28/28	●	●	●	-	●	1,22	1,48	1,39	1,41	1,33	1,98	0,95	1,47	1,25	3,0	25	
		HL 26/26	-	●	-	-	-	0,72	0,89	1,29	1,31	0,73	1,16	0,56	0,89	0,72	1,1	40	
		HL 28/15	●	-	●	●	●	0,86	1,16	0,79	0,71	0,32	1,35	0,40	0,98	0,55	3,9	7	
		HL 20/12	●	-	●	●	-	0,45	0,53	0,61	0,59	0,09	0,35	0,14	0,36	0,19	2,2	4	

to follow see right page

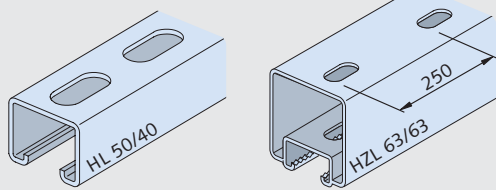
All load bearing values are calculated elastic-plastic according to DIN 18 800.
 Part safety coefficient $\gamma_F = 1,4$. Deflexion $\geq l / 150$.

① Observe minimum distance a_e between Channel end and load point (T-head bolt, locking plate):

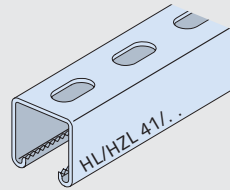
- Heavy and medium duty framing systems: $a_e \geq 30$ mm
- light duty framing systems: $a_e \geq 15$ mm

HALFEN Framing Channels, slotted:

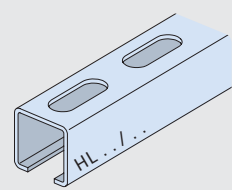
Heavy Duty Framing Systems



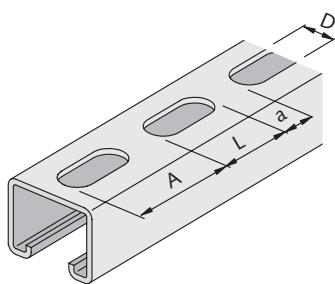
Medium Duty Framing Systems



Light Duty Framing Systems



Hole sizes and spacing



Heavy Duty Framing Systems				
Channel	D [mm]	L [mm]	A [mm]	a [mm]
HL 50/40	18	40	60	20
63/63	14	28	250	-

Medium Duty Framing Systems				
Channel	D [mm]	L [mm]	A [mm]	a [mm]
HL / HZL 41/41	14	28	50	22
41/41	14	28	50	22
41/22	14	28	50	22
41/22	14	28	50	22
41/83	15	40	60	20
41/62	15	40	60	20

Light Duty Framing Systems				
Channel	D [mm]	L [mm]	A [mm]	a [mm]
HL 36/36	15	40	60	20
28/28	12,5	25	40	15
26/26	12,5	25	40	15
28/15	9	25	40	15
20/12	9	25	40	15

Other hole sizes and spacings on request:
 e.g. Channel 28/28 also with RL Ø 11 or
 LL 11 x 40 every 60 mm.

HALFEN FRAMING SYSTEMS

HALFEN Framing Channels, slotted

			Bending load capacity at span L									matching HALFEN T-head bolts		matching Locking plates		Other access- ories see page
			F [kN]			F [kN]			q [kN/m]			Type	Thread	Type	Thread	
L =			0,50m	1,00m	1,50m	0,50m	1,00m	1,50m	0,50m	1,00m	1,50m					
H.D. Fr. Sys.		HL 50/ 40	5,8	2,9	1,7	4,4	2,2	1,0	11,6	5,8	1,8	HS 50/30	M10-M20	GWP 50/30 GWP 50/40	M 6-M16	18 - 19
		HZL 63/63	16,2	8,3	5,5	11,7	6,1	4,1	33,6	16,8	7,4	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	20 - 21

Medium Duty Fr. Systems		HL 41/41	4,7	2,3	1,4	3,6	1,8	0,87	9,4	4,7	1,5	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	24	
		HZL 41/41	4,6	2,3	1,4	3,4	1,7	0,84	9,2	4,6	1,5	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	26	
		HL 41/22	1,5	0,54	0,24	1,2	0,32	0,14	1,7	0,86	0,25	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	25	
		HZL 41/22	1,5	0,53	0,23	1,1	0,31	0,14	1,6	0,84	0,25	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	27	
		L =			1,00m	2,00m	3,00m	1,00m	2,00m	3,00m	1,00m	2,00m	3,00m				
		HL 41/83	7,5	3,7	2,2	5,6	2,8	1,3	7,4	3,7	1,1	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	29	
		HL 41/62	4,5	2,2	1,0	3,4	1,3	0,6	3,6	1,8	0,5	HZS 41/41, 41/22	M 8-M16	GWP 41/41	M 6-M16	28	

Light D. Fr. Sys.		L =			0,50m	1,00m	1,50m	0,50m	1,00m	1,50m	0,50m	1,00m	1,50m				
		HL 36/36	3,3	1,6	0,88	2,5	1,1	0,52	6,2	3,1	0,94	HS 38/17	M10-M16	GWP 38/17	M 6-M12	34 - 35	
		HL 28/28	1,5	0,73	0,32	1,1	0,43	0,19	2,2	1,1	0,34	HS 28/15	M 6-M12	GWP 28/15	M 6-M10	38 - 39	
		HL 26/26	0,90	0,40	0,18	0,68	0,24	0,10	1,5	0,64	0,19	HS 28/15	M 6-M12	GWP 28/15	M 6-M10	38 - 39	
		HL 28/15	0,69	0,17	0,08	0,4	0,10	0,05	0,5	0,28	0,08	HS 28/15	M 6-M12	GWP 28/15	M 6-M10	40 - 41	
		HL 20/12	0,19	0,05	0,02	0,1	0,03	0,01	0,2	0,08	0,02	HS 20/12	M 6-M 8	GWP 20/12	M 5-M 6	42 - 43	

See note on page 56.

② Do not exceed T-head bolt load capacity (p. 60 - 61) and max. point loading at channel slot (p. 54 + 56).
The lowest value is base of calculation.

③ Acc. to max. perm. point loading:
Max F = max. bending load capacity on the channel lips.

*) Possible bulging, tilting and buckling must be prevented by appropriate measurements.

HALFEN FRAMING SYSTEMS

Load Capacity Values for HALFEN Framing Channels

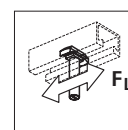
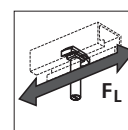
Load capacity values for welded-on HALFEN Framing channels

Type	Channel	Welding seams		Fixing space ew [mm]	Load capacity ①		longitud. tensile load, every angle F _L [kN]
		aw [mm]	lw [mm]		tensile load $\alpha \leq 60^\circ$ F _Z [kN]	transverse load $\gamma < 60^\circ$ F _Q [kN]	
hot rolled	HM 72/48	5	50	300	31,0	9,3	④
	HM 52/34	4	30	200	17,0	5,9	④
	HM 50/30	3	30	200	11,0	3,0	④
	HM 40/22	3	30	150	5,7	2,5	④
	HZM 38/23 NEW!	3	30	200	12,0	3,3	12,0
	HZM 29/20 NEW!	3	30	150	8,0	2,2	8,0
cold rolled ③	HM 50/40	3	30	400	5,4	1,9	④
	HZM 41/41 ②	3	30	300	5,6	1,2	5,0
	HZM 41/22 ②	3	30	120	5,6	1,5	5,0
	HM 41/41 ②	3	30	300	5,6	1,2	④
	HM 41/22 ②	3	30	120	5,6	1,5	④
	HM 36/36	3	30	300	4,4	1,2	④
	HM 38/17	3	30	100	4,8	2,5	④
	HM 28/15	3	30	100	2,5	1,2	④

① Values do not apply for Stainless steel channels → p. 60

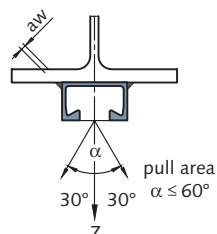
② Values do not apply for Stainless steel channels → p. 31

③ Load capacities given for cold rolled channels, welded in cold formed areas, refer to secondary, non safety-relevant applications.

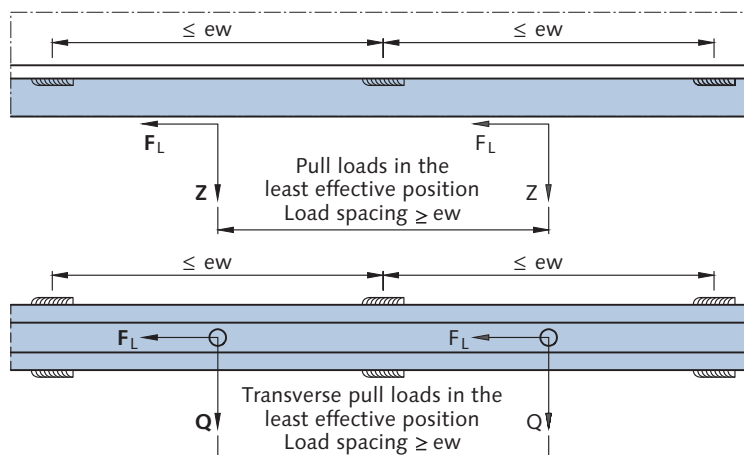
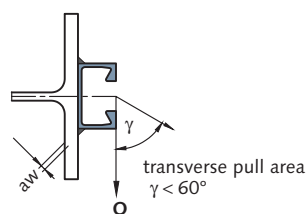


④ Perm. loads in longitudinal direction for smooth (untoothed) framing channels → pages 60 - 61

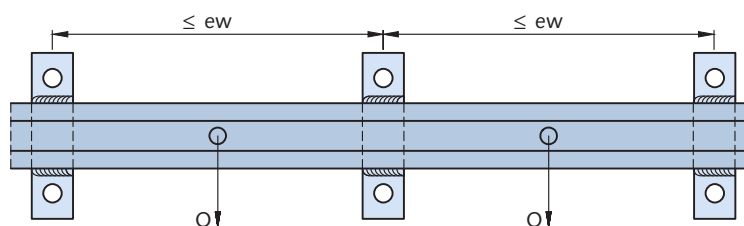
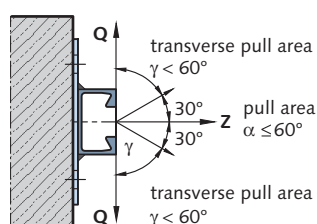
HALFEN Framing channels Type HM welded to steel parts



The transverse capacity values apply for transverse load on front edge of the channel. Where the load is higher (e.g. spaced fixing), the additional bolt bending moment should be included and superimposed on the transverse pull loads.
→ Example p. 59



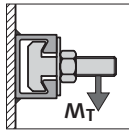
HALFEN Framing channels Type HM bolted to concrete elements



HALFEN FRAMING SYSTEMS

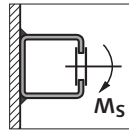
Load Capacity Values for HALFEN Framing Channels

Perm. bending moments for T-head bolts
taken from front edge of channel

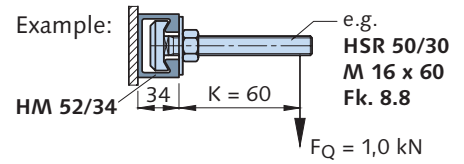


Thread	grade			
	4.6	8.8	A2 - 50 A4 - 50	A2 - 70 A4 - 70
	M _T [Nm]	M _T [Nm]	M _T [Nm]	M _T [Nm]
M 6	2,0	5,1	1,8	3,8
M 8	5,0	12,5	4,4	9,4
M 10	10,0	24,9	8,7	18,7
M 12	17,5	43,7	15,3	32,8
M 16	44,4	111,0	38,8	83,3
M 20	86,5	216,4	75,7	162,3
M 24	149,7	374,2	131,1	–
M 27	221,9	554,8	–	–
M 30	299,9	749,7	–	–

Perm. elbow support moment
for HALFEN Channels



Channel	M _S [Nm]	Channel	M _S [Nm]
72/48	498	41/41	81
52/34	231	36/36	39
50/30	99	38/17	30
40/22	52	315	7
38/23	87	28/28	20
29/20	52	26/26	7
50/40	109	28/15	15
486	53	20/12	5
422	28		



HALFEN Channel **HM 52/34**
perm. M_S = 250 Nm > 60 Nm
perm. F_Q = 5,90 kN > 1,00 kN (page 58)

HALFEN Channel **HSR 50/30 - M16, Fk. 8.8**
perm. M_T = 111 Nm > 60 Nm
actual Q = 36,1 × (1 - 60/111) (page 11 → F_S)
= 16,58 kN > 1,00 kN

For bolt bending with additional pull, diagonal pull or transverse pull, the loads should be overlaid:

$$Z, Q \leq \text{perm. } Z, Q (1 - M / \text{perm. } M)$$

Note:

The bending moment of T-head bolt M_T
must not exceed the perm. elbow support
moment M_S of HALFEN Channel.

perm. Z, Q = perm. pull resp. diagonal pull
resp. transverse load

perm. M = perm. bending moment T-head
bolt

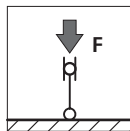
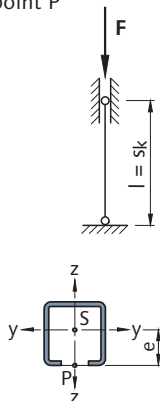
Z, Q = existing pull resp. diagonal pull
resp. transverse load

M = existing bending moment T-head
bolt

Load capacity values for HALFEN Framing channels as compression members

Buckling detection acc.
to DIN 18 800

- load applied to
point P



- ① F = permitted working load
Part safety factor for forces γ_f = 1,4, E = 170 000 N/mm²
② F = permitted working load
Part safety factor for forces γ_f = 1,4, E = 210 000 N/mm²

HALFEN Channel	Channel data							Perm. working load F [kN] ① at member length L [mm]:									
	A [cm ²]	e [cm]	I _y [cm ⁴]	W _y [cm ³]	W _{pl} [cm ³]	i _y min [cm]		500 F [kN]	1000 F [kN]	1500 F [kN]	2000 F [kN]	2500 F [kN]	3000 F [kN]	3500 F [kN]	4000 F [kN]	4500 F [kN]	5000 F [kN]
Type																	
HM 72/48	11,23	2,41	34,99	14,33	18,28	1,77		60,3	54,5	46,1	36,9	29,2	23,2	18,7	15,3	12,7	10,7
HM 52/34	6,32	1,68	9,42	5,49	7,09	1,22		32,1	26,1	19,0	13,6	10,0	7,5	5,9	4,7	3,8	3,1
HM 52/34 D	12,65	1,72	56,19	16,53	21,73	2,11		84,1	75,9	64,4	51,8	40,9	32,4	26,1	21,3	17,6	14,8
HM 50/30	4,11	1,56	5,23	3,35	4,34	1,13		21,9	16,9	11,7	8,1	5,8	4,4	3,3	2,6	–	–
HM 40/22	2,70	1,23	2,02	1,65	2,19	0,87		13,6	8,9	5,5	3,6	2,5	1,8	–	–	–	–
HM 50/40	4,27	2,18	8,66	3,97	5,55	1,42		22,9	19,6	15,2	11,3	8,5	6,5	5,1	4,1	3,4	2,8
HL 50/40	3,73	1,95	7,14	3,65	4,68	1,38		19,1	16,3	12,5	9,3	7,0	5,4	4,2	3,4	2,8	2,3
HZL 63/63 ②	7,09	3,01	33,07	10,06	13,51	2,16		26,8	26,4	23,3	21,3	19,2	17,1	15,2	13,4	11,9	10,5
HM/HZM 41/41	3,25	2,38	6,91	2,91	4,26	1,46		16,9	14,6	11,5	8,7	6,6	5,1	4,0	3,2	–	–
HM/HZM 41/41D	6,51	4,13	33,74	8,16	11,36	1,68		27,5	25,5	23,2	20,7	17,4	13,8	11,1	9,1	7,5	6,3
HZL/HL 41/41	2,90	2,18	5,87	2,69	3,70	1,42		14,4	12,5	9,8	7,4	5,6	4,3	3,4	2,7	–	–
HM 36/36	2,79	2,07	4,51	2,18	3,17	1,27		14,3	11,8	8,7	6,3	4,6	3,5	2,7	–	–	–
HL 36/36	2,42	1,85	3,65	1,97	2,64	1,23		11,7	9,6	7,1	5,1	3,8	2,8	2,2	–	–	–
HM 28/28	1,73	1,58	1,70	1,08	1,54	0,99		8,5	6,2	4,1	2,8	2,0	–	–	–	–	–
HL 28/28	1,48	1,39	1,33	0,95	1,25	0,95		6,7	4,9	3,2	2,2	1,5	–	–	–	–	–
HM 26/26	1,05	1,48	0,94	0,64	0,89	0,95		5,2	3,7	2,3	1,6	–	–	–	–	–	–
HL 26/26	0,89	1,29	0,73	0,56	0,72	0,91		4,1	2,9	1,8	1,2	–	–	–	–	–	–

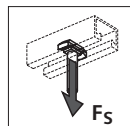
Note:
At higher excentricity,
the max. load should
be calculated in terms
of buckling in
accordance to
DIN 18 800.

HALFEN FRAMING SYSTEMS

Heavy and Light Duty Framing Systems

HALFEN T-head bolts Type HS, HSR - load capacities

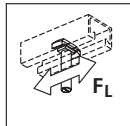
Pull out loads



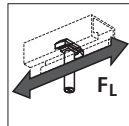
Note:

Generally the max. loads of HALFEN Channels are lower than those of T-head bolts (→ pages 54 - 59).

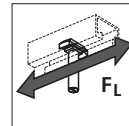
Longitudinal loads



T-head bolts
Type HS ②

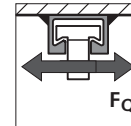


T-head bolts
Type HSR with
nibs ①



T-head bolts Type
HZS 38/23
and 29/20,
nibbed.
Fits to chan-
nels HZM
38/23 resp.
29/20
NEW!
→ page 17

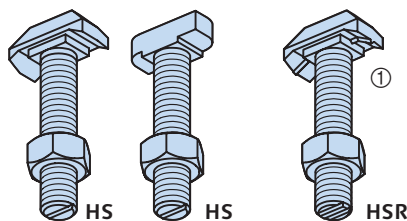
Transverse pull → page 58



Generally the open C channels determine the values. Perm. transverse loads depend on the construction. See also transverse load on welded channels on p. 58.

for mild steel channels

Halfen T-head bolts,
Material: **fv, gv**

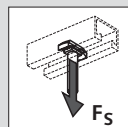


typically grade 4.6

grade 8.8

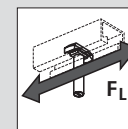
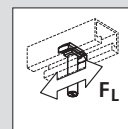
For grade of each bolt:
See type selection on p. 9 - 43

Max. pull out per T-head bolt



Thread	grade 4.6 [kN]	grade 8.8 [kN]
M 6	2,2	4,6
M 8	4,0	8,4
M 10	6,4	13,3
M 12	9,3	19,4
M 16	17,3	36,1
M 20	27,0	56,4
M 24	38,8	81,2
M 27	50,5	106,0
M 30	61,7	129,0

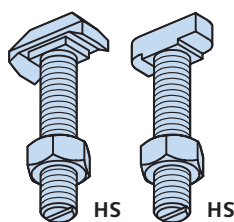
Max. longitudinal load per Halfen T-head bolt



Type HS, grade 4.6 at tightening torque [Nm]	Type HS, grade 8.8 at tightening torque [Nm]	Type HSR, grade 8.8 (v = 3) at tightening torque [Nm]
[kN] ②	[kN] ②	[kN] ①
0,1	0,4	
3	10	
8	24	
15	48	
25	70	
60	200	5,0
120	400	7,5
200	680	
300	1000	
400		

for stainless steel channels

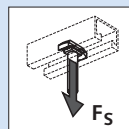
Stainless steel Halfen T-head bolts,
Material: **A4, A2**



Stainless steel grades
A2 - 50/ 70, A4 - 50/ 70

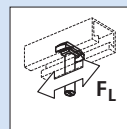
For grade of each bolt:
See type selection on p. 9 - 43

Max. pull out per T-head bolt



Thread	A2 - 50 A4 - 50 [kN]	A2 - 70 A4 - 70 [kN]
M 6	2,2	3,0
M 8	4,0	5,5
M 10	6,4	8,7
M 12	9,3	12,6
M 16	17,3	23,6
M 20	27,0	36,8
M 24	38,8	
M 27	50,5	
M 30	61,7	

Max. longitudinal load per Halfen T-head bolt



A2 - 50/70 A4 - 50/70 [kN]	at tightening torque [Nm]
0,1	3
0,2	8
0,3	15
0,5	25
0,9	60
1,4	120
2,0	200

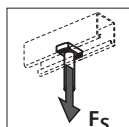
- ① Halfen T-head bolt with nibs. Permitted load as per official report FMPA Baden-Württemberg from 20.1.1986, $v \geq 3,0$.
- ② Calculated load capacity with safety coefficient $v \geq 3,0$. For constructions loaded in longitudinal direction, Halfen T-head bolts with nibs, Type HSR (p. 9 - 15, 31; not in Stainless steel), are to be used.

HALFEN FRAMING SYSTEMS

System 41 Series for Medium Loading

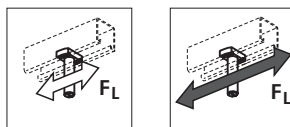
HALFEN Locking plates and T-head bolts System 41 Series - load capacities

Pull out loads



Generally the max. loads of HALFEN Channels are lower than those of T-head bolts
(→ pages 54 - 59).

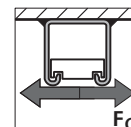
Longitudinal loads



In mild steel channels, the permissible load in longitudinal direction is higher than in stainless steel channels - due to the increased grip of flame-hardened locking-plate-teeth into the channel lips.
For stainless steel, we recommend toothed channels.

Important: Do not exceed tightening torque of T-head bolt.

Transverse pull → page 58

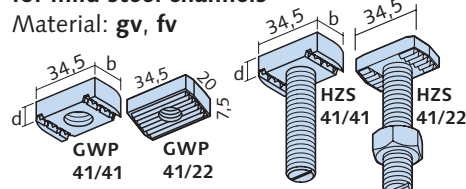


Generally the open C channels determine the values. Perm. transverse loads depend on the construction. See also transverse load on welded channels on p. 58.

Availability ● = Standard ○ = to order

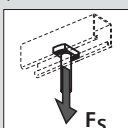
for mild steel channels

Material: **gv, fv**



Thread	Locking plates		T-head bolts		Dim. d/ b [mm]
	GWP 41/41	GWP 41/22	HZS 41/41	HZS 41/22	
M 6	●	●	—	—	6/ 20
M 8	●	●	●	—	8/ 20
M 10	●	●	●	—	9/ 20
M 12	● ①	—	—	—	11/ 20
F M 12	●	●	●	●	9/ 20
M 16	② ● ①	●	● ③	●	12/ 30

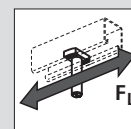
Max. pull out
per T-head bolt



for all Channels
41 Series
Do not exceed
channel load capacity.

Max. pull out per T-head bolt [kN]
5,0
6,0
7,0
9,0 ①
7,0
12,0 ①

Max. longitudinal load per Halfen T-head bolt



for Channels
**HM/HL
41/22, 41/41
41/62, 41/83**
[kN] ⑤

for toothed
Channels
**HZM/HZL
41/22, 41/41**
[kN]

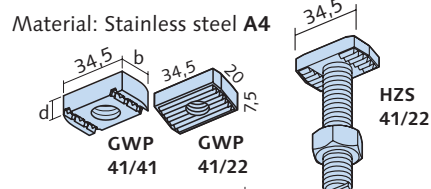
at tightening
torque
[Nm] ④

for Channels HM/HL 41/22, 41/41 41/62, 41/83 [kN] ⑤	for toothed Channels HZM/HZL 41/22, 41/41 [kN]	at tightening torque [Nm] ④
1,0	2,2	12
2,4	4,0	28
3,5	5,0	55
5,0 ①	5,0 ①	75
4,0	5,0	60 (50)
7,5 ①	7,5 ①	125 (80)

F = plain form, fits to all Channels 41 Series ①-⑤ see below

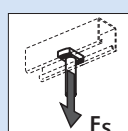
for stainless steel channels

Material: Stainless steel **A4**



Thread	Locking plates		T-head bolts HZS 41/22	Dim. d/ b [mm]
	GWP 41/41	GWP 41/22		
M 6	●	●	—	6/ 20
M 8	●	●	—	8/ 20
M 10	●	●	—	9/ 20
F M 12	●	●	●	9/ 20
M 16	② ● ①	●	●	12/ 30

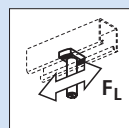
Max. pull out
per T-head bolt



Do not exceed
channel load capacity.

