



Quality by Witzenmann

# THE GROUP

With 24 companies in 19 countries,  
Witzenmann is the global number 1 in the industry

## World leader

Witzenmann is a global group of companies that specialises in flexible metal elements. Our company is renowned as an innovative development partner and reliable manufacturer within the industry thanks to our vision of "managing flexibility". Today, Witzenmann offers the widest range of products for the most diverse areas of applications. This enables us to offer the correct solutions time and time again.

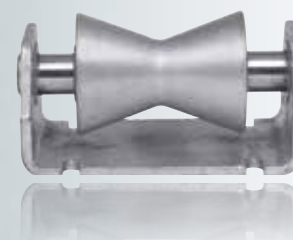


### Witzenmann GmbH

Östliche Karl-Friedrich-Str. 134  
75175 Pforzheim, Germany  
Phone +49 7231 581-0  
Fax +49 7231 581-820  
wi@witzenmann.com  
www.witzenmann.de

### Witzenmann Sachsen GmbH

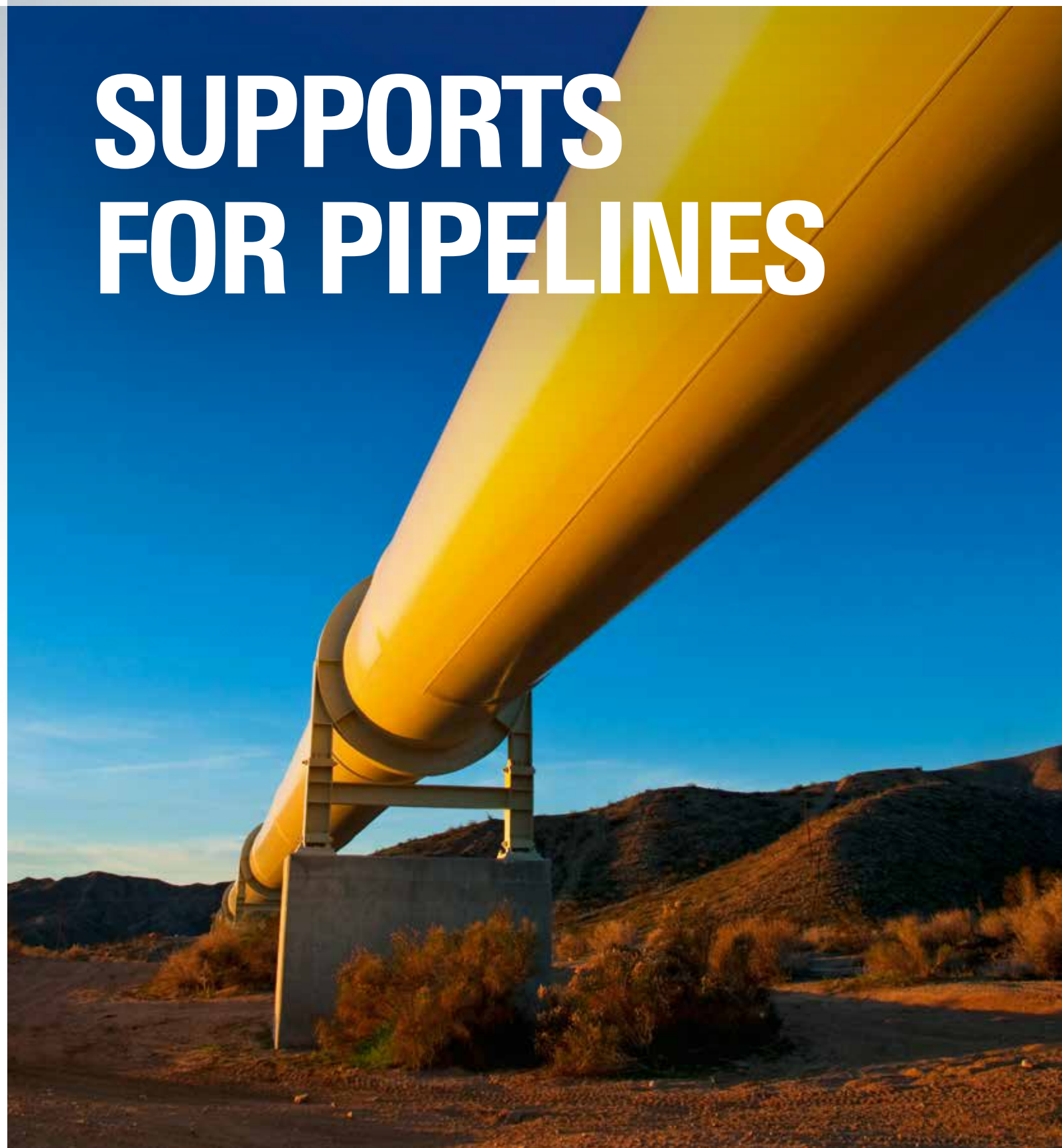
Greizer Str. 38  
08412 Werdau, Germany  
Phone +49 3761 451-93  
Fax +49 3761 451-26  
info@witzenmann-sachsen.de  
www.witzenmann-sachsen.de



**WITZENMANN**

managing flexibility

# SUPPORTS FOR PIPELINES



# CONTENTS

## General information

HYDRA moveable, roller and fixed supports	4
Quality by Witzemann	6
Technical data	8

## HYDRA movable support

LKL, LSL and LXL	Fixed height, steel to steel or low-friction sliding	12
LSV and LVL	Height-adjustable, steel to steel or low-friction sliding	20
IKL	Fixed height, low-friction sliding for pre-insulated pipelines	23

## Accessories movable support

Kxx	Clamping systems	26
LAW	Uplift restraint to weld on	28
LGA and LGV	Sliding element with PTFE sliding plate	29

## HYDRA fixed support

FLN	Fixed height, clamped	32
FVN	Height-adjustable, clamped	37
FSN and FSD	Fixed height, bolting-on	41
FLV	Fixed height, clamped, for pre-insulated pipelines	45

## HYDRA guides

LKF, LSF and LXF	Fixed height, steel to steel or low-friction sliding Various guide types	49
------------------	---	----

## HYDRA roller support

RZL and RZG	Single cylinder roller support	57
RKF and RKL	Double cone roller support, guided and lateral moveable	58
RDF	Double cylinder roller support, guided	59
RDL	Double cylinder roller support, lateral moveable	60
ADJ and ADM	Uplift restraint	61
AKJ and AKM	Uplift restraint	62

## HYDRA pipe saddles

IDO and IDR	DN 100-1200, weld on and 2-clamp	66
IKO and IKB	DN 50-450, weld on and 2-clamp	68
INO and INB	DN 500-1800, weld on or pipe bracket	70
INS	DN 500-2000, with support shell and pipe clamps	72
ITB	Clamp base for cylinder roller support	74
SMR	Pipe saddle for pre-insulated pipes	76

## HYDRA special versions

LKL 10 and LKG 10	Movable and guide support, low overall height, fixed height	80
FLN 10	Fixed support, low overall height, fixed height	81
LBN	Guide support, U-bolt, fixed height	82
LPR	Movable support, U-shaped section, 2-clamp, fixed height	83
LUR	Movable support, box-shaped, 2-clamp, fixed height	84
LSN and LSV	Movable and fixed support to weld on	85
LFA	Fixed support to weld on, with or without support shell	86
PAN	Vertikal pipe support to weld on, normal version	87
PAV	Vertikal pipe support to weld on, stronger version	88
PRN	Vertikal pipe support with 2 clamps, normal version	89
PRV	Vertikal pipe support with 2 clamps, stronger version	90





# HYDRA<sup>®</sup> MOVABLE, ROLLER AND FIXED SUPPORTS

HYDRA movable, roller and fixed support for industrial pipeline construction are a main aspect of production at Witzemann Sachsen. The customers for these products are drawn above all from heavy industry, major chemical and petrochemical plants as well as the entire plant engineering and construction industry. In close cooperation with customers, special support series are adapted to the modified requirements of new plants. The international technology association of Witzemann Sachsen within the Witzemann Group creates both economic and innovative product solutions that help to set the global standard time and time again.

## **The technical features of the HYDRA support range at a glance**

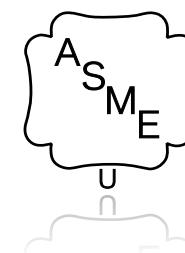
- From DN 15
- Temperatures up to 300 °C or up to 650 °C
- For non-insulated, thermally insulated or pre-insulated pipelines
- Movable support, guide support, guides, fixed support, roller supports

- Guide support with clampable system or weldable guide
- Fixed support clampable or bolting-on
- Clampable for carrier width 80 to 300 mm and support base thicknesses 7 to 19 mm
- Clampable on T, U or L-carrier
- 1-clamp and 2-clamp version
- Low-friction version with polyamide sliding plate or version steel to steel sliding or version with stainless steel sliding plate and sliding element PTFE
- Versions of 3 to 4 fixed overall heights and in 3 height adjustment ranges
- Roller support maintenance-free



# QUALITY BY WITZENMANN

Converting our prominent development expertise perfectly into customised product solutions that fulfil the highest requirements - this is our standard.

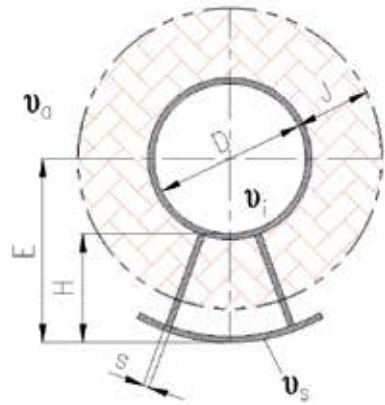


Durability and absolute operational reliability are essential for a company aiming to be the quality leader. It is not only DIN ISO 9001 / TS 16949 certification, but also a wide variety of national and international approvals and certifications such as VDA 6.1, J'ATEX (94/9 CE) or DESP (97/23 CE) that constitute "HYDRA - Quality by Witzmann". Our customers include major companies involved in petrochemicals, industry and plant engineering and construction, power plant operators and suppliers in the energy sector. This is reason enough for us to consistently enhance the qualitative development of our product solutions.

#### Spin-off effects from other markets

Witzmann is involved in many highly specialised markets. These include, for instance, aerospace, nuclear power and even medical technology. These are all fields in which maximum functional reliability is required under demanding operating conditions. This is one of the coefficients which, thanks to our multi-faceted expertise, makes us an in-demand development partner around the world. The FLEXPORTE software we have developed provides the specialist planner with a simple way of configuring supports, hangers and supports, all the way through to a 3D-CAD presentation. It is compatible with all common planning tools via PDS and PDMS interfaces.

