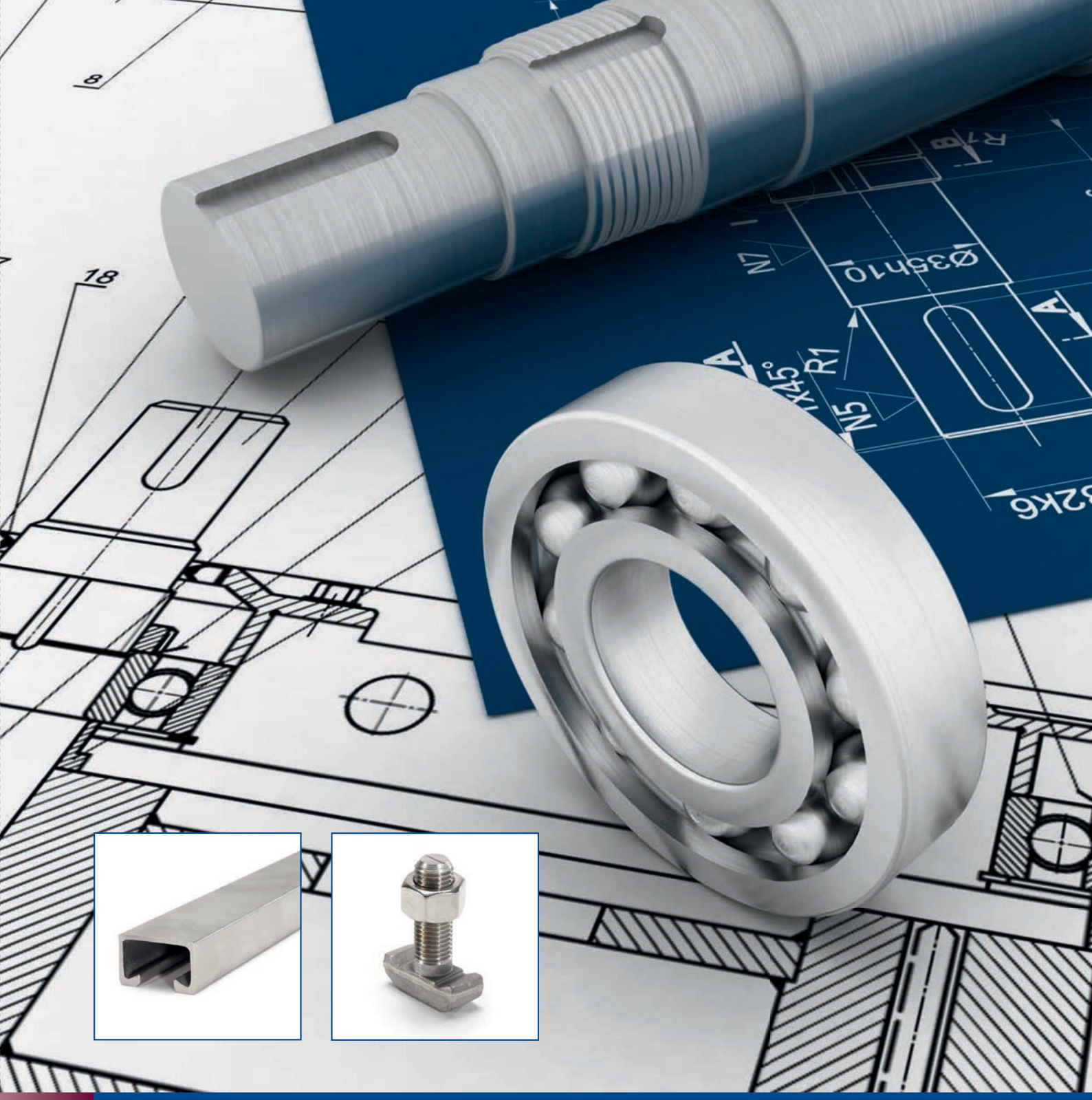


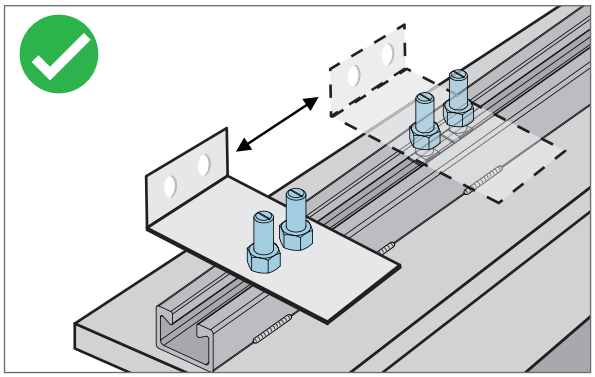
Mounting Technology

JORDAHL®
anchored in quality

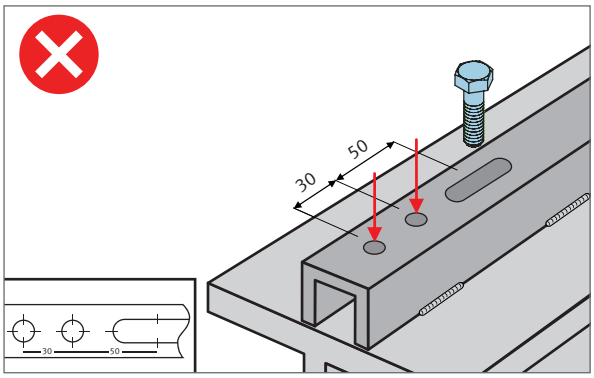
JORDAHL® Mounting Channels

Advantages

- Flexible channel-bolt-connection as support and attachment element
- Economic series production due to shorter planning and installation times
- Free positioning and variable adjustment by using simple spanner
- Compensation of constructional tolerances; standard grid sizes can be changed



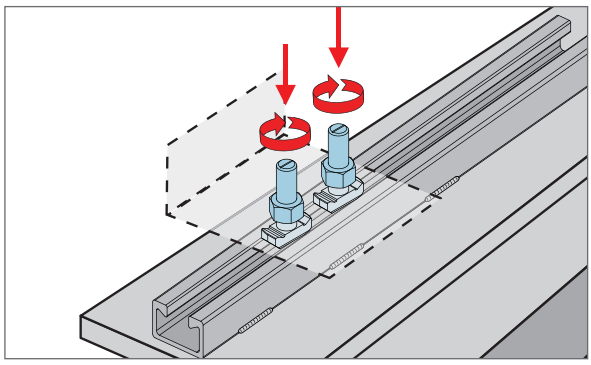
- Quick replacement, refitting and moving of construction components or building elements



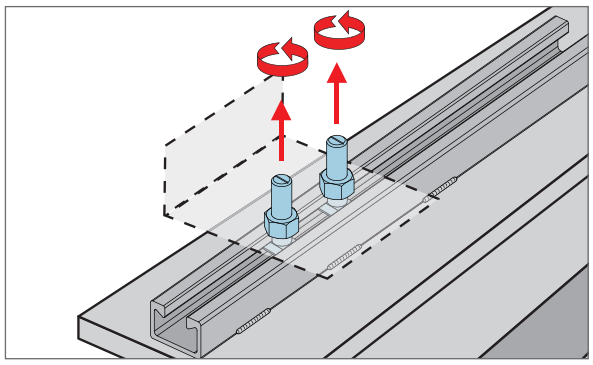
- No drilling templates, perforation patterns or welding work on site

Handling

- Quick and reliable planning of connections with tested load tables
- Welding of channel to steelwork on site
- Painting/ galvanizing of the construction on site
- Secure, flexible and quick to re-adjust



- Secure, flexible and quick bolt-mounting of installation or attachment parts on site



- Quick and simple disassembly or replacement of construction components on site

work safety

reduces construction time

economical

simple assembly

fire prevention

sustainable construction

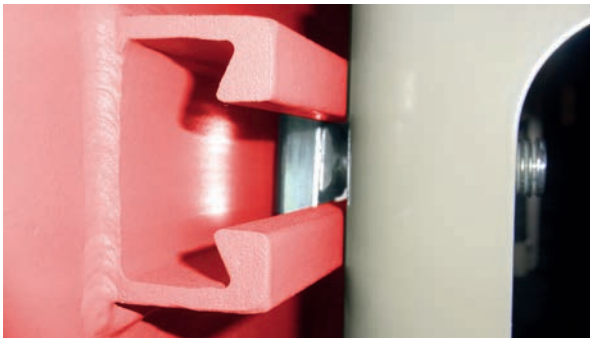
Contents

JORDAHL® Mounting Channels

Features

Mounting Technology

- For variable connections in steel construction, power plant construction, shipbuilding and general mechanical engineering
- Suitable for medium duty to heavy constructions e.g. support frames and high-load bolted connections
- For variable bolt distances in the longitudinal direction of the channel and for tolerance compensation in attachment parts
- Lengths up to 6 metres available
- Curved mounting channels on request
- Test report 2.2 (specify Test Report 3.1 in order)

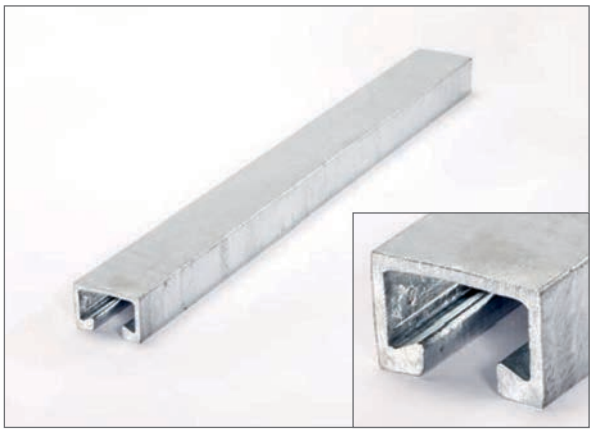


Material and Design

- Mill finish steel (weld construction)
- Hot dip galvanized (bolted frame constructions with high requirements for corrosion protection)
- Stainless steel A4 (applications with the highest corrosion protection and chemical resistance)

Hot-rolled Mounting Channels

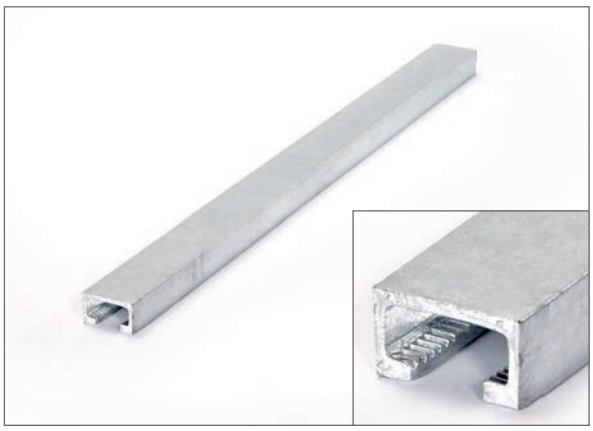
- Hot-rolled from a single block
- Free from internal stresses
- High ductility
- Optimized geometry with strengthened channel lips and large contact areas for high tightening torques
- Right-angled profile edges for good weldability
- Dynamically loadable in pull and transverse directions; double-notched toothed bolts loadable in longitudinal directions
- Highest load-bearing capacity, statically tested loads up to 40 kN (FKM), breaking load up to 100 kN
- Five channel sizes for economic construction



Hot-rolled Mounting Channels JM

Hot-rolled toothed Mounting Channels

- Hot rolled from a single block with toothed channel lips
- High ductibility, no residual stress and excellent weldability
- Suitable for dynamic loads
- Form-fitting load transmission also in longitudinal channel direction
- High load-bearing capacity for loads up to 27 kN (FKM), breaking loads up to 85 kN
- Four toothed channel sizes for economic construction



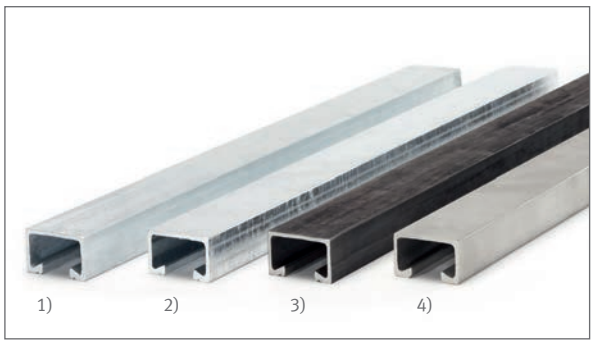
Hot-rolled toothed Mounting Channels JXM

Material

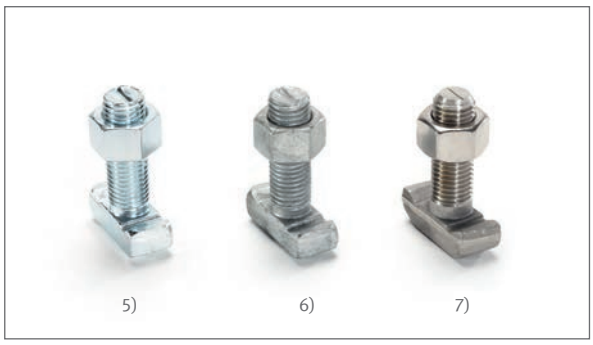
JORDAHL® Product	Steel		Stainless Steel[1]	
Mounting Channels	S235JR = 1.0038 S275JR = 1.0044	DIN EN 10025	1.4401/1.4404/ 1.4571 } A4[2] 1.4529/1.4547[3]	DIN EN 10088
Bolts	Strength class 4.6/8.8	DIN EN ISO 898-1	A4-50; A4-70[2] F4-70[3]	DIN EN ISO 3506-1
Hexagon Nuts ISO 4032	Strength class 8	DIN EN 20898-2	A4-50; A4-70[2] 1.4529[3]	DIN EN ISO 3506-2
Washers	Steel	DIN EN ISO 7089 (DIN 125) DIN EN ISO 7093-1 (DIN 9021) DIN EN ISO 9097 (DIN 440)	1.4401/1.4404/ 1.4571 } A4[2]	DIN EN 10088