Do not exceed channel load capacity. [kN]
5,0
6,0
7,0
7,0
12,0 ①

Max. longitudinal load per Halfen T-head bolt



for Channels
**HM/HL
41/22, 41/41**

at tightening
torque
[Nm] ④

for toothed Channels
**HZM/HZL
41/22, 41/41**
[kN]

at tightening
torque
[Nm] ④

for Channels HM/HL 41/22, 41/41	at tightening torque [Nm] ④	for toothed Channels HZM/HZL 41/22, 41/41 [kN]	at tightening torque [Nm] ④
0,3	6,5	2,2	6,5
0,6	16,0	4,0	16,0
1,2	31,5	5,0	31,5
1,7	55,0 (50)	5,0	55,0 (50)
4,0	125,0 (80)	5,0 ①	125,0 (80)

① Do not fit to Channels 41/22

② Insert GWP 41/41-M16 (b = 30mm) from channel end.

③ HZS 41/41-M16 = forged, without toothing, max. longitudinal load: 4 kN

④ Values in brackets for Types **GWP 41/22** and **HZS 41/22**

⑤ Max. load in longitudinal direction does not apply to
T-head bolts **HS 41/22** and locking plates **GWP 41/22**

HALFEN FRAMING SYSTEMS

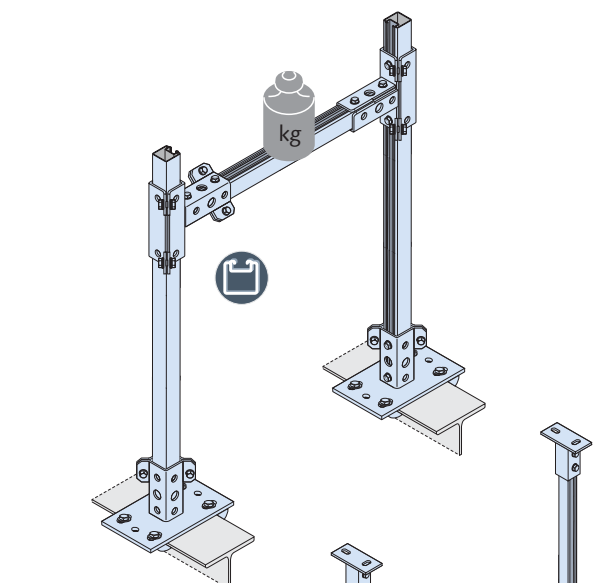
HALFEN POWERCLICK Framing System

Never has so little given so much:
THREE SIZES - one system

POWERCLICK SYSTEM 63

Suitable for pipes with nominal diameters up to 150 mm or 400 mm on agreed applications

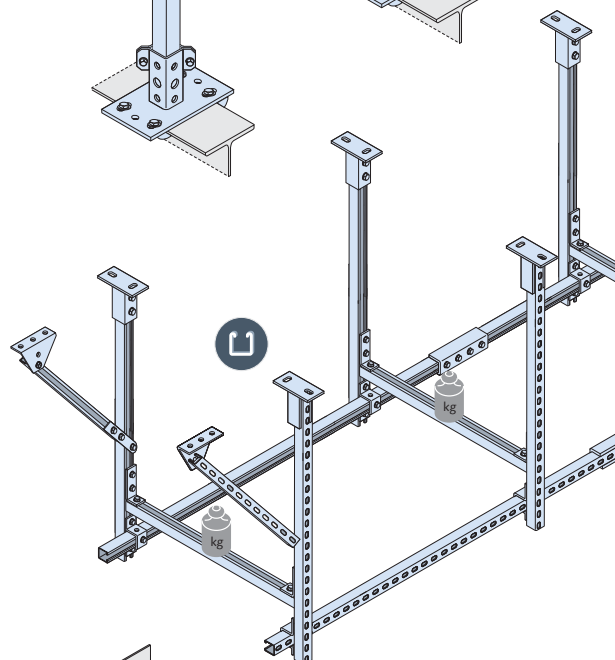
Catalogues PC 63 and PC 63-P



POWERCLICK SYSTEM 41

Suitable for pipes with nominal diameters up to 80 mm or 150 mm with short spans or agreed applications

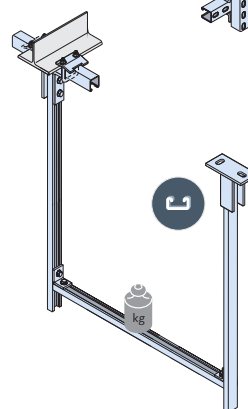
Catalogue PC 41



POWERCLICK SYSTEM 22

Suitable for pipes with nominal diameters up to 25 mm

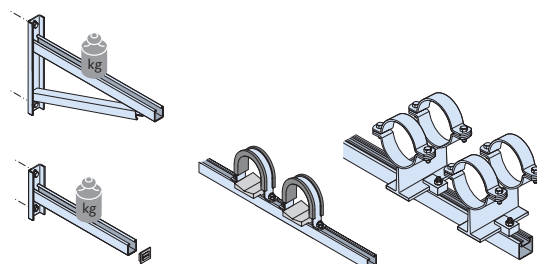
Catalogue PC 41



POWERCLICK ACCESSORIES

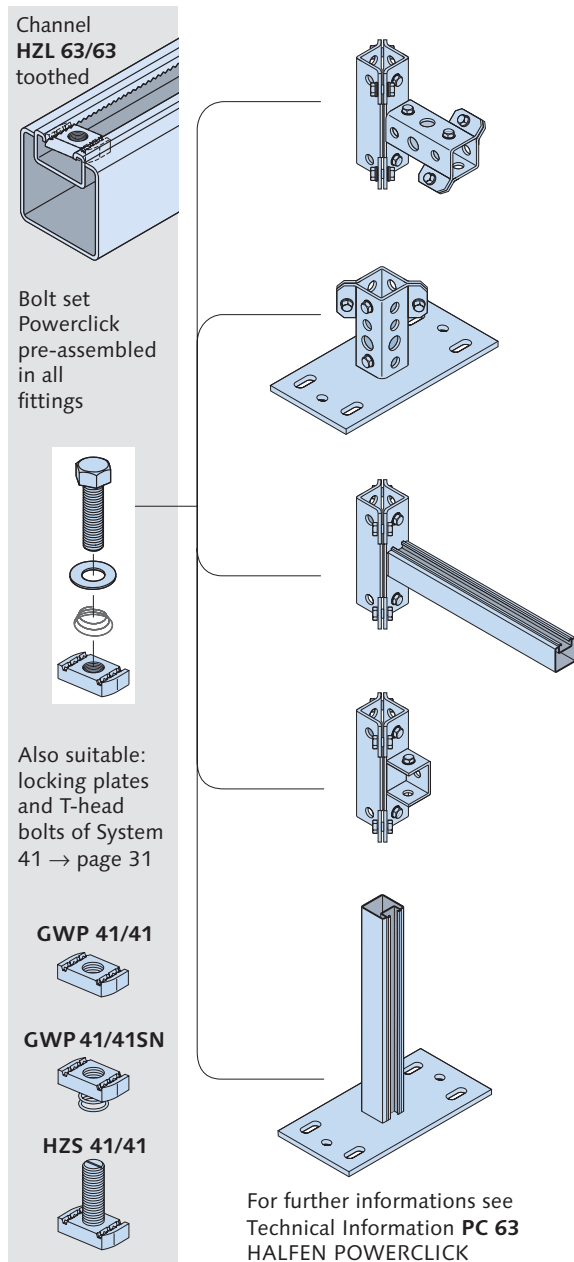
Cantilevers, pipe clamps, sliding supports

Catalogue PC Z

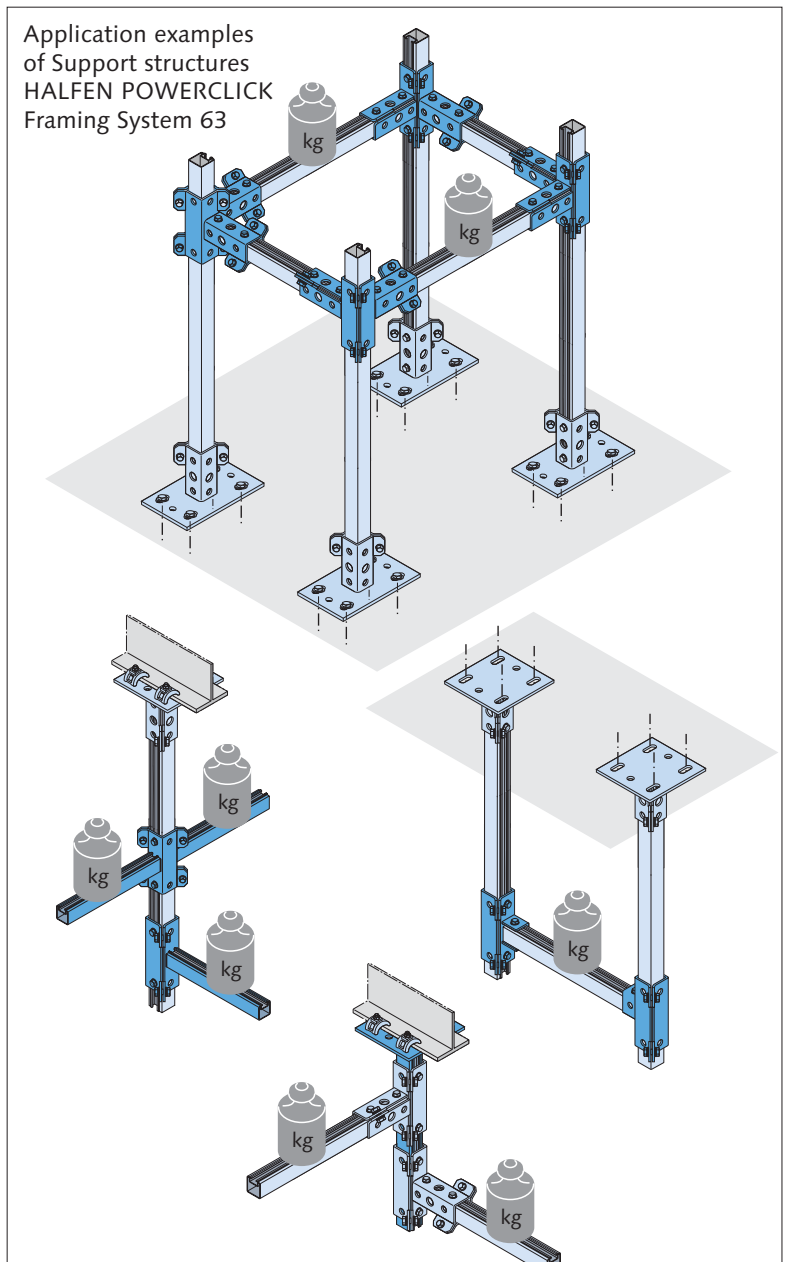


HALFEN FRAMING SYSTEMS

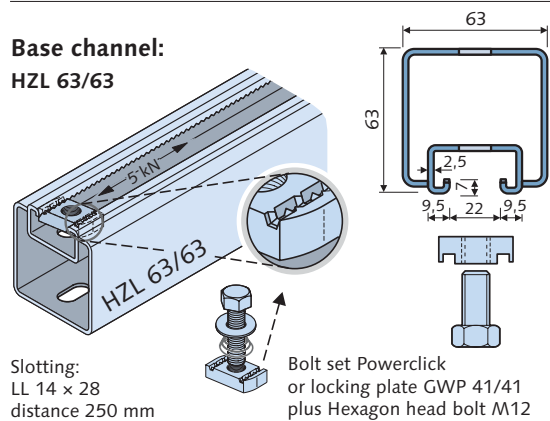
HALFEN POWERCLICK Framing System 63 for Heavy Duty



Application examples
of Support structures
HALFEN POWERCLICK
Framing System 63



Base channel:
HZL 63/63



Channel data:

Bending capacity at span L	Max. load compression member	Max. longitudinal load per T-head bolt:			
		Thrd.	Locking plate GWP 41/41		
F [kN]	F [kN]		at tightening torque	at tightening torque	
0,50 1,00 1,50	→ page 59	M 12	5,6	60 Nm	5,0 60 Nm

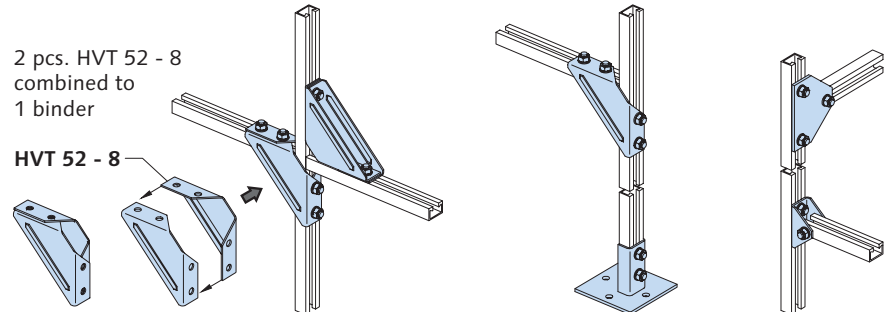
Other channel data, design properties → pages 54 - 59

HALFEN FRAMING SYSTEMS

HALFEN System 52 Series for Heavy Duty, Overview

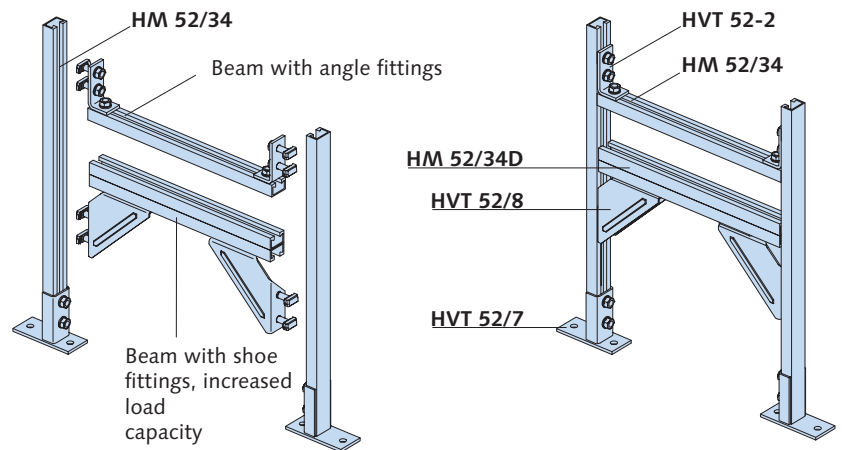
HALFEN Fittings System 52 Series

- Angle fittings, fixing plate, screw connection tie etc.

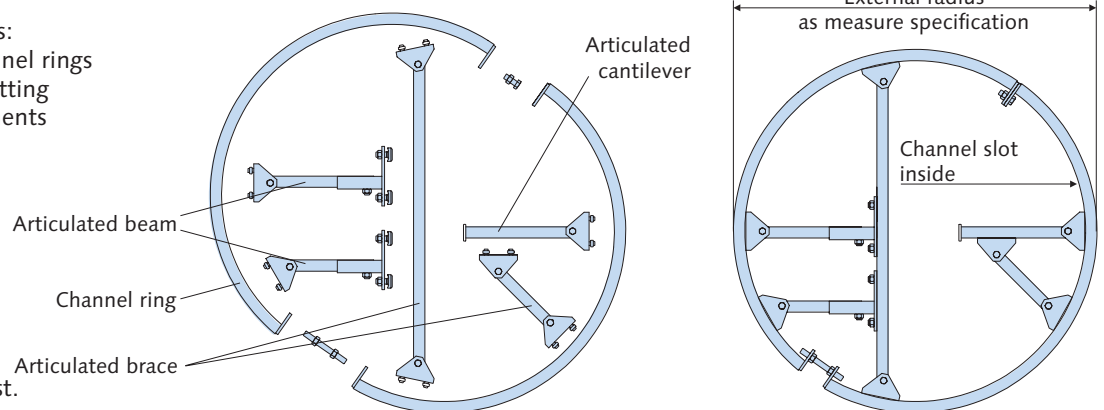


Components to assembly, System 52 Series Examples

- Frame constructions: will be manufactured to your measurements



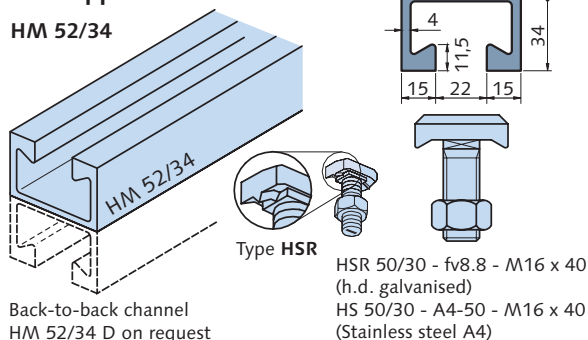
- Assembly channel rings: Manufacturing of channel rings and lateral channel slotting also to your measurements



Delivery times on request.

Base channel for channel rings and support structures:

HM 52/34



Channel data:

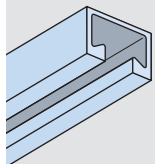
Bending capacity at span L		Max. load compression member		Max. longitudinal load per T-head bolt	
0,50	1,00	1,50		Type HSR, grade 8.8	Type HS, grade A4-50 resp. grade 4.6
F [kN]				at tightening torque	at tightening torque
8,7	4,4	2,2	→ page 59	Thrd.	
load capacities back-to-back channels				M 16	
26,7	13,5	9,0	→ page 59	[kN]	[kN]
				200 Nm	60 Nm

Other channel data → pages 54 - 55; design properties → pages 58 - 59

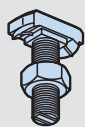
HALFEN FRAMING SYSTEMS

HALFEN Fittings System 52 Series

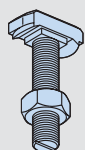
Channel **HM**
52/34 hot rolled



All T-head bolts and locking plates of Type 50/30 are suitable.



HSR 50/30
M16, M20
with nibs



HS 50/30
M10-M20



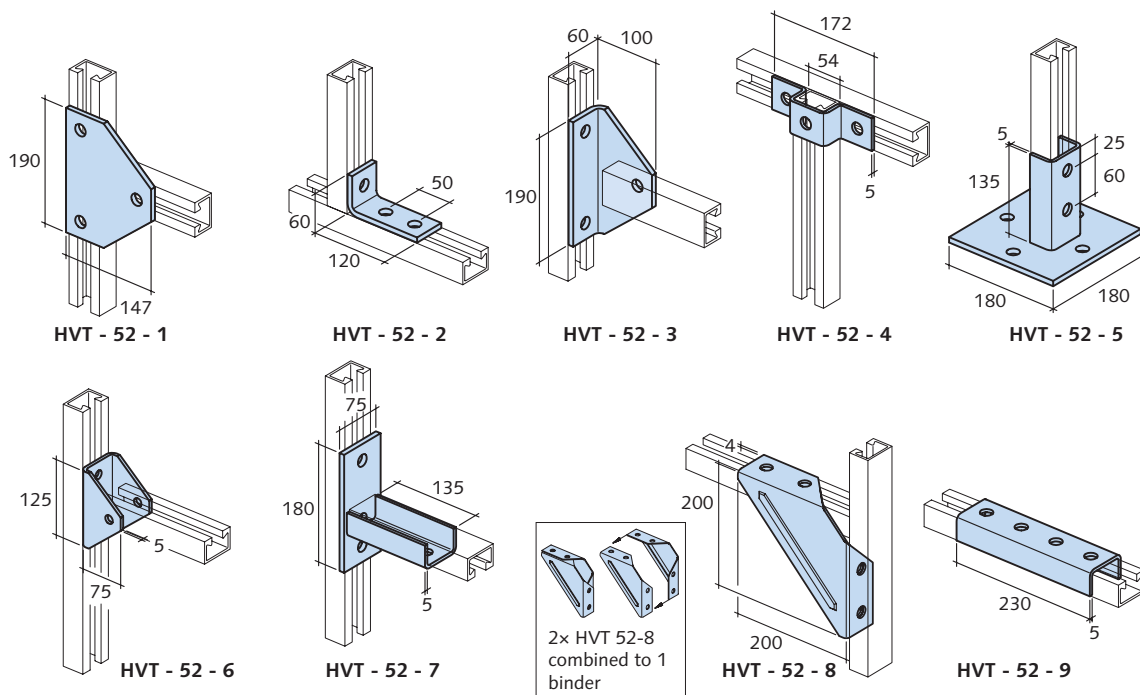
GWP 50/30
M8-M16



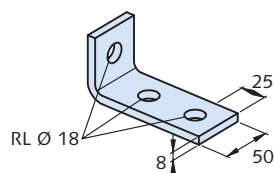
Curved channels and channel rings on request

HVT - 52

Fittings System 52 Series,
fit to Channel 52/34, hole-Ø 18 mm



Unless otherwise stated, the following dimensions apply for all fittings.



Application examples:

All part sketches show only one of many possible applications.

Designation	Stock no.
	0312.040-
FV = hot dip galvanised	
HVT - 52 - 1 - FV	00001
HVT - 52 - 2 - FV	00002
HVT - 52 - 3 - FV	00003
HVT - 52 - 4 - FV	00004
HVT - 52 - 5 - FV	00005
HVT - 52 - 6 - FV	00006
HVT - 52 - 7 - FV	00007
HVT - 52 - 8 - FV	00008
HVT - 52 - 9 - FV	00009

Designation	Stock no.
	0312.040-
A4 = Stainless steel W 1.4571/1.4401	
HVT - 52 - 1 - A4 ①	00011
HVT - 52 - 2 - A4 ①	00012
HVT - 52 - 3 - A4 ①	00013
HVT - 52 - 4 - A4 ①	00014
HVT - 52 - 5 - A4 ①	00015
HVT - 52 - 6 - A4 ①	00016
HVT - 52 - 7 - A4 ①	00017
HVT - 52 - 8 - A4 ①	00018
HVT - 52 - 9 - A4 ①	00019

① to order

Framing Channels, Bolts

Accessories

Design Properties

Support Structures

Cantilevers

Pipe Clamps, Pipe Supports

Notes, Work aid

HALFEN FRAMING SYSTEMS

Systems 41 and 22 Series, Standard Systems for Medium Duty, Overview

1 Framing Channels, Bolts



2 Accessories

HALFEN POWERCLICK is a standard support system for pipe assembly. All fittings are pre-converted with HALFEN T-head bolts. Using POWERCLICK, assembly times are reduced about 60%, and because of free system adjustment costly workarounds become redundant. The efficient dimensioning of POWERCLICK System assures the same strength like conventional constructions, but is more flexible. HALFEN

POWERCLICK copes with every situation with standard system solutions.. The catalogue HALFEN POWERCLICK Framing System 41 Series offers further information. With clearly arranged data it is an important planning aid for users. Every accessory part is introduced separately with all technical data. Above all, the HALFEN Planning Service will support your project. POWERCLICK makes it easy. For all applications only a few different com-

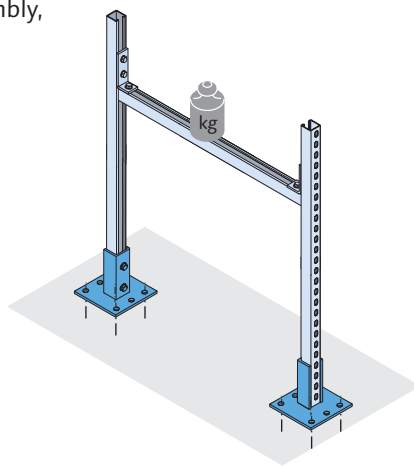
ponents, for all channels only one and the same HALFEN T-head bolt is necessary. The bolt is pre-assembled within the fittings, is to be fixed in no time at all and is partially load bearing even before tightening. Because of the easy weight of the components no lifting devices are required. Due to the flexible adjusting site tolerances can be easily compensated.

3 Design Properties

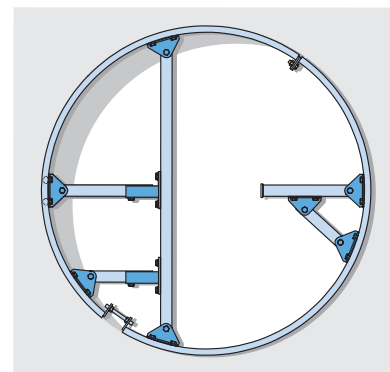
4 Support Structures

HALFEN POWERCLICK Framing System 41 Series

Components, ready to assembly, for medium duty



HALFEN Channel Ring System 41 Series

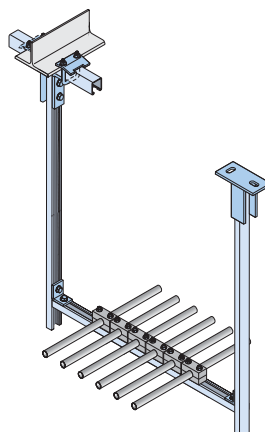


→ pages 68 - 69

5 Cantilevers

6 Pipe Clamps, Pipe Supports

HALFEN POWERCLICK Framing System 22 Series

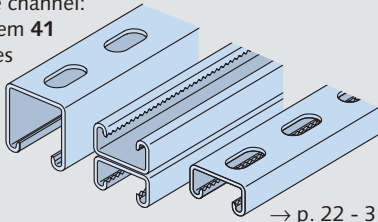


7 Notes, Work aid

HALFEN FRAMING SYSTEMS

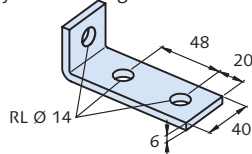
HALFEN Fittings Systems 41 and 22 Series

Base channel:
System 41
Series



→ p. 22 - 31

Unless otherwise stated, the following dimensions apply for all fittings.