# TECHNICAL DATA



## Temperature influences

### Temperature at the outer insulating support / lower edge of support (contact diameter)

Support temperature (outside) in °C

$$\vartheta_s = C_1 \cdot (\chi \cdot \vartheta_i + (1-\chi) \cdot \vartheta_a)$$

$$\vartheta_L = C_1 \cdot C_2 \cdot (\chi \cdot \vartheta_i + (1-\chi) \cdot \vartheta_a)$$

with

Correction coefficient  $C_1$

$C_1 = 1.0$  for continuous webs

$C_1 = 0.7$  for interrupted webs

Medium temperature  $\vartheta_i$  in °C

Ambient temperature  $\vartheta_a$  in °C

Correction coefficient  $C_2$

$$C_2 = 1 - \left( \frac{H-J}{H} \right)^3$$

Temperature coefficient  $\chi$  (a) from diagram

$$a_{\text{calliper}} = \frac{D_A \cdot J}{4000 \cdot s}$$

$$a_{\text{support}} = \frac{D_A \cdot J}{4000 \cdot s}$$

with

Contact diameter  $D_A$  in mm

Thickness of root face (insulation thickness)  $J$  in mm

Width of root face  $s$  in mm

$$D_A = D + 2 \cdot J$$

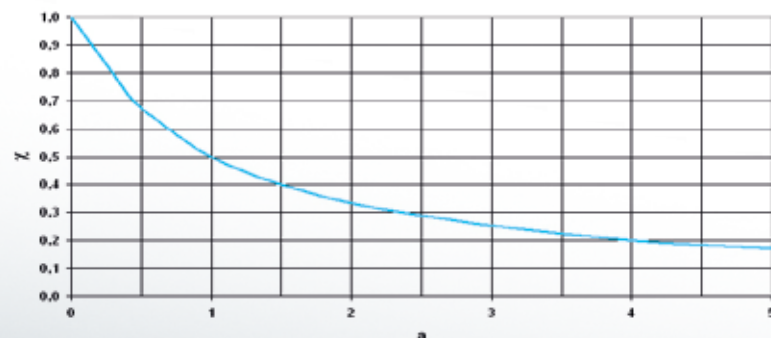
### Temperature on the support bushes of the roller support

Support temperature in °C

$$\vartheta_R = \frac{1}{3} (2 \cdot \vartheta_s + \vartheta_a)$$

For determining the correction coefficient  $K_\vartheta$  and thus the permitted loads on the roller support

### Temperature coefficient $\chi$



# REDUCTION COEFFICIENTS

## Nominal loads and coefficient

For simplification, HYDRA products are designed acc. to nominal loads. Adaptation to the real operating conditions, nominal loads is performed using temperature and material-dependent correction coefficient  $K_\vartheta$  by means of loads.

When a clamping system is used, the permitted loads of the clamping system must be taken into account.

### Nominal load $F_N$

Permitted load at 20 °C and S235JR

### Load $F_t$

Permitted load at design temperature and selected material

### Nominal load $F_s$

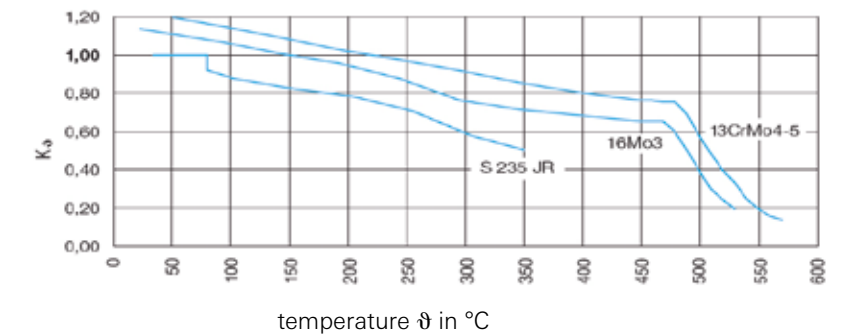
Existing load from pipe statics

### Condition

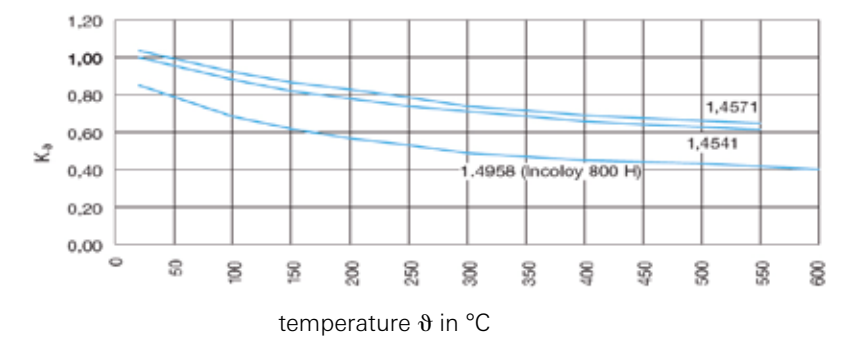
$$F_s \leq F_t = F_N \times K_\vartheta$$

## Correction coefficient $K_\vartheta$ / temperature-dependent

### Correction coefficient $K_\vartheta$ for ferritic materials



### Correction coefficient $K_\vartheta$ for austenitic materials



		Correction coefficient $K_\vartheta$ from ferritic and martensitic materials																	
Number acc. to	Material Name acc. to	Upper limit temperature acc. to		Correction coefficient $K_\vartheta$															
		VGB-R510L	DIN EN, WB	Component temperature $\vartheta$ in °C															
DIN EN	DIN EN	in °C		100	200	250	300	350	400	450	480	500	520	540	560	580	600	630	650
1.0038	S235JR	350	350	0.88	0.79	0.71	0.58	(0.5)											
1.5415	16Mo3	500	530			(0.87)	0.76	0.72	0.68	0.65	0.60	0.39	(0.25)						
1.7335	13CrMo4-5	530	570				0.85	0.8	0.76	0.75	0.58	0.40	(0.25)	(0.17)					
1.7380	10CrMo9-10	580	600								(0.57)	0.43	0.33	0.24	0.18	(0.14)			
1.4903	X10CrMo-VNb9-1 (P91)	> 580	650									(0.91)	0.76	0.62	0.49	0.38	0.25	0.19	
		Correction coefficient $K_\vartheta$ from austenitic materials																	
		in °C		Component temperature $\vartheta$ in °C															
				50	100	150	200	300	400	500 <sup>1)</sup>	550 <sup>1)</sup>	580	590	600	610	630	650		
1.4541	X6CrNiTi18-10	>580	550	0.94	0.88	0.82	0.78	0.71	0.66	0.63	0.62								
1.4571	X6CrNiTi-Mo17-12-2	>580	550	1.0	0.92	0.87	0.83	0.74	0.69	0.67	0.66								
1.4958	X5NiCrAlTi31-20 (800A)		900 <sup>2)</sup>							0.42	0.40	0.40	0.40	0.40	0.40	0.38	0.32		

1) For temperatures above > 400 °C, another bolting material must be used. Consequently the temperature information must be provided with the order.  
2) Due to lack of bolting materials, only upon request at temperatures above 650 °C.



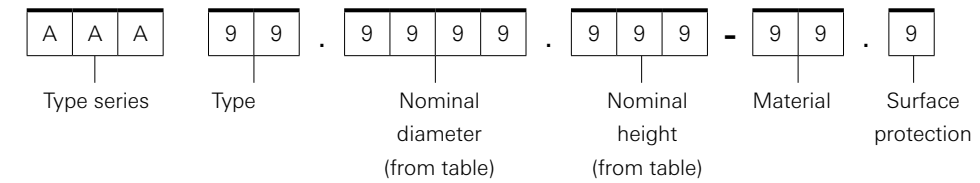
# HYDRA® MOVABLE SUPPORT



## HYDRA® MOVABLE SUPPORT

Type series, names, variants

### Type designation (example)



### HYDRA type series

LKL	Movable support with PA sliding plate, low-friction sliding
LSL	Movable support without sliding plate, steel to steel sliding
LXL	Movable support with stainless steel sliding plate
LVS	Movable support without sliding plate, steel to steel sliding, height-adjustable
LVL	Movable support with PA sliding plate, low-friction sliding, height-adjustable
IKL	Movable support with PA sliding plate, low-friction sliding, for pre-insulated pipelines

### Type

Characteristic	Types
20	T-shaped, base width 80 mm, 1 clamp
21	T-shaped, base width 80 mm, 2-clamp
22	T-shaped, base width 100 mm, 2-clamp
23	Box-shaped base, 2-clamp
24	Box-shaped base, heavy version, 2-clamp

### Material

Name	Characteristic	max. medium temp* acc. to VGB R510L in °C
S235JRG2	1.0038	37
16Mo3	1.5415	16
13CrMo4-5	1.7335	13
10CrMo9-10	1.7380	10
X6CrNiTi18-10	1.4541	41
X6CrNiMoTi17-12-2	1.4571	71
X10CrMoVNb9-1	1.4903	91
X5NiCrAlTi31-20 (800A)	1.4958	80
others	-	99

\* Reduction coefficients see page 9

\*max. temperature on polyamide sliding plate 90° C

### Surface protection

Name	Characteristic
Unthreatened	0
Galvanized	1
Hot-dip galvanized	2 (standard)
Primed	3
Special	4

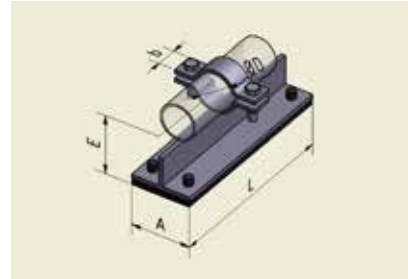
# HYDRA® MOVABLE SUPPORT

Type series LKL and LSL, type 20 and 21,  
low overall height, up to 95 °C, fixed height, steel to steel or low-friction sliding

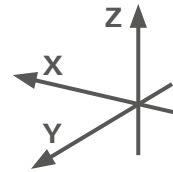
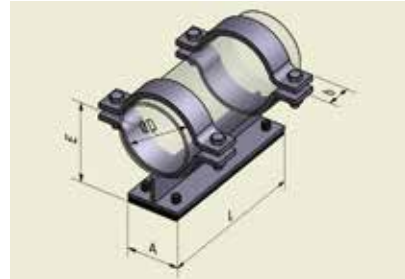
## Technical data

- 1 and 2-clamp, clampable
- Nominal height H = 60 mm  
(for non-insulated pipelines)
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced (LKL)
- Surface protection:  
steel components hot-dip galvanized
- Coefficients of friction:  
Friction for formation LKL PA and steel hot-dip galvanized:  
0.2 to 0.3
- Support base thicknesses for clamping system:  
LKL 16 mm  
LSL 8 mm

Type 20



Type 21



## Differences in the type series:

**Type series LKL – with clamped polyamide sliding plate**

**Type series LSL – steel to steel sliding (H and E dimension 8 mm lower than LKL)**

## Order example: LKL 21.0080.060-37.2

Type 21, nominal diameter 80, nominal height 60 mm, S235JR, hot-dip galvanized

Nominal diameter DN	Outside pipe diameter D	Type LKL ... Type LSL ...	Nominal loads <sup>2)</sup>			System dimension LKL		Dimensions			Weight approx.
			-F <sub>z</sub>	+F <sub>z</sub>	F <sub>x</sub>	Nominal height H	Installation dimension E	A	L	b	
-	mm		kN	kN	kN	mm	mm	mm	mm	mm	kg
15	21.3	20.0015. ... <sup>1)</sup>	5,3	2	4	60	69	82	250	25	2
20	26.9	20.0020. ... <sup>1)</sup>					71				
25	33.7	20.0025. ... <sup>1)</sup>	5,3	3	4	60	76	82	250	30	2
32	42.4	20.0032. ... <sup>1)</sup>					80				
40	48.3	20.0040. ... <sup>1)</sup>					83				
50	60.3	21.0050. ... <sup>1)</sup>	19	14	7,3	60	90	82	250	40	3
65	76.1	21.0065. ... <sup>1)</sup>					98				
80	88.9	21.0080. ... <sup>1)</sup>					104				
100	114.3	21.0100. ... <sup>1)</sup>	15	15	5,6	60	117	82	250	40	5
125	139.7	21.0125. ... <sup>1)</sup>					130				
150	168.3	21.0150. ... <sup>1)</sup>					144				

1) Add nominal heights and the characteristic for material and surface protection  
2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

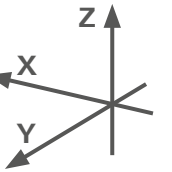
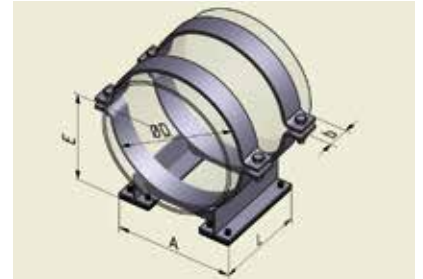
# HYDRA® MOVABLE SUPPORT

Type series LKL and LSL, type 23,  
low overall height, up to 95 °C, fixed height, steel to steel or low-friction sliding