[1] On request
[2] Corrosion class C4 (ISO 12944-2)
[3] Corrosion class C5 (ISO 12944-2)

Corrosion Prevention



JORDAHL® Mounting Channels
1) Hot-dip galvanized steel (spun) = mat surface
2) Hot-dip galvanized steel (dipped) = glossy surface
3) Mill finish steel = black rolling skin
4) Stainless steel = bright or mat surface



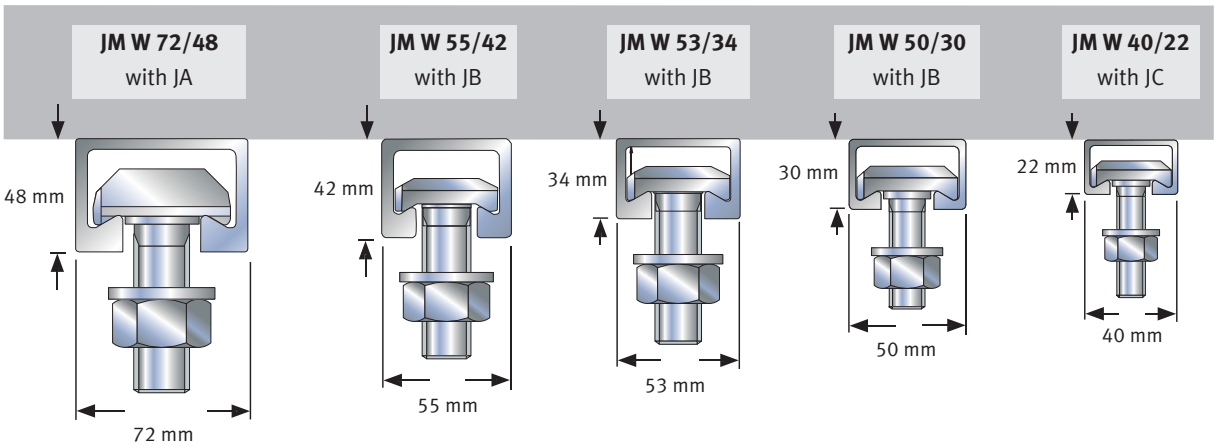
JORDAHL® bolts
5) Electro zinc plated steel = glossy surface
6) Hot-dip galvanized steel = mat surface
7) Stainless steel = bolt head mat, threads glossy

Corrosion categories: ISO 12944-2	Mounting Channels	Bolt, Nut, Washer	Intended Use
C1 little	Mill finish	Mill finish without corrosion protection	Mill finish channels can be welded directly to the construction. Corrosion protection is provided after the construction has been put together and painted or galvanized.
C2 low	Hot-dip galvanized (HDG), Layer › 50 µm	Electro zinc plated (ZP), Layer › 5 µm	For bolted constructions in interior spaces, e.g. apartments, offices, schools, hospitals, sales rooms with the exception of wet rooms.
C3 medium	Hot-dip galvanized (HDG), Layer › 50 µm	Hot-dip galvanized (HDG), Layer › 50 µm	For bolted constructions in interior spaces with a normal air humidity (including kitchens, bathrooms and washrooms in apartments) with the exception of spaces that are permanently exposed to moisture.
C4 high	Stainless Steel[1] 1.4401 } A4 1.4404 } 1.4571 } 1.4362 L4	Stainless Steel[1] 1.4401 } A4-50 1.4404 } A4-70 1.4571 } 1.4362 L4-70	Applications with medium corrosion protection, e.g. wet rooms, areas susceptible to weathering, industrial environments, close to the sea and in inaccessible areas.
C5 severe	Stainless Steel[1] 1.4462 F4 1.4529 } HC 1.4547 }	Stainless Steel[1] 1.4462 F4-70 1.4529 } HC-50 1.4547 } HC-70	Applications with high corrosion protection and high stress corrosion due to chlorides and sulphur dioxide (including concentration of harmful substances, e.g. when construction components are exposed to salt water and road tunnels).

[1] on request

Overview Mounting Channels

Hot-rolled Mounting Channels



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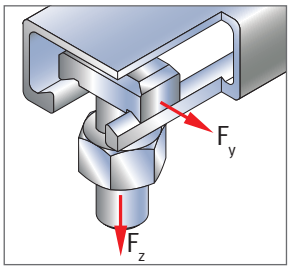
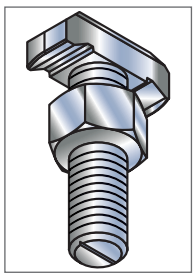
JA	JB JE	JB	JB	JC
M 20	M 16	M 10	M 10	M 10
M 24	M 20	M 12	M 12	M 12
M 27	M 24	M 16	M 16	M 16
M 30		M 20	M 20	

Hook-head Bolts

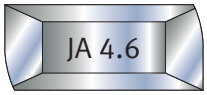
- Suitable for all non-toothed mounting channels
- Load capacity in shear and central tension via bearing stress
- Double-notch toothed bolt for load transfer in
- Longitudinal direction page 26
- Shaft marked with one **notch** to indicate correct allignment of bolt
- Available in two strength classes (4.6 = high ductibility, transversal force is transferred via bearing stress; 8.8 = high pretension for form-fitting connections)

Types: JA, JB, JE, JC

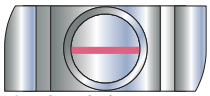




one notch at the end of the shank



View from above
Embossment including type and strength class



View from below
Notch marks the orientation of head

Material and Design:

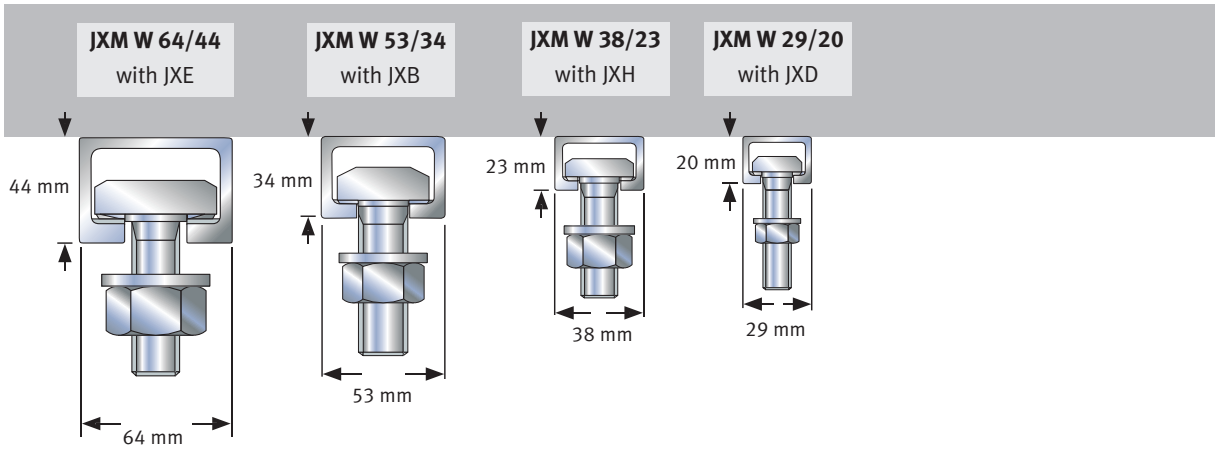
- Hot-dip galvanized steel (Strength classes 4.6/8.8)
- Electro zinc plated steel (Strength classes 4.6/8.8)
- Stainless Steel (A4)

Position identification Hook-head Bolts

Note: After installation the notch has to be perpendicular to the longitudinal direction of the channel.

Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

Hot-rolled toothed Mounting Channels



⇢ Pages 18/19 ⇢ Pages 20/21 ⇢ Pages 22/23 ⇢ Pages 24/25

JXE	JXB	JXH	JXD
M 20	M 16	M 12	M 10
M 24	M 20	M 16	M 12

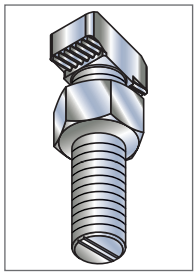
Toothed bolts

- Suitable for all toothed mounting channels
- Load capacity in shear, central and longitudinal tension via bearing stress
- Marked by **two notches** at the shaft end

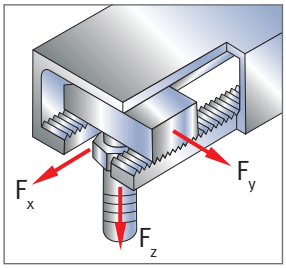
Types: JXE, JXB, JXH, JXD

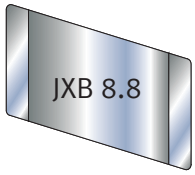
Material and Design:

- Hot-dip galvanized steel (strength class 8.8)
- Stainless steel (strength class FA-70)

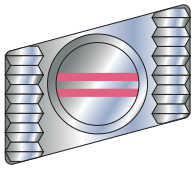


two notches at the end of the shank





View from above
Embossment including type and strength class



View from below
Notches mark the orientation of head

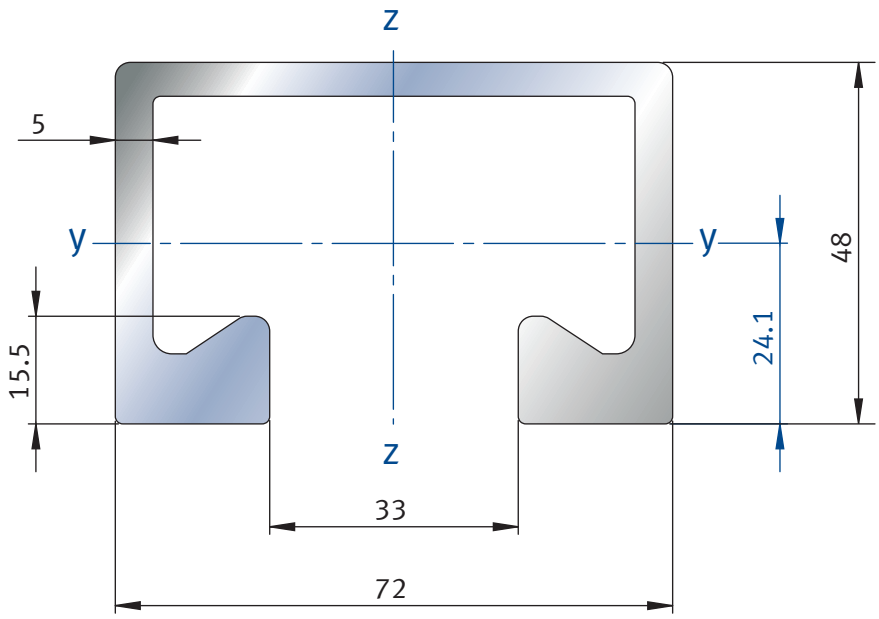
Position Identification Toothed Bolts

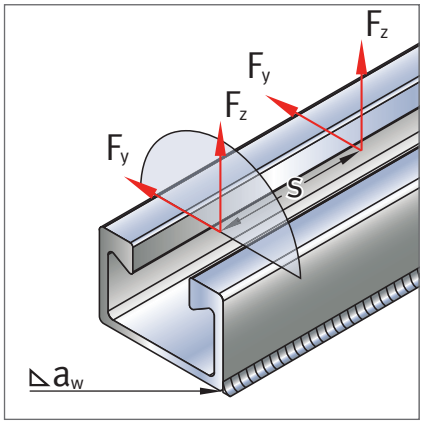
Note: After installation the notches have to be perpendicular to the plongitudinal direction of the channel.

Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

Hot-rolled Mounting Channels

JM W 72/48





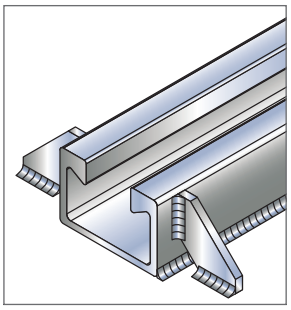
Technical Details

Permitted single load [1]		Minimum load distance	Moments of Resistance			Moments of Inertia	
$F_{z\,max}$ [kN]	$F_{y\,max}$ [2] [kN]	s [mm]	W_y [mm^3]	W_z [mm^3]	$W_{pl,y}$ [mm^3]	I_y [mm^4]	I_z [mm^4]
40.0	**4.0 (40.0)**	129	14,565	23,131	18,282	349,720	832,710

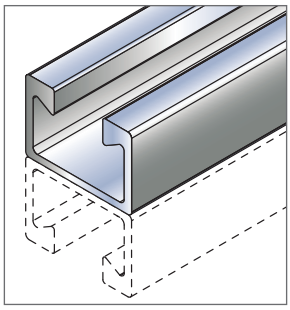
[1] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[2] Value in brackets for side support; Maximum distance to support <s

Breaking load		Cross Section	Weight[3]	Weld
$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	A [mm^2]	G [kg/m]	a_w [mm]
100.0	10.0 (100.0)	1,127	8.84	4

[3] All weights per metre for mill finish steel. For galvanized channels: weights per metre × 1,10.