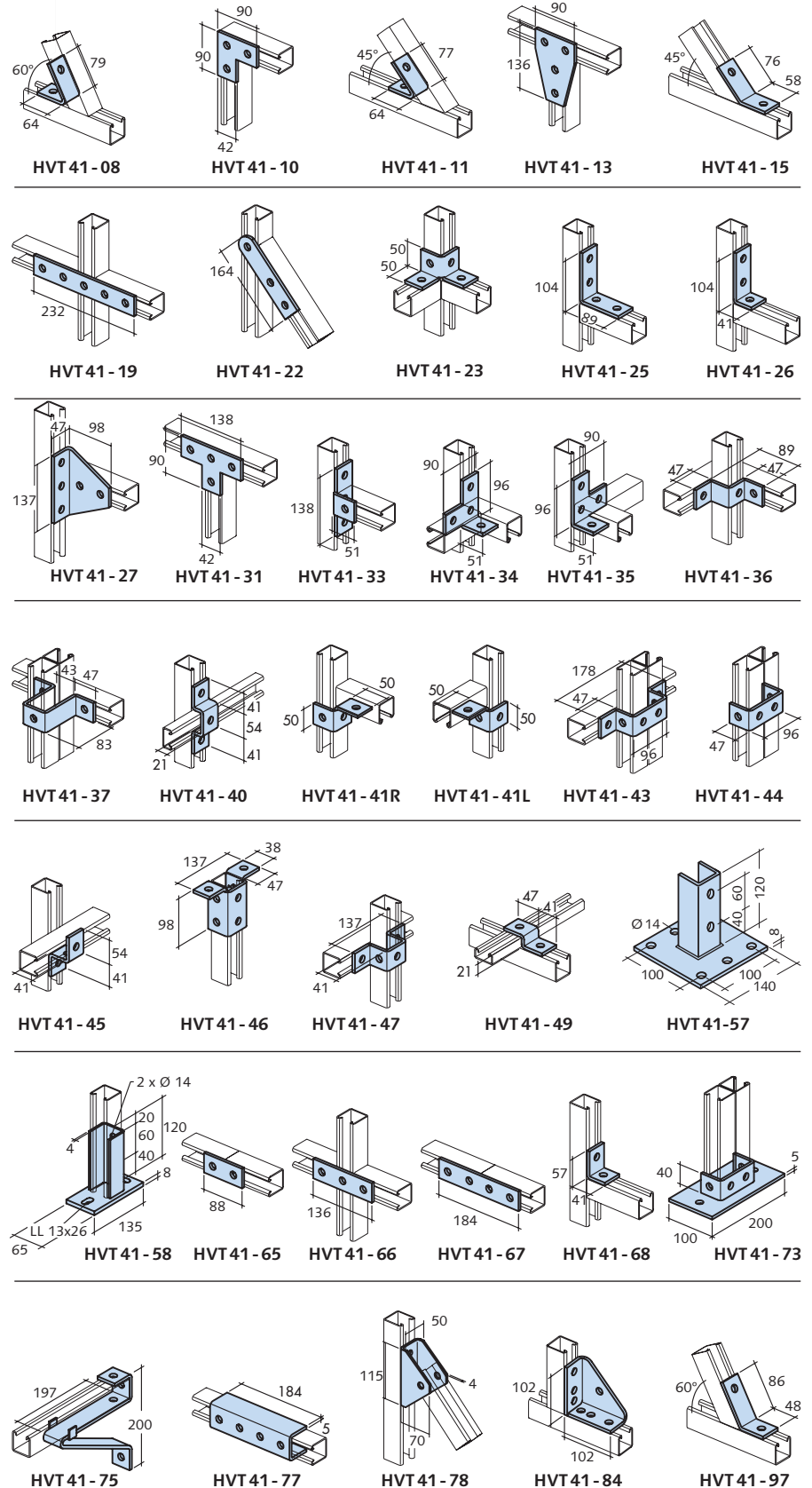
Application examples:

All part sketches show only one of many possible applications.

① → p. 47

Designation	Stock no. fv = h.d. galvanised 0312. ...	Stock no. A4 = Stl. steel A4 0312. ...
HVT 41 - 08	030-00001	—
HVT 41 - 10	030-00002	030-00049
HVT 41 - 11	030-00003	—
HVT 41 - 13	030-00004	030-00051
HVT 41 - 15	030-00005	—
HVT 41 - 19	030-00006	—
HVT 41 - 22	030-00008	030-00054
HVT 41 - 23	030-00009	—
HVT 41 - 25	030-00010	—
HVT 41 - 26	030-00011	030-00057
HVT 41 - 27	030-00012	030-00058
HVT 41 - 31	030-00013	—
HVT 41 - 33	030-00014	—
HVT 41 - 34	030-00015	—
HVT 41 - 35	030-00016	—
HVT 41 - 36	030-00017	—
HVT 41 - 37	030-00018	—
HVT 41 - 40	030-00019	—
HVT 41 - 41L	030-00020	—
HVT 41 - 41R	030-00021	—
HVT 41 - 43	030-00022	—
HVT 41 - 44	030-00023	—
HVT 41 - 45	030-00024	—
HVT 41 - 46	030-00025	030-00071
HVT 41 - 47	030-00026	030-00072
HVT 41 - 49	030-00027	—
HVT 41 - 57	030-00029	030-00074
HVT 41 - 58	030-00030	030-00075
HVT 41 - 65	030-00032	—
HVT 41 - 66	030-00033	—
HVT 41 - 67	030-00034	—
HVT 41 - 68	030-00035	030-00079
HVT 41 - 73	030-00037	—
HVT 41 - 75	030-00038	—
HVT 41 - 77	030-00039	030-00082
HVT 41 - 78	030-00040	030-00083
HVT 41 - 84	030-00041	030-00084
HVT 41 - 85	030-00042	030-00085
HVT 41 - 86	030-00044	030-00086
HVT 41 - 89	030-00046	—
HVT 41 - 97	030-00047	—

HVT - 41 Fittings System 41 Series, fit to 41 Channels, hole-Ø 14 mm



Framing Channels, Bolts

Accessories

Design Properties

Support Structures

Cantilevers

Pipe Clamps, Pipe Supports

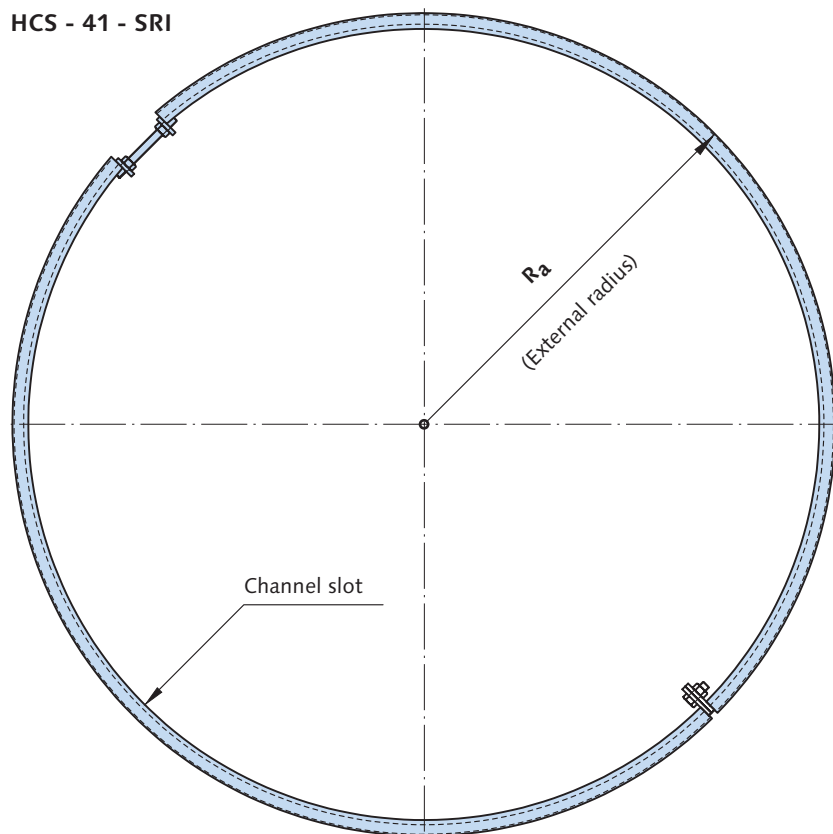
Notes, Work aid

HALFEN FRAMING SYSTEMS

HALFEN Channel Ring System 41 Series

Channel ring

HCS - 41 - SRI



HCS - 41 - SRI - P Delivery includes:
Channel
2 Channel ring segments from channel HM 41/22, curved with external radius R_a [mm] = order length, with welded-on head plates.

HCS - 41 - SRI - M Set includes:
Assembly set
1 x Threaded rod M 12 x 120
1 x Hex. head bolt HSK - M12 x 25
3 x Hexagonal nut M 12

Type selection

Designation	Stock no.	
Material: fv = hot-dip galvanised	0304. ...	
HCS - 41 - SRI - P - fv Radius R_a	010-00002 ①	○
HCS - 41 - SRI - M - fv	020-00002	○
Material: A4 = Stainless steel A4		
HCS - 41 - SRI - P - A4 Radius R_a	010-00001 ①	○
HCS - 41 - SRI - M - A4	020-00001	○

① Always specify external radius R_a [mm] when ordering.

Note:

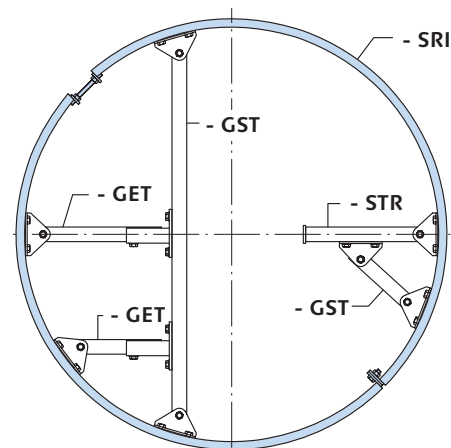
Minimum external radius for channel HM 41/22: $R_a \geq 750$ mm.

Channel ring und -slotting will be produced to your specifications.
Delivery times on request.

If necessary, dowel fixing set can be ordered separately.

● = Standard ○ = to order

HCS - 41

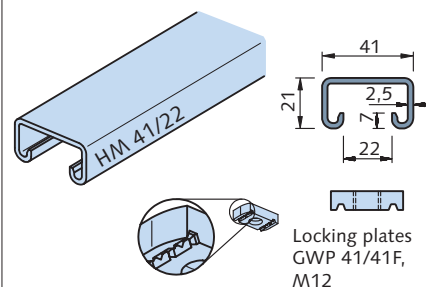


Order example:
SRI - Channel ring
External radius $R_a = 1000$ mm

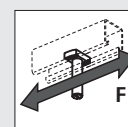
Channel:
HCS - 41 - SRI - **P** - fv - 1000
or Stock no. **0304.010-00002, R_a 1000**
Assembly set:
HCS - 41 - SRI - **M** - fv
or Stock no. **0304.020-00002**

Base channel for Channel ring System 41 Series:

HM 41/22 for material **fv**
HZM 41/22 toothed, for material **A4**



max. longitudinal load per Halfen T-head bolt



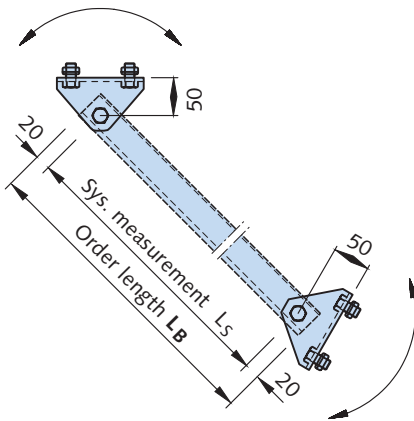
at tightening torque [Nm]

Channel	Thrd.	Material: fv = h.d. galvanised	Material: A4 = Stainl. steel A4
HM 41/22	M12	4,0 kN 60 Nm	55 Nm
HZM 41/22			5,0 kN

HALFEN FRAMING SYSTEMS

HALFEN Channel Ring System 41 Series

- GST Articulated brace



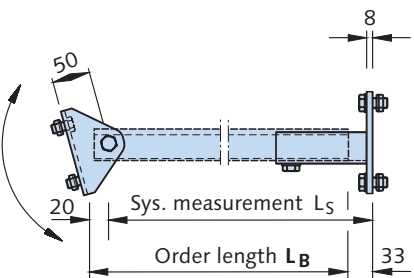
HCS - 41 - GST - P Delivery includes (dashed line):
Channel
HL 41/41, Order length L_B [mm]
with hole
*) when grade **A4**: HZL 41/41

HCS - 41 - GST - M Delivery includes:
Assembly set
2 x HVT 41 - 78
2 x Bolt fixing set HCS-41-B4

Type selection

Designation	Stock no.	
Material: fv = h.d. galvanised	0304. . .	
HCS - 41 - GST - P - fv - Length L_B	060-00002 ①	○
HCS - 41 - GST - M - fv	070-00002	○
Material: A4 = Stainl. steel A4		
HCS - 41 - GST - P - A4 - Length L_B	060-00001 ①	○
HCS - 41 - GST - M - A4	070-00001	○

- GET Articulated beam



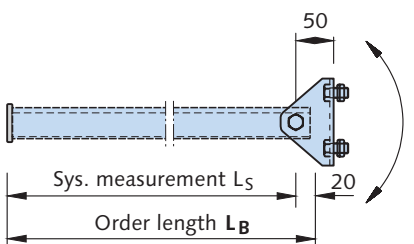
HCS - 41 - GET - P Delivery includes (dashed line):
Channel
HL 41/41, order length L_B [mm]
with holes

HCS - 41 - GET - M Delivery includes:
Assembly set
1 x U-Fitting HVT 41 - 78
1 x HVT 41 - 58
1 x Bolt fixing set HCS-41-B3
1 x Bolt fixing set HCS-41-B4

Type selection

Designation	Stock no.	
Material: fv = h.d. galvanised	0304. . .	
HCS - 41 - GET - P - fv - Length L_B	050-00002 ①	○
HCS - 41 - GET - M - fv	040-00002	○
Material: A4 = Stainl. steel A4		
HCS - 41 - GET - P - A4 - Length L_B	050-00001 ①	○
HCS - 41 - GET - M - A4	040-00001	○

- STR Articulated cantilever



HCS - 41 - STR - P Delivery includes (dashed line):
Channel
HL 41/41, Bestell-Length L_B [mm]
with holes

HCS - 41 - STR - M Delivery includes:
Assembly set
1 x U-Fitting HVT 41 - 78
1 x Bolt fixing set HCS-41-B4
1 x Channel end cap HPE 41/41

Type selection

Designation	Stock no.	
Material: fv = h.d. galvanised	0304. . .	
HCS - 41 - STR - P - fv - Length L_B	080-00002 ①	○
HCS - 41 - STR - M - fv	090-00002	○
Material: A4 = Stainl. steel A4		
HCS - 41 - STR - P - A4 - Length L_B	080-00001 ①	○
HCS - 41 - STR - M - A4	090-00001	○

Material:

fv = h.d. galvanised

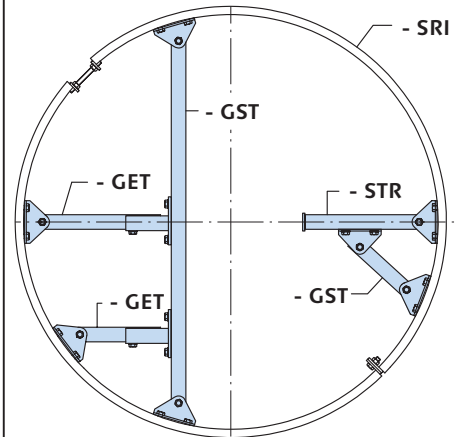
A4 = Stainl. steel A4

Other channel data and accessories:

→ pages 24 - 31

● = Standard ○ = to order

HCS - 41



Order example:
GET - Articulated beam
Order length L_B = 800 mm

Channel:
HCS - 41 - GET - **P** - fv - 800

or Stock no. **0304.050-00002, L_B = 800mm**

Assembly set:
HCS - 41 - GET - **M** - fv

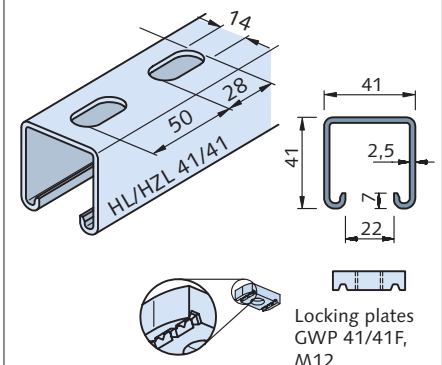
or Stock no. **0304.040-00002**

① Always specify order length L_B [mm]
when ordering.

Base Channel for System 41:

HL 41/41 slotted, for mat. **fv** und **A4**

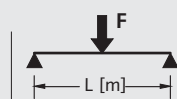
HZL 41/41 slotted, toothed, for mat. **A4**



Bending capacity
at span L

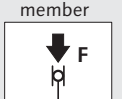


F [kN]



F [kN]

Max. load
compression
member



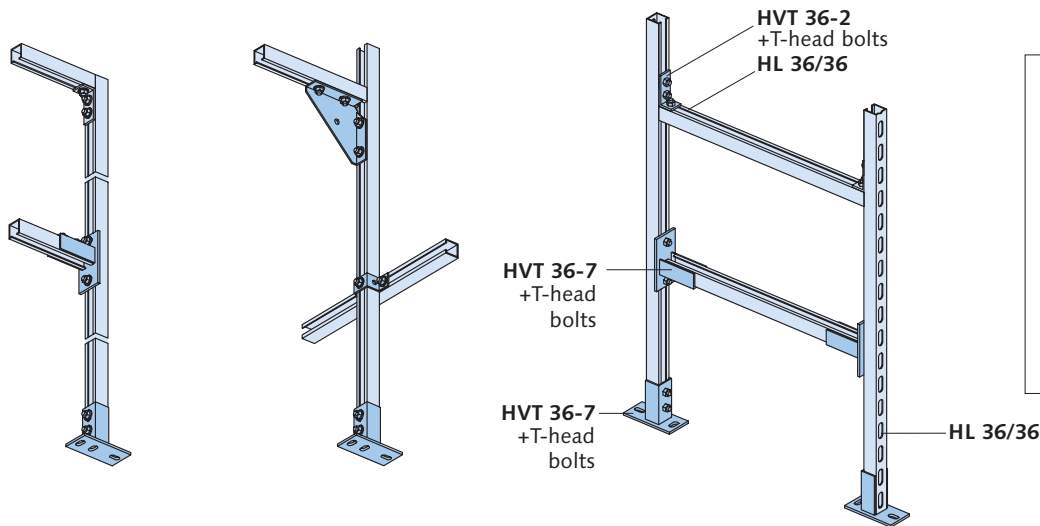
→ page 59

HALFEN FRAMING SYSTEMS

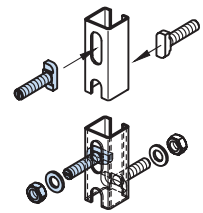
HALFEN System 36 Series for Light Duty, Overview

HALFEN Fittings System 36 Series

- Angle fittings, fixing plates etc.

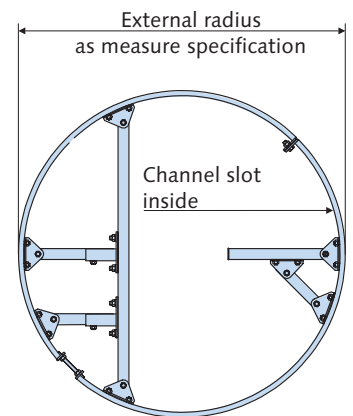
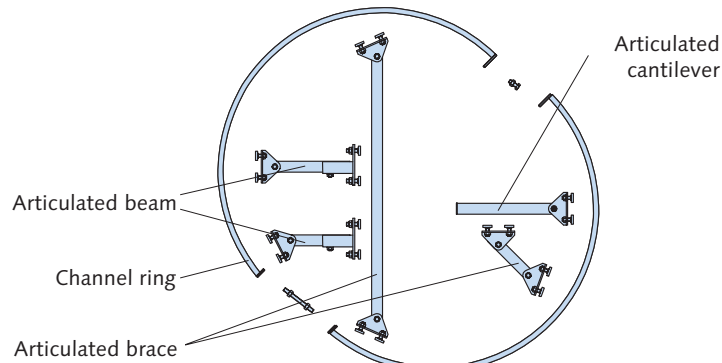


Advantage: With channel HL 36/36 assembly through slotted channel back.



Components to assembly, System 36 Series

Support structures for light duty
Example:

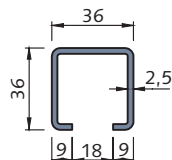
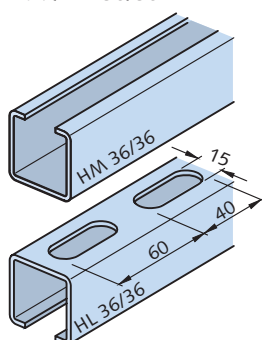


Base channel for channel ring
HM 38/17 → p. 36

- Assembly channel rings:
Manufacturing of channel rings and lateral channel slotting to your measurements.

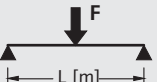
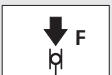
Base channels:

HM / HL 36/36



HS 38/17
M 10 x 30
M 12 x 30
+ Washer U

Channel data:

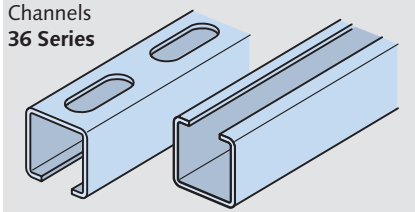
	Bending capacity at span L			Max. load compression member	Max. longitudinal load per T-head bolt			
								
	0,50	1,00	1,50		Thrd.	Type HS, grade 4.6 [kN] at tightening torque	Type HS, gr. A4-50/70 [kN] at tightening torque	
H/M 36/36	3,9	1,9	1,0	→ page 55	M 10	0,3	15 Nm	0,3
HL 36/36	3,3	1,6	0,88		M 12	0,5	25 Nm	0,5

Other channel data → pages 54 - 57; design properties → pages 58 - 59

HALFEN FRAMING SYSTEMS

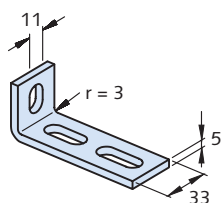
HALFEN System 36 Series for Light Duty, Fittings

Channels
36 Series



Standard dimensions [mm]:

Unless otherwise stated, the following dimensions apply for all fittings.



All part sketches show only one of many possible applications.

The fittings are fixed to channel by using T-head bolts

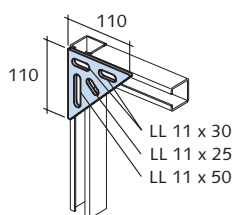
- HS 38/17 - M 10 x 30 or
- HS 38/17 - M 12 x 30 and washer U.

● = Standard ○ = to order

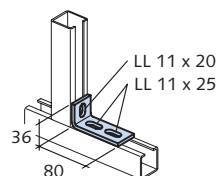
Material fv = h.d. galvanised gv = electroplated	Stock no.
HVT 36 - 1 -gv ○	0312.020-00001
HVT 36 - 2 -gv ○	0312.020-00002
HVT 36 - 3 -gv ○	0312.020-00003
HVT 36 - 4 -gv ○	0312.020-00004
HVT 36 - 5 -gv ○	0312.020-00005
HVT 36 - 6 -gv ○	0312.020-00006
HVT 36 - 7 -fv ○	0312.020-00007
HVT 36 - 8 -gv ○	0312.020-00008
HVT 36 - 9 -fv ○	0312.020-00009

Designation A4 = Stainless steel A4	Stock no.
HVT 36 - 2 -A4 ○	0312.020-00010
HVT 36 - 7 -A4 ○	0312.020-00011

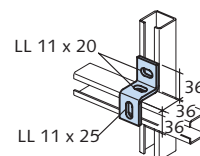
HVT - 36 HALFEN Fittings System 36 Series, fit to channels 36 Series, hole-Ø 11 mm



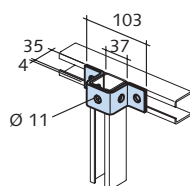
HVT 36 - 1



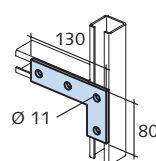
HVT 36 - 2



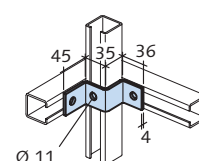
HVT 36 - 3



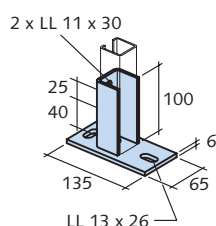
HVT 36 - 4



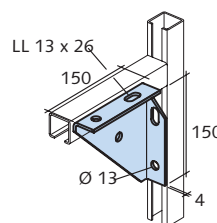
HVT 36 - 5



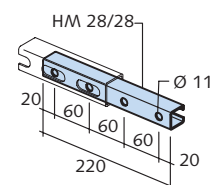
HVT 36 - 6



HVT 36 - 7



HVT 36 - 8



HVT 36 - 9 ①

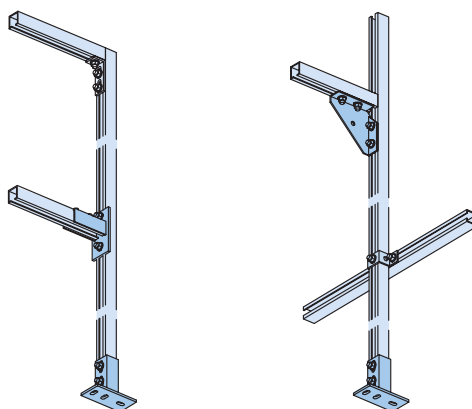
① The fitting is fixed to channels by using T-head bolts Type HS 28/15 - M 10 x 25 and washer U, M10 DIN 9021

HALFEN FRAMING SYSTEMS

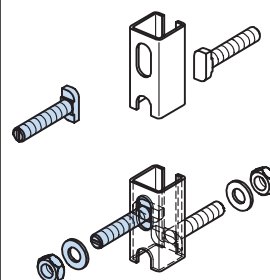
HALFEN System 28 Series for Light Duty, Overview

HALFEN Fittings System 28 Series

- Angle fittings, fixing plates etc.