## Technical data

- 2-clamp, clampable
- Nominal height H = 60 mm  
(for non-insulated pipelines)
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced (LKL)
- Surface protection: steel components hot-dip galvanized
- Coefficient of friction:  
Sliding pairing LKL PA steel hot-dip galvanized: 0.2 to 0.3
- Support base thicknesses for clamping system:  
LKL 16 mm  
LSL 8 mm

Type 23



## Differences in the type series:

**Type series LKL – with clamped polyamide sliding plate**

**Type series LSL – steel to steel sliding (H and E dimension 8 mm lower than LKL)**

## Order example: LKL 23.0150.060-37.2

Type 23, nominal diameter 150, nominal height 60 mm, S235JR, hot-dip galvanized

Nominal diameter DN	Outside pipe diameter D	Type LKL ... Type LSL ...	Nominal loads <sup>2)</sup>			System dimension LKL		Dimensions			Weight approx.
			-F <sub>z</sub>	+F <sub>z</sub>	F <sub>x</sub>	Nominal height H	Installation dimension E	A	L	b	
-	mm		kN	kN	kN	mm	mm	mm	mm	mm	kg
100	114.3	23.0100. ... <sup>1)</sup>	74	20	47	60	117	203	250	40	7
125	139.7	23.0125. ... <sup>1)</sup>					130				
150	168.3	23.0150. ... <sup>1)</sup>	80	20	45	60	144	232	250	40	8
200	219.1	23.0200. ... <sup>1)</sup>					170				
250	273.0	23.0250. ... <sup>1)</sup>					197				
300	323.9	23.0300. ... <sup>1)</sup>	127	20	77	60	222	302	250	50	12
350	355.6	23.0350. ... <sup>1)</sup>					238				
400	406.4	23.0400. ... <sup>1)</sup>					263				
450	457.0	23.0450. ... <sup>1)</sup>	170	25	103	60	289	333	250	60	17
500	508.0	23.0500. ... <sup>1)</sup>					314				
600	610.0	23.0600. ... <sup>1)</sup>					365				

1) Add nominal heights and the characteristic for material and surface protection  
2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C



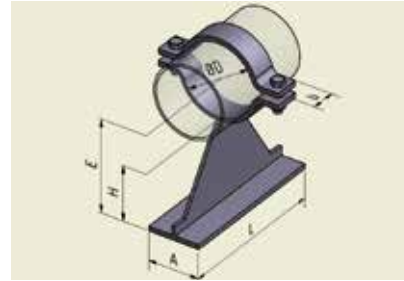
# HYDRA® MOVABLE SUPPORT

Type series LKL, LSL and LXL, type 20,  
up to 300 °C, fixed height, steel to steel or low-friction sliding

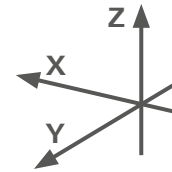
## Technical data

- 1-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced (LKL)  
Sliding plate: Stainless steel (LXL)
- Surface protection:  
steel components hot-dip galvanized
- Coefficients of friction:  
Sliding pairing LKL PA steel hot-dip galvanized: 0.2 to 0.3  
Sliding pairing LXL stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)
- Support base thicknesses for clamping system:  
LKL 17 mm  
LSL with nominal height 85 and 190: 9 mm  
LSL with nominal height 140: 7.4 mm

Type 20



Type series LKL



## Differences in the type series:

**Type series LKL – with clamped polyamide sliding plate**

**Type series LSL – steel to steel sliding (E dimension 8 mm lower than LKL)**

**Type series LXL – with welded stainless steel sliding plate (E dimension 5 mm lower than LSL)**

## Order example: LKL 20.0080.150-37.2

Type 20, nominal diameter 80, nominal height 150 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type LKL ... Type LSL ... Type LXL ...	Nominal loads <sup>2)</sup> and system dimensions						Dimensions			Weight
			Nominal height H						A	L	b	
DN	D		-F <sub>z</sub>	E	-F <sub>z</sub>	E	-F <sub>z</sub>	E				
-	mm		kN	mm	kN	mm	kN	mm	mm	mm	mm	kg
15	21.3	20.0015 ... <sup>1)</sup>	5,3	103	2,6	159	2,6	209	80	250	25	3
20	26.9	20.0020 ... <sup>1)</sup>		105		161		211				
25	33.7	20.0025 ... <sup>1)</sup>		110		166		216				
32	42.4	20.0032 ... <sup>1)</sup>	5,3	114	2,6	170	2,6	220	80	250	30	3
40	48.3	20.0040 ... <sup>1)</sup>		117		173		223				
50	60.3	20.0050 ... <sup>1)</sup>		124		180		230				
65	76.1	20.0065 ... <sup>1)</sup>	7,9	132	2,6	188	2,6	238	80	250	40	4
80	88.9	20.0080 ... <sup>1)</sup>		138		194		244				
100	114.3	20.0100 ... <sup>1)</sup>		153		209			80	250	40	4
125	139.7	20.0125 ... <sup>1)</sup>	7,9	166	2,1	222	-	-				
150	168.3	20.0150 ... <sup>1)</sup>		180		236						

1) Add nominal height and characteristic for material and surface protection

2) The nominal loads apply to supports made from S235JR and temperatures up to 80° C

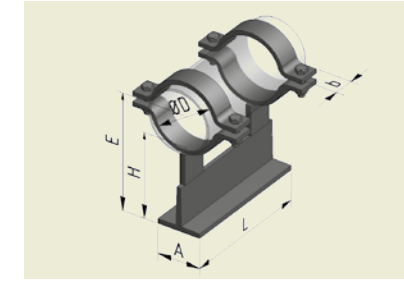
# HYDRA® MOVABLE SUPPORT

Type series LKL, LSL and LXL, type 21 and 22,  
up to 300 °C, fixed height, steel to steel or low-friction sliding

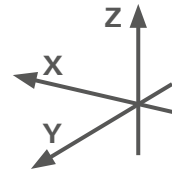
## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced (LKL)  
Sliding plate: Stainless steel (LXL)
- Surface protection:  
steel components hot-dip galvanized
- Coefficients of friction:  
Sliding pairing LKL PA steel hot-dip galvanized: 0.2 to 0.3  
Sliding pairing LXL stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)
- Support base thicknesses for clamping system:  
LKL 21: 17 mm    LKL 22: 19 mm  
LSL 21: 9 mm    LSL 22: 11 mm

Type 21 and 22



Type series LKL



## Differences in the type series:

**Type series LKL – with clamped polyamide sliding plate**

**Type series LSL – steel to steel sliding (E dimension 8 mm lower than LKL)**

**Type series LXL – with welded stainless steel sliding plate (E dimension 5 mm lower than LSL)**

## Order example: LKL 21.0080.150-37.2

Type 21, nominal diameter 80, nominal height 150 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type LKL ... Type LSL ... Type LXL ...	Nominal loads <sup>2)</sup> and system dimensions								Dimensions			Weight		
			Nominal height H								A	L	b			
DN	D		-F <sub>z</sub>	E	-F <sub>z</sub>	E	-F <sub>z</sub>	E	-F <sub>z</sub>	E						
-	mm		kN	mm	kN	mm	kN	mm	kN	mm	mm	mm	mm	kg		
15	21.3	21.0015 ... <sup>1)</sup>	11	103	-	-	11	159	6,1	209	80	250	25	4		
20	26.9	21.0020 ... <sup>1)</sup>		105				161		211						
25	33.7	21.0025 ... <sup>1)</sup>		110			12	166		216						
32	42.4	21.0032 ... <sup>1)</sup>	16	114	-	-	11	170	5,5	220	80	250	30	5		
40	48.3	21.0040 ... <sup>1)</sup>		117			10	173		223						
50	60.3	21.0050 ... <sup>1)</sup>	19	124			9,2	180	5,3	230						
65	76.1	21.0065 ... <sup>1)</sup>	18	132	-	-	8,2	188	4,7	238	80	250	40	5		
80	88.9	21.0080 ... <sup>1)</sup>	17	138			7,4	194	4,5	244						
100	114.3	22.0100 ... <sup>1)</sup>			5,0	172	5,0	207	5,0	258	100	250 (with H60 = 80)	40	7		
125	139.7	22.0125 ... <sup>1)</sup>	-	-	4,5	185	4,5	220	4,5	271						
150	168.3	22.0150 ... <sup>1)</sup>			4,2	199	4,2	234	4,2	285						
200	219.1	22.0200 ... <sup>1)</sup>			3,7	225	3,7	260	3,7	311						
250	273.0	22.0250 ... <sup>1)</sup>	-	-	3,2	252	3,2	287	3,2	338	100	250	50	10		
300	323.9	22.0300 ... <sup>1)</sup>			2,9	277	2,9	312	2,9	363						

1) Add nominal height and characteristic for material and surface protection

2) The nominal loads apply to supports made from S235JR and temperatures up to 80° C



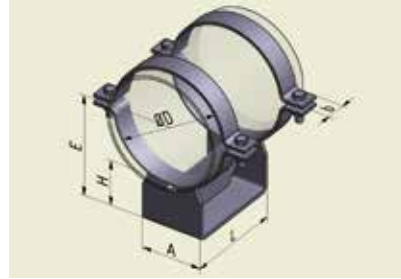
# HYDRA® MOVABLE SUPPORT

Type series LKL, LSL and LXL, type 23,  
up to 300 °C, fixed height, steel to steel or low-friction sliding

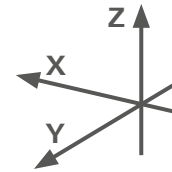
## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced (LKL)  
Sliding plate: Stainless steel (LXL)
- Surface protection:  
steel components hot-dip galvanized
- Coefficients of friction:  
Sliding pairing LKL PA steel hot-dip galvanized: 0.2 to 0.3  
Sliding pairing LXL stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)
- Support base thicknesses for clamping system:  
LKL 18 mm  
LSL 10 mm

## Type 23



## Type series LKL



## Difference in the type series:

**Type series LKL – with clamped polyamide sliding plate**

**Type series LSL – steel to steel sliding (E dimension with H=107 8 mm lower than LKL)**

**Type series LXL – with welded stainless steel sliding plate (E dimension with H=110 5 mm lower,  
with H = 153, 203 and 253 3 mm higher than LSL)**

## Order example: LKL 23.0150.150-37.2

Type 23, nominal diameter 150, nominal height 150 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Nominal loads <sup>2)</sup>	Type LKL ... Type LSL ... Type LXL ...	System dimensions Installation dimension (nominal height)				Dimensions			Weight
				115	150	200	-	A	L	b	
DN	D	-F <sub>z</sub>		Installation dimension E				mm	mm	mm	kg
-	mm	kN		mm	mm	mm	mm	mm	mm	mm	kg
100	114.3	74	23.0100 ... <sup>1)</sup>	172	207	257	307	100	290	50	12
125	139.7	77	23.0125 ... <sup>1)</sup>	185	220	270	320				
150	168.3	80	23.0150 ... <sup>1)</sup>	199	234	284	334				
200	219.1	102	23.0200 ... <sup>1)</sup>	225	260	310	360				
250	273.0	115	23.0250 ... <sup>1)</sup>	252	287	337	387	175	290	60	22
300	323.9	127	23.0300 ... <sup>1)</sup>	277	312	362	412			60	23
350	355.6	127	23.0350 ... <sup>1)</sup>	293	328	378	428			60	24
400	406.4	170	23.0400 ... <sup>1)</sup>	318	353	403	453	250	290	70	37
450	457.0		23.0450 ... <sup>1)</sup>	344	379	429	479				38
500	508.0		23.0500 ... <sup>1)</sup>	369	404	454	504				40
600	610.0	170	23.0600 ... <sup>1)</sup>	420	455	505	555	250	290	90	48
700	711.0		23.0700 ... <sup>1)</sup>	471	506	556	606			90	52
800	814.0		23.0800 ... <sup>1)</sup>	522	557	607	657			100	72

1) Add nominal height and characteristic for material and surface protection  
2) The nominal loads apply to supports made from S235JR and temperatures up to 80° C