Side support



Double profile JM W 72/48 D on request

Material and Design

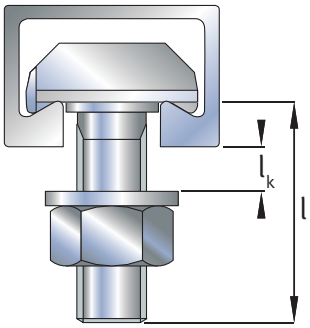
- Steel 1.0038 hot-dip galvanized (HDG)
- Steel 1.0038 mill finish
- Stainless steel 1.4571 (technical details provided on request)

Ordering Example JM W 72/48

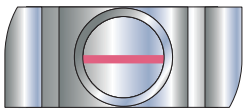
Type	Channel size		Length [mm]		Design
JM	**W 72/48**	-	6,000	-	HDG

Hook head bolt JA
M 20 – M 30

Bolt length	Material and Design					Clamping length [4]
l [mm]	Strength class	M 20	M 24	M 27	M 30	l_k [mm]
50	4.6	HDG	HDG	–	–	2
	8.8	–	–	–	–	
75	4.6	HDG	HDG	HDG	HDG	21
	8.8	HDG	–	–	–	
100	4.6	HDG	HDG	HDG	HDG	46
	8.8	HDG	HDG	–	–	
125	4.6	–	–	–	–	83
	8.8	HDG	–	–	–	
150	4.6	HDG	HDG	–	HDG	96
	8.8	–	HDG	–	–	
200	4.6	HDG	HDG	–	HDG	146
	8.8	–	–	–	–	



View from above


View from below

Other lengths and materials can be provided on request.
To determine the required bolt lengths, see fold-out page.
[4] Clamping length for largest thread diameter
Hook head locking plates for use with thread rods, see page 27.

Technical Details

Permitted load [5]								
Strength class	M 20		M 24		M 27		M 30	
	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]
4.6	39.2	23.5	40.0	33.9	40.0	40.0	40.0	40.0
8.8	40.0	39.2	40.0	40.0	40.0	40.0	40.0	40.0

Breaking load								
Strength class	M 20		M 24		M 27		M 30	
	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]
4.6	98.0	58.8	141.2	84.7	183.6	110.2	224.4	134.6
8.8	196.0	98.0	282.4	141.2	367.2	183.6	448.8	224.4

[5] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[6] Permitted single load $F_{y\,max}$ of the channel for the side support has to be taken into account

Material and Design
- Steel hot-dip galvanized (HDG)
- Strength classes 4.6 / 8.8
- Stainless steel (technical details provided on request)

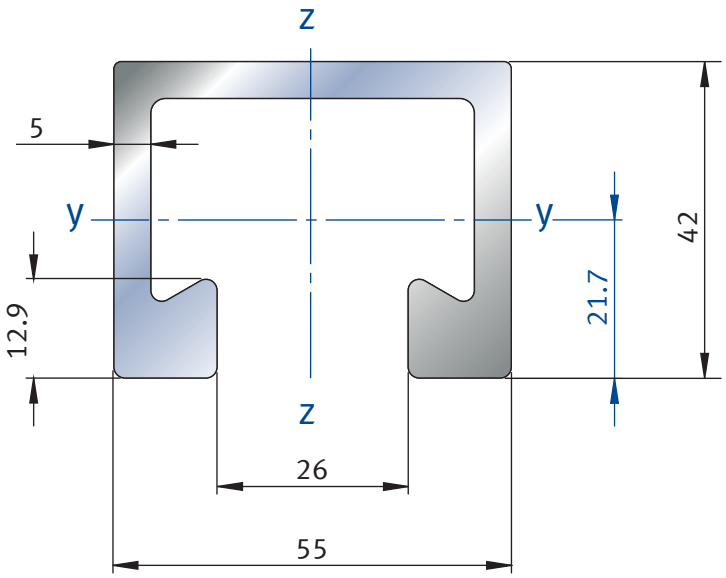
Ordering Example JA M 30

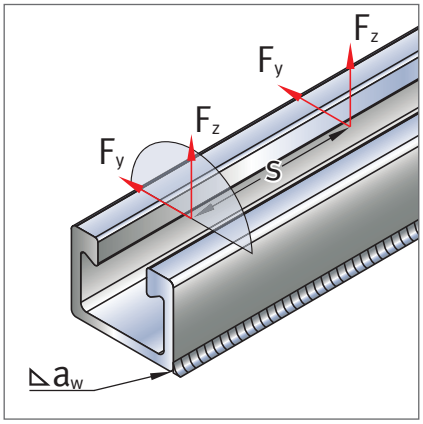
Type	Thread Ø		Length [mm]		Design	Strength class
JA	**M 30**	x	100	-	HDG	4.6

Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

Hot-rolled Mounting Channels

JM W 55/42





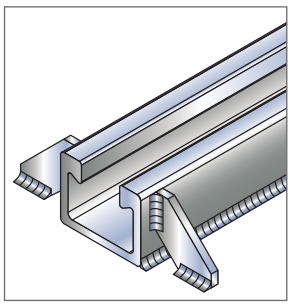
Technical Details

Permitted single load [1]		Minimum load distance	Moments of Resistance			Moments of Inertia	
$F_{z\,max}$ [kN]	$F_{y\,max}$ [2] [kN]	s [mm]	W_y [mm^3]	W_z [mm^3]	$W_{pl,y}$ [mm^3]	I_y [mm^4]	I_z [mm^4]
32.0	**3.2 (32.0)**	109	8,490	13,311	11,721	187,460	362,730

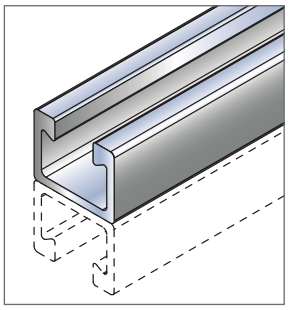
[1] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[2] Value in brackets for side support; Maximum distance to support <s

Breaking load		Cross Section	Weight[3]	Weld
$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	A [mm^2]	G [kg/m]	a_w [mm]
80.0	8.0 (80.0)	861	6.76	3

[3] All weights per metre for mill finish steel. For galvanized channels: weights per metre × 1,10.



Side support



Double profile JM W 55/42 D
on request

Material and Design

- Steel 1.0044 hot-dip galvanized (HDG)
- Steel 1.0044 mill finish

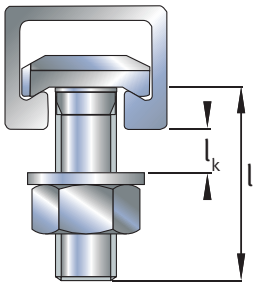
Ordering Example JM W 55/42

Type	Channel size		Length [mm]		Design
JM	**W 55/42**	-	6,000	-	HDG

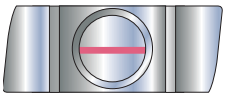
Hook head bolt JB
M 10 – M 20, JE M 24

Bolt length	Material and Design						Clamping length [4]
l [mm]	Strength class	M 10	M 12	M 16	M 20	M 24	l_k [mm]
40	4.6	ZP	ZP	ZP	–	–	5
	8.8	–	HDG	–	–	–	
45	4.6	–	–	–	ZP	–	5
	8.8	–	–	–	–	–	
50	4.6	ZP	HDG, ZP	HDG, ZP	–	–	15
	8.8	–	HDG	HDG	–	–	
55	4.6	–	–	–	HDG, ZP	–	15
	8.8	–	–	–	HDG	–	
60	4.6	–	HDG, ZP	HDG, ZP	–	ZP	15
	8.8	–	HDG	HDG	–	–	
65	4.6	–	–	–	HDG, ZP	–	25
	8.8	–	–	–	HDG	–	
75	4.6	–	–	–	HDG, ZP	ZP	30
	8.8	–	–	–	HDG	–	
80	4.6	ZP	HDG, ZP	HDG, ZP	–	–	45
	8.8	–	HDG	HDG	–	–	

Other lengths and materials can be provided on request.
To determine the required bolt lengths, see fold-out page.
[4] Clamping length for largest thread diameter



View from above


View from below

l [mm]	Strength class	M 10	M 12	M 16	M 20	M 24	l_k [mm]
100	4.6	–	HDG, ZP	HDG, ZP	HDG, ZP	–	60
	8.8	–	–	HDG	HDG	–	
125	4.6	–	HDG, ZP	ZP	ZP	–	85
	8.8	–	–	HDG	HDG	–	
150	4.6	–	ZP	ZP	ZP	–	110
	8.8	–	–	–	–	–	
200	4.6	–	ZP	ZP	ZP	–	160
	8.8	–	–	–	–	–	
300	4.6	–	–	ZP	ZP	–	260
	8.8	–	–	–	–	–	

double-notch toothed bolt for load transfer in longitudinal direction page 26. Hook head locking plates for use with thread rods, see page 27.

Technical Details

Permitted load [5]										
Strength class	M 10		M 12		M 16		M 20		M 24	
	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]
4.6	9.3	5.6	13.5	8.1	25.1	15.1	32.0	23.5	32.0	32.0
8.8	18.6	9.3	27.0	13.5	32.0	25.1	32.0	32.0	32.0	32.0

Breaking load										
Strength class	M 10		M 12		M 16		M 20		M 24	
	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]
4.6	23.2	13.9	33.7	20.2	62.8	37.7	98.0	58.8	141.2	84.7
8.8	46.4	23.2	67.4	33.7	125.6	62.8	196.0	98.0	282.4	141.2

[5] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[6] Permitted single load $F_{y\,max}$ of the channel for the side support has to be taken into account

Material and Design
- Steel hot-dip galvanized (HDG)
- Steel electro zinc plated (ZP)
- Strength classes 4.6 / 8.8
- Stainless steel (technical details provided on request)

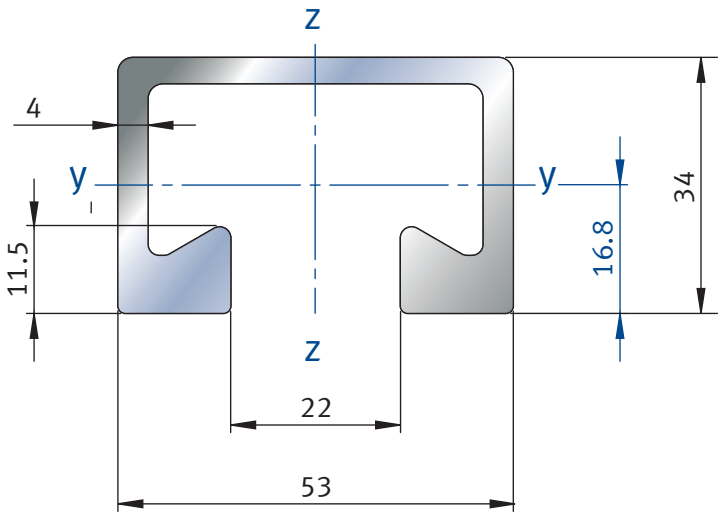
Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

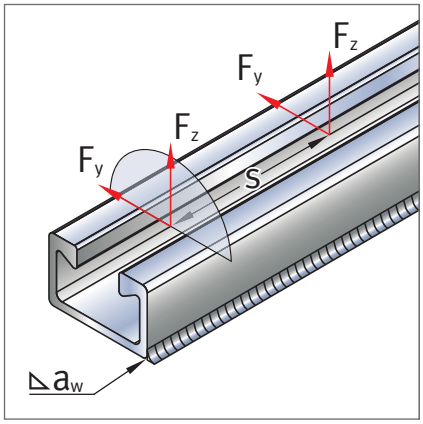
Ordering Example JB M 20 and JE M 24

Type	Thread Ø		Length [mm]		Design	Strength class
JB	**M 20**	x	100	-	HDG	8.8
JE	**M 24**	x	75	-	ZP	4.6

Hot-rolled mounting channels

JM W 53/34





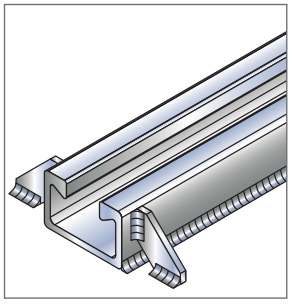
Technical Details

Permitted single load [1]		Minimum load distance	Moments of Resistance			Moments of Inertia	
$F_{z\,max}$ [kN]	$F_{y\,max}$ [2] [kN]	s [mm]	W_y [mm^3]	W_z [mm^3]	$W_{pl,y}$ [mm^3]	I_y [mm^4]	I_z [mm^4]
22.0	**2.2 (22.0)**	88	5,348	9,028	7,177	93,260	236,990

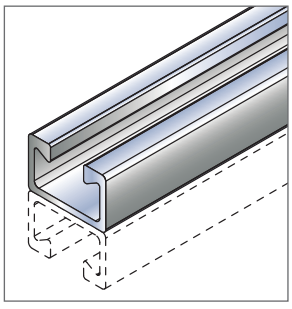
[1] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[2] Value in brackets for side support; Maximum distance to support <s

Breaking load		Cross Section	Weight[3]	Weld
$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	A [mm^2]	G [kg/m]	a_w [mm]
55.0	5.5 (55.0)	634	4.98	3

[3] All weights per metre for mill finish steel. For galvanized channels: weights per metre × 1,10.