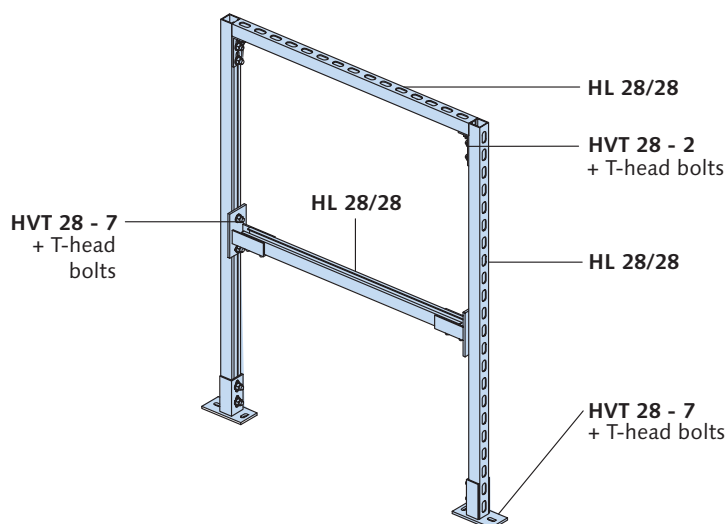


Advantage: With channel HL 28/28 assembly through slotted channel back.



Components to assembly, System 28 Series

Support structures
for light duty
Example:

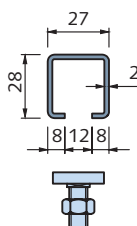
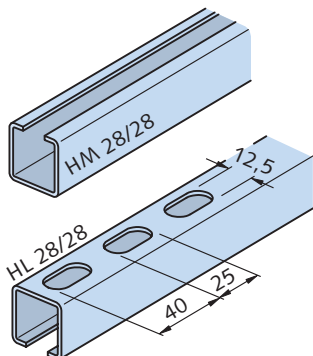


- Frame constructions:
will be manufactured to your
measurements.
Delivery times on request.

Base channels:

HM 28/28

HL 28/28 (slotted)



T-head bolt
HS 28/15
M 8 x 20
+ Washer U

Channel data:

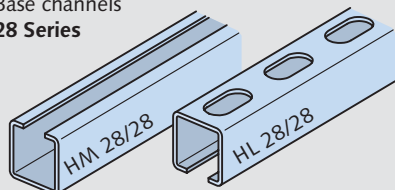
	Bending capacity at span L	Max. load compression member	Max. longitudinal load per T-head bolt:			
			Thr.	Type HS, grade 4.6 [kN]	Type HS, gr. A4-50/70 [kN]	Type HS, gr. A4-50/70 [kN]
	 0,50 1,00 1,50 F [kN]	 → page 59				
HM 28/28	1,9 0,9 0,4					
HL 28/28	1,5 0,7 0,3		M 8	0,2	8 Nm	0,2 8 Nm

Other channel data → page 54 - 57; design properties → pages 58 - 59

HALFEN FRAMING SYSTEMS

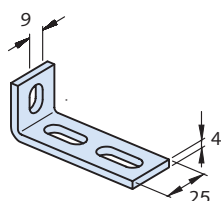
HALFEN System 28 Series for Light Duty, Fittings

Base channels
28 Series



Standard dimensions [mm]:

Unless otherwise stated, the following dimensions apply for all fittings.



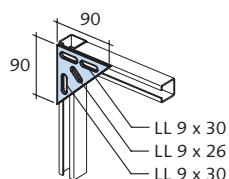
The fittings are fixed to channel by using T-head bolts

- HS 28/15 - M 8 x 20 and washer U.

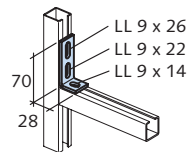
● = Standard ○ = to order

Material	Stock no.
fv = h.d. galvanised	
gv = electroplated	
HVT 28 - 1 - gv ○	0312.010-00001
HVT 28 - 2 - gv ○	0312.010-00002
HVT 28 - 3 - gv ○	0312.010-00003
HVT 28 - 4 - gv ○	0312.010-00004
HVT 28 - 5 - gv ○	0312.010-00005
HVT 28 - 6 - gv ○	0312.010-00006
HVT 28 - 7 - fv ○	0312.010-00007
HVT 28 - 8 - gv ○	0312.010-00008
HVT 28 - 9 - fv ○	0312.010-00009

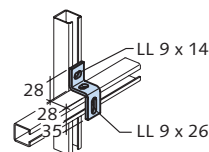
HVT - 28 HALFEN Fittings System 28 Series, fit to channels 28 Series, hole-Ø 9 mm



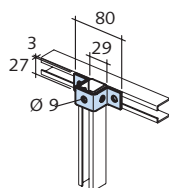
HVT 28 - 1



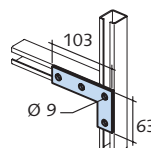
HVT 28 - 2



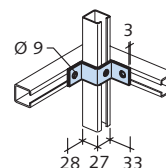
HVT 28 - 3



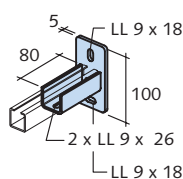
HVT 28 - 4



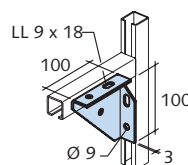
HVT 28 - 5



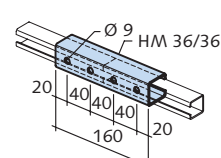
HVT 28 - 6



HVT 28 - 7



HVT 28 - 8



HVT 28 - 9

Framing Channels, Bolts

1

Accessories

2

Design Properties

3

Support Structures

4

Cantilevers

5

Pipe Clamps, Pipe Supports

6

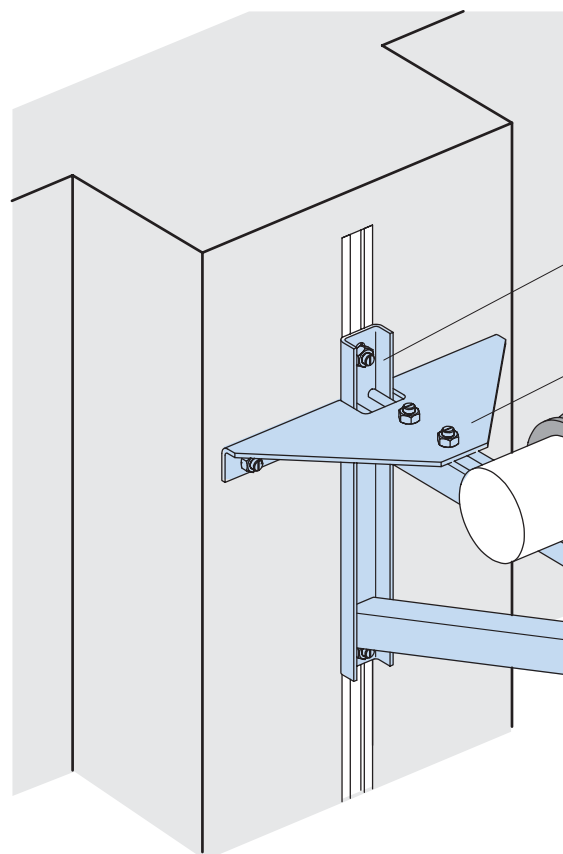
Notes, Work aid

7

HALFEN FRAMING SYSTEMS

Cantilevers

Application



Fixing with dowel or with T-head bolts to cast-in HALFEN Channel

For loads in longitudinal pipe direction combinations of HALFEN Cantilevers with Support angles Type KON - Z1 are possible.

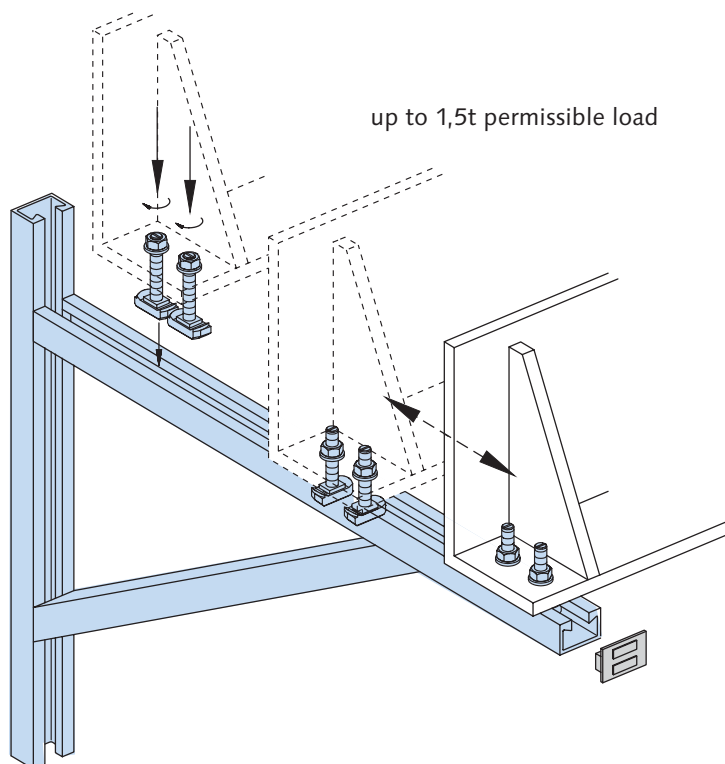
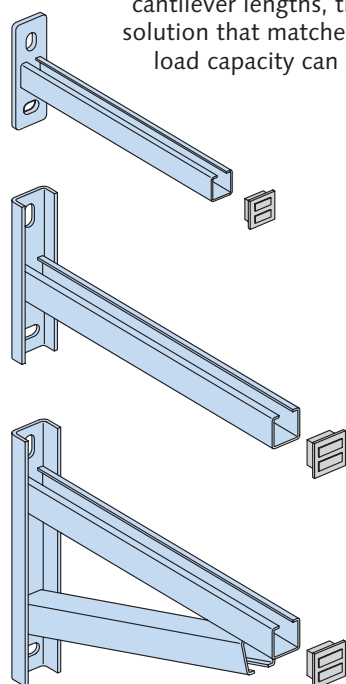
Cantilever of standard HALFEN Channel, to be combined with T-head bolts, HALFEN Fittings and System accessories.

Delivery of all HALFEN Cantilevers with Channel end cap (except KON 41/D).

Depending on ordered number of items, special constructions of all Cantilevers are available.

Type selection

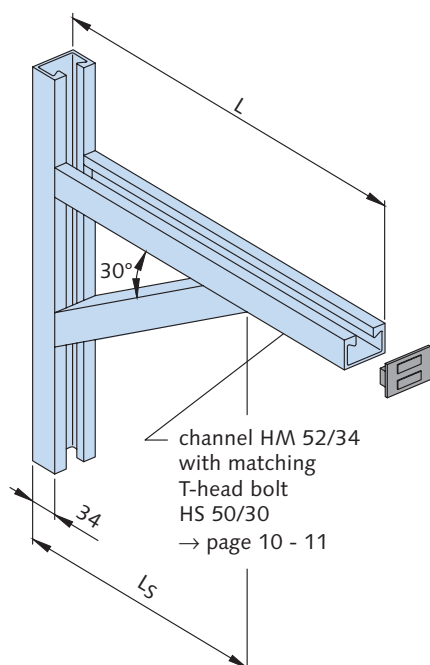
Due to continuous covering of the different cantilever lengths, the most cost-efficient solution that matches exactly the required load capacity can be achieved at equal space requirements.



HALFEN FRAMING SYSTEMS

Cantilevers

KON 52/2 Cantilevers

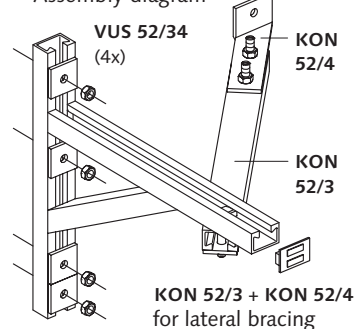


fv		A4		load capacity			dim.	
h.d. galvanised		Stainl. steel W 1.4571/ 1.4401 (A4)						
length [mm]	Stock no.	length [mm]	Stock no.	F1 [kN]	F1 [kN]	F2 [kN]	H1 [mm]	L5 [mm]
500	00001	500	00008	9,00	15,00	7,50	450	330
600	00002	600	00009	8,00	15,00	7,50	475	380
700	00003	700	00010	7,00	15,00	6,50	500	430
800	00004	800	00011	6,00	15,00	6,00	550	480
900	00005	900	00012	5,50	15,00	5,50	600	530
1000	00006	1000	00013	5,00	15,00	5,00	650	630
1100	00007	1100	00014	4,50	14,00	4,50	700	730

Connection forces	length [mm]	Fz [kN]	FQ [kN]
	500	17,82	15,00
	600	16,89	15,00
	700	16,83	15,00
	800	15,86	15,00
	900	15,47	15,00
	1000	15,00	15,00
	1100	14,72	14,00

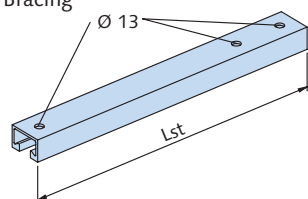
Order example Designation: **KON 52/2 - fv - 800 [mm]**
or Stock no.: **0310.080-00004**

Assembly diagram

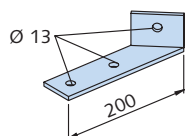


Fittings for Cantilevers 52/2

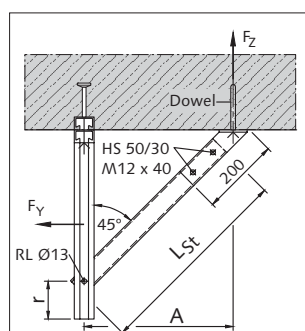
KON 52/3 Bracing



KON 52/4 Fixing angle



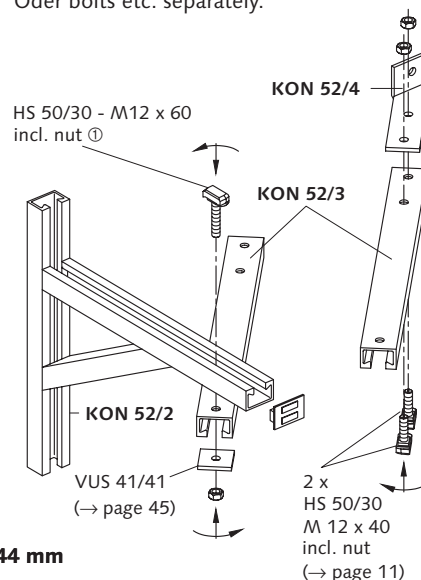
fv		A4		fits to cantilevers 52/2		
h.d. galvanised		Stainl. steel W 1.4571/ 1.4401 (A4)		length	dim.	
length LST [mm]	Stock no.	length LST [mm]	Stock no.	L [mm]	r [mm]	A [mm]
532	00001	532	00012	500	100	400
602	00002	602	00013	600	150	450
673	00003	673	00014	700	200	500
744	00004	744	00015	800	250	550
815	00005	815	00016	900	300	600
961	00006	961	00017	1000	300	700
1102	00007	1102	00018	1100	300	800
● 0310.100-		○ 0310.100-				
KON 52/4	00002		00001			



Order example:
bracing:
KON 52/3 - fv - 744 mm
or Stock no.: **0310.090-00004**
Fitting angle:
KON 52/4 - fv
or Stock no.: **0310.100-00002**

● = Standard
○ = to order

Assembly diagram Order bolts etc. separately.



① Stainless steel cantilevers are fixed with locking plate GWP 50/30 - M 12 and T-head bolt HSK - M12 x 60, DIN 933.

Note: The max. load bearable of lateral brace depends on permissible load Fz of dowel.

Framing Channels, Bolts

Accessories

Design Properties

Support Structures

Cantilevers

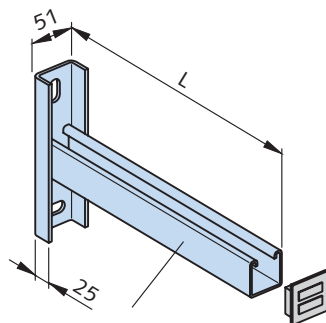
Pipe Clamps, Pipe Supports

Notes, Work aid

HALFEN FRAMING SYSTEMS

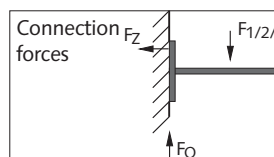
Cantilevers

KON 41/1 Cantilevers

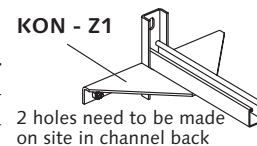


Channel HM 41/41 with matching T-head bolts HS 41/41 (→ p. 47) and HZS 41/41 (toothed, → p. 31).

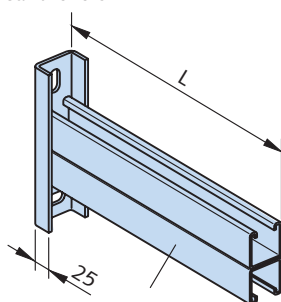
fv		A4		load capacity			
h.d. galvanised		Stainl. steel W 1.4571/1.4401 (A4)					
length	Stock no.	length	Stock no.	F1 [kN]	F1 [kN]	F2 [kN]	F3 [kN]
[mm]	0310.010-	[mm]	0310.010-				
175	00001	175	00004	5,35	2,65	2,65	1,75
325	00002	325	00005	2,65	1,30	1,30	0,85
475	00003	475	00006	1,75	0,85	0,85	0,55



length [mm]	Fz [kN]	FQ [kN]
175	3,23	5,35
325	2,97	2,65
475	2,87	1,75

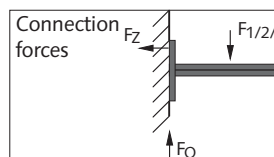


KON 41/D Cantilevers

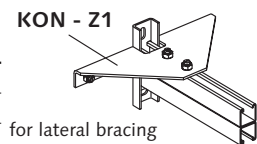


Channel HM 41/41 with matching T-head bolts HS 41/41 and HZS 41/41 (→ p. 47 and 31).

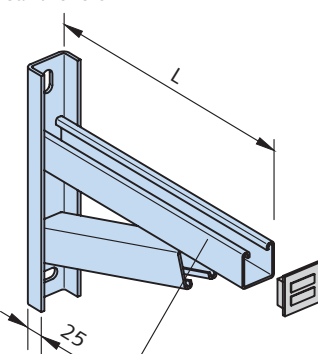
fv		A4		load capacity			
h.d. galvanised		Stainl. steel W 1.4571/1.4401 (A4)					
length	Stock no.	length	Stock no.	F1 [kN]	F1 [kN]	F2 [kN]	F3 [kN]
[mm]	0310.030-	[mm]	0310.030-				
325	00001	325	00004	5,60	2,80	2,80	1,85
475	00002	475	00005	3,70	1,85	1,85	1,20
625	00003	625	00006	2,80	1,40	1,40	0,90



length [mm]	Fz [kN]	FQ [kN]
325	6,28	5,60
475	6,06	3,70
625	6,03	2,80

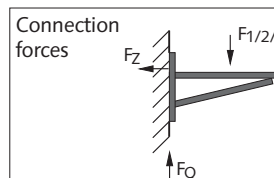


KON 41/2 Cantilevers

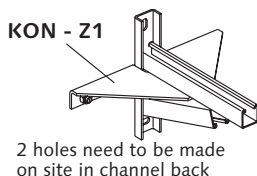


Channel HM 41/41 with matching T-head bolts HS 41/41 and HZS 41/41 (→ p. 47 and 31).

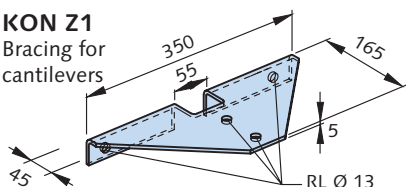
fv		A4		load capacity			
h.d. galvanised		Stainl. steel W 1.4571/1.4401 (A4)					
length	Stock no.	length	Stock no.	F1 [kN]	F1 [kN]	F2 [kN]	F3 [kN]
[mm]	0310.020-	[mm]	0310.020-				
325	00001	325	00005	7,50	4,90	4,80	3,40
475	00002	475	00006	5,00	4,75	3,70	2,45
625	00003	625	00007	3,50	3,50	2,75	1,85
775	00004	775	00008	2,65	2,65	2,05	1,40



length [mm]	Fz [kN]	FQ [kN]	Dim. H [mm]
325	9,30	10,20	270
475	10,16	7,40	330
625	8,23	5,55	380
775	6,63	4,20	430



KON Z1 Bracing for cantilevers

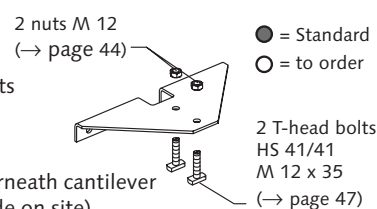


fv		A4	
h.d. galvanised		Stainl. steel	
Stock no.		Stock no.	
0310.110-		0310.110-	
00002		00001	

Assembly diagram

(Order T-head bolts, nuts and cantilevers separately)

Possible assembly underneath cantilever (2 holes need to be made on site)

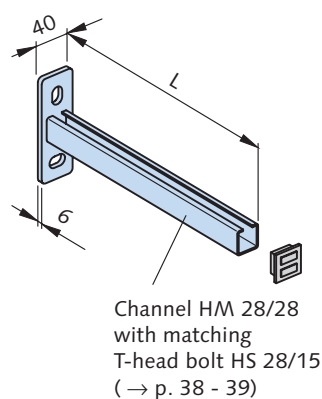


HALFEN FRAMING SYSTEMS

Cantilevers

KON 28/1

Cantilevers



fv		A4		load capacity			
h.d. galvanised		Stainl. steel W 1.4571/ 1.4401 (A4)					
length [mm]	Stock no.	length [mm]	Stock no.	F1 [kN]	F1 [kN]	F2 [kN]	F3 [kN]
100	00001	100	00005	2,70	1,35	1,35	0,90
200	00002	200	00006	1,35	0,68	0,68	0,45
300	00003	300	00007	0,90	0,45	0,45	0,30
400	00004	400	00008	0,70	0,35	0,35	0,20

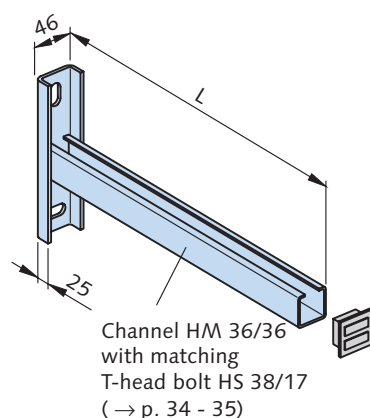
Connection forces	length [mm]	Fz [kN]	FQ [kN]
	100	1,82	2,70
	200	1,82	1,36
	300	1,82	0,90
	400	1,89	0,70

KON - Z1



KON 36/1

Cantilevers



fv		A4		load capacity			
h.d. galvanised		Stainl. steel W 1.4571/ 1.4401 (A4)					
length [mm]	Stock no.	length [mm]	Stock no.	F1 [kN]	F1 [kN]	F2 [kN]	F3 [kN]
300	00001	300	00005	2,00	1,00	1,00	0,70
400	00002	400	00006	1,50	0,75	0,75	0,50
500	00003	500	00007	1,20	0,60	0,60	0,40
600	00004	600	00008	1,00	0,50	0,50	0,33

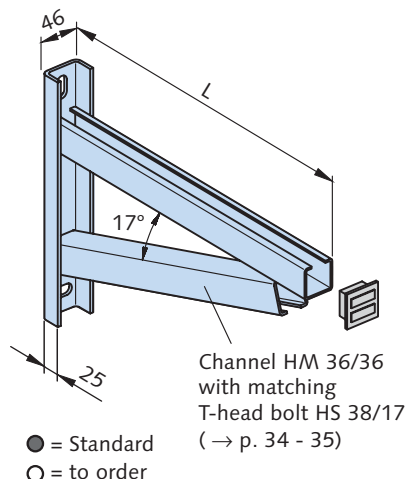
Connection forces	length [mm]	Fz [kN]	FQ [kN]
	300	2,07	2,10
	400	2,07	1,50
	500	2,07	1,20
	600	2,07	1,00

KON - Z1



KON 36/2

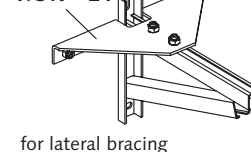
Cantilevers



fv		A4		load capacity			
h.d. galvanised		Stainl. steel W 1.4571/ 1.4401 (A4)					
length [mm]	Stock no.	length [mm]	Stock no.	F1 [kN]	F1 [kN]	F2 [kN]	F3 [kN]
300	00001	300	00006	5,00	4,20	4,00	2,65
400	00002	400	00010	4,15	4,10	3,15	2,10
500	00003	500	00007	3,15	3,65	2,50	1,65
600	00004	600	00009	2,55	3,35	2,00	1,30
700	00005	700	00011	2,10	3,15	1,65	1,10

Connection forces	length [mm]	Fz [kN]	FQ [kN]	Dim. H [mm]
	300	7,63	8,00	255
	400	8,44	6,30	280
	500	8,16	5,00	310
	600	7,95	4,00	340
	700	7,82	3,30	370

KON - Z1



Order example: KON 36/2 - fv - L = 500 mm

or Stock no. 0310.070-00003

Subject to alterations

Framing Channels, Bolts

Accessories

Design Properties

Support Structures

Cantilevers

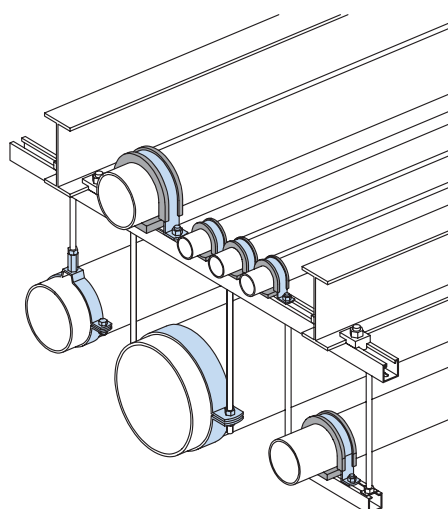
Pipe Clamps, Pipe Supports

Notes, Work aid

HALFEN FRAMING SYSTEMS

Pipe Clamps

HALFEN Pipe clamps are well suited for fittings in combination with HALFEN Framing Systems. Due to the material thickness of HALFEN Pipe clamps which are dimensioned by relating requirements, an optimum of material efficiency is guaranteed.