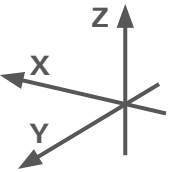
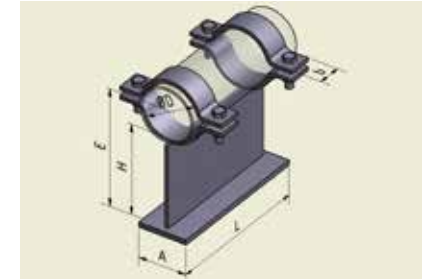
# HYDRA® MOVABLE SUPPORT

Type series LSL and LXL, type 21 and 22,  
up to 600 °C, fixed height, steel to steel or low-friction sliding

## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent - see pg. 9  
Sliding plate: Stainless steel (LXL)
- Surface protection: steel parts unthreaded, primed
- Coefficients of friction:  
Sliding pairing LXL stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)
- Support base thicknesses for clamping system:  
LSL 8 mm

## Type 21 and 22



## Differences in the type series:

**Type series LSL – steel to steel sliding**

**Type series LXL – with welded stainless steel sliding plate (E dimension 3 mm higher than LSL)**

## Order example LSL 21.0080.150-16.0

Type 21, nominal diameter 80, nominal height 150 mm 16Mo3, unthreaded

Nominal diameter	Outside pipe diameter	Type LSL ... Type LXL ...	Nominal loads <sup>2)</sup> and system dimensions						Dimensions			Weight					
			Nominal height H						A	L	b		approx.				
DN	D		150		200		250					mm		mm	mm	kg	
-	mm		-F <sub>z</sub>	E	-F <sub>z</sub>	E	-F <sub>z</sub>	E	mm	mm	mm	kg					
			kN	mm	kN	mm	kN	mm									
15	21,3	21.0015 ... <sup>1)</sup>	160	210	260	5.5	5.0	4.0	80	250	30	4					
20	26,9	21.0020 ... <sup>1)</sup>	162	212	262						30	4					
25	33,7	21.0025 ... <sup>1)</sup>	166	216	266						30	4					
32	42,4	21.0032 ... <sup>1)</sup>	170	220	270						30	4					
40	48,3	21.0040 ... <sup>1)</sup>	173	223	273						30	4					
50	60,3	21.0050 ... <sup>1)</sup>	180	230	280						40	5					
65	76,1	21.0065 ... <sup>1)</sup>	188	238	288						40	5					
80	88,9	21.0080 ... <sup>1)</sup>	194	244	294						40	5					
100	114,3	22.0100 ... <sup>1)</sup>	207	257	307						6.8	5.8	4.8	100	250	50	8
125	139,7	22.0125 ... <sup>1)</sup>	220	270	320											50	9
150	168,3	22.0150 ... <sup>1)</sup>	234	284	334	50	9										
200	219,1	22.0200 ... <sup>1)</sup>	260	310	360	50	10										
250	273,0	22.0250 ... <sup>1)</sup>	287	337	387	50	13										
300	323,9	22.0300 ... <sup>1)</sup>	312	362	412	50	15										

1) Add nominal height and characteristic for material and surface protection  
2) The nominal loads apply to supports made from 16Mo3 and temperatures up to 150° C

# HYDRA® MOVABLE SUPPORT

Type series LSL and LXL, type 23,  
up to 600 °C, fixed height, steel to steel or low-friction sliding

## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent - see pg. 9  
Sliding plate: Stainless steel (LXL)
- Surface protection: steel parts unthreaded, primed
- Coefficients of friction:  
Sliding pairing LXL stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)
- Support base thicknesses for clamping system:  
LSL 10 mm

## Differences in the type series:

**Type series LSL – steel to steel sliding**

**Type series LXL – with welded stainless steel sliding plate (E dimension 3 mm higher than LSL)**

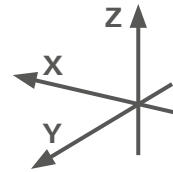
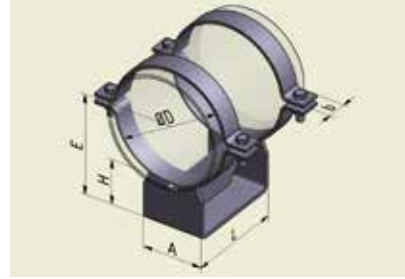
## Order example LSL 23.0200.150-16.0

Type 23, nominal diameter 200, nominal height 150 mm, 16Mo3, unthreaded

Nominal diameter	Outside pipe diameter	Nominal loads <sup>2)</sup>	Type LSL ... Type LXL ...	System dimensions Installation dimension (nominal height)			Dimensions			Weight
				150	200	250	A	L	b	
DN	D	-F <sub>Z</sub>		Installation dimension E						
-	mm	kN		mm	mm	mm	mm	mm	mm	kg
100	114.3	74	23.0100 ... <sup>1)</sup>	207	257	307	100	290	50	12
125	139.7	77	23.0125 ... <sup>1)</sup>	220	270	320				
150	168.3	80	23.0150 ... <sup>1)</sup>	234	284	334				
200	219.1	102	23.0200 ... <sup>1)</sup>	260	310	360	175	290	50	20
250	273.0	115	23.0250 ... <sup>1)</sup>	287	337	387			60	22
300	323.9	127	23.0300 ... <sup>1)</sup>	312	362	412			60	23
350	355.6	127	23.0350 ... <sup>1)</sup>	328	378	428			60	24
400	406.4	170	23.0400 ... <sup>1)</sup>	353	403	453	250	290	70	37
450	457.0		23.0450 ... <sup>1)</sup>	379	429	479				38
500	508.0		23.0500 ... <sup>1)</sup>	404	454	504				40
600	610.0	170	23.0600 ... <sup>1)</sup>	455	505	555	250	290	90	48
700	711.0		23.0700 ... <sup>1)</sup>	506	556	606				52
800	814.0		23.0800 ... <sup>1)</sup>	557	607	657				100

1) Add nominal height and characteristic for material and surface protection  
2) The nominal loads apply to supports made from 16Mo3 and temperatures up to 150° C

Type 23



# HYDRA® MOVABLE SUPPORT

Type series LSL and LXL, type 24,  
up to 600 °C, fixed height, heavy version, steel to steel or low-friction sliding

## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR, 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent - see pg. 9  
Sliding plate: Stainless steel (LXL)
- Surface protection: steel parts hot-dip galvanized, unthreaded, primed
- Coefficients of friction:  
Sliding pairing LXL stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)
- Support base thicknesses for clamping system:  
LSL DN<=350: 8 mm  
LSL DN>350: 10 mm  
LSL DN>800: 15 mm

## Differences in the type series:

**Type series LSL – steel to steel sliding**

**Type series LXL – with welded stainless steel sliding plate (E dimension 3 mm higher than LSL)**

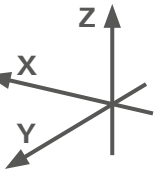
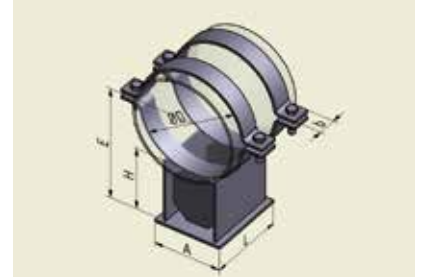
## Order example LSL 24.0500.200-37.2

Type 24, nominal diameter 500, nominal height 200 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Nominal loads <sup>2)</sup>	Type LSL ... Type LXL ...	System dimensions Installation dimension (nominal height)				Dimensions			Weight
				150	200	250	300	A	L	b	
DN	D	-F <sub>Z</sub>		Installation dimension E							
-	mm	kN		mm	mm	mm	mm	mm	mm	mm	kg
150	168.3	100	24.0150 ... <sup>1)</sup>	234	284	334	-	120	250	50	14
200	219.1		24.0200 ... <sup>1)</sup>	260	310	360	150				16
250	273.0	135	24.0250 ... <sup>1)</sup>	287	337	387	-	180	250	60	20
300	323.9		24.0300 ... <sup>1)</sup>	312	362	412		210			23
350	355.6		24.0350 ... <sup>1)</sup>	328	378	428		220			24
400	406.4	235	24.0400 ... <sup>1)</sup>	353	403	453	-	270	330	70	41
450	457.0		24.0450 ... <sup>1)</sup>	379	429	479		270			43
500	508.0		24.0500 ... <sup>1)</sup>	404	454	504		320			48
600	610.0	300	24.0600 ... <sup>1)</sup>	455	505	555	-	370	330	90	64
700	711.0		24.0700 ... <sup>1)</sup>	506	556	606		370			68
800	814.0	360	24.0800 ... <sup>1)</sup>	-	607	657	707	420	330	100	109
900	914.0		24.0900 ... <sup>1)</sup>	-	657	707	757	420			134
1000	1016.0		24.1000 ... <sup>1)</sup>	-	708	758	808	520			330

1) Add nominal height and characteristic for material and surface protection  
2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

Type 24





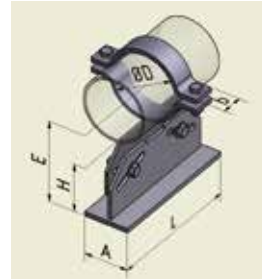
# HYDRA® MOVABLE SUPPORT

Type series LVS and LVL, type 20 and 21,  
up to 300 °C, height-adjustable, steel to steel or low-friction sliding

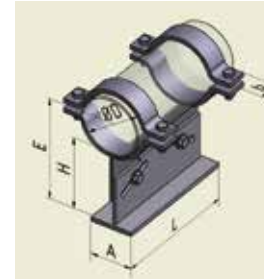
## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced (LVL)
- Surface protection:  
steel components hot-dip galvanized
- Coefficient of friction:  
Sliding pairing LVL PA steel hot-dip galvanized: 0.2 to 0.3
- Height adjustment:  
Infinitely variable, height adjustment scale, self-locking, adaptation to pipe slope up to 10° possible  
Recommended bolting tightening torque 90 Nm
- Support base thicknesses for clamping system:  
LVL 16 mm  
LVS 8 mm

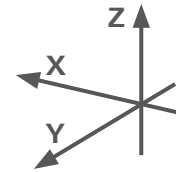
Type 20



Type 21



LVL



## Differences in the type series:

**Type series LVL – with polyamide sliding plate**

**Type series LVS – steel to steel sliding (H and E dimensions 8 mm less than LVL)**

## Order example: LVL 20.0080.150-37.2

Type 20, nominal diameter 80, nominal height 150, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type LVL ... Type LVS ...	Nominal loads <sup>2)</sup> and height ranges										Dimensions			Weight
			Nominal height H										A	L	b	
			100		150		200		96 - 120		120 - 170					
DN	D	-F <sub>Z</sub>	F <sub>Y</sub>	-F <sub>Z</sub>	F <sub>Y</sub>	F <sub>X</sub>	F <sub>X</sub>	F <sub>X</sub>	F <sub>X</sub>	F <sub>X</sub>	F <sub>X</sub>	A	L	b	approx.	
-	mm	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	mm	mm	mm	kg	
15	21.3	...0015 ... <sup>1)</sup>	2	2	6	6	1.6	3.2	1.0	1.6	0.4	0.8	80	25	250	4
20	26.9	...0020 ... <sup>1)</sup>														
25	33.7	...0025 ... <sup>1)</sup>														
32	42.4	...0032 ... <sup>1)</sup>	2	2	6	6	1.6	3.2	1.2	1.6	0.6	0.8	80	30	250	4
40	48.3	...0040 ... <sup>1)</sup>														
50	60.3	...0050 ... <sup>1)</sup>														
65	76.1	...0065 ... <sup>1)</sup>	3	3	7	7	2.4	4.0	1.4	2.4	0.6	1.2	80	40	250	5
80	88.9	...0080 ... <sup>1)</sup>														
100	114.3	...0100 ... <sup>1)</sup>														
125	139.7	...0125 ... <sup>1)</sup>	4	4	7	7	2.4	4.0	1.4	2.4	-		80	40	250	7
150	168.3	...0150 ... <sup>1)</sup>														