Side support



Double profile JM W 53/34 D on request

Material and Design

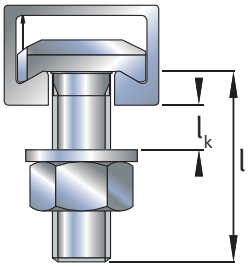
- Steel 1.0038 hot-dip galvanized (HDG)
- Steel 1.0038 mill finish
- Stainless steel 1.4571 (technical details provided on request)

Ordering Example JM W 53/34

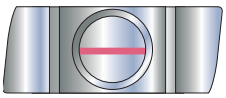
Type	Channel size		Length [mm]		Design
JM	**W 53/34**	-	6,000	-	HDG

Hook head bolt JB
M 10 – M 20

Bolt length	Material and Design					Clamping length [4]
l [mm]	Strength class	M 10	M 12	M 16	M 20	l_k [mm]
40	4.6	ZP	ZP	ZP	–	8
	8.8	–	HDG	–	–	
45	4.6	–	–	–	ZP	8
	8.8	–	–	–	–	
50	4.6	ZP	HDG, ZP	HDG, ZP	–	18
	8.8	–	HDG	HDG	–	
55	4.6	–	–	–	HDG, ZP	18
	8.8	–	–	–	HDG	
60	4.6	–	HDG, ZP	HDG, ZP	–	17
	8.8	–	HDG	HDG	–	
65	4.6	–	–	–	HDG, ZP	28
	8.8	–	–	–	HDG	
75	4.6	–	–	–	HDG, ZP	32
	8.8	–	–	–	HDG	
80	4.6	ZP	HDG, ZP	HDG, ZP	–	48
	8.8	–	HDG	HDG	–	



View from above


View from below

l [mm]	Strength class	M 10	M 12	M 16	M 20	l_k [mm]
100	4.6	–	HDG, ZP	HDG, ZP	HDG, ZP	63
	8.8	–	–	HDG	HDG	
125	4.6	–	HDG, ZP	ZP	HDG, ZP	88
	8.8	–	–	HDG	HDG	
150	4.6	–	ZP	ZP	ZP	113
	8.8	–	–	–	–	
200	4.6	–	ZP	ZP	ZP	163
	8.8	–	–	–	–	
300	4.6	–	–	ZP	ZP	263
	8.8	–	–	–	–	

Other lengths and materials can be provided on request.
To determine the required bolt lengths, see fold-out page.
[4] Clamping length for largest thread diameter

double-notch toothed bolt for load transfer in longitudinal direction page 26. Hook head locking plates for use with thread rods, see page 27.

Technical Details

Permitted load [5]								
Strength class	M 10		M 12		M 16		M 20	
	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]
4.6	9.3	5.6	13.5	8.1	22.0	15.1	22.0	22.0
8.8	18.6	9.3	22.0	13.5	22.0	22.0	22.0	22.0

Breaking load								
Strength class	M 10		M 12		M 16		M 20	
	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]
4.6	23.2	13.9	33.7	20.2	62.8	37.7	98.0	58.8
8.8	46.4	23.2	67.4	33.7	125.6	62.8	196.0	98.0

[5] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[6] Permitted single load $F_{y\,max}$ of the channel for the side support has to be taken into account

Material and Design
- Steel hot-dip galvanized (HDG)
- Steel electro zinc plated (ZP)
- Strength classes 4.6 / 8.8
- Stainless steel (technical details provided on request)

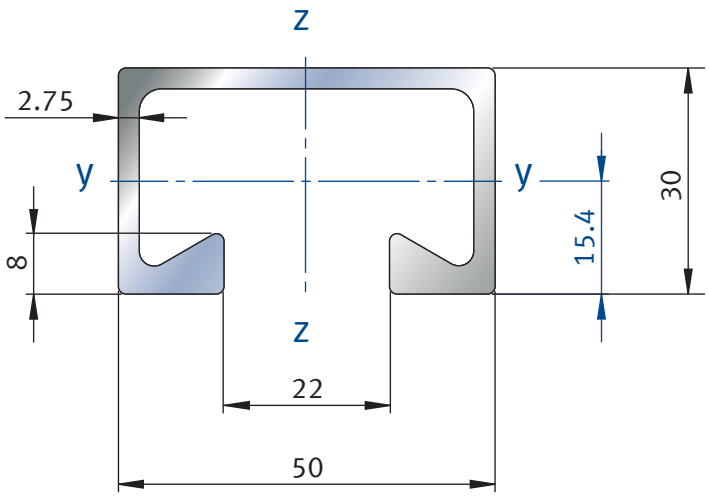
Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

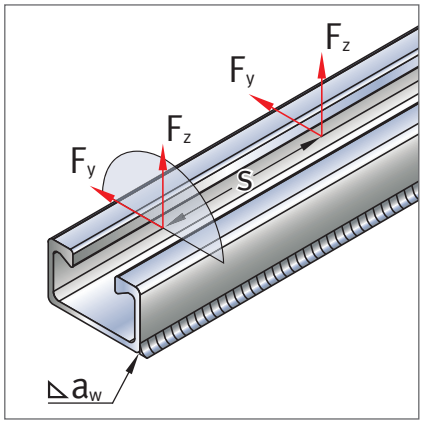
Ordering Example JB M 20

Type	Thread Ø		Length [mm]		Design	Strength class
JB	**M 20**	x	100	-	HDG	8.8

Hot-rolled Mounting Channels

JM W 50/30





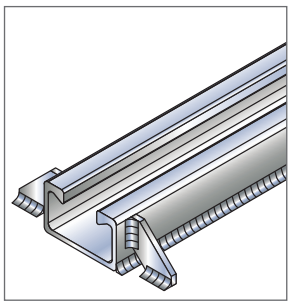
Technical Details

Permitted single load [1]		Minimum load distance	Moments of Resistance			Moments of Inertia	
$F_{z\,max}$ [kN]	$F_{y\,max}$ [2] [kN]	s [mm]	W_y [mm^3]	W_z [mm^3]	$W_{pl,y}$ [mm^3]	I_y [mm^4]	I_z [mm^4]
12.4	**1.24 (12.4)**	81	3,239	5,669	4,336	51,900	138,880

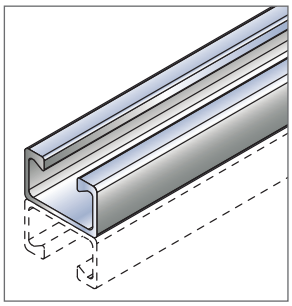
[1] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[2] Value in brackets for side support; Maximum distance to support <s

Breaking load		Cross Section	Weight[3]	Weld
$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	A [mm^2]	G [kg/m]	a_w [mm]
31.0	3.1 (31.0)	412	3.23	3

[3] All weights per metre for mill finish steel. For galvanized channels: weights per metre × 1,10.



Side support



Double profile JM W 50/30 D on request

Material and Design

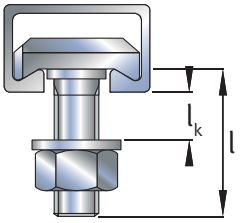
- Steel 1.0038 hot-dip galvanized (HDG)
- Steel 1.0038 mill finish
- Stainless steel 1.4571 (technical details provided on request)

Ordering Example JM W 50/30

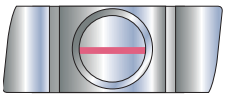
Type	Channel size		Length [mm]		Design
JM	**W 50/30**	-	6,000	-	HDG

Hook head bolt JB
M 10 – M 20

Bolt length	Material and Design					Clamping length [4]
l [mm]	Strength class	M 10	M 12	M 16	M 20	l_k [mm]
40	4.6	ZP	ZP	ZP	–	10
	8.8	–	HDG	–	–	
45	4.6	–	–	–	ZP	10
	8.8	–	–	–	–	
50	4.6	ZP	HDG, ZP	HDG, ZP	–	20
	8.8	–	HDG	HDG	–	
55	4.6	–	–	–	HDG, ZP	20
	8.8	–	–	–	HDG	
60	4.6	–	HDG, ZP	HDG, ZP	–	20
	8.8	–	HDG	HDG	–	
65	4.6	–	–	–	HDG, ZP	30
	8.8	–	–	–	HDG	
75	4.6	–	–	–	HDG, ZP	35
	8.8	–	–	–	HDG	
80	4.6	ZP	HDG, ZP	HDG, ZP	–	50
	8.8	–	HDG	HDG	–	



View from above


View from below

l [mm]	Strength class	M 10	M 12	M 16	M 20	l_k [mm]
100	4.6	–	HDG, ZP	HDG, ZP	HDG, ZP	65
	8.8	–	–	HDG	HDG	
125	4.6	–	HDG, ZP	ZP	HDG, ZP	90
	8.8	–	–	HDG	HDG	
150	4.6	–	ZP	ZP	ZP	115
	8.8	–	–	–	–	
200	4.6	–	ZP	ZP	ZP	165
	8.8	–	–	–	–	
300	4.6	–	–	ZP	ZP	265
	8.8	–	–	–	–	

Other lengths and materials can be provided on request.
To determine the required bolt lengths, see fold-out page.
[4] Clamping length for largest thread diameter

double-notch toothed bolt for load transfer in longitudinal direction page 26. Hook head locking plates for use with thread rods, see page 27.

Technical Details

Permitted load [5]								
Strength class	M 10		M 12		M 16		M 20	
	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]
4.6	9.3	5.6	12.4	8.1	12.4	12.4	12.4	12.4
8.8	12.4	9.3	12.4	12.4	12.4	12.4	12.4	12.4

Breaking load								
Strength class	M 10		M 12		M 16		M 20	
	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]
4.6	23.2	13.9	33.7	20.2	62.8	37.7	98.0	58.8
8.8	46.4	23.2	67.4	33.7	125.6	62.8	196.0	98.0

[5] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[6] Permitted single load $F_{y\,max}$ of the channel for the side support has to be taken into account

Material and Design
- Steel hot-dip galvanized (HDG)
- Steel electro zinc plated (ZP)
- Strength classes 4.6 / 8.8
- Stainless steel (technical details provided on request)

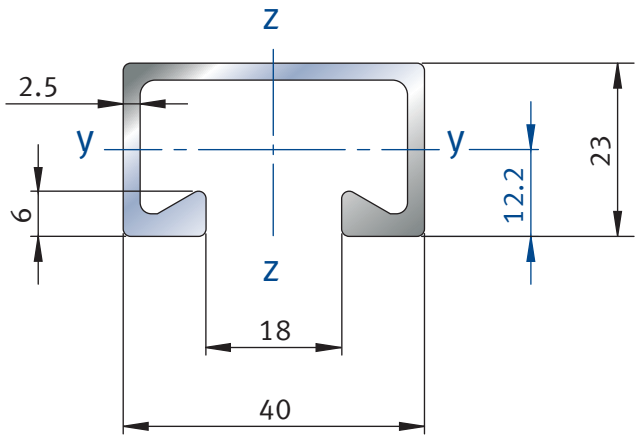
Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

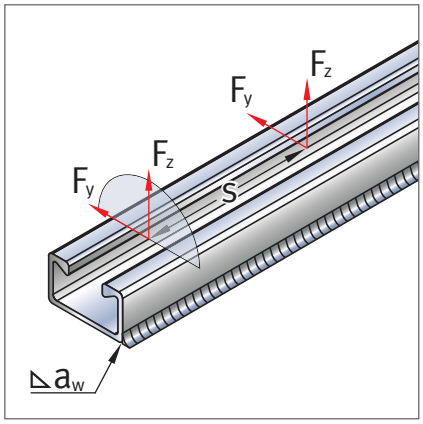
Ordering Example JB M 20

Type	Thread Ø		Length [mm]		Design	Strength class
JB	**M 20**	x	100	-	HDG	8.8

Hot-rolled Mounting Channels

JM W 40/22





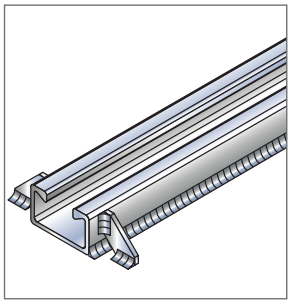
Technical Details

Permitted single load [1]		Minimum load distance	Moments of Resistance			Moments of Inertia	
$F_{z\,max}$ [kN]	$F_{y\,max}$ [2] [kN]	s [mm]	W_y [mm^3]	W_z [mm^3]	$W_{pl,y}$ [mm^3]	I_y [mm^4]	I_z [mm^4]
8.0	**0.8 (8.0)**	65	1,616	2,970	2,152	19,700	58,660

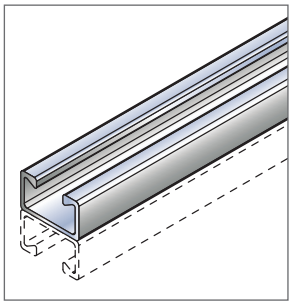
[1] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[2] Value in brackets for side support; Maximum distance to support <s

Breaking load		Cross Section	Weight[3]	Weld
$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	A [mm^2]	G [kg/m]	a_w [mm]
20.0	2.0 (20.0)	268	3.23	3

[3] All weights per metre for mill finish steel. For galvanized channels: weights per metre × 1,10.



Side support



Double profile JM W 40/22 D on request

Material and Design

- Steel 1.0038 hot-dip galvanized (HDG)
- Steel 1.0038 mill finish
- Stainless steel 1.4571 (technical details provided on request)

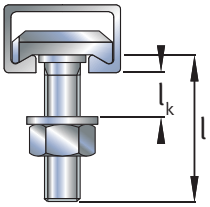
Ordering Example JM W 40/22

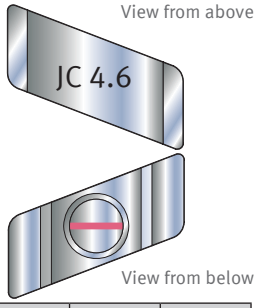
Type	Channel size		Length [mm]		Design
JM	**W 40/22**	-	6,000	-	HDG

Hook head bolt JC
M 10 – M 16

Bolt length	Material and Design				Clamping length [4]
l [mm]	Strength class	M 10	M 12	M 16	l_k [mm]
30	4.6	HDG, ZP	ZP	ZP	2
	8.8	–	–	–	
40	4.6	HDG, ZP	HDG, ZP	HDG, ZP	12
	8.8	–	HDG	HDG	
50	4.6	ZP	HDG, ZP	HDG, ZP	22
	8.8	–	HDG	–	
60	4.6	HDG, ZP	HDG, ZP	HDG, ZP	32
	8.8	–	HDG	HDG	
80	4.6	HDG, ZP	HDG, ZP	HDG, ZP	52
	8.8	–	HDG	HDG	
100	4.6	ZP	HDG, ZP	ZP	72
	8.8	–	–	HDG	
125	4.6	–	ZP	ZP	97
	8.8	–	–	HDG	

Other lengths and materials can be provided on request.
To determine the required bolt lengths, see fold-out page.
[4] Clamping length for largest thread diameter





l [mm]	Strength class	M 10	M 12	M 16	l_k [mm]
150	4.6	–	ZP	ZP	122
	8.8	–	–	–	
200	4.6	–	ZP	ZP	172
	8.8	–	–	–	
250	4.6	–	–	ZP	222
	8.8	–	–	–	
300	4.6	–	–	ZP	272
	8.8	–	–	–	

double-notch toothed bolt for load transfer in longitudinal direction page 26. Hook head locking plates for use with thread rods, see page 27.