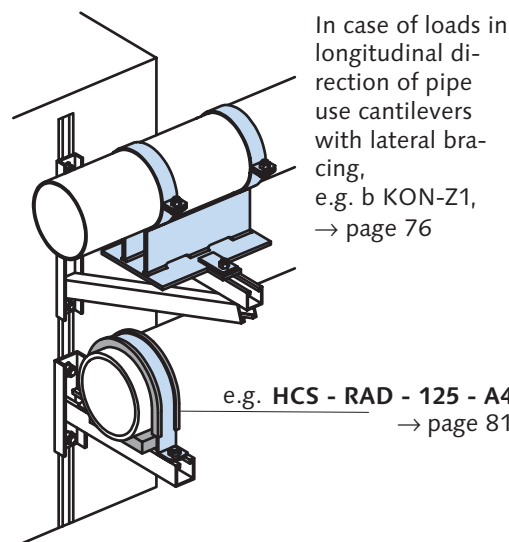


e.g. **HCS - RAD - 160 - fv** → page 81

HALFEN Pipe clamps are available in a whole range of versions for pipe - Ø from 15 to 530 mm.

For Alpha pipe fittings, HALFEN also offers pipe clamp, sound attenuation insulation and pipe rest as a complete assembly set (Type HCS - RAD) → page 81

Using HALFEN Pipe fittings, spatial adjustment in all directions at any time is assured.



In case of loads in longitudinal direction of pipe use cantilevers with lateral bracing, e.g. b KON-Z1, → page 76

e.g. **HCS - RAD - 125 - A4** → page 81

Assembly diagram:

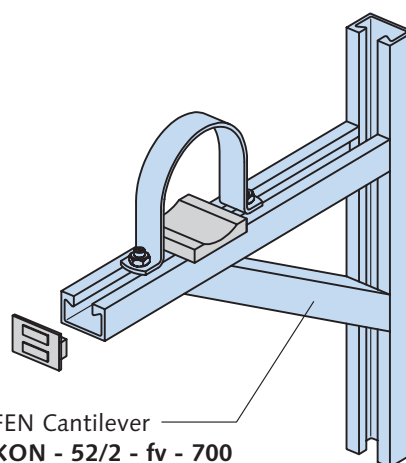
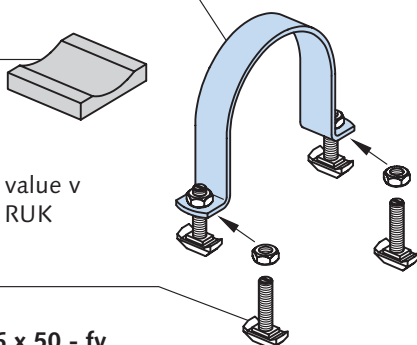
Example: HALFEN Pipe clamp **HRS - A** on HALFEN Cantilever **KON - 52/2** (→ Assembly set HCS - RAD, page 81).

Pipe clamp
e.g. **HRS - A - 326 - fv**
→ page 80

Pipe rest
e.g. **RUK - 323**
→ page 79

Required pre-tension value v increases by width of RUK

T-head bolts
(to order separately)
e.g. **HS 50/30 - M 16 x 50 - fv**
→ page 11 or 13



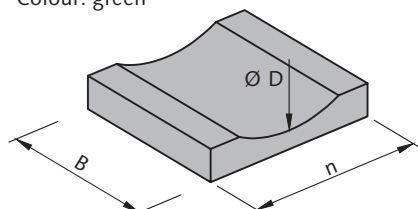
HALFEN Cantilever
e.g. **KON - 52/2 - fv - 700**
→ page 75

HALFEN FRAMING SYSTEMS

Pipe Rest RUK

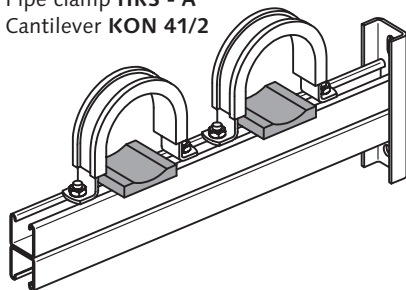
RUK

Pipe rest for pipe clamp Type Alpha
(→ pages 80 - 81),
Material: polypropylene,
resistant to temp. from -30 to +90° C
Colour: green



Assembly example:

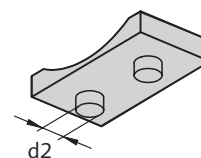
- Pipe rest **RUK**
- Pipe clamp **HRS - A**
- Cantilever **KON 41/2**



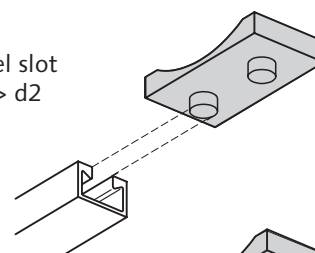
Designation	Stock no.		Dimensions [mm]			
			for Ø D D [mm]	n	B	d2
RUK - 57	00001	○	57	38	50	10
RUK - 60	00002	●	60			
RUK - 76	00003	●	76			
RUK - 88	00004	●	88	75	70	15
RUK - 108	00005	●	108			
RUK - 114	00006	●	114			
RUK - 133	00007	○	133			
RUK - 139	00008	●	139			
RUK - 159	00009	●	159	140	75	25
RUK - 168	00010	●	168			
RUK - 193	00011	●	193			
RUK - 216	00012	●	216			
RUK - 219	00013	●	219			
RUK - 267	00014	○	267	220	75	30
RUK - 273	00015	●	273			
RUK - 318	00016	●	318			
RUK - 323	00017	●	323			
RUK - 355	00018	●	355			
RUK - 368	00019	○	368			
RUK - 406	00020	●	406			
RUK - 419	00021	●	419			
RUK - 508	00022	●	508			
RUK - 521	00023	○	521			

Notes for assembly of RUK

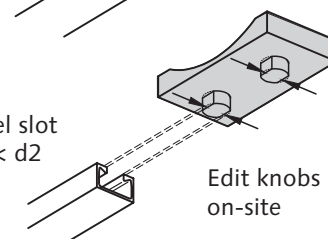
Pipe rest RUK
d2 = Ø of knobs



Channel slot
width > d2



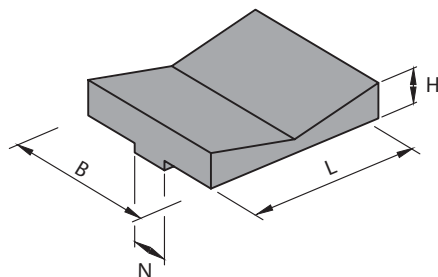
Channel slot
width < d2



RUV

Pipe rest for various pipe - Ø.
Cost efficient alternative as **RUV** is suitable
for a number of pipe sizes. Pipe rest made
of plastic (Two-point-rest).

Material: polypropylene, resistant to
temperatures from -30 to +90°
Colour: black



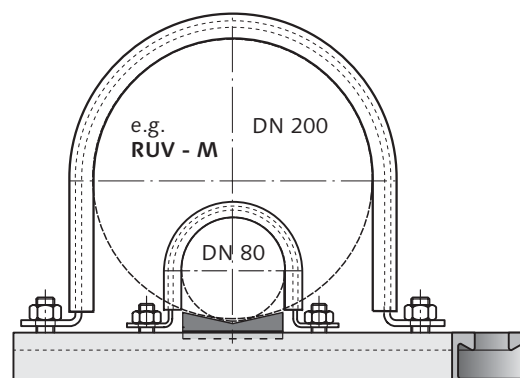
Designation	Stock no.		for Ø D [mm]	L [mm]	B [mm]	N [mm]	H [mm]
RUV - K	00001	●	25 - 79	30	50	11	11
RUV - M	00002	●	80 - 269	80	70	17	15
RUV - G	00003	●	270 - 420	120	70	17	16

Type **RUV - K** for HALFEN Channels: min. 12 mm slot width
max. 52 mm channel width

Type **RUV - M** for HALFEN Channels: min. 18 mm slot width
max. 72 mm channel width

Type **RUV - G** for HALFEN Channels: min. 18 mm slot width
max. 72 mm channel width

● Standard ○ to order

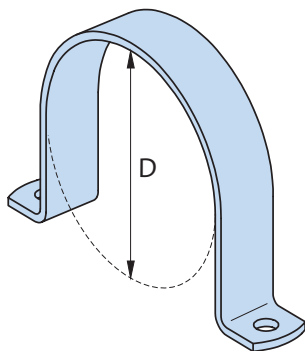


HALFEN FRAMING SYSTEMS

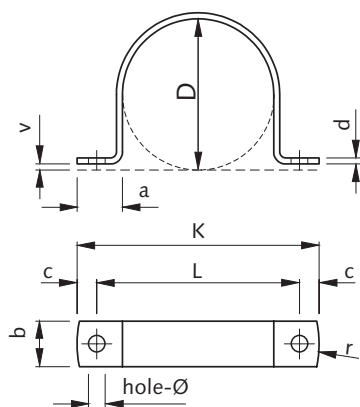
Pipe Clamps Type Alpha

HRS - A

Alpha Pipe clamp



Assembly note:
Pre-assemble Alpha pipe clamps with T-head bolts, then apply to HALFEN Channel resp. cantilever and tighten screw.



Order example: HRS - A - 168 - fv

Type _____
Ø D [mm] _____
grade _____
or
Stock no.: **0311.010-00074**

Material fv h.d. galvanised		Material A4 Stainl. steel A4		span width from - to [mm]	hole Ø [mm]	Dimensions						Pre- tension dim. v [mm]
Ø D [mm]	Stock no. 0311.010-	Ø D [mm]	Stock no. 0311.010-			b/d [mm]	L [mm]	K [mm]	a [mm]	c [mm]	r [mm]	
17	00048	17	00001	16 - 19	11 for M 10	25/2,5	51	77	30	13	19	2,75
21,5	00049	21,5	00002	20,5 - 23,5			55,5	81,5				
27	00050	27	00003	26 - 29			61	87				
33,5	00051	33,5	00004	32,5 - 35,5			67,5	93,5				
42,5	00052	42,5	00005	41,5 - 44,5			76,5	102,5				
48,5	00053	48,5	00006	47,5 - 50,5			82,5	108,5				
50	00054	50	00007	49 - 52			84	110				
56	00055	56	00008	55 - 58			90	116				
60	00056	60	00009	59 - 62			94	120				
64	00057	64	00010	63 - 66			98	124				
77	00058	77	00011	76 - 79	11 for M 10	30/4	111	137	30	13	19	4
80	00059	80	00012	79 - 82			114	140				
84	00060	84	00013	83 - 86			118	144				
89	00061	89	00014	88 - 91			123	149				
96	00062	96	00015	95 - 98			130	156				
100	00063	100	00016	98 - 102			134	160				
105	00064	105	00017	103 - 107			139	165				
110	00065	110	00018	108 - 112			144	170				
116	00066	116	00019	114 - 118			150	176				
125	00067	125	00020	123 - 127			159	185				
131	00068	131	00021	129 - 133	13 for M 12	40/4	165	191	40	16	19	4
137	00069	137	00022	135 - 139			171	197				
141	00070	141	00023	139 - 143			175	201				
150	00071	150	00024	148 - 152			184	210				
157	00072	157	00025	155 - 159			191	217				
160	00073	160	00026	158 - 162			208	240				
168	00074	168	00027	166 - 170			216	248				
176	00075	176	00028	174 - 178			224	256				
185	00076	185	00029	183 - 187			233	265				
200	00077	200	00030	198 - 202			248	280				
212	00078	212	00031	210 - 214	17 for M 16	50/5	260	292	50	25	28	5
218	00079	218	00032	216 - 220			266	298				
225	00080	225	00033	223 - 227			273	305				
235	00081	235	00034	233 - 237			283	315				
267	00083	267	00035	265 - 269			317	367				
273	00084	273	00036	271 - 275			323	373				
285	00085	285	00037	283 - 287			335	385				
326	00086	326	00038	324 - 328			376	426				
340	00087	340	00039	338 - 342			390	440				
355	00088	355	00040	353 - 357	17 for M 16	50/5	405	455	50	25	28	5
400	00089	400	00041	398 - 402			450	500				
406	00090	406	00042	404 - 408			456	506				
420	00091	420	00043	418 - 422			470	520				
429	00092	429	00044	427 - 431			479	529				
508	00093	508	00045	506 - 510			558	608				
525	00094	525	00046	523 - 527			575	625				
532	00095	532	00047	530 - 534			582	635				

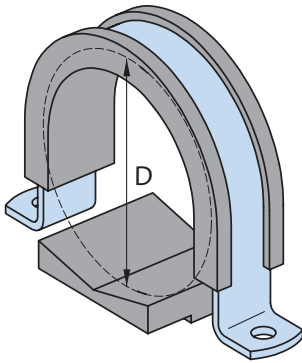
● Standard ○ to order

HALFEN FRAMING SYSTEMS

Pipe Clamps Type Alpha, Assembly Set

HCS - RAD

Pipe clamp assembly set
with DGM rubber insulation and RUV pipe rest

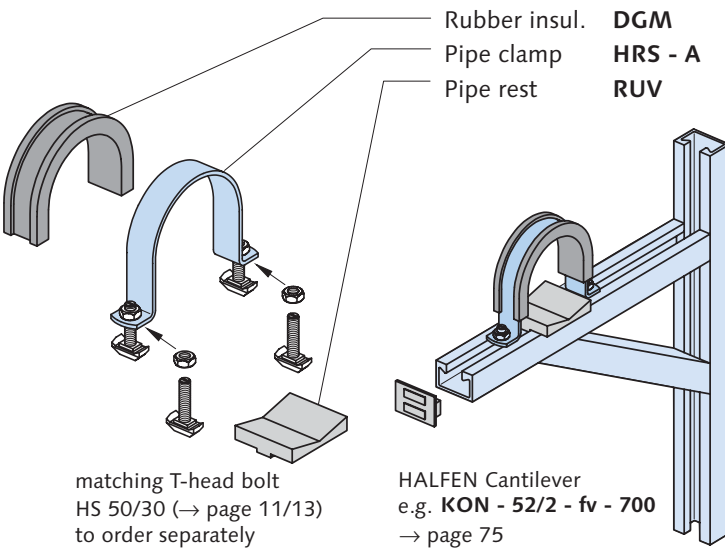


Note:
When DGM (Rubber insulation) is used, pipe rest RUK resp. RUV is also necessary.

Delivery includes:
1 x Pipe clamp Alpha
1 x Rubber insulation DGM (enclosed as cut goods)
1 x Pipe rest RUV

Assembly diagram

HCS - RAD (e.g. on HALFEN cantilever KON 52/2) consisting of:



matching T-head bolt
HS 50/30 (→ page 11/13)
to order separately

HALFEN Cantilever
e.g. KON - 52/2 - fv - 700
→ page 75

① Ø D = Nominal dimension of
pipe clamp
without rubber insulation

For pipe clamps with insulation the
effective diameter is
 $D_{eff} = \text{Ø D} - 16 \text{ mm}$.

Pipe clamps are suitable for pipe-Ø
within span width (see table value).

Order example:

Designation: **HCS - RAD - 326 - fv**

Typ _____
Ø D [mm] _____
Material _____
or
Stock no.: **0303.010-00076**

Material fv h.d. galvanised		Material A4 Stainl. steel A4		Span width from - to [mm]	DGM Rubber insulation length [mm]	Type
Ø D ① [mm]	Stock no. 0303.010-	Ø D ① [mm]	Stock no. 0303.010-			
33,5	00042	33,5	00001	16,5 - 21,5	1 x 75	DGM 25/8
42,5	00043	42,5	00002	25,5 - 30,5	1 x 75	
48,5	00044	48,5	00003	31,5 - 36,5	1 x 120	
50	00045	50	00004	33 - 38	1 x 120	
56	00046	56	00005	39 - 44	1 x 120	
60	00047	60	00006	43 - 48	1 x 150	
64	00048	64	00007	47 - 52	1 x 150	
77	00049	77	00008	60 - 65	1 x 180	
80	00050	80	00009	63 - 68	1 x 180	
84	00051	84	00010	67 - 72	1 x 180	
89	00052	89	00011	72 - 77	1 x 210	DGM 30/8
96	00053	96	00012	79 - 84	1 x 210	
100	00054	100	00013	83 - 88	1 x 250	
105	00055	105	00014	88 - 93	1 x 250	
110	00056	110	00015	93 - 98	1 x 250	
116	00057	116	00016	99 - 104	1 x 250	
125	00058	125	00017	108 - 113	1 x 305	
131	00059	131	00018	114 - 119	1 x 305	
137	00060	137	00019	120 - 125	1 x 305	
141	00061	141	00020	124 - 129	1 x 305	DGM 40/8
150	00062	150	00021	133 - 138	1 x 355	
157	00063	157	00022	140 - 145	1 x 355	
160	00064	160	00023	143 - 148	1 x 395	
168	00065	168	00024	151 - 156	1 x 395	
176	00066	176	00025	159 - 164	1 x 395	
185	00067	185	00026	168 - 173	1 x 450	
200	00068	200	00027	183 - 188	1 x 450	
212	00069	212	00028	195 - 200	1 x 500	
218	00070	218	00029	201 - 206	1 x 500	DGM 50/8
225	00071	225	00030	208 - 213	1 x 560	
235	00072	235	00031	218 - 223	1 x 560	
267	00073	267	00032	250 - 255	1 x 650	
273	00074	273	00033	256 - 261	1 x 650	
285	00075	285	00034	268 - 273	1 x 700	
326	00076	326	00035	309 - 314	1 x 800	
340	00077	340	00036	323 - 328	1 x 800	
355	00078	355	00037	338 - 343	1 x 860	
400	00079	400	00038	383 - 388	1 x 1015	
406	00080	406	00039	389 - 394	1 x 1015	DGM 50/8
420	00081	420	00040	403 - 408	1 x 1015	
429	00082	429	00041	412 - 417	1 x 1015	
508		508		491 - 496	1 x 1295	
525		525		508 - 513	1 x 1295	
532		532		515 - 520	1 x 1295	

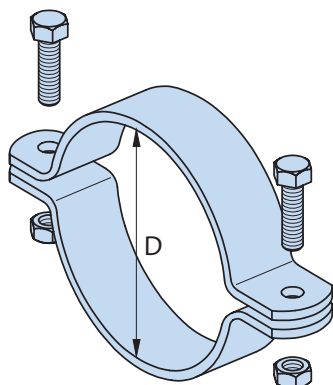
● Standard ○ to order

HALFEN FRAMING SYSTEMS

Pipe Clamps Type Beta

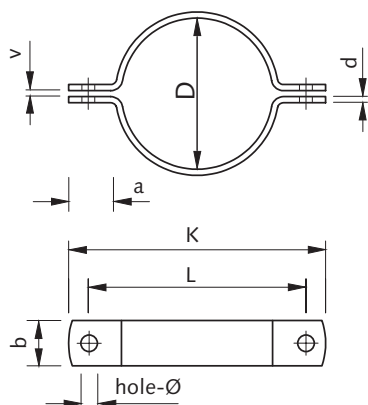
HRS - B

Beta Pipe clamp



Delivery includes:
1 x Pipe clamp
2 x Hx. head bolts
2 x Nuts

Note:
Pipe clamp HRS - B
with rubber insulation DGM:
→ page 85



Material fv h.d. galvanised			Material A4 Stainless steel A4			Span width from - to [mm]	hole Ø [mm]	Dimensions					Pre- tension dim. v [mm]	load cap. [kN]
Ø D [mm]	Stock no. 0311.030-		Ø D [mm]	Stock no. 0311.030-				b/d [mm]	L [mm]	K [mm]	a [mm]			
21,5	00049	●	21,5	00002	●	20,5 - 23,5	6,5 for M 6	25/2,5	49,5	71,5	25	2,75	1,9	
27	00050	●	27	00003	●	26 - 29			55	77				
33,5	00051	●	33,5	00004	●	32,5 - 35,5			61,5	83,5				
42,5	00052	●	42,5	00005	●	41,5 - 44,5			70,5	92,5				
48,5	00053	●	48,5	00006	●	47,5 - 50,5			76,5	98,5				
50	00054	●	50	00007	●	49 - 52			78	100				
56	00055	●	56	00008	●	55 - 58	8,5 for M 8	25/2,5	84	106	25	2,75	1,9	
60	00056	●	60	00009	●	59 - 62			88	110				
64	00057	●	64	00010	●	63 - 66			92	114				
77	00058	●	77	00011	●	76 - 79			105	127				
80	00059	●	80	00012	●	79 - 82			108	130				
84	00060	●	84	00013	○	83 - 86			112	134				
89	00061	●	89	00014	●	88 - 91	11 for M 10	30/4	118	140	35	4	4,1	
96	00062	●	96	00015	○	95 - 98			125	147				
100	00063	●	100	00016	●	98 - 102			144	170				
105	00064	●	105	00017	●	103 - 107			149	175				
110	00065	●	110	00018	●	108 - 112			154	180				
116	00066	●	116	00019	●	114 - 118			160	186				
125	00067	●	125	00020	●	123 - 127	13 for M 12	40/4	169	195	40	4	4,9	
131	00068	●	131	00021	●	129 - 133			175	201				
137	00069	●	137	00022	●	135 - 139			181	207				
141	00070	●	141	00023	●	139 - 143			185	211				
150	00071	●	150	00024	●	148 - 152			194	220				
157	00072	●	157	00025	●	155 - 159			201	227				
160	00073	●	160	00026	●	158 - 162	17 for M 16	50/5	208	240	50	5	7,8	
168	00074	●	168	00027	●	166 - 170			216	248				
176	00075	●	176	00028	●	174 - 178			224	256				
185	00076	●	185	00029	●	183 - 187			233	265				
200	00077	●	200	00030	●	198 - 202			248	280				
212	00078	●	212	00031	●	210 - 214			260	292				
218	00079	●	218	00032	●	216 - 220	17 for M 16	60/6	266	298	55	5	9,7	
225	00080	●	225	00033	●	223 - 227			273	305				
235	00081	○	235	00034	○	233 - 237			283	315				
267	00082	○	267	00035	○	265 - 269			317	367				
273	00083	○	273	00036	○	271 - 275			323	373				
285	00084	○	285	00037	○	283 - 287			335	385				
326	00085	○	326	00038	○	324 - 328	17 for M 16	60/6	376	426	55	5	9,7	
340	00086	○	340	00039	○	338 - 342			390	440				
355	00087	○	355	00040	○	353 - 357			415	465				
400	00088	○	400	00041	○	398 - 402			460	510				
406	00089	○	406	00042	○	404 - 408			466	516				
420	00090	○	420	00043	○	418 - 422			480	530				
429	00091	○	429	00044	○	427 - 431	17 for M 16	60/6	489	539	55	5	9,7	
508	00092	○	508	00045	○	506 - 510			568	618				
525	00093	○	525	00046	○	523 - 527			585	635				
532	00094	○	532	00047	○	530 - 534			592	642				