1) Add type, nominal height and characteristic for material and surface protection

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C  
F<sub>x</sub>-loads apply to guide support, i.e. support with clamping system from pg. 29

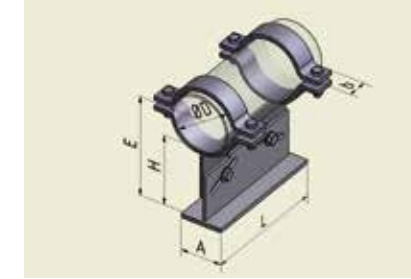
# HYDRA® MOVABLE SUPPORT

Type series LVS and LVL, type 22,  
up to 300 °C, height-adjustable, steel to steel or low-friction sliding

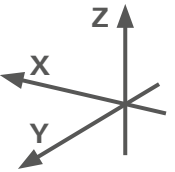
## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced (LVL)
- Surface protection:  
steel components hot-dip galvanized
- Coefficient of friction:  
Sliding pairing LVL PA steel hot-dip galvanized: 0.2 to 0.3
- Height adjustment:  
Infinitely variable, height adjustment scale, self-locking, adaptation to pipe slope up to 10° possible  
Recommended bolting tightening torque 90 Nm
- Support base thicknesses for clamping system:  
LVL 16 mm  
LVS 8 mm

Type 22



LVL



## Differences in the type series:

**Type series LVL – with polyamide sliding plate**

**Type series LVS – steel to steel sliding (H and E dimensions 8 mm smaller than LVL)**

## Order example: LVL 22.0150.150-37.2

Type 22, nominal diameter 150, nominal height 150, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type LVL ... Type LVS ...	Nominal loads <sup>2)</sup> and height ranges					Dimensions			Weight
			Nominal height H					A	L	b	
			100		150		200				
DN	D	-F <sub>Z</sub>	F <sub>Y</sub>	F <sub>X</sub>	F <sub>X</sub>	F <sub>X</sub>	A	L	b	approx.	
-	mm	kN	kN	kN	kN	kN	mm	mm	mm	kg	
100	114.3	22.0100 ... <sup>1)</sup>	8	8	4	2.8	1.6	100	40	250	7
125	139.7	22.0125 ... <sup>1)</sup>									
150	168.3	22.0150 ... <sup>1)</sup>									
200	219.1	22.0200 ... <sup>1)</sup>									
250	273.0	22.0250 ... <sup>1)</sup>	9	9	4	2.8	1.6	100	50	250	11
300	323.9	22.0300 ... <sup>1)</sup>									

1) Add nominal height and characteristic for material and surface protection

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C  
F<sub>x</sub>-loads apply to guide support, i.e. support with clamping system from pg. 29

# HYDRA® MOVABLE SUPPORT

Type series LVS and LVL, type 23,  
up to 300 °C, height-adjustable, steel to steel or low-friction sliding

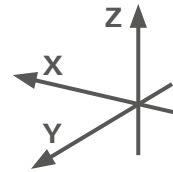
## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced (LVL)
- Surface protection:  
steel components hot-dip galvanized
- Coefficient of friction:  
Sliding pairing LVL PA steel hot-dip galvanized: 0.2 to 0.3
- Height adjustment:  
Infinitely variable, height adjustment scale, self-locking, adaptation to pipe slope up to 10° possible  
Recommended bolting tightening torque 90 Nm
- Support base thicknesses for clamping system:  
LVL 16 mm  
LVS 8 mm

Type 23



LVL



## Differences in the type series:

**Type series LVL – with polyamide sliding plate**

**Type series LVS – steel to steel sliding (H and E dimensions 8 mm less than LVL)**

## Order example: LVL 23.0250.150-37.2

Type 23, nominal diameter 250, nominal height 150, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type LVL ... Type LVS ...	Nominal loads <sup>2)</sup> and height ranges					Dimensions			Weight
			-F <sub>z</sub>	F <sub>y</sub>	Nominal height H			A	L	b	
					100	150	200				
DN	D		kN	kN	kN	kN	kN	mm	mm	mm	approx.
-	mm										kg
100	114.3	23.0100 . . . . <sup>1)</sup>	25	25	5	5	5	175	40	250	11
125	139.7	23.0125 . . . . <sup>1)</sup>						175			
150	168.3	23.0150 . . . . <sup>1)</sup>						190			
200	219.1	23.0200 . . . . <sup>1)</sup>	32	32	5	5	5	190	50	250	15
250	273.0	23.0250 . . . . <sup>1)</sup>						210			
300	323.9	23.0300 . . . . <sup>1)</sup>						210			
350	355.6	23.0350 . . . . <sup>1)</sup>	32	32	5	5	5	280	60	250	20
400	406.4	23.0400 . . . . <sup>1)</sup>						280			21
450	457.0	23.0450 . . . . <sup>1)</sup>						290			22
500	508.0	23.0500 . . . . <sup>1)</sup>	32	32	5	5	5	320	70	250	30
600	610.0	23.0600 . . . . <sup>1)</sup>						320			34

1) Add nominal height and characteristic for material and surface protection

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C  
F<sub>x</sub>-loads apply to guide support, i.e. support with clamping system pg. 29

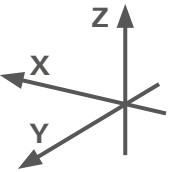
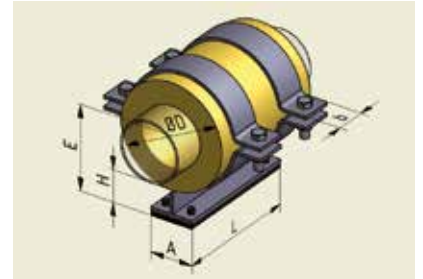
# HYDRA® MOVABLE SUPPORT

Type series IKL, type 21,  
up to 300 °C, for pre-insulated pipelines, fixed height, low-friction sliding

## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced
- Surface protection: steel components hot-dip galvanized
- Coefficient of friction:  
Sliding pairing PA steel hot-dip galvanized: 0.2 to 0.3
- Support base thicknesses for clamping system:  
IKL 16 mm

Type 21



**The insulation is not included in the delivery!**

## Order example: IKL 21.0080.0160-37.2

Type 21, nominal diameter 80, insulation diameter 160 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Insulation pipe diameter	Type IKL ...	Nominal loads <sup>2)</sup>			Nominal height	Installation dimension	Dimensions			Weight		
				-F <sub>z</sub>	+F <sub>z</sub>	F <sub>x</sub>			H	E	A		L	b
DN	D	DM										approx.		
-	mm	mm										kg		
20	26.9	90	21.0020.0090 . . . . <sup>1)</sup>	1	1	1	60	105	82	250	40	1.8		
25	33.7	90	21.0025.0090 . . . . <sup>1)</sup>					105						
32	42.4	110	21.0032.0110 . . . . <sup>1)</sup>					115						
40	48.3	110	21.0040.0110 . . . . <sup>1)</sup>	2	2	2	60	115	82	250	50	2.4		
50	60.3	125	21.0050.0125 . . . . <sup>1)</sup>					123						
65	76.1	140	21.0065.0140 . . . . <sup>1)</sup>					130						
65	76.1	160	21.0065.0160 . . . . <sup>1)</sup>	3	3	3	60	140	82	250	50	2.8		
80	88.9	160	21.0080.0160 . . . . <sup>1)</sup>					140						
80	88.9	180	21.0080.0180 . . . . <sup>1)</sup>					150						
100	114.3	200	21.0100.0200 . . . . <sup>1)</sup>	4	3.5	3	60	160	82	250	60	3.5		
125	139.7	200	21.0125.0200 . . . . <sup>1)</sup>					160						
125	139.7	225	21.0125.0225 . . . . <sup>1)</sup>					173						

1) Add the characteristic for material and surface protection

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C



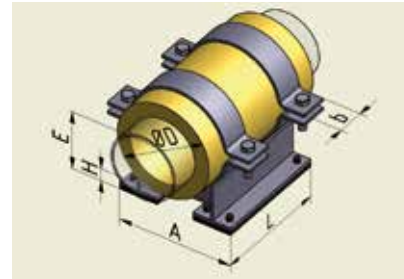
# HYDRA® MOVABLE SUPPORT

Type series IKL, type 23 and 24,  
up to 300 °C, for pre-insulated pipelines, fixed height, low-friction sliding

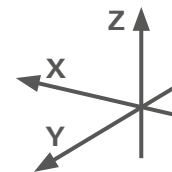
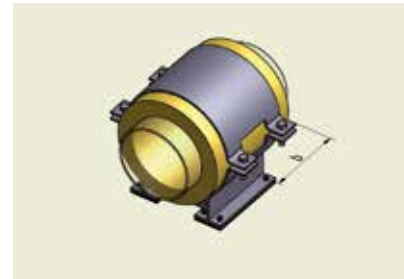
## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced
- Surface protection:  
steel components hot-dip galvanized
- Coefficients of friction:  
Sliding pairing PA-steel hot-dip galvanized: 0.2 to 0.3
- Support base thicknesses for clamping system:  
IKL 16 mm

Type 23



Type 24



The insulation is not included in the delivery!

## Order example: 24.0250.0450-37.2

Type 24, nominal diameter 250, insulation diameter 450 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Insulation pipe diameter	Type IKL ...	Nominal loads <sup>2)</sup>			Nominal height	Installation dimension	Dimensions			Weight
				-F <sub>z</sub>	+F <sub>z</sub>	F <sub>x</sub>			E	A	L	
DN	D	DM		kN	kN	kN	mm	mm	mm	mm	mm	kg
100	114.3	200	23.0100.0200 ... <sup>1)</sup>	5	3.5	5	60	160	241	250	60	10
125	139.7	200	23.0125.0200 ... <sup>1)</sup>					160	241			10
125	139.7	225	23.0125.0225 ... <sup>1)</sup>					173	251			11
150	168.3	250	24.0150.0250 ... <sup>1)</sup>	12				185	279			15
200	219.1	315	24.0200.0315 ... <sup>1)</sup>	15	3.5	5	60	218	303	250	235	17
200	219.1	355	24.0200.0355 ... <sup>1)</sup>	15				238	297			18
200	219.1	400	24.0200.0400 ... <sup>1)</sup>	15				260	318			26
250	273.0	400	24.0250.0400 ... <sup>1)</sup>					260	318			26
250	273.0	450	24.0250.0450 ... <sup>1)</sup>	20	3.5	5	60	285	333	250	235	28
300	323.9	450	24.0300.0450 ... <sup>1)</sup>					285	333			28
350	355.6	500	24.0350.0500 ... <sup>1)</sup>	20				310	346			31
400	406.4	560	24.0400.0560 ... <sup>1)</sup>	25	3.5	5	60	340	362	250	235	34
400	406.4	600	24.0400.0600 ... <sup>1)</sup>	30				360	372			35
450	457.0	630	24.0450.0630 ... <sup>1)</sup>	30				375	379			37
500	508.0	670	24.0500.0670 ... <sup>1)</sup>	35	3.5	5	60	395	389	250	235	39
600	610.0	800	24.0600.0800 ... <sup>1)</sup>	40				460	418			44

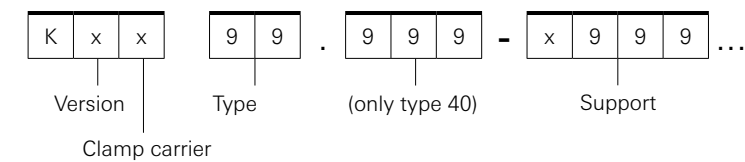
1) Add the characteristic for material and surface protection

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

# ACCESSORIES MOVABLE SUPPORT

Clamping systems - names, versions, types

## Type designation (example)



## Version

O	Guide support, without uplift restraint
Z	Guide support, with double uplift restraint
A	Guide support, with quadruple uplift restraint
L	Movable support, sliding plate and support clamped