Technical Details

Permitted load [5]						
Strength class	M 10		M 12		M 16	
	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]
4.6	8.0	5.6	8.0	8.0	8.0	8.0
8.8	8.0	8.0	8.0	8.0	8.0	8.0

Breaking load						
Strength class	M 10		M 12		M 16	
	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]
4.6	23.2	13.9	33.7	20.2	62.8	37.7
8.8	46.4	23.2	67.4	33.7	125.6	62.8

[5] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[6] Permitted single load $F_{y\,max}$ of the channel for the side support has to be taken into account

Material and Design
- Steel hot-dip galvanized (HDG)
- Steel electro zinc plated (ZP)
- Strength classes 4.6 / 8.8
- Stainless steel (technical details provided on request)

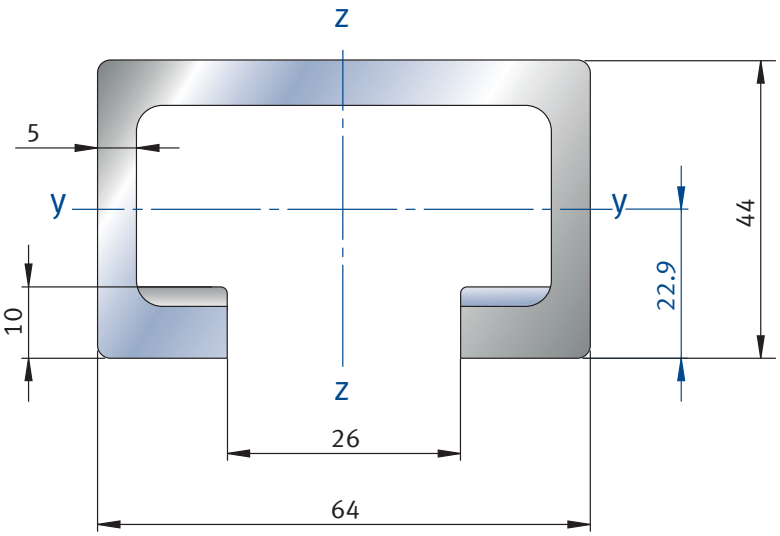
Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

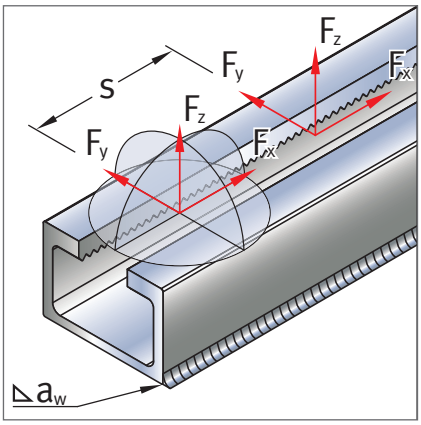
Ordering Example JC M 16

Type	Thread Ø		Length [mm]		Design	Strength class
JC	**M 16**	x	100	-	HDG	8.8

Hot-rolled Toothed Mounting Channels

JXM W 64/44





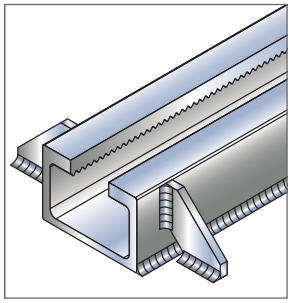
Technical Details

Permitted single load [1]			Minimum load distance	Moments of Resistance			Moments of Inertia	
$F_{z\,max}$ [kN]	$F_{y\,max}$ [2] [kN]	$F_{x\,max}$ [kN]	s [mm]	W_y [mm³]	W_z [mm³]	$W_{pl,y}$ [mm³]	I_y [mm⁴]	I_z [mm⁴]
34.0	**1.7 (34.0)**	**34.0**	130	10,523	16,937	13,796	241,150	541,980

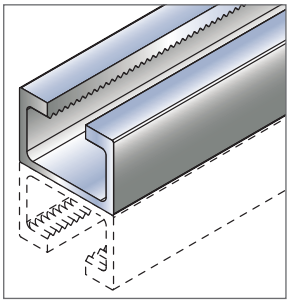
[1] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[2] Value in brackets for side support; Maximum distance to support <s

Breaking load			Cross Section	Weight[3]	Weld
$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]	A [mm²]	G [kg/m]	a_w [mm]
85.0	4.3 (85.0)	85.0	916	7.19	4

[3] All weights per metre for mill finish steel. For galvanized channels: weights per metre × 1,10.



Side support



Double profile JXM W 64/44 D on request

Material and Design

- Steel 1.0044 hot-dip galvanized (HDG)
- Steel 1.0044 mill finish

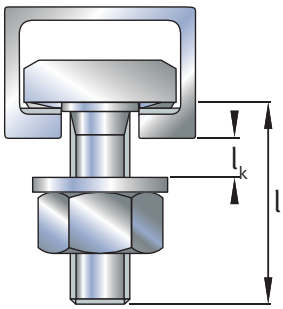
Ordering Example JXM W 64/44

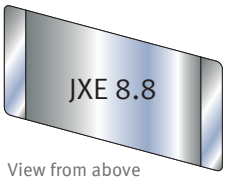
Type	Channel size		Length [mm]		Design
JXM	**W 64/44**	-	6,000	-	HDG

Toothed Bolt JXE
M 20 – M 24

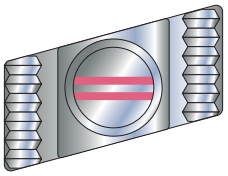
Bolt length	Material and Design			Clamping length [4]
l [mm]	Strength class	M 20	M 24	l_k [mm]
60	8.8	HDG	–	23
75	8.8	–	HDG	33
100	8.8	HDG	HDG	58
150	8.8	HDG	HDG	108

Other lengths and materials can be provided on request.
To determine the required bolt lengths, see fold-out page.
[4] Clamping length for largest thread diameter





View from above


View from below

Technical Details

Permitted load [5]						
Strength class	M 20			M 24		
	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{x\,max}$ [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{x\,max}$ [kN]
8.8	34.0	34.0	34.0	34.0	34.0	34.0

Breaking load						
Strength class	M 20			M 24		
	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]
8.8	196.0	98.0	98.0	282.4	141.2	141.2

[5] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003 (limited by the permitted single load of the toothed mounting channel JXM W 64/44)
[6] Permitted single load $F_{y\,max}$ of the channel for the side support has to be taken into account

Material and Design
- Steel hot-dip galvanized (HDG)
- Strength class 8.8
- Stainless steel (technical details provided on request)

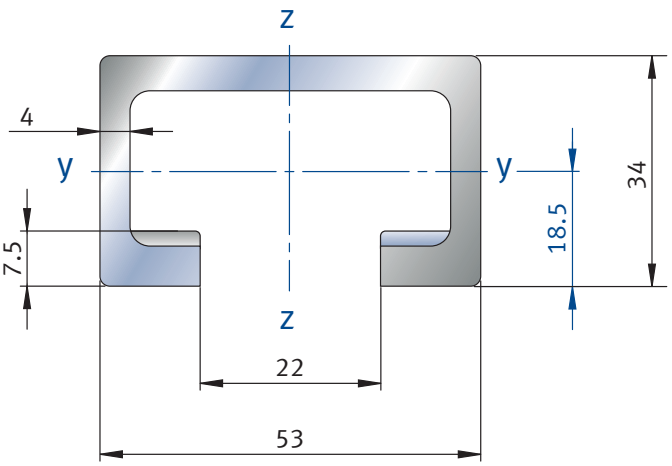
Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

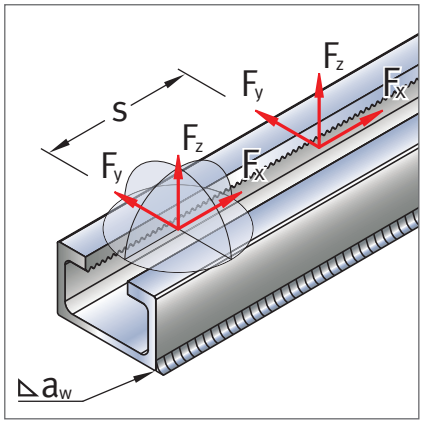
Ordering Example JXE M 24

Type	Thread Ø		Length [mm]		Design	Strength class
JXE	**M 24**	x	100	-	HDG	8.8

Hot-rolled Toothed Mounting Channels

JXM W 53/34





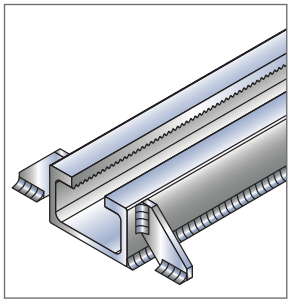
Technical Details

Permitted single load [1]			Minimum load distance	Moments of Resistance			Moments of Inertia	
$F_{z\,max}$ [kN]	$F_{y\,max}$ [2] [kN]	$F_{x\,max}$ [kN]	s [mm]	W_y [mm³]	W_z [mm³]	$W_{pl,y}$ [mm³]	I_y [mm⁴]	I_z [mm⁴]
22.0	**1.1 (22.0)**	**22.0**	90	5,008	8,834	6,855	92,520	231,890

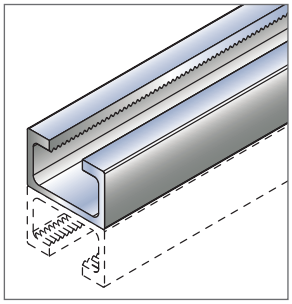
[1] Permitted single load taking the highest total safety factor jges into account = 2,5 of the FKM directive 2003
[2] Value in brackets for side support; Maximum distance to support <s

Breaking load			Cross Section	Weight[3]	Weld
$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]	A [mm²]	G [kg/m]	a_w [mm]
55.0	2.75 (55.0)	55.0	591	4.64	3

[3] All weights per metre for mill finish steel. For galvanized channels: weights per metre × 1,10.



Side support



Double profile JXM W 53/34 D on request

Material and Design

- Steel 1.0044 hot-dip galvanized (HDG)
- Steel 1.0044 mill finish
- Stainless steel 1.4571 (technical details provided on request)

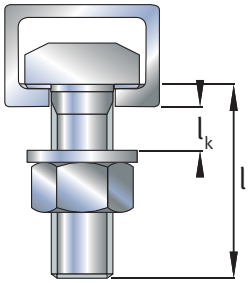
Ordering Example JXM W 53/34

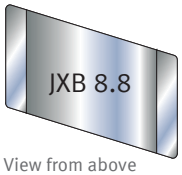
Type	Channel size		Length [mm]		Design
JXM	**W 53/34**	-	6,000	-	HDG

Toothed Bolt JXB
M 16 – M 20

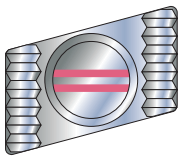
Bolt length	Material and Design			Clamping length [4]
l [mm]	Strength class	M 16	M 20	l_k [mm]
60	8.8	HDG	–	31
65	8.8	–	HDG	31
80	8.8	HDG	HDG	46
100	8.8	HDG	HDG	66
150	8.8	–	HDG	116

Other lengths and materials can be provided on request.
To determine the required bolt lengths, see fold-out page.
[4] Clamping length for largest thread diameter





View from above


View from below

Technical Details

Permitted load [5]						
Strength class	M 16			M 20		
	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{x\,max}$ [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{x\,max}$ [kN]
8.8	22.0	22.0	22.0	22.0	22.0	22.0

Breaking load						
Strength class	M 16			M 20		
	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]
8.8	125.6	62.8	62.8	196.0	98.0	98.0

[5] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003 (limited by the permitted single load of the toothed mounting channel JXM W 53/34)
[6] Permitted single load $F_{y\,max}$ of the channel for the side support has to be taken into account

Material and Design
- Steel hot-dip galvanized (HDG)
- Strength class 8.8
- Stainless steel (technical details provided on request)

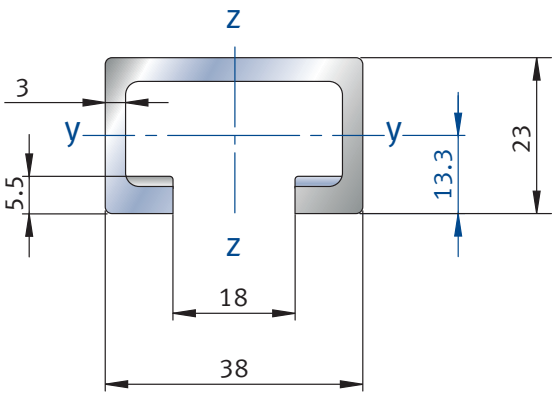
Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