Order example: HRS - B - 125 - fv

● Standard ○ to order

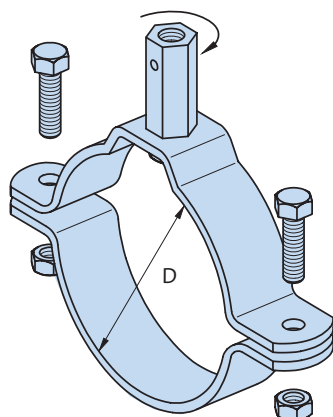
Type _____
Ø D [mm] _____
Material _____
or
Stock no.: **0311.030-00067**

HALFEN FRAMING SYSTEMS

Pipe Clamps Type Delta

HRS - D

Delta Pipe clamp

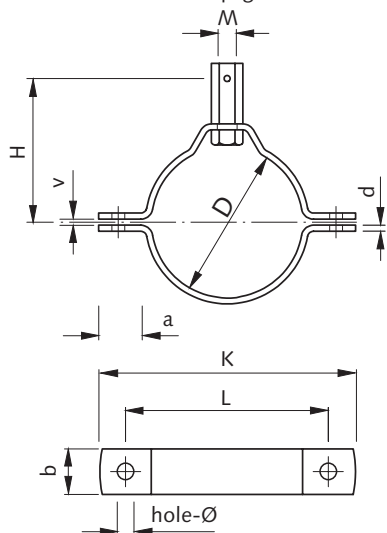


Delivery includes:

- 1 x Pipe clamp with hexagonal rod coupler, unremovable but turnable on pipe clamp
- 2 x Hex. head bolts
- 2 x Nuts

Note:

Pipe clamp HRS-D with rubber insulation DGM: → page 85



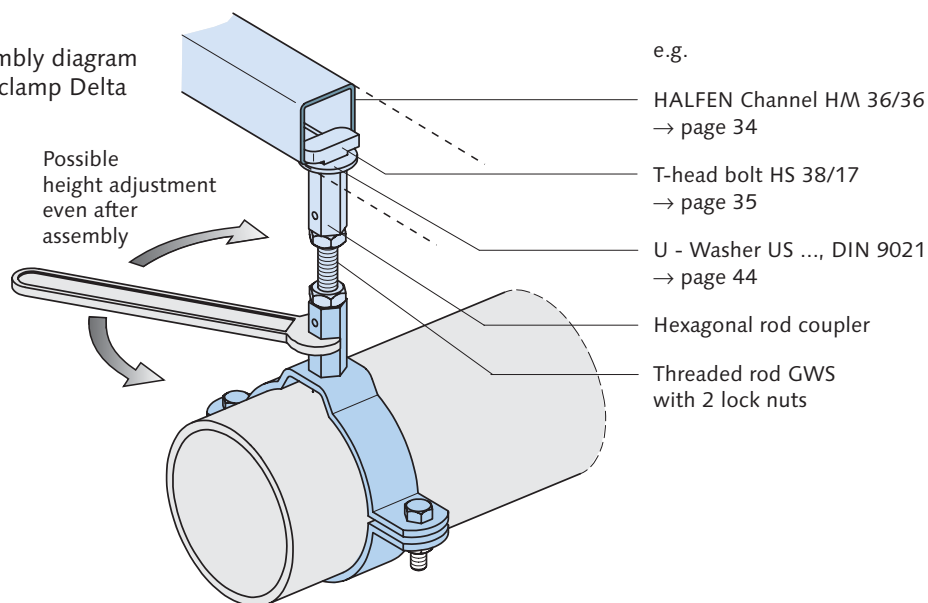
Order example: HRS - D - 125 - fv

Type _____
 Ø D [mm] _____
 Material _____
 or
 Stock no.: **0311.050-00039**

Material fv h.d. galvanised		Material A4 Stainl. steel A4		span width from - to [mm]	hole Ø [mm]	Dimensions						Pre- tension dim. v [mm]	load cap. [kN]
Ø D [mm]	Stock no. 0311.050-	Ø D [mm]	Stock no. 0311.050-			b/d [mm]	L [mm]	K [mm]	a [mm]	H [mm]	M [mm]		
64	00030	64	00001	63 - 66	8,5 for M 8	25/2,5	92	114	25	65	M 10 x 40 w. v.h.	2,75	1,9
77	00031	77	00002	76 - 79			105	127		70			
80	00032	80	00003	79 - 82			108	130		70			
89	00033	89	00004	88 - 91			118	140		75			
96	00034	96	00005	95 - 98			125	147		80			
100	00035	100	00006	98 - 102	11 for M 10	30/4	144	170	35	85	M 12 x 40 with view hole	4	4,1
105	00036	105	00007	103 - 107			149	175		90			
110	00037	110	00008	108 - 112			154	180		90			
116	00038	116	00009	114 - 118			160	186		95			
125	00039	125	00010	123 - 127			169	195		100			
131	00040	131	00011	129 - 133			175	201		100			
137	00041	137	00012	135 - 139			181	207		105			
141	00042	141	00013	139 - 143			185	211		105			
150	00043	150	00014	148 - 152			194	220		110			
157	00044	157	00015	155 - 159	13 for M 12	40/4	201	227	40	115	M 16 x 50 with view hole	4	4,9
160	00045	160	00016	158 - 162			208	240		125			
168	00046	168	00017	166 - 170			216	248		130			
176	00047	176	00018	174 - 178			224	256		135			
185	00048	185	00019	183 - 187			233	265		140			
200	00049	200	00020	198 - 202			248	280		145			
212	00050	212	00021	210 - 214			260	292		150			
218	00051	218	00022	216 - 220			266	298		155			
225	00052	225	00023	223 - 227			273	305		160			
235	00053	235	00024	233 - 237	17 for M 16	50/5	283	315	50	170	M 16 x 50 w. v.h.	5	7,8
267	00054	267	00025	265 - 269			317	367		175			
273	00055	273	00026	271 - 275			323	373		180			
285	00056	285	00027	283 - 287			335	385		190			
326	00057	326	00028	324 - 328			376	426		210			
340	00058	340	00029	338 - 342			390	440		215			

● Standard ○ to order

Assembly diagram
Pipe clamp Delta



Framing Channels, Bolts

Accessories

Design Properties

Support Structures

Cantilevers

Pipe Clamps, Pipe Supports

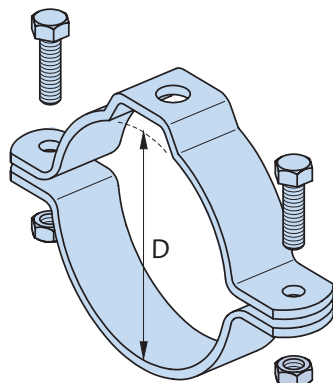
Notes, Work aid

HALFEN FRAMING SYSTEMS

Pipe Clamps Type Gamma

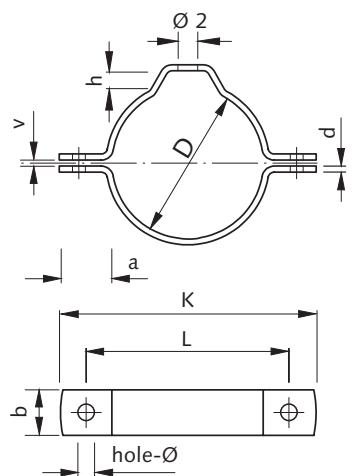
HRS - G

Gamma Pipe clamps



Delivery includes:
1 x Pipe clamp
2 x Hex. head bolts
2 x Nuts

Note:
Pipe clamp HRS-G with rubber insulation DGM: → page 85



Material fv h.d. galvanised		Material A4 Stainl. steel A4		span width from - to [mm]	hole Ø [mm]	Dimensions						Pre- tension dim. v [mm]	load cap. [kN]
Ø D [mm]	Stock no. 0311.060-	Ø D [mm]	Stock no. 0311.060-			b/d [mm]	L [mm]	K [mm]	a [mm]	h [mm]	Ø 2 [mm]		
64	00030	64	00001	63 - 66	8,5 for M 8	25/2,5	92	114	25	9	11	2,75	1,9
77	00031	77	00002	76 - 79			105	127					
80	00032	80	00003	79 - 82			108	130					
89	00033	89	00004	88 - 91			118	140					
96	00034	96	00005	95 - 98			125	147					
100	00035	100	00006	98 - 102	11 for M 10	30/4	144	170	35	11	13	4	4,1
105	00036	105	00007	103 - 107			149	175					
110	00037	110	00008	108 - 112			154	180					
116	00038	116	00009	114 - 118			160	186					
125	00039	125	00010	123 - 127			169	195					
131	00040	131	00011	129 - 133			175	201					
137	00041	137	00012	135 - 139			181	207					
141	00042	141	00013	139 - 143			185	211					
150	00043	150	00014	148 - 152			194	220					
157	00044	157	00015	155 - 159	13 for M 12	40/4	201	227	40	14	17	4	4,9
160	00045	160	00016	158 - 162			208	240					
168	00046	168	00017	166 - 170			216	248					
176	00047	176	00018	174 - 178			224	256					
185	00048	185	00019	183 - 187			233	265					
200	00049	200	00020	198 - 202			248	280					
212	00050	212	00021	210 - 214			260	292					
218	00051	218	00022	216 - 220			266	298					
225	00052	225	00023	223 - 227			273	305					
235	00053	235	00024	233 - 237	17 for M 16	50/5	283	315	50	18	17	5	7,8
267	00054	267	00025	265 - 269			317	367					
273	00055	273	00026	271 - 275			323	373					
285	00056	285	00027	283 - 287			335	385					
326	00057	326	00028	324 - 328			376	426					
340	00058	340	00029	338 - 342			390	440					

● Standard ○ to order

Order example: HRS - G - 125 - fv

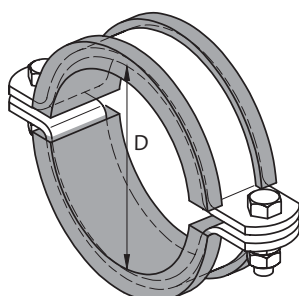
Type _____
 Ø D [mm] _____
 Material _____
 or _____
 Stock no.: 0311.060-00039

HALFEN FRAMING SYSTEMS

DGM - Rubber Insulation

HALFEN Pipe clamps HRS with rubber insulation **DGM**
(DGM see below, order separately)

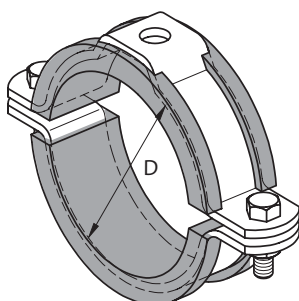
Assembly diagram
Pipe clamp Beta
HRS - B (→ page 82)
with DGM
(order separately)



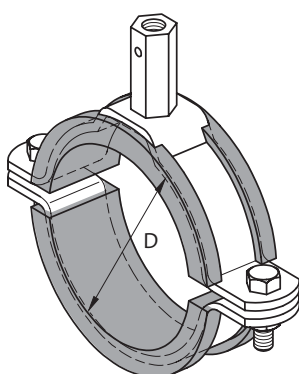
① Ø D = Nominal dimension of
pipe clamp
without rubber insulation

For pipe clamps with insulation the
effective diameter is
 $D_{eff} = \text{Ø D} - 16 \text{ mm}$;
span width with insulation
see table values.

Assembly diagram
Pipe clamp Gamma
HRS - G (→ page 84)
with DGM
(order separately)



Assembly diagram
Pipe clamp Delta
HRS - D (→ page 83)
with DGM
(order separately)

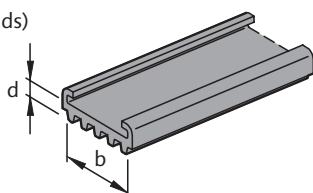


Pipe clamp Alpha **HRS - A** with DGM: → page 81

Ø D ① [mm]	Span width with DGM from - to [mm]	Rubber insulation DGM (order separately) Length [mm]	Type
21,5		-	DGM 25/8
27			
33,5	16,5 - 21,5	2 x 50	
42,5	25,5 - 30,5		
48,5	31,5 - 36,5	2 x 70	
50	33 - 38		
56	39 - 44		
60	43 - 48	2 x 85	
64	47 - 52		
77	60 - 65	2 x 110	
80	63 - 68		DGM 30/8
84	67 - 72	2 x 130	
89	72 - 77		
96	79 - 84		
100	83 - 88	2 x 155	
105	88 - 93		
110	93 - 98	2 x 175	
116	99 - 104		
125	108 - 113	2 x 190	
131	114 - 119		DGM 40/8
137	120 - 125	2 x 220	
141	124 - 129		
150	133 - 138	2 x 240	
157	140 - 145		
160	143 - 148	2 x 270	
168	151 - 156		
176	159 - 164	2 x 295	
185	168 - 173		
200	183 - 188	2 x 310	DGM 50/8
212	195 - 200		
218	201 - 206	2 x 345	
225	208 - 213		
235	218 - 223	2 x 405	
267	250 - 255		
273	256 - 261	2 x 435	
285	268 - 273		
326	309 - 314	2 x 530	
340	323 - 328		DGM 60/8
355	338 - 343	2 x 625	
400	383 - 388		
406	389 - 394	2 x 790	
420	403 - 408		
429	412 - 417		
508	491 - 496		
525	508 - 513		
532	515 - 520		

DGM ●

Rubber insulation DGM (cut goods)
for HALFEN Pipe clamps
Material:
EPDM, resistant to temp.
from - 40°C to +110° C



● Standard ○ to order

② Please indicate length
[m] when ordering.

Order example:
DGM 40/ 8, 12 m
or Stock no.
0320.000-00003, 12m

b/d [mm]	Stock no. ② 0320.000-	for pipe clamp - Ø D	
		HRS - A [mm]	HRS - B - G - D [mm]
DGM 25/ 8	00001	17 - 96	17 - 96
DGM 30/ 8	00002	100 - 157	100 - 157
DGM 40/ 8	00003	160 - 235	160 - 235
DGM 50/ 8	00004	267 - 532	267 - 340
DGM 60/ 8	00005		355 - 532

Framing Channels, Bolts

Accessories

Design Properties

Support Structures

Cantilevers

Pipe Clamps, Pipe Supports

Notes, Work aid

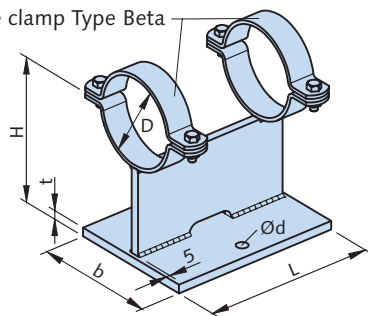
HALFEN FRAMING SYSTEMS

Sliding Pipe Supports, Spacer Clip

HRG - 1

Pipe supports
for pipe diameters D = 21,5 up to 185 mm

Pipe clamp Type Beta



HRG - 1 for pipe Ø D ①	fv	A4	Dimensions [mm]				
			H	L	b	Ø d	t
21,5 - 60	○	○	100	130	80	11	5
63 - 84	○	○	125	150	100	11	8
89 - 131	○	○	150	180	100	11	8
137 - 141	○	○	175	200	120	11	10
150 - 185	○	○	200	200	150	13	10

Order example: **HRG - 1 - 105 - fv**

Type

① Pipe - Ø D [mm]

Available diameters of pipe clamps see HRS-B, → p. 82. **Note:** When using rubber insulation DGM, larger diameters are required.

Material / finish:

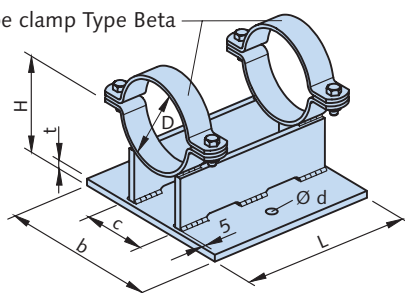
fv = Steel St 37 - 2, h.d. galvanised

A4 = Stainl. steel W1.4571/ 1.4401 (A4)

HRG - 2

Pipe supports
for pipe diameters D = 176 up to 532 mm

Pipe clamp Type Beta



HRG - 2 for pipe Ø D ①	fv	A4	Dimensions [mm]					
			H	L	b	c	Ø d	t
176 - 185	○	○	200	200	200	80	17	8
200 - 235	○	○	200	200	200	100	17	8
267 - 273	○	○	250	250	200	100	17	8
285	○	○	250	250	225	125	17	8
326	○	○	250	300	250	150	17	10
340 - 355	○	○	300	300	250	150	17	10
400 - 429	○	○	350	300	250	150	17	10
508 - 532	○	○	400	400	300	200	22	15

Order example: **HRG - 2 - 105 - fv**

Type

① Pipe - Ø D [mm]

Available diameters of Pipe clamps see HRS-B, → p. 82. **Note:** When using rubber insulation DGM, larger diameters are required.

Material / finish:

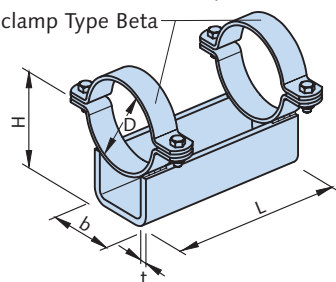
fv = Steel St 37 - 2, h.d. galvanised

A4 = Stainl. steel W1.4571/ 1.4401 (A4)

HRG - 3

Pipe supports
for pipe diameters D = 100 up to 532 mm

Pipe clamp Type Beta



HRG - 3 for pipe Ø D ①	fv	A4	Dimensions [mm]			
			H	L	b	t
100 - 131	○	○	150	180	80	5
137 - 141	○	○	175	200	100	5
150 - 168	○	○	200	200	100	5
176 - 185	○	○	200	200	100	8
200 - 235	○	○	200	200	120	8
267 - 285	○	○	250	250	150	8
326	○	○	250	300	150	8
340 - 355	○	○	300	300	200	10
400 - 429	○	○	350	300	200	10
508 - 532	○	○	400	400	250	10

Order example: **HRG - 3 - 105 - fv**

Type

① Pipe - Ø D [mm]

Available diameters of Pipe clampn see HRS-B, → p. 82. **Note:** When using rubber insulation DGM, larger diameters are required.

Material / finish:

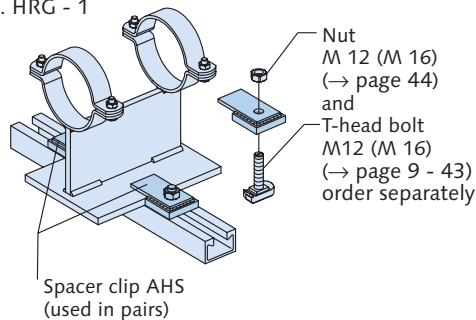
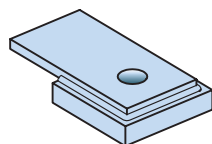
fv = Steel St 37 - 2, h.d. galvanised

A4 = Stainl. steel W1.4571/ 1.4401 (A4)

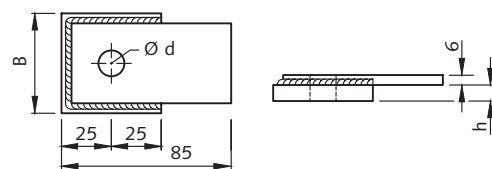
AHS

Spacer clip
for sliding pipe supports

Assembly diagram:
e.g. HRG - 1



Material: fv	Stock no.	B [mm]	h [mm]	Ø d [mm]
AHS - 1 - fv	○ 0324.000-00001	50	8,0	13
AHS - 2 - fv	○ 0324.000-00002	50	10,0	13
AHS - 3 - fv	○ 0324.000-00003	50	12,0	13
AHS - 4 - fv	○ 0324.000-00004	70	20,0	17
Material: A4	Stock no.	B [mm]	h [mm]	Ø d [mm]
AHS - 1 - A4	○ 0324.000-00005	50	8,0	13
AHS - 2 - A4	○ 0324.000-00006	50	10,0	13
AHS - 3 - A4	○ 0324.000-00007	50	12,0	13
AHS - 4 - A4	○ 0324.000-00008	70	20,0	17



● Standard ○ to order

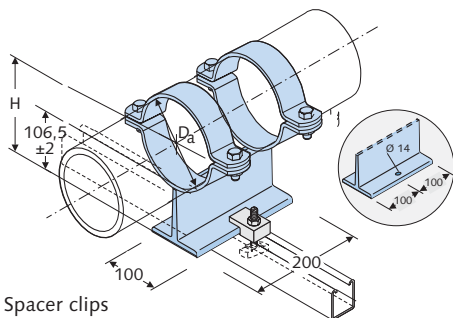
Other dimensions on request.

HALFEN FRAMING SYSTEMS

Sliding Supports, Spacer Clips, Application Example

HCS HRG

Sliding support DN 15-DN 200, pipe clamps acc. to DIN 3567, Form A



Fixing with 2 Spacer clips
HCS AHS 5/1 - fv

D _a	DN	H	Designation	Stock no. 0291. ..		
21,3	15	116	HCS HRG 4-21 - fv	040-00001	1	●
33,7	25	122	HCS HRG 4-33 - fv	040-00002	1	●
48,3	40	129	HCS HRG 4-48 - fv	040-00003	1	●
60,3	50	136	HCS HRG 4-60 - fv	040-00004	1	●
76,1	65	144	HCS HRG 4-76 - fv	040-00009	1	●
88,9	80	150	HCS HRG 4-89 - fv	040-00005	1	●
114,3	100	166	HCS HRG 4-116 - fv	040-00006	1	●
139,7	125	178	HCS HRG 4-141 - fv	040-00007	1	●
168,3	150	192	HCS HRG 4-168 - fv	040-00008	1	●
219,1	200	217,5	HCS HRG 4-219 - fv	040-00010	1	●

fv = h.d. galvanised

Example 1: Pipe fittings on HALFEN POWERCLICK Framing Systems

- one range of accessories for all three
channel sizes!