## Type

10	Sliding directly on beam, clamping gap 10 mm
15	Sliding directly on beam, clamping gap 15 mm
20	Sliding directly on beam, clamping gap 20 mm
40	Sliding plate clamped on the beam

## Support

T999	T / double-T: Width must be specified
U999x999	U-section: Width must be specified
L999x999	L-section: Width must be specified

# MATRIX CLAMPING SYSTEMS

Type series Kxx

## Design work

The guide support is a combination of a movable support and clamping system. Which clamping system is right for the guide support depends on:

- Support base thicknesses
- Support width
- Uplift loads

Sections	Variant O without uplift restraint	Variant Z with uplift restraint double	Variant A with uplift restraint quadruple
T-sections			
U-sections			
L-sections			

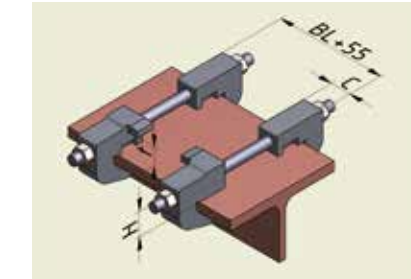
# CLAMPING SYSTEMS

Type series Kxxx, type 10, 15, 20  
and type 40 - PA sliding plate clamped

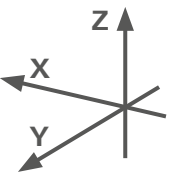
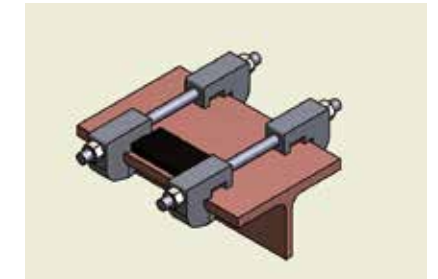
## Technical data

- Clamp carrier T-shaped:  
Carrier width >80 mm  
Support base thicknesses 7 to 19 mm
- Clamp carrier U-section:  
Carrier width >50 mm  
Support base thicknesses 7 to 19 mm
- Clamp carrier L-section:  
Carrier width >60 mm  
Support height >60 mm  
Support base thicknesses 7 to 19 mm
- Materials:  
Claws: S235JR, forged  
Sliding plate: Polyamide glass fibre-reinforced
- Surface protection: hot-dip galvanized
- Tightening torque:  
Thread M12: 70 Nm

## Type 10, 15, 20



## Type 40 PA sliding plate clamped



## Order example: KZT 20-T180

Type 20, double uplift restraint, sliding on support, support width 180 mm

Type Kxx	Nominal loads		Dimensions			Support base thicknesses	Weight
	+F <sub>z</sub> kN	F <sub>x</sub> <sup>2)</sup> kN	C mm	H mm	t mm		
KOT / KOU / KOL 20	-	10	25	27	-	-	1.8
KZT / KZU / KZL 10	4	10	25	27	10	5 - 8	1.8
KZT / KZU / KZL 15				27	15	9 - 13	
KZT / KZU / KZL 20				30	21	14 - 19	
KAT 10	6	10	25	27	10	5 - 8	1.8
KAT 15				27	15	9 - 13	
KAT 20				30	21	14 - 19	
KLT 40 . . . <sup>1)</sup>	-	-	25	27	-	-	2
KOT 40 . . . <sup>1)</sup>	-	10		27	-	-	
KAT 40 . . . <sup>1)</sup>	6	10		30	13	6 - 11	
KLU 40 . . . <sup>1)</sup>	-	-	25	27	-	-	1.9
KOU 40 . . . <sup>1)</sup>	-	10		27	-	-	
KZU 40 . . . <sup>1)</sup>	4	10		30	13	6 - 11	
KLL 40 . . . <sup>1)</sup>	-	-	25	27	-	-	1.9
KOL 40 . . . <sup>1)</sup>	-	10		27	-	-	
KZL 40 . . . <sup>1)</sup>	4	10		30	13	6 - 11	

1) Add support base width BL

2) Max. lateral load of supports with clamping system: min (0.35\*F<sub>z</sub> support or F<sub>x</sub>-clamping system)

Type 40 - Standard support base widths BL [mm]									
80	100	175	190	210	250	280	290	320	340



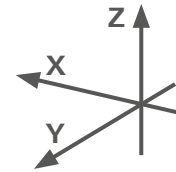
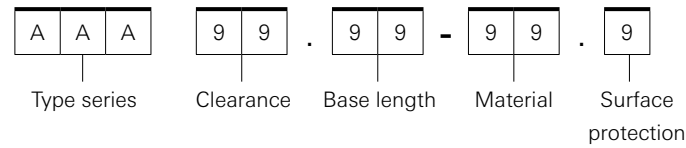
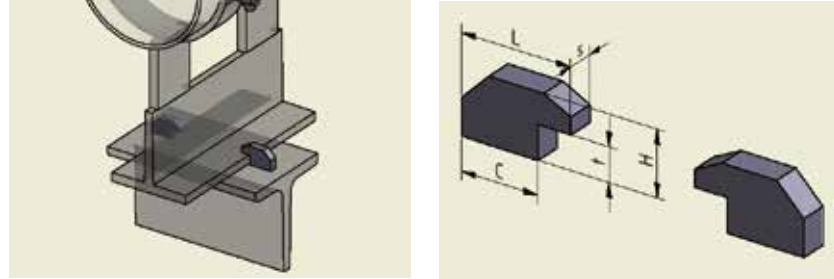
# UPLIFT RESTRAINT TO WELD ON

Type series LAW

## Technical data

- Material: S235JR
- Surface protection: primed

## LAW



### Order example: LAW 12.50-37.2

Clearance 12 mm, base length 50 mm, S235JR, primed

Type LAW ...	Nominal loads		Dimensions						Weight	
	$F_z^{1)}$	$F_x$	L	H	C	s	t	Weld a	approx.	
	kN	kN	mm	mm	mm	mm	mm	mm		
10.24 - 37.3	3	14	36	20	24	10	10	3	0.08	
10.35 - 37.3	7	26	47	25	35	10	10	4	0.16	
12.28 - 37.3	4	16	40	23	28	10	12	3	0.12	
12.50 - 37.3	12	35	65	30	50	15	12	4	0.40	
17.40 - 37.3	8	30	55	33	40	15	17	4	0.34	
17.60 - 37.3	14	45	75	33	60	20	17	4	0.64	
20.40 - 37.3	8	30	55	35	40	15	20	4	0.36	

1) for 1 pair

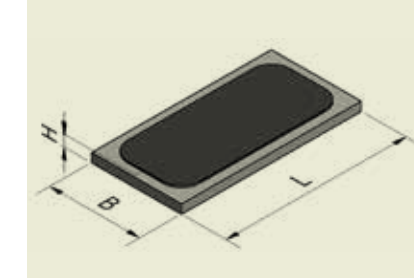
# SLIDING ELEMENT WITH PTFE SLIDING PLATE

Type series LGA to weld on and LGV to bolting on

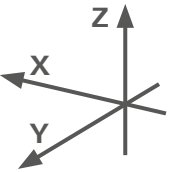
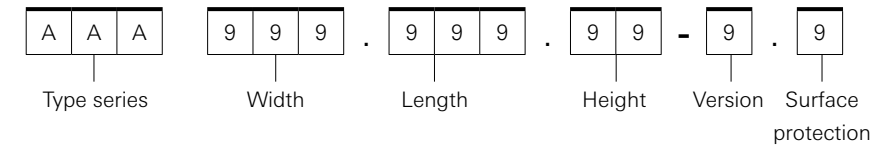
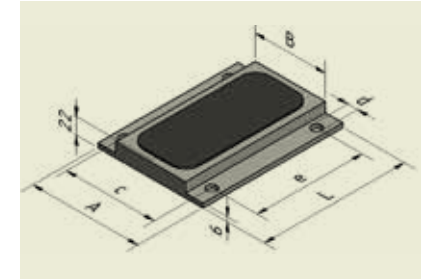
## Technical data

- Material: S235JR, PTFE
- Surface protection: primed

## LGA to weld on



## LGV to bolting on



## Versions

- Version 0: Maximum operating temperature 100 °C
- Version 1: Maximum operating temperature 180 °C

### Order example: LGA 050.100.10-0.3

Width 50 mm, length 200 mm, height 10 mm, variant 0, primed

Type LGA .... Type LGV ....	Nominal load	Dimensions							PTFE	Number of holes	Weight		
		$-F_z$	A	B	LGA	L	c	e			d	LGA	LGV
					H							mm	kg
050 . 050 . 10 . ... <sup>1)</sup>	13	100	50	10	50	75	0	11.5	Ø 40 x 5	2	0.1	0.5	
050 . 100 . 10 . ... <sup>1)</sup>	22	100	50	10	100	75	60	11.5	30 x 80 x 5	4	0.3	1.0	
050 . 150 . 10 . ... <sup>1)</sup>	37	100	50	10	150	75	100	11.5	30 x 130 x 5	4	0.4	1.5	
100 . 100 . 10 . ... <sup>1)</sup>	59	150	100	12	100	125	60	14	80 x 80 x 5	4	0.7	1.7	
100 . 150 . 12 . ... <sup>1)</sup>	98	150	100	12	150	125	100	14	80 x 130 x 5	4	1.0	2.6	
100 . 200 . 12 . ... <sup>1)</sup>	138	150	100	12	200	125	150	14	80 x 180 x 5	4	1.3	3.4	
150 . 200 . 12 . ... <sup>1)</sup>	228	200	150	12	200	175	150	14	130 x 180 x 5	4	2	5.0	
200 . 200 . 12 . ... <sup>1)</sup>	318	250	200	12	200	225	150	14	180 x 180 x 5	4	2.7	6.3	

Load values are designed for a specific pressure  $p = 10 \text{ N/mm}^2$

To ensure the coefficient of friction  $\mu = 0.1$  a stainless steel plate must be used as a counter support.

The PTFE sliding plate must be completely covered by the stainless steel plate in every support position.

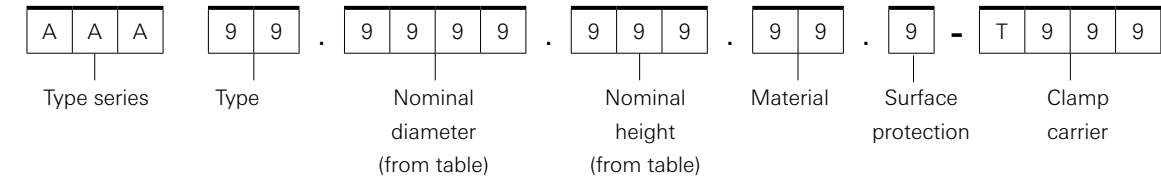
1) Add the characteristic for version and surface protection

# HYDRA® FIXED SUPPORT

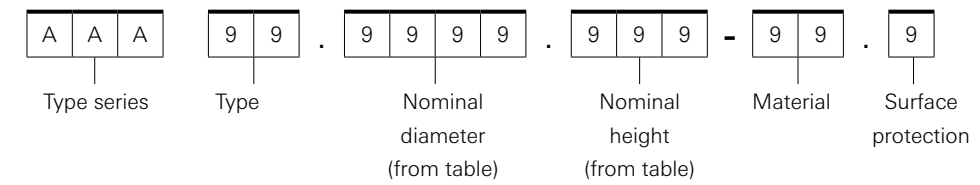
## HYDRA® FIXED SUPPORT

Type series, names, variants

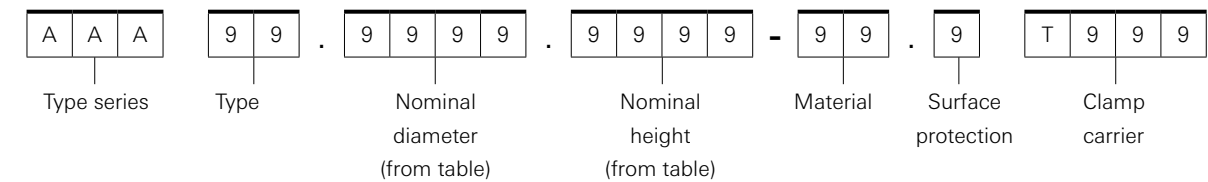
### Type designation FLN / FVN



### FSN / FSD



### FLV



### Type series

FLN	Fixed support, fixed height, clampable
FVN	Fixed support, height-adjustable, clampable
FSN	Fixed support, steel to steel, bolting-on
FSD	Fixed support, double, bolting-on
FLV	Fixed support, fixed height, clampable, for pre-insulated pipelines