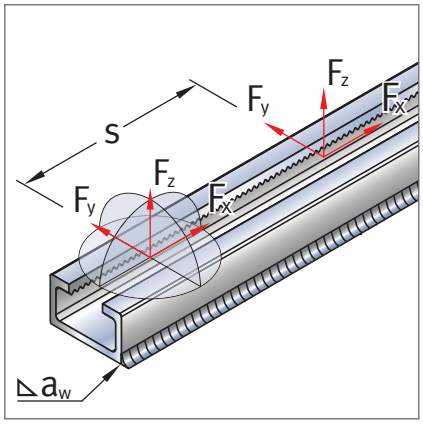
Ordering Example JXB M 20

Type	Thread Ø		Length [mm]		Design	Strength class
JXB	**M 20**	x	100	-	HDG	8.8

Hot-rolled Toothed Mounting Channels

JXM W 38/23





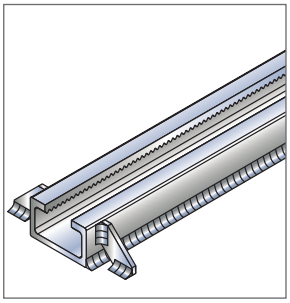
Technical Details

Permitted single load [1]			Minimum load distance	Moments of Resistance			Moments of Inertia	
$F_{z\,max}$ [kN]	$F_{y\,max}$ [2] [kN]	$F_{x\,max}$ [kN]	s [mm]	W_y [mm^3]	W_z [mm^3]	$W_{pl,y}$ [mm^3]	I_y [mm^4]	I_z [mm^4]
12.0	**0.6 (12.0)**	**12.0**	80	1,571	3,226	2,295	20,950	61,290

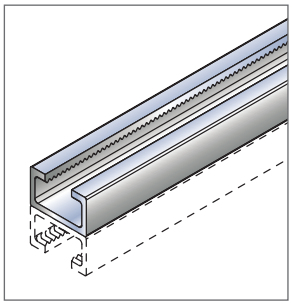
[1] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[2] Value in brackets for side support; Maximum distance to support <s

Breaking load			Cross Section	Weight[3]	Weld
$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]	A [mm^2]	G [kg/m]	a_w [mm]
30.0	1.5 (30.0)	30.0	308	2.42	3

[3] All weights per metre for mill finish steel. For galvanized channels: weights per metre × 1,10.



Side support



Double profile JXM W 38/23 D on request

Material and Design

- Steel 1.0044 hot-dip galvanized (HDG)
- Steel 1.0044 mill finish
- Stainless steel 1.4571 (technical details provided on request)

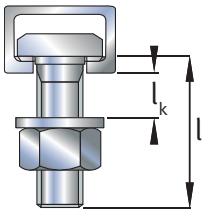
Ordering Example JXM W 38/23

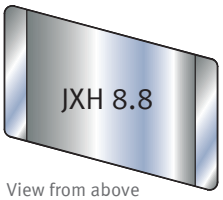
Type	Channel size		Length [mm]		Design
JXM	**W 38/23**	-	6,000	-	HDG

Toothed Bolt JXH
M 12 – M 16

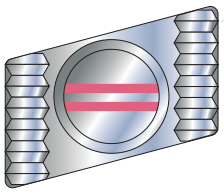
Bolt length	Material and Design			Clamping length [4]
l [mm]	Strength class	M 12	M 16	l_k [mm]
30	8.8	HDG	HDG	3
40	8.8	HDG	HDG	13
50	8.8	HDG	HDG	23
60	8.8	HDG	HDG	33
80	8.8	HDG	HDG	53
100	8.8	HDG	HDG	73
125	8.8	–	HDG	98
150	8.8	–	HDG	123

Other lengths and materials can be provided on request.
To determine the required bolt lengths, see fold-out page.
[4] Clamping length for largest thread diameter





View from above


View from below

Technical Details

Permitted load [5]						
Strength class	M 12			M 16		
	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{x\,max}$ [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{x\,max}$ [kN]
8.8	12.0	12.0	12.0	12.0	12.0	12.0

Breaking load						
Strength class	M 12			M 16		
	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]
8.8	67.4	33.7	33.7	125.6	62.8	62.8

[5] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003 (limited by the permitted single load of the toothed mounting channel JXM W 38/23)
[6] Permitted single load $F_{y\,max}$ of the channel for the side support has to be taken into account

Material and Design
- Steel hot-dip galvanized (HDG)
- Strength class 8.8
- Stainless steel (technical details provided on request)

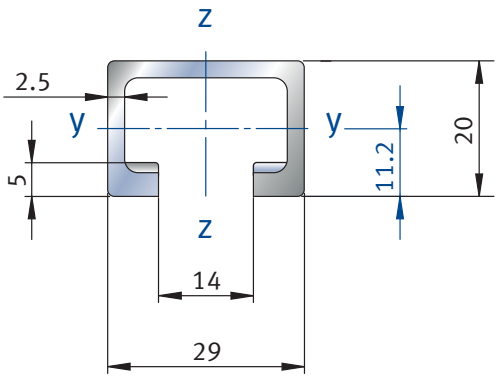
Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

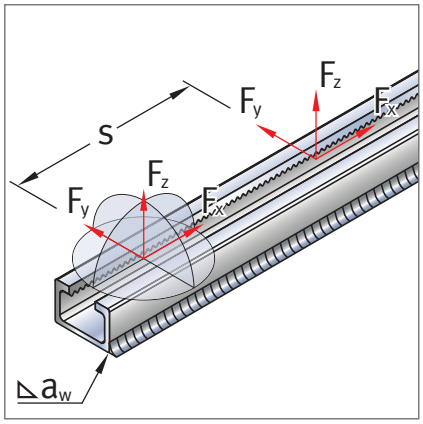
Ordering Example JXH M 16

Type	Thread Ø		Length [mm]		Design	Strength class
JXH	**M 16**	x	100	-	HDG	8.8

Hot-rolled Toothed Mounting Channels

JXM W 29/20





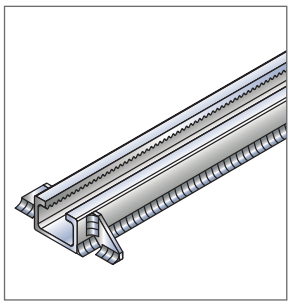
Technical Details

Permitted single load [1]			Minimum load distance	Moments of Resistance			Moments of Inertia	
$F_{z\,max}$ [kN]	$F_{y\,max}$ [2] [kN]	$F_{x\,max}$ [kN]	s [mm]	W_y [mm^3]	W_z [mm^3]	$W_{pl,y}$ [mm^3]	I_y [mm^4]	I_z [mm^4]
8.0	**0.4 (8.0)**	**8.0**	65	900	1,649	1,291	10,100	23,910

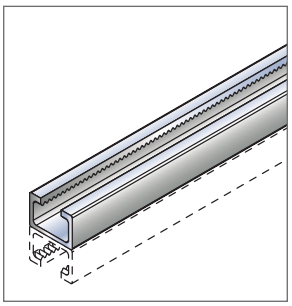
[1] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
[2] Value in brackets for side support; Maximum distance to support <s

Breaking load			Cross Section	Weight[3]	Weld
$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]	A [mm^2]	G [kg/m]	a_w [mm]
20.0	1.0 (20.0)	20.0	197	1.55	3

[3] All weights per metre for mill finish steel. For galvanized channels: weights per metre × 1,10.



Side support



Double profile JXM W 29/20 D on request

Material and Design

- Steel 1.0044 hot-dip galvanized (HDG)
- Steel 1.0044 mill finish

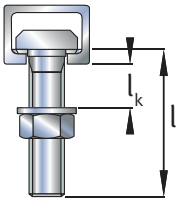
Ordering Example JXM W 29/20

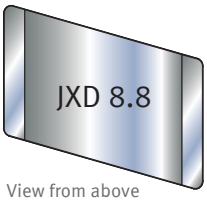
Type	Channel size		Length [mm]		Design
JXM	**W 29/20**	-	6,000	-	HDG

Toothed Bolt JXD
M 10 – M 12

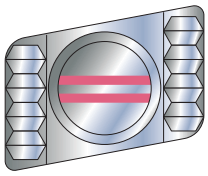
Bolt length	Material and Design			Clamping length [4]
l [mm]	Strength class	M 10	M 12	l_k [mm]
30	8.8	–	HDG	8
40	8.8	HDG	HDG	18
50	8.8	–	HDG	28
60	8.8	–	HDG	38
80	8.8	–	HDG	58
100	8.8	–	HDG	78
125	8.8	–	HDG	103
150	8.8	–	HDG	128

Other lengths and materials can be provided on request.
To determine the required bolt lengths, see fold-out page.
[4] Clamping length for largest thread diameter





View from above


View from below

Technical Details

Permitted load [5]						
Strength class	M 10			M 12		
	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{x\,max}$ [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [6] [kN]	$F_{x\,max}$ [kN]
8.8	8.0	8.0	8.0	8.0	8.0	8.0

Breaking load						
Strength class	M 10			M 12		
	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]
8.8	46.4	23.2	23.2	67.4	33.7	33.7

[5] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003 (limited by the permitted single load of the toothed mounting channel JXM W 29/20)
[6] Permitted single load $F_{y\,max}$ of the channel for the side support has to be taken into account

Material and Design
- Steel 1.0038 hot-dip galvanized (HDG)
- Strength class 8.8
- Stainless steel (technical details provided on request)

Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

Ordering Example JXD M 12

Type	Thread Ø		Length [mm]		Design	Strength class
JXD	**M 12**	x	100	-	HDG	8.8

Double-Notch Toothed Bolts

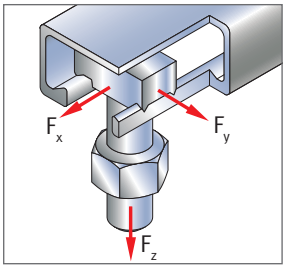
Doppel-Notch Toothed Bolts

- Suitable for all hot-rolled non-toothed mounting channels
- Notch-teeth press into the non-toothed channel lip and produce a form-fitting, non-slip connection
- Load transmission in longitudinal direction of the channel even in non-toothed mounting channel
- Marked by **two notches** at the shaft end

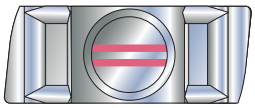
Types: JKB, JKC

Material and Design:

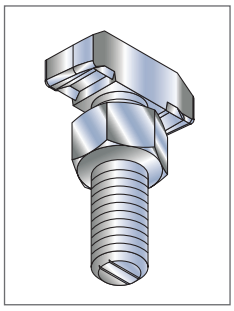
- hot-dip galvanized steel (HDG)



View from above
Embossment including type and strength class



View from below
Notches mark the position



Two notches at the end of the shank.

Position Identification Double-Notch Toothed Bolts

Note: Following installation, the notches must be at right angles to the channel longitudinal direction.

Bolts will be supplied including nuts.
Washers must be ordered separately (See page 28)

Bolt length	Material and Design				Clamping length [1]
l [mm]	Strength class	JKC M 16	JKB M 16	JKB M 20	l_k [mm]
40	8.8	HDG	–	–	12
60	8.8	HDG	HDG	HDG	20
80	8.8	—	–	HDG	40

Other lengths and materials can be provided on request.
To determine the required bolt lengths, see fold-out page.
[4] Clamping length for largest thread diameter

Notch teeth of the bolt press into the channel lips

Technical Details

Type	Channel	Permitted load [2]						Breaking load					
		M 16			M 20			M 16			M 20		
		$F_{z\,max}$ [kN]	$F_{y\,max}$ [kN]	$F_{x\,max}$ [kN]	$F_{z\,max}$ [kN]	$F_{y\,max}$ [kN]	$F_{x\,max}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{y\,u}$ [kN]	$F_{x\,u}$ [kN]
JKB	**JM W 55/42 JM W 53/34 JM W 50/30**	50.3	25.1	2.0	78.4	39.2	3.0	125.6	62.8	5.0	196.0	98.0	7.5
JKC	**JM W 40/22**	50.3	25.1	2.0	–	–	–	125.6	62.8	5.0	–	–	–

[2] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
Observe the permitted single load of the channel

Material and Design

- Steel hot-dip galvanized (HDG)
- Strength class 8.8

Ordering Example Double-Notch Toothed Bolts

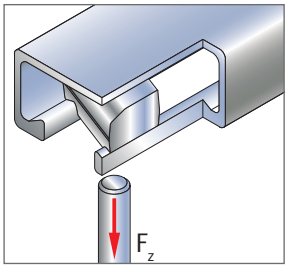
Type	Thread Ø		Length [mm]		Design	Strength class
JKB	**M 20**	x	80	-	HDG	8.8

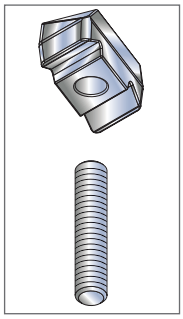
Locking Plates

Hook-head locking plates

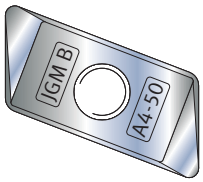
- Threaded plate
- Suitable for all non-toothed mounting channels
- Suitable for all JORDAHL bolts and threaded rods

Types: JGM A, JGM B, JGM C

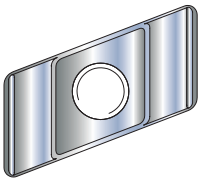




Locking plate with threaded rod

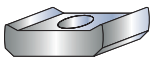
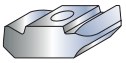
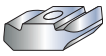


View from above
Type and strength class



View from below
As a result of a 90 degree rotation after being inserted, the threaded hole is at the centre. The hook head shape prevents the locking plate from turning backwards.