POWERCLICK Framing System 63



POWERCLICK Framing System 41



POWERCLICK Framing System 22

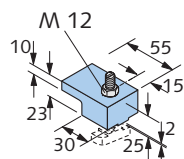
HCS AHS

Spacer clip, used in
pairs, pre-assembled
with

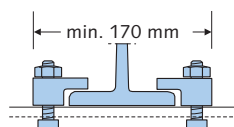
1 x HZS 41/22 - fv
8.8 - M12 x 50 per
clip

suitable for all
channels System 41
Series

Designation	Stock no. 0308. ..		
HCS AHS 5/1 - fv	040-00001	1	●

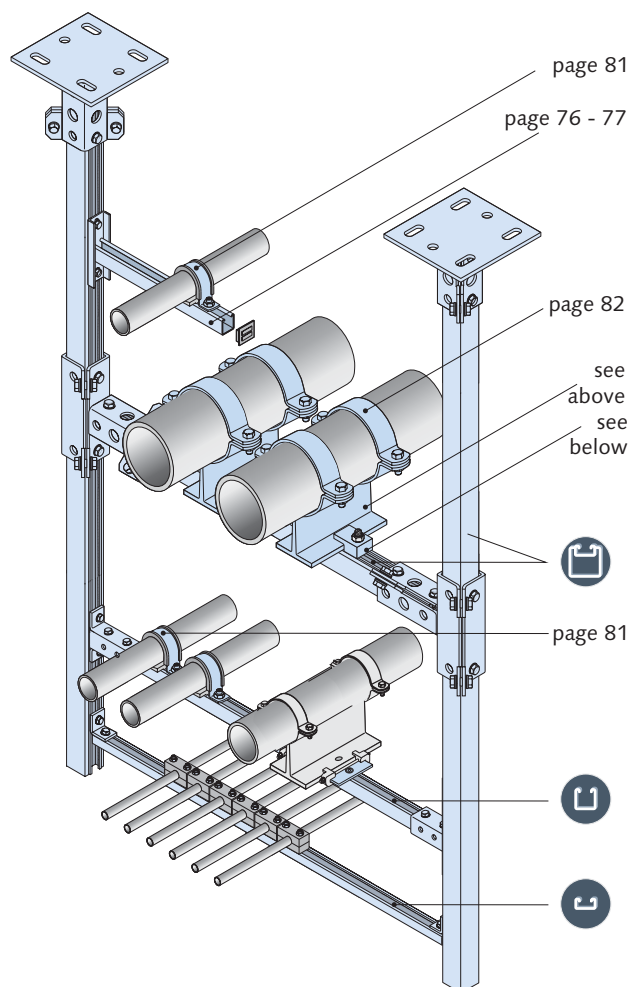


Max. 60 Nm



● Standard ○ to order

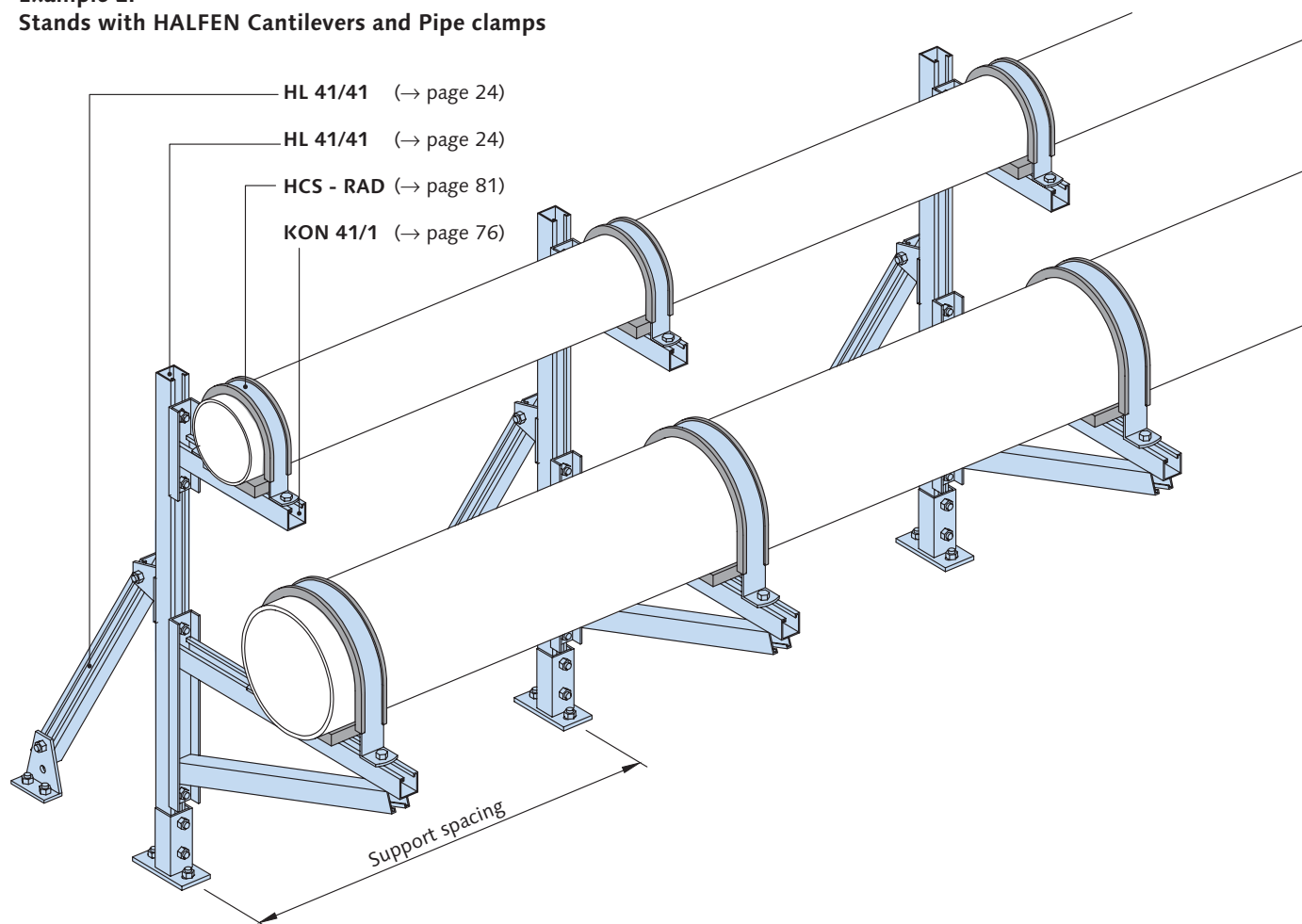
packing unit [pcs.]



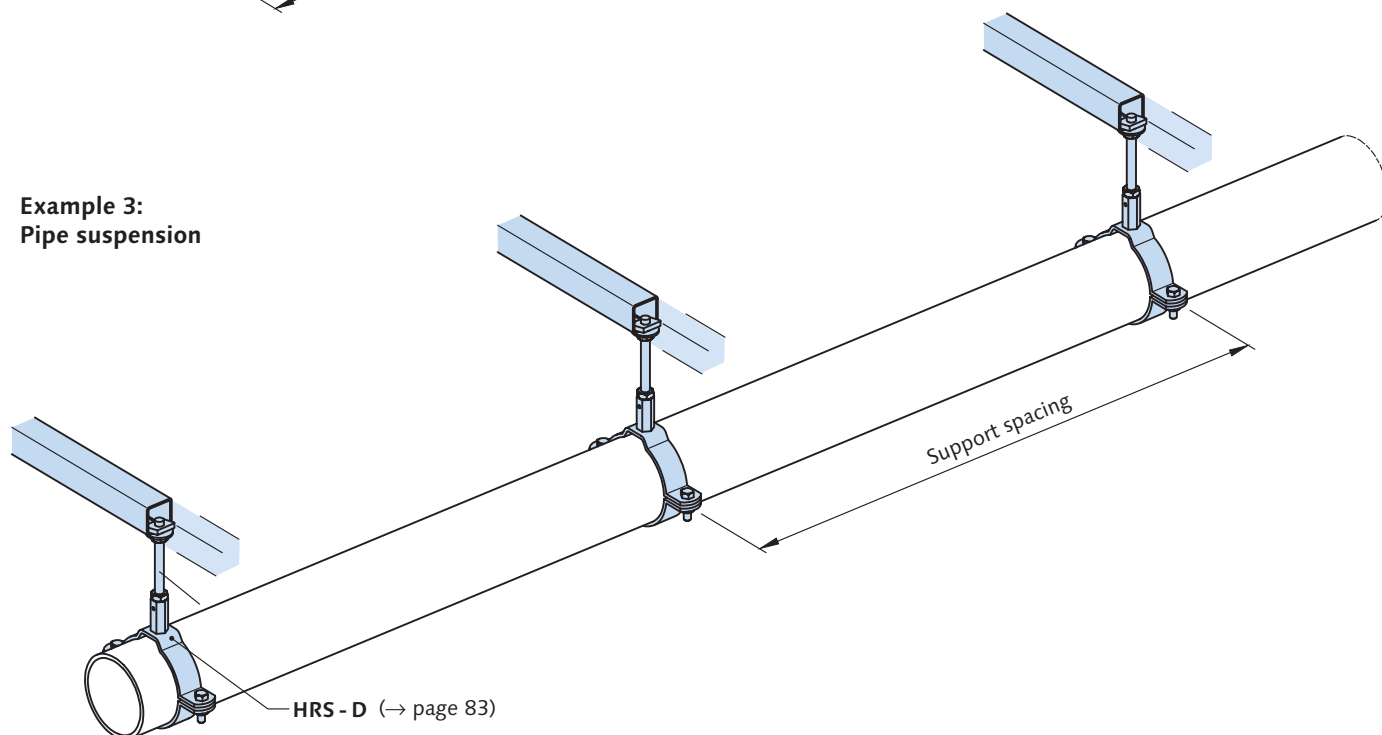
HALFEN FRAMING SYSTEMS

Application Examples

Example 2: Stands with HALFEN Cantilevers and Pipe clamps



Example 3: Pipe suspension



HALFEN FRAMING SYSTEMS

Pipe Weights and Support Spacing

External pipe Ø ① [mm]	Pipe weight (empty) [kg/m]	Pipe weight (filled with water) [kg/m]	Support spacing max. [m]
Threaded pipe according to DIN 2440 (medium)			
17,2	0,89	1,01	1,35
21,3	1,27	1,47	1,50
26,9	1,65	2,02	1,80
33,7	2,55	3,13	2,10
42,4	3,28	4,30	2,40
48,3	3,77	5,15	2,60
60,3	5,33	7,55	3,00
76,1	6,80	10,52	3,20
88,9	8,85	13,98	3,50
114,3	12,60	21,30	4,20
139,7	16,90	30,17	4,60
165,1	20,10	39,06	5,30
Steel pipe (heating pipe) according to DIN 2448			
17,2	0,69	12,15	3,80
21,3	0,96	15,76	4,00
26,9	1,41	17,31	4,10
33,7	2,01	18,90	4,20
44,5	2,70	23,32	4,35
48,3	2,95	25,07	4,40
51,0	3,12	27,12	4,50
57,0	3,90	32,54	4,75
60,3	4,14	34,76	4,80
63,5	4,36	36,93	4,90
76,1	5,28	43,40	5,00
82,5	6,31	51,26	5,20
88,9	6,81	12,15	3,80
101,6	8,76	15,76	4,00
108,0	9,33	17,31	4,10
114,3	9,90	18,90	4,20
127,0	12,20	23,32	4,35
133,0	12,80	25,07	4,40
139,7	13,50	27,12	4,50
152,4	16,40	32,54	4,75
159,0	17,10	34,76	4,80
168,3	18,10	36,93	4,90
177,8	21,30	43,40	5,00
193,7	25,00	51,26	5,20
219,1	31,00	64,73	5,50
267,0	40,60	91,40	5,90
273,0	41,60	95,40	5,90
298,5	51,10	117,60	6,20
318,0	57,40	129,50	6,40 ①
323,9	55,60	130,85	6,40 ①
406,4	85,90	204,40	7,10 ①
508,0	135,00	320,50	8,00 ①

External pipe-Ø ① [mm]	Pipe weighth (empty) [kg/m]	Pipe weighth (filled with water) [kg/m]	Support spacing max. [m]
Drain pipe, GA DIN 19 500			
60	5,300	7,505	0,60
80	7,100	11,283	0,80
112	10,300	18,791	1,15
137	13,700	26,763	1,35
162	17,300	35,437	1,60
212	32,700	64,100	2,00
Drain pipe cast iron (SML, ML)			
58	4,300	6,400	ca.1,50 according to the manufac- turer's instructions each length of pipe must be supported at least twice ; applies additionally for each moulded part
78	5,900	9,900	
110	8,400	17,700	
135	11,800	24,500	
160	14,100	32,300	
210	23,100	54,600	
274	33,300	87,700	
326	43,200	120,800	
429	75,500	208,800	
532	104,300	311,800	
635	137,100	434,200	
Drain pipe PE (Geberit)			
32	0,273	0,804	according manufacturer 10 x Ø
40	0,348	1,255	
50	0,443	1,963	
56	0,500	2,463	
63	0,566	3,116	
75	0,679	4,416	
90	0,952	6,360	
110	1,432	9,503	
125	1,817	12,271	
140	2,287	15,391	
160	3,004	20,106	
200	3,830	31,457	
250	6,019	49,150	
Drain pipe, PVC hard			
50	0,244	1,284	0,50
63	0,308	1,998	0,60
75	0,490	3,930	0,75
110	1,025	8,006	1,10
125	1,351	12,430	1,25
160	2,158	18,031	1,60

External pipe-Ø ② [mm]	Pipe weight (empty) [kg/m]	Pipe weight (filled with water) [kg/m]	Support spacing max. [m]
Copper pipe DIN 1786 and 1754, bright			
10	0,252	0,302	≤ 0,50
12	0,308	0,387	
15	0,391	0,524	
18	0,475	0,676	≤ 1,00
22	0,587	0,901	
28	1,110	1,601	
35	1,420	2,214	≤ 1,50
42	1,700	2,894	
54	2,910	4,873	
64	3,470	6,296	≤ 2,00
70	3,800	7,219	
74	4,030	7,877	
80	4,360	8,894	≤ 2,00 - 3,00
104	5,700	13,550	
125	10,200	21,316	
131	10,700	22,966	

② for pipes with normal wall thickness

① Observe load capacities of pipe clamps and reduce eventually support width.

HALFEN FRAMING SYSTEMS

Pipe Dimensions

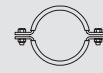
1	Framing Channels, Bolts			Threaded pipe DIN 2440 (medium duty) DIN 2441 (heavy duty)		Seamless Steel pipe DIN 2448 DIN E 2460 heating pipe		Insulated Copper pipe Wicu pipe Standard with web coat		bright Copper pipe DIN 17 440	Steel Drain pipe DIN 19 530 Loro. Steel plastic coated		Cast iron Drain pipe GA DIN 19 500 and SML		Eternit pipe DIN 19 830		PVC DIN 19 531 PP DIN 19 560 ABS DIN 19 561 Rotstrich HT	
	DN	Zoll	Da	DN	Da	Copper pipe Da	Insu- lation Da	DN	DN	Da	DN	Da	DN	Da	DN	Da	DN	Da
2									12									
									15									
	10	3/8	17,2	10	17,2	12	16											
	15	1/2	21,3	15	21,3	15	19		18/22									
	20	3/4	26,9	20	26,9	18/22	23/27		28									
	25	1	33,7	25	33,7	28	33		35								30	32
						35	40											
3	32	1 1/4	42,4	32	44,5				42	40	42						40	42,5
	40	1 1/2	48,3	40	48,3	42	48					40	48				50	50
				46	51													
				50	57				54	50	53	50	58					
	50	2	60,3	50	60,3	54	60						60					
				57	63,5				64/65						50	64		
	65	2 1/2	76,1	65	76,1				76	70	73	70	78				70	75
4													80					
				76	82,5				85						70	84		
	80	3	88,9	80	88,9				89									
				94	101,6				100	100	102							
				100	108							100	110				100	110
	100	4	114,3	100	114,3										100	116		
				113	121													
5					127				125								125	125
				125	133				133	125	133	125	133					
												137						
	125	5	139,7	125	139,7										125	141		
				150	159				159	150	159	150	160				150	160
	150	6	165,1	150	168,3										150	168		
					177,8													
6				175	193,7												200	200
												200	210					
				200	219,1				219	200	219				200	220		
					267													
				250	273							250	274	250	274			
7					298,5													
					318													
				300	323,9							300	326	300	326			
				350	355,6							350	355					
				400	406,4							400	429					
				500	508							500	532					
Notes, Work aid																		

DN = Nominal diameter; Da = External diameter

Dimensions in mm (resp. in inches, where stated)

HALFEN FRAMING SYSTEMS

Pipe Dimensions, Selection of Pipe Clamps

PE DIN 19 535 (Geberit, Akatherm, Riamer, Supralen)		PVC Drain pipe DIN 19 531		PVC Pressure pipe DIN 19 532 and DIN 8062		PE low pressure pipe DIN 19 533 (Supralen)		 Type Alpha	 Type Alpha with DGM and RUV	 Type Beta	 Type Beta/ Gamma with DGM	 Type Delta/ Gamma	 Type Delta/ Gamma with DGM
DN	Da	DN	Da	DN	Da	DN	Da	Ø D [mm]	Ø D [mm]	Ø D [mm]	Ø D [mm]	Ø D [mm]	Ø D [mm]
				10	16			17					
				15	20			21,5					
								27	42,5	27	42,5		
	32	25	32	25	32	20	32	33,5	48,5	33,5	48,5		
	40	32	40	32	40	25	40	42,5	56	42,5	56		
								42,5	56	42,5	56		
								48,5	64	48,5	64		64
40	50	50	50	40	50	32	50	50	64	50	64		64
50	56							56	64	56	64		64
								60	77	60	77		77
60	63	60	63	50	63	40	63	64	80	64	80	64	80
70	75	70	75	65	75	50	75	77	89	77	89	77	89
								80	96	80	96	80	96
								84	100	84	100	84	100
80	90		90	80	90		90	89	105	89	105	89	105
								100	116	100	116	100	116
100	110	100	110	100	110	65	110	110	125	110	125	110	125
								116	131	116	131	116	131
								125	141	125	141	125	141
125	125	125	125	125	125	80	125	125	141	125	141	125	141
								131	150	131	150	131	150
								137	150	137	150	137	150
	140		140		140			141	157	141	157	141	157
150	160	150	160	150	160			160	176	160	176	160	176
								168	185	168	185	168	185
								176	185	176	185	176	185
								200	212	200	212	200	212
200	200	200	200	200	200			200	212	200	212	200	212
								212	225	212	225	212	225
								218	235	218	235	218	235
250	250								267		267		267
								267	285	267	285	267	285
								273	285	273	285	273	285
300	315	300	315						326		326		326
								326	340	326	340	326	340
								355		355			
400	400	400	400					400	420	400	420		
								406	420	406	420		
								429		429			
								508	525	508	525		
								532		532			

DN = Nominal diameter; Da = External diameter

Ø D = Nominal diameter pipe clamps (→ tables pages 80 - 85)

Framing Channels, Bolts

Accessories

Design Properties

Support Structures

Cantilevers

Pipe Clamps, Pipe Supports

Notes, Work aid

HALFEN FRAMING SYSTEMS

Pipe Fixing under Bridges

Regulations, standards and basic rules

Regulation WAS 0 (1995):
Assembly instructions for bridge drains

Supplementary Technical Contracting Conditions for Artificial Buildings, issue 1989 (German regulation ZTV-K88):

Regulation sketches WAS 5, 6, 13, 14, 15, 16, 21, 25 and 26:

"Fixings of conduits must consist of stainless steel material grades 1.4401 or 1.4571 acc. DIN 17 440 resp. DIN 267, part 11."

"Fixing parts and connections made of stainless steel, steel group A4, material - no. 1.4401 or 1.4571".

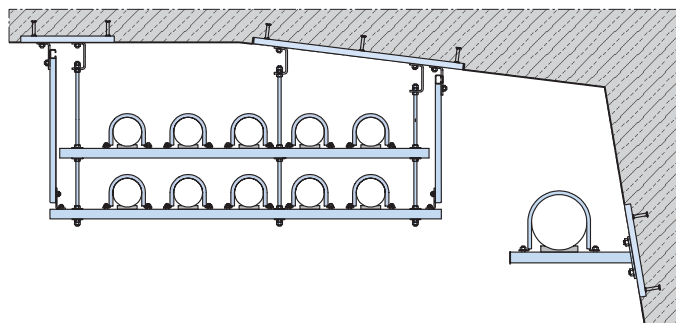
Standard catalogue of works specifications (STLK), scope of works LB 111, issue 5/89, generally stipulates for pipe fixings:

"Fixing elements in stainless steel acc. to DIN 17440, material grade 1.4571, connection components in stainless steel acc. to DIN 267, part 11, material grade 1.4571".

Support structures under bridges which are not covered by WAS - regulations

Due to the large range of HALFEN channels, T-bolts and accessories made of stainless steel grade A4 the support structures can be dimensioned to meet the requirements, which can be realised even under difficult conditions. We also offer support for clients to find solutions of technical problems. Send us a drawing:

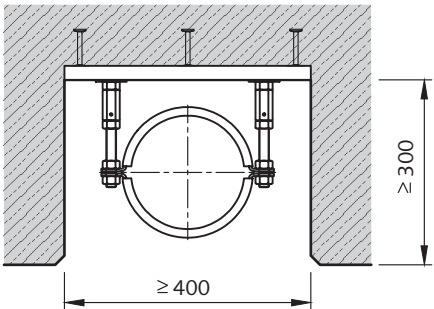
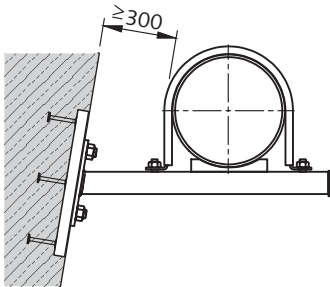
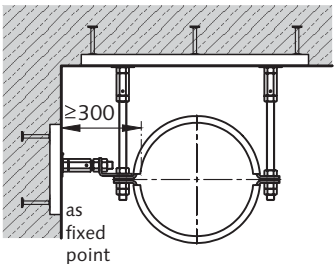
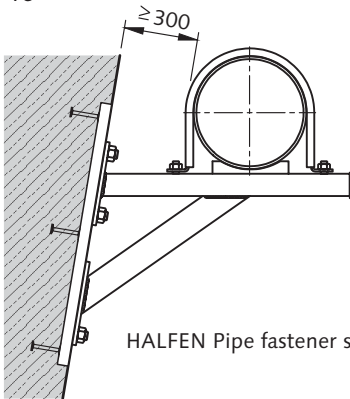
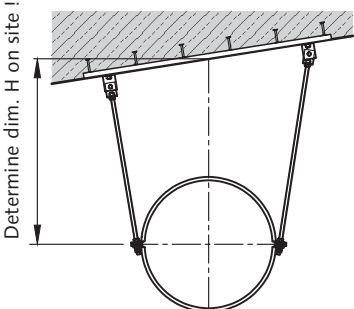
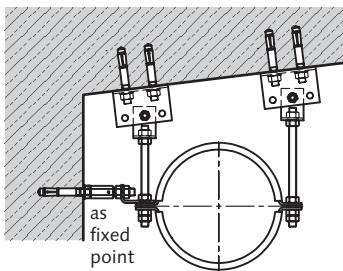
HALFEN-DEHA Vertriebsgesellschaft mbH
Technical Support Framing
Fax: +049-(0)2173/ 970-349



HALFEN FRAMING SYSTEMS

Pipe Fixing under Bridges

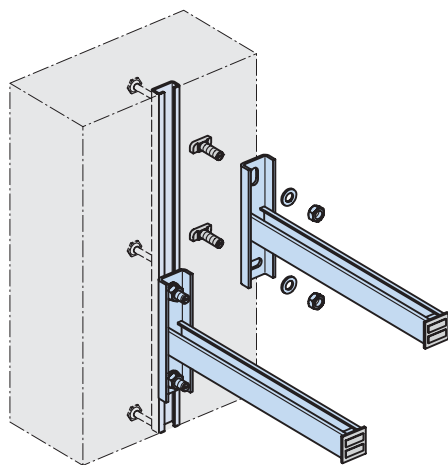
Support structures for bridge drainage pipes in accordance with WAS

Section:	Specification text:	Section:	Specification text:
WAS 5 or WAS 6 Section B : B  HALFEN Pipe fastener according to WAS 6 Supply and fit ____ pieces HALFEN Pipe fastener according to WAS 6, material Stainless steel W 1.4571/ 1.4401 (A4) for DN ____.		WAS 15  HALFEN Pipe fastener according to WAS 15 Supply and fit ____ pieces HALFEN Pipe fastener according to WAS 15, material Stainless steel W 1.4571/ 1.4401 (A4) for DN ____.	
WAS 13 fig. 1 - without articulation -  HALFEN Pipe fastener according to WAS 13 without articulation Supply and fit ____ pieces HALFEN Pipe fastener according to WAS 13 without articulation, material Stainless steel W 1.4571/ 1.4401 (A4) for DN ____ with/without fixed point		WAS 16  Note: Since October 1997, this drawing is no longer part of WAS regulation! The application must be reconciled with bridge operator. HALFEN Pipe fastener similar to WAS 16 (old) Supply and fit ____ pieces HALFEN Pipe fastener similar to WAS 16 , material Stainless steel W 1.4571/ 1.4401 (A4) for DN ____.	
WAS 13 fig. 2 (WAS 14 old)  HALFEN Pipe fastener according to WAS 14 Supply and fit ____ pieces HALFEN Pipe fastener according to WAS 14 , material Stainless steel W 1.4571/ 1.4401 (A4). for DN ____.		WAS 26  HALFEN Pipe fastener according to WAS 26 Supply and fit ____ pieces HALFEN Pipe fastener according to WAS 26, material Stainless steel W 1.4571/ 1.4401 (A4), for DN ____ with/without fixed point.	

HALFEN FRAMING SYSTEMS

Fixing to Concrete

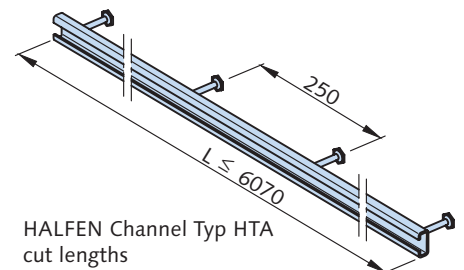
Fixing to cast-in HALFEN Channels



HALFEN cast-in channels are the ideal basis for easy-to-install, adjustable fixings. A polystyrene bead filler or a strip filler provides protection against ingress of concrete into the channel. Any component can be fixed to HALFEN Channels without damaging the concrete or the reinforcement.

HALFEN cast-in channels Type HTA and HZA are officially approved (DIBt Berlin):

Z-21.4-34 (HTA),
Z-21.4-145 (HZA toothed) and
Z-21.4-1691 (HZA 38/23 and 29/20 Dynagrip).