### Type

Characteristic	Types
20	T-shaped, base width 80 mm, 1-clamp
21	T-shaped, base width 80 mm, 2-clamp
22	T-shaped, base width 100 mm, 2-clamp
23	Box-shaped base, 2-clamp

**Material (key same as movable support pg. 11)**

**Surface protection (key same as movable support pg. 11)**

### Clamp carrier

T999	T / double-T: Width must be specified
U999x999	U-section: Width must be specified
L999x999	L-section: Width must be specified



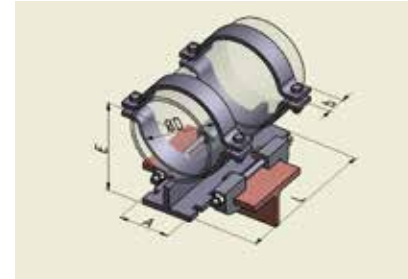
# HYDRA® FIXED SUPPORT

Type series FLN, type 21, 22 and 23,  
low overall height, fixed height, clampable

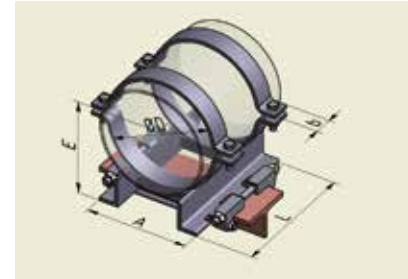
## Technical data

- 2-clamp, clampable
- Nominal height H = 60 mm  
(for non-insulated pipelines)
- Clamp carrier T-shaped:  
Carrier width 80 (100) to 140 mm  
Support base thickness 7 to 19 mm
- Materials: S235JR
- Surface protection: hot-dip galvanized
- The clamping system is included

Type 21 and 22



Type 23



The low overall height is suitable for non-insulated pipelines with temperatures up to 90 °C.

## Order example: FLN 21.0080.060-37.2-T140

Type 21, nominal diameter 80, nominal height 60 mm, S235JR, hot-dip galvanized, clamp carrier T140

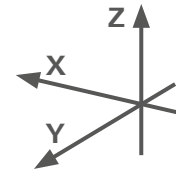
Nominal diameter	Outside pipe diameter	Type FLN ...	Nominal loads <sup>1)</sup>				Installation dimension	Dimensions			Weight
			-F <sub>Z</sub>	+F <sub>Z</sub>	F <sub>X</sub>	F <sub>Y</sub> <sup>4)</sup>		E	A	b	
DN	D		kN	kN	kN	kN	mm	mm	mm	mm	approx.
-	mm										kg
15	21.3	21.0015.060 ... <sup>2)</sup>	2	2	3	6	69	80	25	310	5
20	26.9	21.0020.060 ... <sup>2)</sup>	2	2	3	6	71				
25	33.7	21.0025.060 ... <sup>2)</sup>	2	2	3	6	76				
32	42.4	21.0032.060 ... <sup>2)</sup>	2	2	3	6	80	80	30	310	5
40	48.3	21.0040.060 ... <sup>2)</sup>	2	2	3	7	83				
50	60.3	21.0050.060 ... <sup>2)</sup>	4	3	3	7	90				
65	76.1	21.0065.060 ... <sup>2)</sup>	4	3	4	8	98	80	40	310	6
80	88.9	21.0080.060 ... <sup>2)</sup>	4	3	4	8	104				
100	114.3	22.0100.060 ... <sup>2)</sup>	6	4	4	8	117				
125	139.7	22.0125.060 ... <sup>2)</sup>	6	4	4	8	130	80	40	310	9
150	168.3	22.0150.060 ... <sup>2)</sup>	6	4	4	8	144				
100	114.3	23.0100.060 ... <sup>2)</sup>	10	6	6	25	117	200			
125	139.7	23.0125.060 ... <sup>2)</sup>	10	6	6	25	130	210	40	340	9
150	168.3	23.0150.060 ... <sup>2)</sup>	10	6	6	32	140	222			
200	219.1	23.0200.060 ... <sup>2)</sup>	15	6	6	32	170	238			
250	273.0	23.0250.060 ... <sup>2)</sup>	20	6	6	32	197	255	50	340	13
300	323.9	23.0300.060 ... <sup>2)</sup>	25	6	6	32	222	271			
350	355.6	23.0350.060 ... <sup>2)</sup>	30	6	6	32	238	278			
400	406.4	23.0400.060 ... <sup>2)</sup>	40	6	6	32	263	292	60	340	17
450	457.0	23.0450.060 ... <sup>2)</sup>	40	6	6	32	289	301			
500	508.0	23.0500.060 ... <sup>2)</sup>	50	6	6	32	314	324	70	340	28
600	610.0	23.0600.060 ... <sup>2)</sup>	60	6	6	32	365	346			

1) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

2) Add characteristic for material and surface protection and clamp carrier

3) Lower nominal height can be ordered for combination with LSL supports

4) On Type FLN 23 attach slip safety locks on both sides of the pipe at the 6 o'clock position to transfer the axial forces.



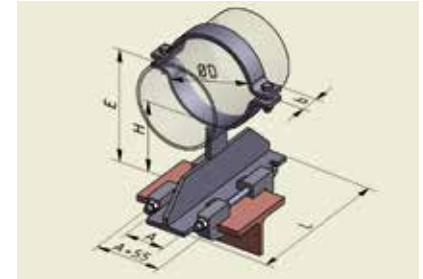
# HYDRA® FIXED SUPPORT

Type series FLN, type 20,  
up to 300 °C, fixed height, clampable

## Technical data

- 1-clamp, clampable
- Clamp carrier T-shaped:  
Carrier width 80 to 140 mm  
Support base thickness 7 to 19 mm
- Max. insulation thickness:  
Nominal height H - 30 mm
- Materials: S235JR
- Surface protection: hot-dip galvanized
- The clamping system is included

Type 20



## Order example: FLN 20.0080.150-37.2-T140

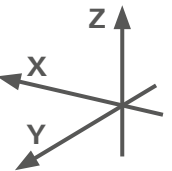
Type 20, nominal diameter 80, nominal height 150 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Type FLN ...	Nominal loads <sup>2)</sup> and system dimensions								Dimensions			Weight					
			Nominal height <sup>3)</sup>								A	b	L						
			-F <sub>Z</sub>	F <sub>Y</sub>	F <sub>Z</sub>	F <sub>X</sub>	E	F <sub>X</sub>	E	F <sub>X</sub>					E				
DN	D		kN	kN	kN	mm	kN	mm	kN	mm	mm	mm	mm	mm	mm	mm	mm	approx.	
-	mm																		kg
15	21.3	20.0015 ... <sup>1)</sup>	3	1,5	1	104	1	159	1	209	80	25	310					6	
20	26.9	20.0020 ... <sup>1)</sup>				106		161		211									
25	33.7	20.0025 ... <sup>1)</sup>				111		166		216									
32	42.4	20.0032 ... <sup>1)</sup>	3,5	2,3	1	115	1	170	1	220	80	30	310					7	
40	48.3	20.0040 ... <sup>1)</sup>				118		173		223									
50	60.3	20.0050 ... <sup>1)</sup>				125		180		230									
65	76.1	20.0065 ... <sup>1)</sup>	6	3,7	2	133	2	188	2	238	80	40	310					8	
80	88.9	20.0080 ... <sup>1)</sup>				139		194		244									
100	114.3	20.0100 ... <sup>1)</sup>				154		209											
125	139.7	20.0125 ... <sup>1)</sup>	6	5,2	2	167	2	222	-	-	80	40	310					9	
150	168.3	20.0150 ... <sup>1)</sup>				181		236											

1) Add nominal height, characteristic for material, surface protection and clamp carrier

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

3) Lower nominal height can be ordered for combination with LSL supports



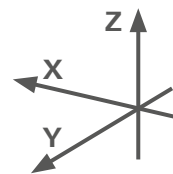
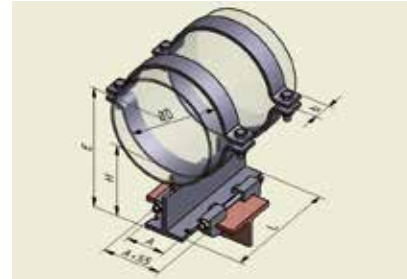
# HYDRA® FIXED SUPPORT

Type series FLN, type 21,  
up to 300 °C / 450 °C, fixed height, clampable

## Technical data

- 2-clamp, clampable
- Clamp carrier T-shaped:  
Carrier width 80 to 140 mm  
Support base thickness 7 to 19 mm
- Max. insulation thickness:  
Nominal height H - 30 mm
- Materials:  
Support: S235JR, 16Mo3  
Material is temperature-dependent, see pg. 9
- Surface protection: steel parts hot-dip galvanized, unthreaded
- The clamping system is included

## Type 21



## Order example: FLN 21.0080.150-37.2-T140

Type 21, nominal diameter 80, nominal height 150 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Type FLN ...	Nominal loads <sup>2)</sup> and system dimensions												Dimensions			Weight
			Nominal height <sup>3)</sup>												A	b	L	
			only S235JR				only 16Mo3				F <sub>x</sub>	E	F <sub>x</sub>	E				
-F <sub>z</sub>	F <sub>y</sub>	+F <sub>z</sub>	F <sub>x</sub>	E	F <sub>x</sub>	E	F <sub>x</sub>	E	F <sub>x</sub>	E					F <sub>x</sub>	E	mm	mm
DN	D		kN	kN	kN	kN	mm	kN	mm	kN	mm	kN	mm	mm	mm	mm	kg	
-	mm																	
15	21.3	21.0015 ... <sup>1)</sup>	7,4	5,7	3	2	104	1,3	159	0,9	209	0,7	259	80	25	310	6	
20	26.9	21.0020 ... <sup>1)</sup>					106		161		211		261					
25	33.7	21.0025 ... <sup>1)</sup>					111		166		216		266					
32	42.4	21.0032 ... <sup>1)</sup>	8,9	6,8	4,7	2,5	115	1,4	170	1,1	220	0,7	270	80	30	310	7	
40	48.3	21.0040 ... <sup>1)</sup>					118		173		223		273					
50	60.3	21.0050 ... <sup>1)</sup>					125		180		230		280					
65	76.1	21.0065 ... <sup>1)</sup>	11,8	8	6	4,2	133	2,5	188	1,8	238	1	288	80	40	310	8	
80	88.9	21.0080 ... <sup>1)</sup>					139		194		244		294					
100	114.3	21.0100 ... <sup>1)</sup>					154		209		-		-	80	40	310	9	
125	139.7	21.0125 ... <sup>1)</sup>	11,8	8	6	5	167	3	222	-	-	-	-	80	40	310	9	
150	168.3	21.0150 ... <sup>1)</sup>					181		236		-		-					

1) Add nominal height, characteristic for material, surface protection and clamp carrier  
2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C  
3) Lower nominal height can be ordered for combination with LSL supports