Technical Details

Type	for Mounting Channel	Permitted load [3]						Breaking load					
		M 6	M8	M 10	M 12	M 16	M 20	M 6	M8	M 10	M 12	M 16	M 20
		$F_{z\,max}$ [kN]	$F_{z\,max}$ [kN]	$F_{z\,max}$ [kN]	$F_{z\,max}$ [kN]	$F_{z\,max}$ [kN]	$F_{z\,max}$ [kN]	$F_{z\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{z\,u}$ [kN]	$F_{z\,u}$ [kN]
JGM A 	**JM W 72/48**	–	–	–	–	–	36.0	–	–	–	–	–	90.0
JGM B 	**JM W 55/42** **JM W 53/34** **JM W 50/30**	3.2	5.84	9.28	10.0	12.0	–	8.0	14.6	23.2	25.0	30.0	–
JGM C 	**JM W 40/22**	3.2	5.8	8.0	8.0	8.0	–	8.0	14.6	20.0	20.0	20.0	–

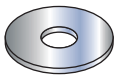
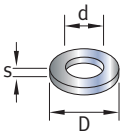
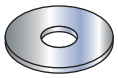
[3] Permitted single load taking the highest total safety factor j_{ges} into account = 2,5 of the FKM directive 2003
Locking plates may only be centrally tensioned (F_z)
Observe the permitted single load of the channel

Material and Design

- Steel electro zinc plated (ZP)
- Stainless Steel (Technical Details provided on request)

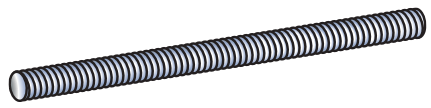
Accessories

Washers

Design ZP, A4[1]	Dimension	d [mm]	D [mm]	s [mm]
ISO 7093-1 (DIN 9021)	M 6	6.4	18.0	1.6
	M 8	8.4	24.0	2.0
	M 10	10.5	30.0	2.5
	M 12	13.0	37.0	3.0
	M 16	17.0	50.0	3.0
	M 20	22.0	60.0	4.0
ISO 7089 (DIN 125)	M 6	6.4	12.0	1.6
	M 8	8.4	16.0	1.6
	M 10	10.5	20.0	2.0
	M 12	13.0	24.0	2.5
	M 16	17.0	30.0	3.0
	M 20	21.0	37.0	3.0
	M 24	25.0	44.0	4.0
ISO 7094 (DIN 440)	M 6	6.6	22.0	2.0
	M 10	11.0	34.0	3.0
	M 12	13.5	44.0	4.0
	M 16	17.5	56.0	5.0
	M 20	22.0	72.0	6.0

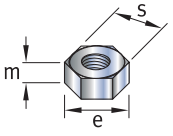
[1] Hot-dip galvanized design and further sizes on request.

Threaded Rod



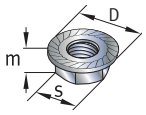
Threaded Rod DIN 976-1	
Strength class 4.6 Design ZP, A4 Length 1000 mm	Thread
	M 6
	M 8
	M 10
	M 12
	M 16
	M 20

Hexagon Nuts[2]

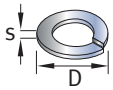
Hexagon Nuts According to ISO 4032			
Strength class 8 Design HDG, ZP, A4	Thread	s [mm]	m [mm]
	M 6	10.0	5.2
	M 8	13.0	6.8
	M 10	16.0	8.4
	M 12	18.0	10.8
	M 16	24.0	14.8
	M 20	30.0	18.0
	M 24	36.0	21.5
	M 27	41.0	23.8
	M 30	46.0	25.6

[2] For dynamic loads we recommend self-locking nuts.

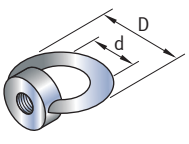
Self Locking Nut with Serrated Bearing

Strength class 8 Design ZP	Thread	D [mm]	m [mm]	s [mm]
	M 12	26.0	12	18
	M 16	34.5	16	24

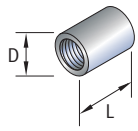
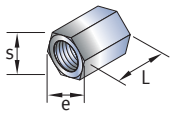
Spring Washers

Spring Washers DIN 127			
only for strength class 4.6 Design ZP, A4	Dimension	D [mm]	s [mm]
	M 6	11.8	1.6
	M 8	14.8	2.0
	M 10	18.1	2.2
	M 12	21.1	2.5
	M 16	27.4	3.5
	M 20	33.6	4.0
	M 24	40.0	5.0
	M 30	48.2	6.0

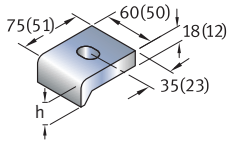
Ring Nuts

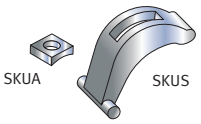
Ring Nuts DIN 582			
Design mill finish, ZP	Thread	d [mm]	D [mm]
	M 8	20.0	36.0
	M 10	25.0	45.0
	M 12	30.0	54.0
	M 16	35.0	63.0
	M 20	40.0	72.0
	M 24	50.0	90.0

Coupling Sleeves

round	Thread	D [mm]	L [mm]	Design
	**M 6**	10.0	20.0	Strength class 4 Design ZP, A4 on request
	M 8	11.0	20.0	
	M 10	13.0	25.0	
	M 12	15.0	30.0	
	M 16	22.0	40.0	
	M 20	28.0	50.0	
hexagon	**Thread**	**s [mm]**	**L [mm]**	**Design**
	**M 6**	10.0	15.0	Strength class 4 Design ZP, A4 on request
	M 8	13.0	20.0	
	M 10	17.0	25.0	
	M 12	19.0	30.0	
	M 16	24.0	40.0	
	M 20	30.0	50.0	

Clamping Plates

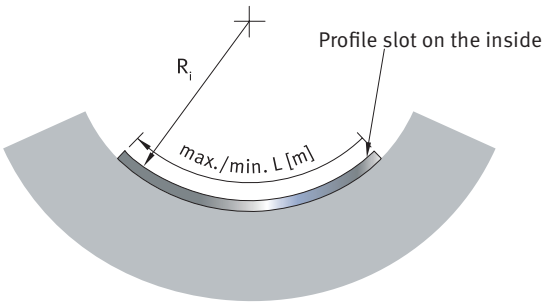
Clamping Plates (Previously DIN 3568)	Type	h [mm]	bolts Ø [mm]
 LL 18 × 24 (14 × 20)	**50/7**[6]	7	M 12
	60/10	10	M 16
	60/11	11	
	60/12[4]	12	
	60/14[5]	14	
	60/16	16	
	60/18	18	
	60/20	20	

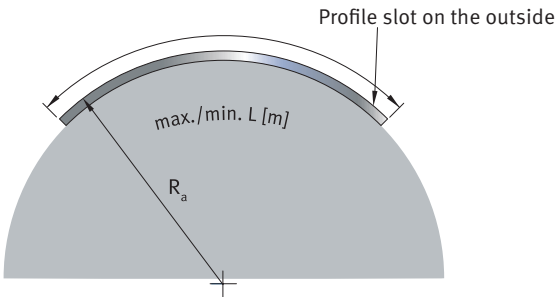
Universal clamping claw with adapter	Type	h [mm]	Bolt Dimension [mm]
	**SKU**	5 – 40	M 12 × 100 Strength class 8.8

[3] Crane rail according to DIN 536 on request: M 16 Ø 18, M 24 Ø 26;
[4] Also for crane rails A100 (KS75)
[5] Also for crane rails A120 (KS101)
[6] Dimensions in brackets

Customized Solutions

Curved Mounting Channels





Minimum Bending Radii / Channel Lengths (all Materials)

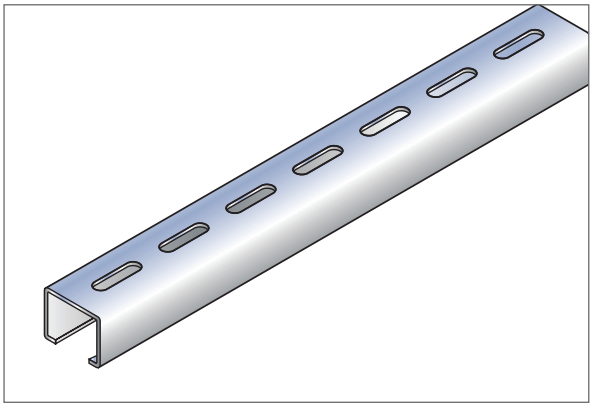
	JM					JXM	
Mounting Channels	**W 72/48**	**W 55/42**	**W 53/34**	**W 50/30**	**W 40/22**	**W 38/23**	**W29/20**
min R_i [m]	1.0	0.5	0.5	0.5	0.5	0.5	0.5
min R_a [m]	3.0	3.0	2.5	2.0	2.0	2.0	2.0
min L [m] Minimum Channel Length	1.5	1.5	1.5	1.5	1.0	0.5	0.5
max L [m] Maximum Channel Length	5.5	5.5	5.8	5.8	5.8	5.8	5.8

Cold-formed Framing Channels

- Constant material strength
- Available as perforated and toothed channels
- Suitable bolts available
- Cold formed, toothed and perforated channels are available in 23 sizes

Material and Design:
- Steel, mill finish (black)
- Steel hot-dip galvanized (HDG)
- Stainless Steel (A4)

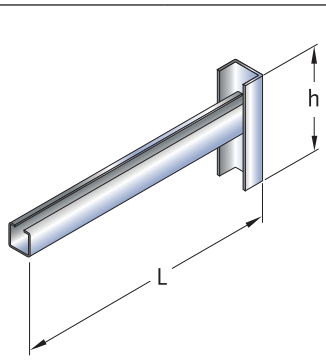
Further information about cold-formed framing channels in JORDAHL® "Channels and Accessories" catalogue.

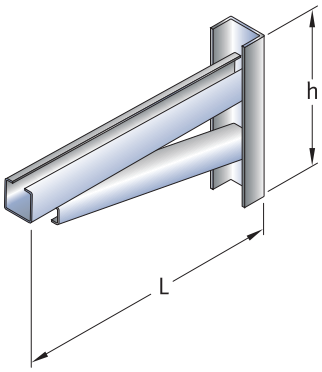


Slotted Back Framing Channel

Profile Brackets

JORDAHL® profile brackets JK 28/28-1, 36/36-1 and 36/36-2 are ready-to-mount constructions for holding clips, pipes, cable trays and other objects. They are fastened to the anchor channels or directly to the structure with anchor bolts. Special designs can also be supplied on request.





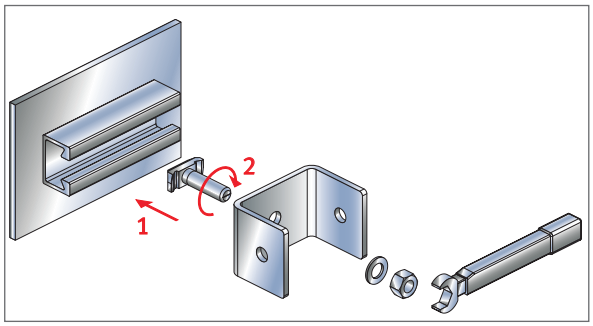
	JK 28/28-1	JK 36/36-1	JK 36/36-2				
Cantilever Profile	K 28/28	K 36/36	K 36/36				
Associated Bolt	Type JD, M 6–12	Type JH, M 10–16	Type JH, M 10–16				
Connection Profile for Bolts	U 36/24 M 12	U 45/27 M 12	U 45/27 M 12				
Cantilever Length L [mm]	100, 200, 300, 400	300, 400, 500, 600	300	400	500	600	700
Total Height h [mm]	120	180	208	238	269	300	330
Material/ Design	Hot-dip galvanized steel ≥ 50 µm, stainless steel on request						

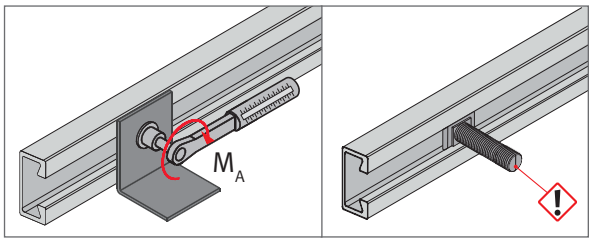
Installation Instructions

JORDAHL® mounting channels can be welded **directly** to the steel construction. For this purpose mill finished channels are used. They are protected against corrosion by painting or galvanizing them after installation.

When using galvanized mounting channels, the zinc layer has to be removed before welding. To ensure corrosion prevention, the protective layer has to be reinstated.

Fastening to JORDAHL® Mounting Channels



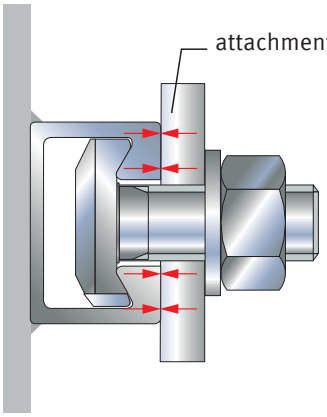


The JORDAHL® bolt can be inserted into the channel slot at any point along the channel length. After a 90° turn clockwise, the head of the bolt locks into position to enable the nut to be tightened.

Tighten the nuts to the recommended torque according to the table.

Note
After fastening: check the correct fit of the JORDAHL bolt. The groove on the shank end of the bolt must be **perpendicular** to the channel longitudinal axis.

Recommended tightening torques M_A



Bolts Ø	Tightening torque M_A [Nm]		
	Bolts 4.6 Locking Plates 4	Bolts 8.8	Double notch toothed bolt 8.8
M 10	15	40	–
M 12	25	70	–
M 16	65	180	200
M 20	130	360	400
M 24	230	620	–
M 27	340	900	–
M 30	460	1,200	–

Welds

Welds are sized according to the FKM 2003 directive for non-supported cases.