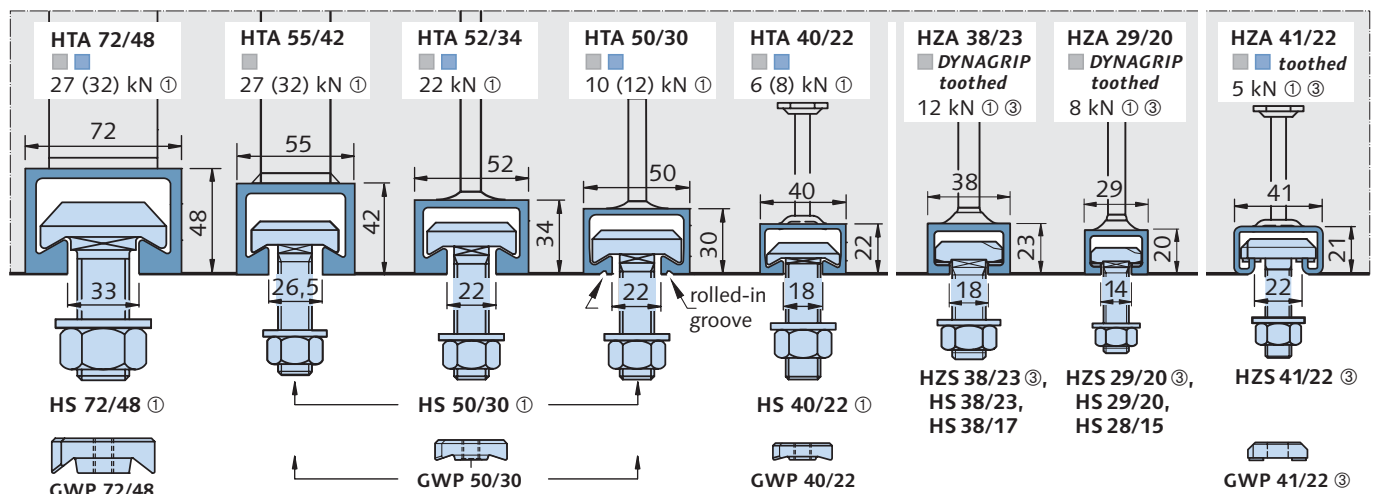


HALFEN Channel Type HTA cut lengths

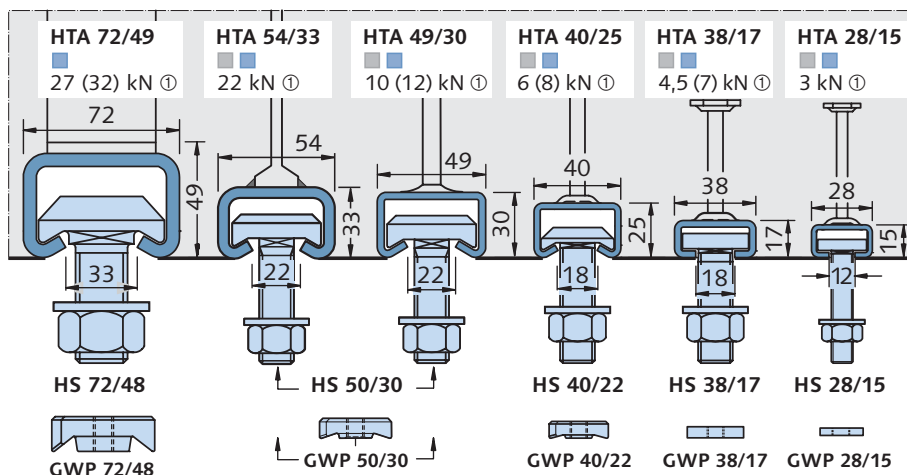


HALFEN Channel Type HTA short lengths

hot rolled



cold rolled



① Load range: Perm. loads acc. to German official approval certificates, distance between load points ≥ 25 cm. Values in brackets for short lengths $L = 15/20/25$ cm

② Material/finish HALFEN Channels:

- fv = Steel h.d. galvanised, S235JR (St37-2) for cold rolled channels and S235JRG2 (RSt37-2) for hot rolled channels
- A4 = Stainless steel W 1.4571/1.4401 (A4)

③ With toothings, also suitable for loadings in longitudinal direction.

Order example:

HTA 38/17 - fv - 550
Type _____
Material _____
Length [mm] (see Catalogue B) _____

HALFEN FRAMING SYSTEMS

Fixing to Cast-In HALFEN Channels

Load bearing areas				Load capacities of HALFEN Channels per load point F				Min. spacings [cm]			
HTA HZA DYNAGRIP				Note: HALFEN Channels are also approved for fire resistance class F90 resp. F60. Permissible loads: see official approvals. concrete strength class $\geq$ B 25 resp. ① : $\geq$ B 35							
$F_z \rightarrow \alpha \leq 150^\circ$ Centric or angled pull out $F_Q \rightarrow \gamma \leq 15^\circ$ Transverse or angled shear F = pull out in all directions for Type HZA ④											
Channel		matching T-head bolt		load bearing area	Individual lengths		Load pairs	Individual channels			
Type ②	Type	with thread:	short lengths		cut lengths	cut lengths	a_r	a_a	a_e	a_f	
FV = h.d. galvan. A4 = St. steel A4	GV = electroplated FV = h.d. galvanised A4 = Stainl. steel A4										
			L=15,20,25 cm F_1 [kN]	L > 25 cm F_1 [kN]	F_1 [kN]	F_2 [kN]					
HTA 28/15	HS 28/15	M 8 - 10	F_z F_Q 3,5 3,5	F_z F_Q 3,0 3,5	F_z F_Q 3,0 3,5	F_z F_Q 2,0 3,0	5	10	4	8	
HTA 38/17	HS 38/17	M 10 - 12	F_z F_Q 7,0 8,0	F_z F_Q 4,5 8,0	F_z F_Q 4,5 8,0	F_z F_Q 3,0 4,5	7,5	15	5	10	
HTA 40/25 HTA 40/22 ①	HS 40/22	M 10 - 12 - 16	F_z F_Q 8,0 10,0	F_z F_Q 6,0 10,0	F_z F_Q 6,0 10,0	F_z F_Q 4,0 6,0	10	20	8	20	
HZA 41/22	HZS 41/22	M 12 - 16	F_z F_Q 5,0 5,0	F_z F_Q 5,0 5,0	F_z F_Q 5,0 5,0	F_z F_Q 3,5 3,5	10	15	8	20	
HZA 29/20 ① DYNAGRIP	HZS 29/20	M 10 - 12	F_z F_y F_x ③ 8,0 8,0 8,0	F_z F_y F_x ③ 8,0 8,0 8,0	F_z F_y F_x ③ 8,0 8,0 8,0	F_z F_y F_x ③ 5,4 5,4 5,4	10	20	8	20	
HZA 38/23 ① DYNAGRIP	HZS 38/23	M 12 - 16	F_z F_y F_x ③ 12,0 12,0 12,0	F_z F_y F_x ③ 12,0 12,0 12,0	F_z F_y F_x ③ 12,0 12,0 12,0	F_z F_y F_x ③ 7,6 7,6 7,6	15	30	13	25	
HTA 49/30 HTA 50/30 ①	HS 50/30	M 12 - 16 - 20	F_z F_Q 12,0 12,0	F_z F_Q 10,0 12,0	F_z F_Q 10,0 12,0	F_z F_Q 5,0 7,0	15	30	13	25	
HTA 52/34 ①	HS 50/30	M 16 - 20	F_z F_Q 22,0 (25,0) 22,0 (25,0) ①	F_z F_Q 22,0 (25,0) 22,0 (25,0) ①	F_z F_Q 22,0 (25,0) 22,0 (25,0) ①	F_z F_Q 11,0 (12,5) 11,0 (12,5) ①	20	40	17,5	35	
HTA 55/42 ① HTA 54/33	HS 50/30	M 20	F_z F_Q 27,0 (32,0) 27,0 (32,0) ①	F_z F_Q 27,0 (32,0) 27,0 (32,0) ①	F_z F_Q 27,0 (32,0) 27,0 (32,0) ①	F_z F_Q 13,5 (16,0) 13,5 (16,0) ①	25	50	22,5	45	
HTA 72/48 ① HTA 72/49	HS 72/48	M 20 - 30	F_z F_Q 27,0 (32,0) 27,0 (32,0) ①	F_z F_Q 27,0 (32,0) 27,0 (32,0) ①	F_z F_Q 27,0 (32,0) 27,0 (32,0) ①	F_z F_Q 13,5 (16,0) 13,5 (16,0) ①	25	50	22,5	45	

① Values in brackets for using concrete strength class B 35

^W = hot rolled channels, also suitable for dynamic loads.

② HTA 55/42, HZA 38/23 and HZA 29/19 only available in h.d. galvanised. For further informations see catalogue B or official approval.

③ For simultaneously loadings in multiple directions applies: $\sqrt{F_x^2 + F_y^2 + F_z^2} \leq \text{perm. F}$

HALFEN FRAMING SYSTEMS

Assembly Examples

Fig. 1

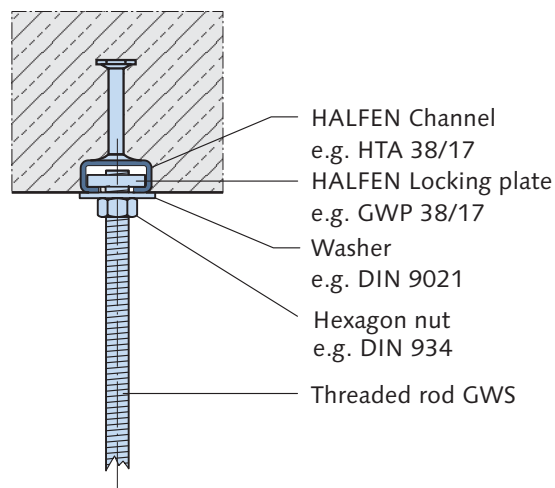


Fig. 2

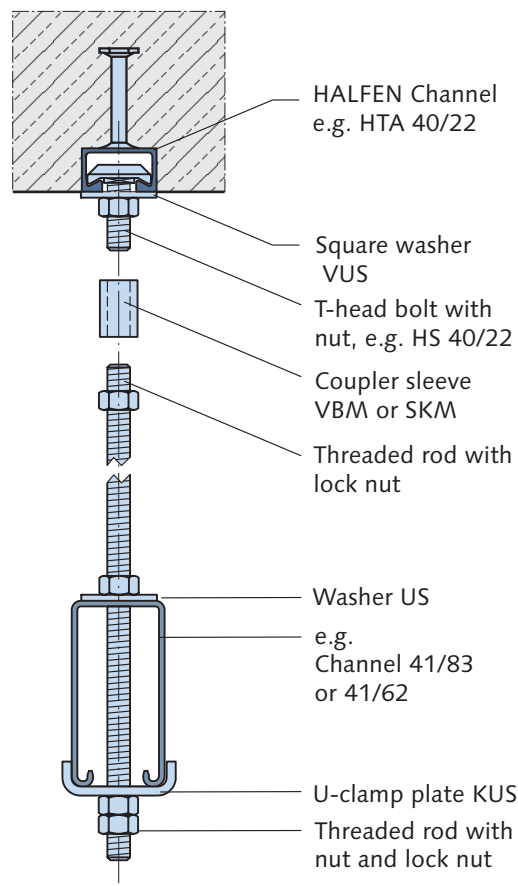


Fig. 3

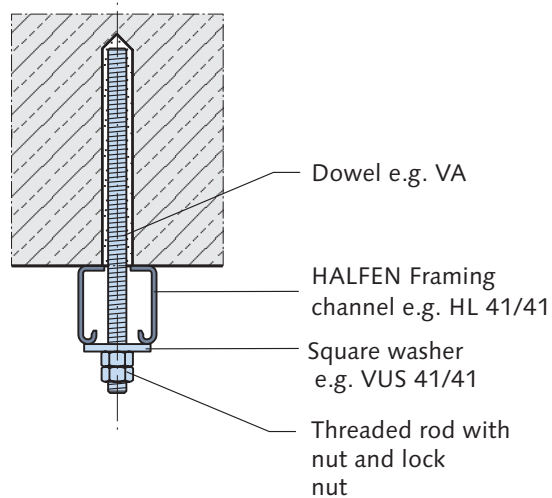


Fig. 4

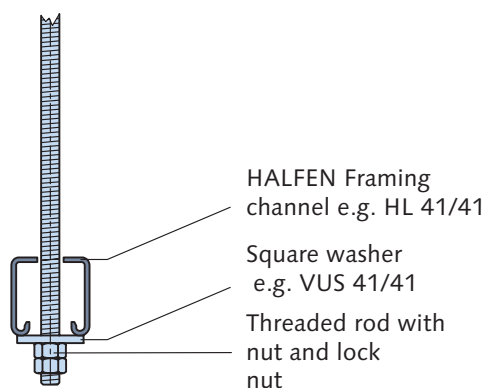
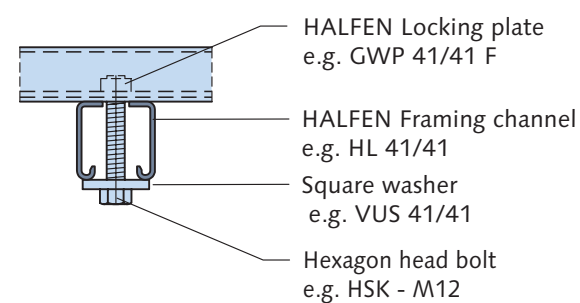


Fig. 5

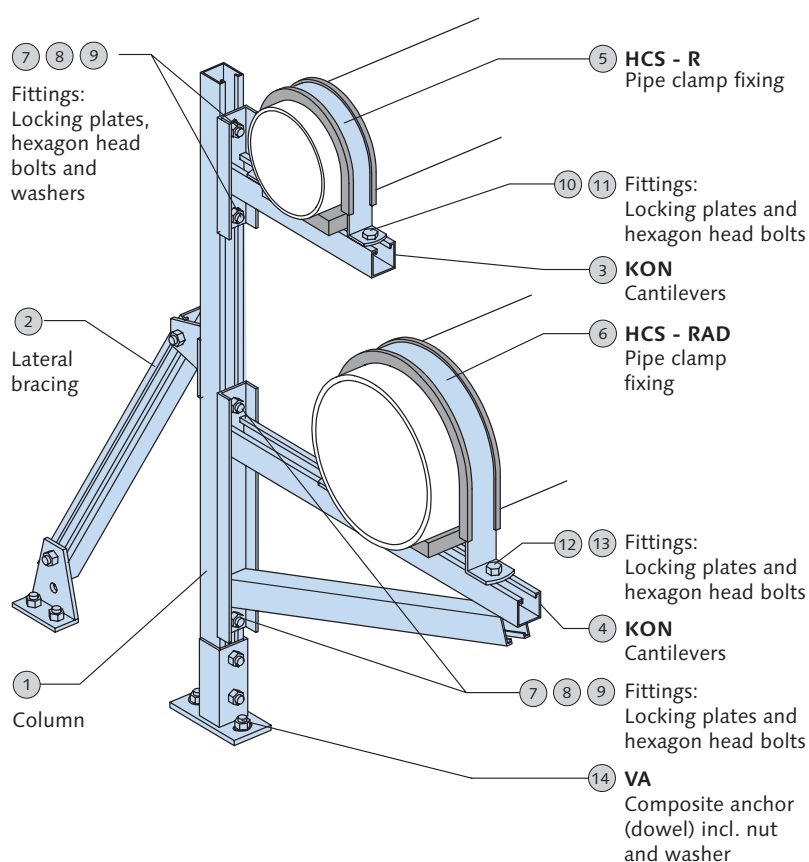


HALFEN FRAMING SYSTEMS

Specification Texts, Parts Lists

Example 1:

Stand with HALFEN Cantilevers and Pipe clamp fixings



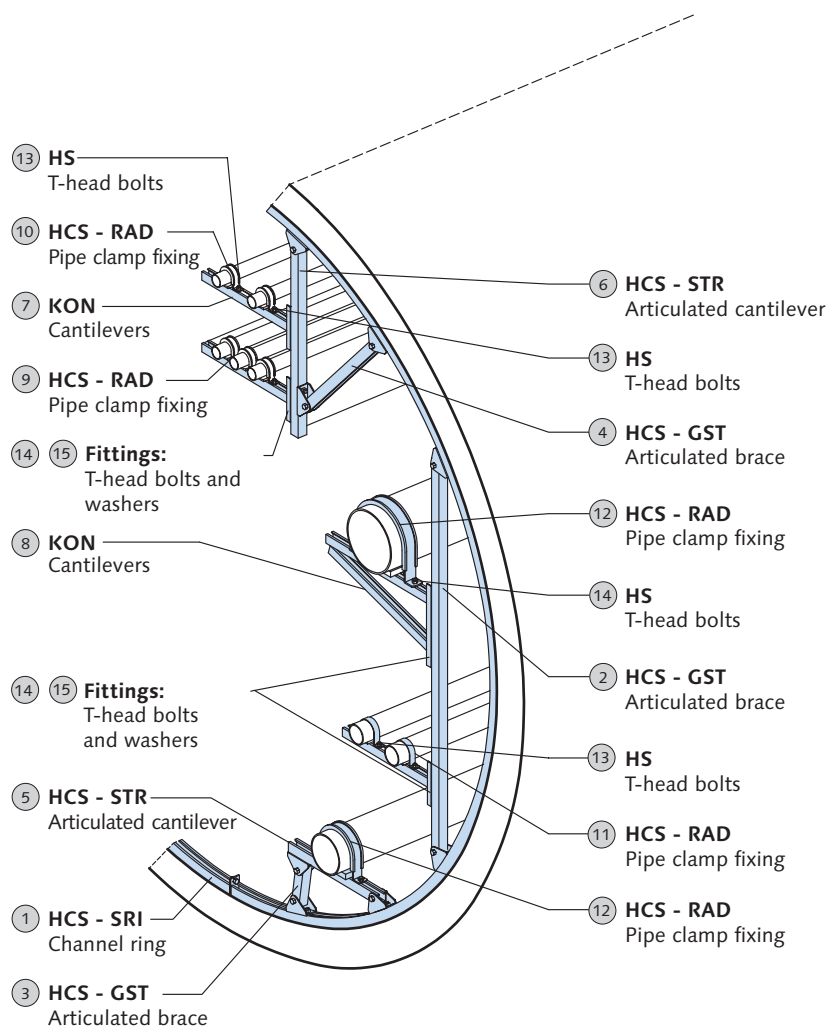
Parts list:

Item	pcs.	Type-Finish-Length/Size [mm]
①	1 1	HCS - 41 - RS - P - fv - LB 1200 HCS - 41 - RS - M - fv (→ catalogue PC41 POWERCLICK)
②	1 1	HCS - 41 - AS2 - P - fv - LB 1300 HCS - 41 - AS2 - M - fv (→ catalogue PC41 POWERCLICK)
③	1	KON 41/1 - fv - L = 325
④	1	KON 41/2 - fv - L = 475
⑤	1	HCS - RAD - 137 - fv
⑥	1	HCS - RAD - 218 - fv
⑦	4	GWP 41/41 - gv - M 12
⑧	4	HSK - gv - M 12 x 30
⑨	4	US - DIN 125 - gv - M 12
⑩	2	GWP 41/41 - gv - M 10
⑪	2	HSK - gv - M 10 x 30
⑫	2	GWP 41/41 - gv - M 12
⑬	2	HSK - gv - M 12 x 30
⑭	4	(Example, dowel on-site)

HALFEN FRAMING SYSTEMS

Specification Texts, Parts Lists

Example 2:
HALFEN Channel ring with connection construction, cantilevers and pipe clamp fixings.



Parts list:

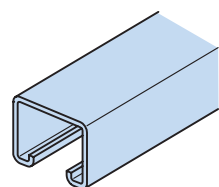
Item	pcs.	Type-Finish-Length/Size [mm]
1	1	HCS - 41 - SRI - P - fv - Ra 1100
	1	HCS - 41 - SRI - M - fv
2		
3	1	HCS - 41 - GST - P - fv - LB 1200
	1	HCS - 41 - GST - P - fv - LB 250
	1	HCS - 41 - GST - P - fv - LB 350
4	3	HCS - 41 - GST - M - fv
5		
	1	HCS - 41 - STR - P - fv - LB 300
	1	HCS - 41 - STR - P - fv - LB 500
6	2	HCS - 41 - STR - M - fv
7	3	KON 41/1 - fv - L = 400
8	1	KON 41/2 - fv - L = 400
9	3	HCS - RAD - 48,5 - fv
10	2	HCS - RAD - 77 - fv
11	2	HCS - RAD - 116 - fv
12	2	HCS - RAD - 157 - fv
13	8	HS 41/41 - gv - M 10 x 35
14	12	HZS 41/22 - fv - M 12 x 35
15	8	US - DIN 125 - gv - M 12

HALFEN FRAMING SYSTEMS

Specification Texts HALFEN Framing Channels and Accessories

Specification text:

Order details:

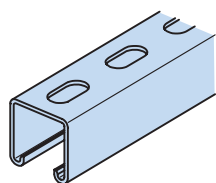


HALFEN Framing channels Type HM

Supply ____ running meters HALFEN Framing channels HM ____/____, finish ____, in standard lengths of 6.00m, cut to size and fit as per specifications.

HM 50/40 - fv - 6000

0280.090-00003

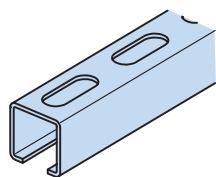


HALFEN Channels System 41 Series

Supply ____ running meters HALFEN Channels HL ____, finish ____, in standard lengths of 6.00m, cut to size and fit as per specifications.

HL 41/41 - fv - 6000

0281.010-00002

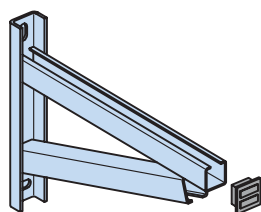


HALFEN Framing channels Type HL

Supply ____ running meters HALFEN Framing channels HL ____/____, finish ____, in standard lengths of 6.00m, cut to size and fit as per specifications.

HL 36/36 - fv - 6000

0281.050-00002

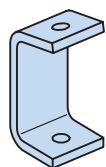


HALFEN Cantilevers

Supply and fit ____ pieces HALFEN Cantilevers KON ____/____, for fixing pipes and other construction parts.

KON 36/ 2 - fv - 400

0310.070-00002

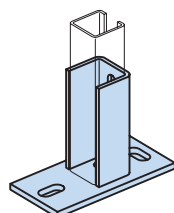


HALFEN Adjustment couplers

Supply and fit ____ pieces HALFEN Adjustment couplers HJV ____, finish ____, for fixing to bevelled components (specify angle).

HJV - 2 - fv

0313.000-00002



HALFEN Fittings

Supply and fit ____ pieces HALFEN Fittings HVT ____ - ____, finish ____, to create different connections.

HVT 36 - 7 - fv

0312.020-00007

Framing Channels, Bolts

1

Accessories

2

Design Properties

3

Support Structures

4

Cantilevers

5

Pipe Clamps, Pipe Supports

6

Notes, Work aid

7

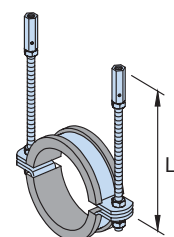
HALFEN FRAMING SYSTEMS

Specification Texts Pipe Clamp Fixing Sets, Pipe Supports

1	Framing Channels, Bolts
2	Accessories
3	Design Properties
4	Support Structures
5	Cantilevers
6	Pipe Clamps, Pipe Supports
7	Notes, Work aid

Specification text:

Order details:

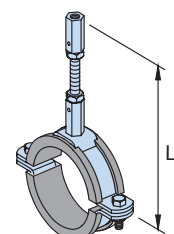


HALFEN Pipe clamp suspension Type Beta, zinc coated

For pipe DN ____ Da ____
Supply and fit ____ pieces HALFEN Pipe clamp suspension, consisting of pipe clamp Type Beta ____, finish ____, with rubber insulation - or - without rubber insulation and threaded rod M 12, L = 1000 mm with hexagonal rod coupler SKM M 12, with T-head bolts for existing HALFEN Channel ____/ ____ or with dowel.

HRS - B - 131 - fv
DGM 30/8, L = 2 x 175 mm
GWS - gv - M 10, L = 1000 mm
Mu - gv - M 10, DIN 934
SKM - fv - M 10

0311.030-00068
0320.000-00002
0400.040-00001
0360.040-00001
0390.000-00004

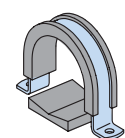


HALFEN Pipe clamp suspension Type Delta, zinc coated

for pipe DN ____ Da ____
Supply and fit ____ pieces HALFEN Pipe clamp suspension consisting of pipe clamp Type Delta ____, finish ____, with rubber insulation - or - without rubber insulation and threaded rod M 16, L = 1000 mm with hexagonal rod coupler SKM M 16, with T-head bolts for existing HALFEN Channel ____/ ____ or with dowel.

HRS - D - 340 - fv
DGM 50/8, L = 2 x 530 mm
GWS - gv - M 16, L = 1000 mm
Mu - gv - M 16, DIN 934
SKM - fv - M 16

0311.050-00058
0320.000-00004
0400.060-00001
0360.070-00002
0390.000-00006

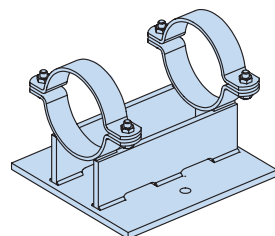


HALFEN Pipe clamp fixing System HCS RAD

For pipe DN ____ Da ____
Supply and fit ____ pieces HALFEN Pipe clamp suspension Alpha HCS - RAD ____, finish ____, with rubber insulation and pipe rest - or - without rubber insulation with/or without pipe rest incl. T-head bolts for fixing of pipes to HALFEN Channels Type ____/ ____.

HCS - RAD - 176 - fv

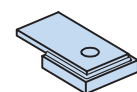
0303.010-00066



HALFEN Pipe support HRG

For pipe DN ____ Da ____
Supply and fit ____ pieces HALFEN Pipe support HRG ____, finish ____, as fixed support for assembly using T-head bolts or as loose support using spacer clips and T-head bolts, appropriate to the forces to be applied.

HRG - 2 - 168 - fv



HALFEN spacer clip AHS

Supply and fit ____ pieces HALFEN Spacer clip Type AHS ____, finish ____, as guides for pipe supports Type HRG ____.

AHS - 1 - fv

0324.000-00001

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HALFEN FRAMING SYSTEMS

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