Proof has to be provided for changes in welds and the side support depending on the application.

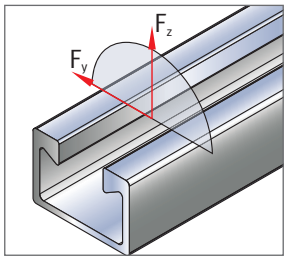
Design Concept

Selection of suitable mounting channel / bolt

Two different mounting channels available: Hot-rolled non-toothed mounting channels and hot-rolled toothed mounting channels.

Procedure for selecting suitable mounting channel:

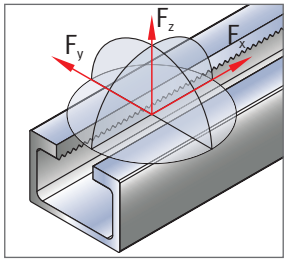
1. Select a mounting channel that can absorb the existing load
2. Check the channel's resistance to bending stress
3. Select a suitable bolt based on the technical details



The selection is correct if the result from the permitted loads for channel and bolt is less than 1. The bolt connection transfers the transversal force form-fitting.

The following applies:

$$(F_y/F_{y\,max})^2 + (F_z/F_{z\,max})^2 \leq 1$$



The following applies to toothed channels and double notch toothed bolts which guarantee form-fitting in a longitudinal direction as well:

$$(F_x/F_{x\,max})^2 + (F_y/F_{y\,max})^2 + (F_z/F_{z\,max})^2 \leq 1$$

Strength verification

The permitted loads $F_{x\,max}$, $F_{y\,max}$ and $F_{z\,max}$ for the mounting channels and bolts are given. These are derived from the breaking loads F_u (Force ultimate = breaking load) of the mounting channels and bolts/nuts with a safety factor of 2.5.

This safety factor is equivalent to the total safety factor j_{ges} of the FKM 2003 directive. The value $\mathbf{j_{ges} = 2.5}$ results from a safety factor in relation to the probability of occurrence and any possible consequence of failure (see table).

$$j_{ges} = \max\ (j_m\ ;\ j_p \times R_m / (R_p \times K_A))$$

Safety factors

Probability		Consequence of failure	
		high	low
high	j_m	2.0	1.75
	j_p	1.5	1.3
low	j_m	1.8	1.6
	j_p	1.35	1.2

These combinations (mill finish channels, galvanized bolts, etc.) achieve the applied total safety factor for the worst-case scenario.

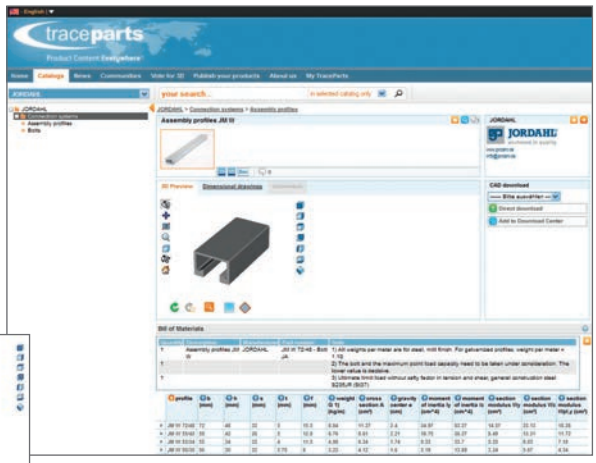
$$\begin{aligned} j_{ges} &= j_p \times R_m / (R_p \times K_A) \\ &= 1.5 \times 360\ N/mm^2 / (240\ N/mm^2 \times 0{,}9) \\ &= 2.5 \end{aligned}$$

Note:
If different load probabilities and consequences of failure are applied, the result is a lower total safety factor. The permitted loads can be increased respectively in these circumstances.

Service

JORDAHL® 3D-CAD models on the Internet:
To integrate our mounting channels into your drawings we provide complete 2D and 3D models for download.

- 2D models for typical CAD programs at
  www.jordahl.de/home ⇢ Service ⇢ CAD Library
- 2D and 3D models available for free download in various CAD formats at
  www.tracepartsonline.net ⇢ Catalogs ⇢ JORDAHL



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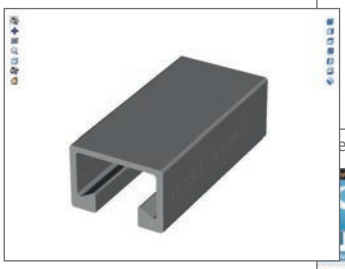
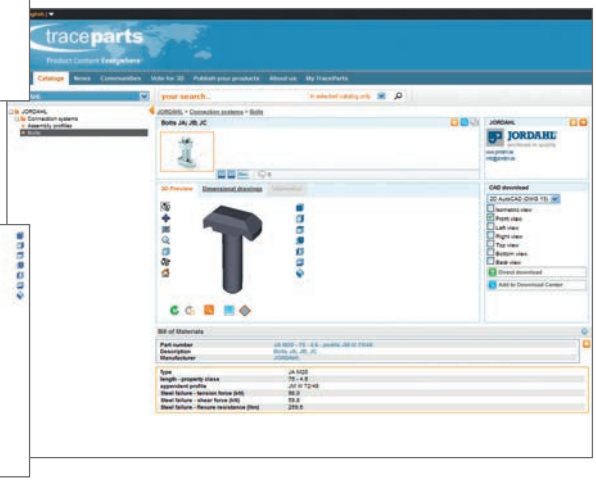
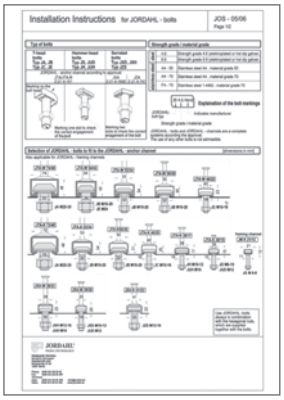




Product information
Our products are designed to make your work easier. That is why we have put together an extensive portfolio of product-specific information.

- Catalogues and approvals
- Installation instructions
- Software
- Tender texts
- etc.

further information available at www.jordahl.de/home



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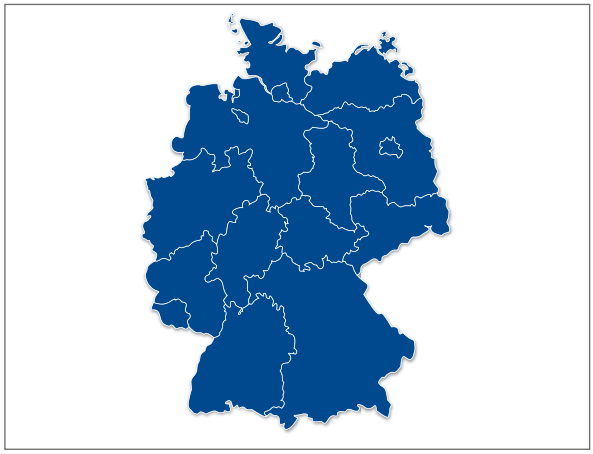
Our products are characterized by their high quality and reliability. Quality is monitored by internal quality control and third-party audits.

- certified by the German Institute for Construction Engineering (DIBt)
- certified quality management (QM) / quality assurance (QS) program in accordance with ISO 9001
- Materials certification classes 2.1, 2.2 and 3.1
- Certifications for welding concrete structures (welding proof)

Advice



In Germany
We are located in several parts in Germany. If you have any questions, please contact our partners for mounting technology. Contact details can be found online at www.jordahl.de/home.

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Phone: +49 30 68283-02
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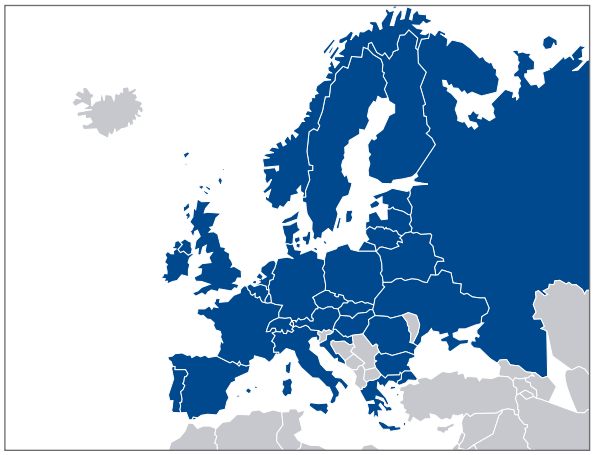

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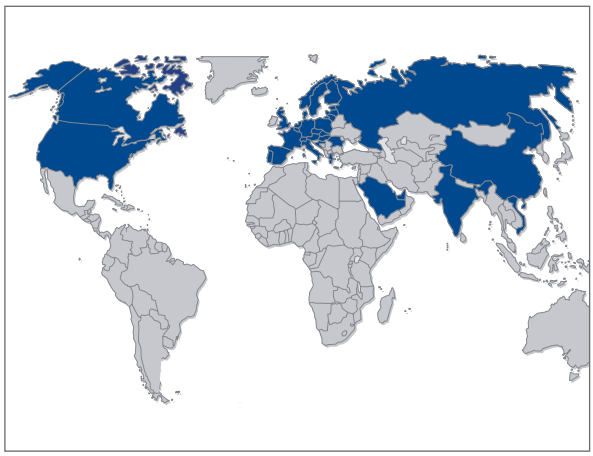
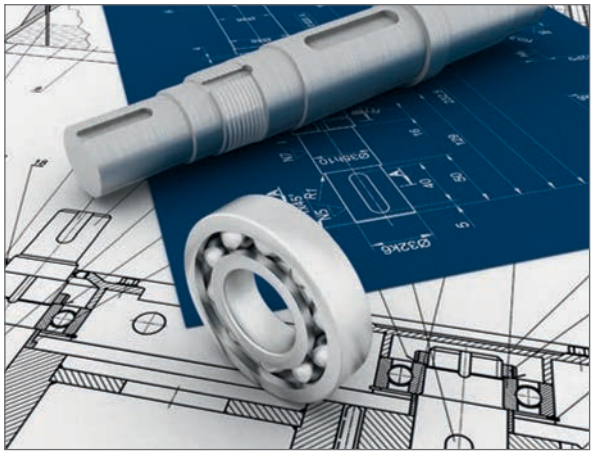
We deliver not only throughout Germany but all over Europe. With the support of our reliable logistics partners we guarantee deliveries of our products all over Europe. An individual, high-quality and customer-oriented service is what we focus on.



Global
JORDAHL® products have proved their value all over the world. German quality standards are highly regarded throughout the world. You can rely on our global logistics partners and a perfect logistics chain. This is certified by the quality standard system DIN EN ISO 9001.



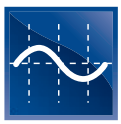
Technical Advice
Customer satisfaction, service orientation and reliability: our product specialists in our Berlin development and service centre set high standards. Our competent and experienced employees are always aware of the latest developments and offer you modern, flexible and individual solutions to cater to all your needs.

Legend

A	Cross Section
a_w	thickness of the weld
e_w	distance between weld centres
f	Profile nose (thickest point of channel edge)
$F_{x\,max}$	Maximum permitted single load in x-direction
$F_{x\,u}$	Breaking load (u = ultimate) in x-direction
$F_{y\,max}$	Max. permitted single load in y-direction
$F_{y\,u}$	Breaking load (u = ultimate) in y-direction
$F_{z\,max}$	Max. permitted single load in z-direction
$F_{z\,u}$	Breaking load (u = ultimate) in z-direction
G	Weight per metre
I_y	Moments of Inertia about the y-axis
I_z	Moments of Inertia about the z-axis
j_{ges}	Total safety factor according to FKM directive
j_m	Safety factor applied to tensile strength according to FKM directive
j_p	Safety factor applied to the yield strength according to the FKM directive
K_A	Anisotropy factor according to the FKM directive
l_w	Length of the weld
M_A	Tightening torque at installation
R_m	Tensile strength of the material
R_p	Yield strength of the material
s	Min. load distance / max. distance from side support
$W_{pl,y}$	Plastic moment of resistance about the y-axis
W_y	Moment of Resistance about the y-axis
W_z	Moment of Resistance about the z-axis
x	Longitudinal direction of channel
y	Transverse direction of channel
z	Direction of pull of channel

Abbreviations

4.6 / 8.8	Strength classes
A4	stainless steel classes
HDG	hot-dip galvanized
ZP	electro zinc plated
St	Steel
black	mill finish



Dynamic load-bearing capacity

Toothed Channel

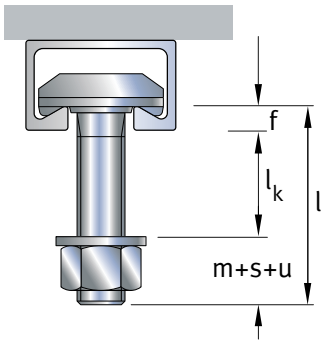
Channel

Bolt

Hot-rolled Channel

Note

Determining Required Bolt Length req. l



l = Bolt length
l_k = Clamping length (thickness of the attached part)
f = Channel lip thickness
m = Nut height EN ISO 4032
s = Washer thickness EN ISO 7093-1
u = Bolt projection EN ISO 4753

req. l [mm] = l_k + f + (m+s+u)

Bolt	Total m+s+u [mm]
M 6	8.8
M 8	11.3
M 10	13.9
M 12	17.3
M 16	21.8
M 20	27.0
M 24	32.5
M 27	35.8
M 30	38.6

Notes

Legend

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www.jordahl.de