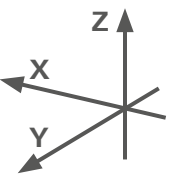
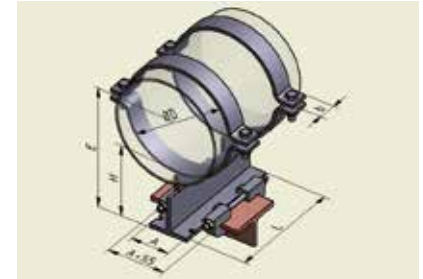
# HYDRA® FIXED SUPPORT

Type series FLN, type 22,  
up to 300 °C / 450 °C, fixed height, clampable

## Technical data

- 2-clamp, clampable
- Clamp carrier T-shaped:  
Carrier width 80 to 140 mm  
Support base thickness 7 to 19 mm
- Max. insulation thickness:  
Nominal height H - 30 mm
- Materials:  
Support: S235JR, 16Mo3  
Material is temperature-dependent, see pg. 9
- Surface protection: steel parts hot-dip galvanized, unthreaded
- The clamping system is included

## Type 22



## Order example: FLN 22.0200.150-37.2-T140

Type 22, nominal diameter 200, nominal height 150 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Type FLN ...	Nominal loads <sup>2)</sup> and system dimensions												Dimensions			Weight
			Nominal height <sup>3)</sup>												A	b	L	
			only S235JR				only 16Mo3				F <sub>x</sub>	E	F <sub>x</sub>	E				
-F <sub>z</sub>	F <sub>y</sub>	+F <sub>z</sub>	F <sub>x</sub>	E	F <sub>x</sub>	E	F <sub>x</sub>	E	F <sub>x</sub>	E					F <sub>x</sub>	E	mm	mm
DN	D		kN	kN	kN	kN	mm	kN	mm	kN	mm	kN	mm	mm	mm	mm	kg	
-	mm																	
25	33.7	22.0025 ... <sup>1)</sup>																
32	42.4	22.0032 ... <sup>1)</sup>	10,9	6,8	4,7	1,8	131	1,8	165	1,8	215	-	-	100	30	310	8	
40	48.3	22.0040 ... <sup>1)</sup>					138		172		222							
50	60.3	22.0050 ... <sup>1)</sup>					145		179		229							
65	76.1	22.0065 ... <sup>1)</sup>	14,5	8	6	3,1	153	3,1	187	3,1	237	-	-	100	40	310	9	
80	88.9	22.0080 ... <sup>1)</sup>					159		193		243							
100	114.3	22.0100 ... <sup>1)</sup>					174		208		258		308					
125	139.7	22.0125 ... <sup>1)</sup>	14,5	8	6	3,7	187	3,7	221	3,7	271	2	321	100	40	310	11	
150	168.3	22.0150 ... <sup>1)</sup>					201		235		285		335					
175	193.7	22.0175 ... <sup>1)</sup>					214		248		298		348					
200	219.1	22.0200 ... <sup>1)</sup>					227		261		311		361					
250	273.0	22.0250 ... <sup>1)</sup>	18,1	8	6	4,6	254	4,6	288	4,6	338	2,5	388	100	50	310	14	
300	323.9	22.0300 ... <sup>1)</sup>					279		313		363		413					

1) Add nominal height, characteristic for material, surface protection and clamp carrier  
2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C  
3) Lower nominal height can be ordered for combination with LSL supports



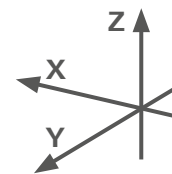
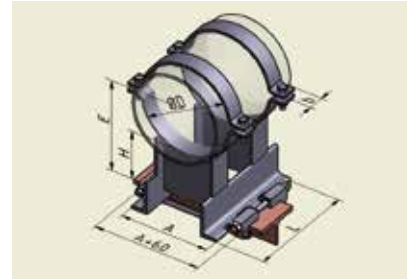
# HYDRA® FIXED SUPPORT

Type series FLN, type 23,  
up to 300 °C / 450 °C, fixed height, clampable

## Technical data

- 2-clamp, clampable
- Clamp carrier T-shaped:  
Carrier width 80 (100) to 140 mm  
Support base thickness 7 to 19 mm
- Max. insulation thickness:  
Nominal height H - 30 mm
- Materials:  
Support: S235JR, 16Mo3  
Material is temperature-dependent, see pg. 9
- Surface protection: steel parts hot-dip galvanized, unthreaded
- The clamping system is included

## Type 23



## Order example: FLN 23.0400.150-37.2-T140

Type 23, nominal diameter 400, nominal height 150 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Type FLN ...	Nominal loads <sup>2)</sup> and system dimensions										Dimensions			Weight		
			Nominal height <sup>3)</sup>										A	b	L			
			only S235JR					only 16Mo3										
DN	D		-F <sub>z</sub>	F <sub>y</sub> <sup>4)</sup>	+F <sub>z</sub>	115		150		200		250					approx.	
-	mm		kN	kN	kN	F <sub>x</sub>	E	F <sub>x</sub>	E	F <sub>x</sub>	E	F <sub>x</sub>	E	mm	mm	mm	kg	
100	114.3	23.0100 ... <sup>1)</sup>				173		208		258		308	182					
125	139.7	23.0125 ... <sup>1)</sup>	47	32	6	6	185	6	220	6	270	6	320	190	40	340	15	
150	168.3	23.0150 ... <sup>1)</sup>				200		235		285		335	198					
200	219.1	23.0200 ... <sup>1)</sup>				225		260		310		360	212	50				
250	273.0	23.0250 ... <sup>1)</sup>	47	32	6	6	252	6	287	6	337	6	387	270	50	340	21	
300	323.9	23.0300 ... <sup>1)</sup>				277		312		362		412	286	50				
350	355.6	23.0350 ... <sup>1)</sup>				293		328		378		428	296	60				
400	406.4	23.0400 ... <sup>1)</sup>	47	32	6	6	319	6	354	6	404	6	454	320	60		26	
450	457.0	23.0450 ... <sup>1)</sup>				344		379		429		479	334	60			28	
500	508.0	23.0500 ... <sup>1)</sup>				369		404		454		504	356	70	340		37	
600	610.0	23.0600 ... <sup>1)</sup>	54	32	6	6	420	6	455	6	505	6	555	380	70		40	
700	711.0	23.0700 ... <sup>1)</sup>				471		506		556		606	390	90			53	
800	813.0	23.0800 ... <sup>1)</sup>				522		557		607		657	420	100			73	

- 1) Add nominal height, characteristic for material, surface protection and clamp carrier
- 2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C
- 3) Lower nominal height can be ordered for combination with LSL supports
- 4) Attach slip safety locks on both sides of the pipe at the 6 o'clock position to transfer the axial forces.

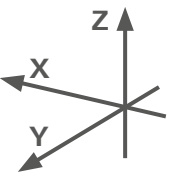
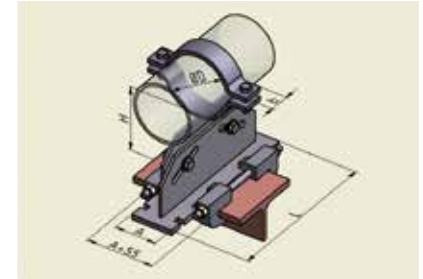
# HYDRA® FIXED SUPPORT

Type series FVN, type 20,  
up to 300 °C, height-adjustable, clampable

## Technical data

- 1-clamp, clampable
- Clamp carrier T-shaped:  
Carrier width 80 to 140 mm  
Support base thickness 7 to 19 mm
- Max. insulation thickness:  
Nominal height H - 30 mm
- Materials:  
Support: S235JR
- Surface protection: steel components hot-dip galvanized
- Height adjustment:  
Infinitely variable, height adjustment scale, self-locking, adaptation to pipe slope up to 10° possible  
Recommended bolting tightening torque 90 Nm
- The clamping system is included

## Type 20



## Order example: FVN 20.0080.150-37.2-T140

Type 20, nominal diameter 80, nominal height 150 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Type FVN ...	Nominal loads <sup>2)</sup> and height ranges					Dimensions			Weight	
			Nominal height H					A	b	L		
			-F <sub>z</sub>	F <sub>y</sub>	+F <sub>z</sub>	100	150					200
DN	D		kN	kN	kN	96 - 120	120 - 170	170 - 215	mm	mm	mm	approx.
-	mm		kN	kN	kN	F <sub>x</sub>	F <sub>x</sub>	F <sub>x</sub>				kg
15	21.3	20.0015 ... <sup>1)</sup>	2	2		1.6	1.0	0.4	80	25	310	6
20	26.9	20.0020 ... <sup>1)</sup>										
25	33.7	20.0025 ... <sup>1)</sup>										
32	42.4	20.0032 ... <sup>1)</sup>	2	2		1.6	1.2	0.6	80	30	310	7
40	48.3	20.0040 ... <sup>1)</sup>										
50	60.3	20.0050 ... <sup>1)</sup>										
65	76.1	20.0065 ... <sup>1)</sup>	3	3		2.4	1.4	0.6	80	40	310	8
80	88.9	20.0080 ... <sup>1)</sup>										
100	114.3	20.0100 ... <sup>1)</sup>										
125	139.7	20.0125 ... <sup>1)</sup>	4	3		2.4	1.4	-	80	40	310	9
150	168.3	20.0150 ... <sup>1)</sup>										

- 1) Add nominal height, characteristic for material, surface protection and clamp carrier
- 2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

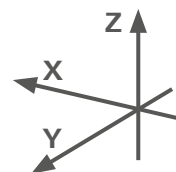
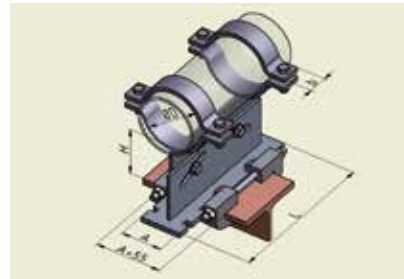
# HYDRA® FIXED SUPPORT

Type series FVN, type 21,  
up to 300 °C, height-adjustable, clampable

## Technical data

- 2-clamp, clampable
- Clamp carrier T-shaped:  
Carrier width 80 to 140 mm  
Support base thickness 7 to 19 mm
- Max. insulation thickness:  
Nominal height H - 30 mm
- Materials:  
Support: S235JR
- Surface protection: steel components hot-dip galvanized
- Height adjustment:  
Infinitely variable, height adjustment scale, self-locking, adaptation to pipe slope up to 10° possible  
Recommended bolting tightening torque 90 Nm
- The clamping system is included

Type 21



## Order example: FVN 21.0080.150-37.2-T140

Type 21, nominal diameter 80, nominal height 150 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Type FVN ...	Nominal loads <sup>2)</sup> and height ranges					Dimensions			Weight
			Nominal height H					A	b	L	
			-F <sub>z</sub>	+F <sub>z</sub>	F <sub>x</sub>	F <sub>x</sub>	F <sub>x</sub>				
DN	D		F <sub>y</sub>	F <sub>z</sub>	F <sub>x</sub>	F <sub>x</sub>	F <sub>x</sub>	mm	mm	mm	approx.
-	mm		kN	kN	kN	kN	kN	mm	mm	mm	kg
15	21.3	21.0015 ... <sup>1)</sup>	6	6	3.2	1.6	0.8	80	25	310	6
20	26.9	21.0020 ... <sup>1)</sup>									
25	33.7	21.0025 ... <sup>1)</sup>									
32	42.4	21.0032 ... <sup>1)</sup>	6	6	3.2	1.6	0.8	80	30	310	7
40	48.3	21.0040 ... <sup>1)</sup>									
50	60.3	21.0050 ... <sup>1)</sup>									
65	76.1	21.0065 ... <sup>1)</sup>	7	6	4.0	2.4	1.2	80	40	310	8
80	88.9	21.0080 ... <sup>1)</sup>									
100	114.3	21.0100 ... <sup>1)</sup>									
125	139.7	21.0125 ... <sup>1)</sup>	7	6	4.0	2.4	-	80	40	310	9
150	168.3	21.0150 ... <sup>1)</sup>									

1) Add nominal height, characteristic for material, surface protection and clamp carrier  
2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

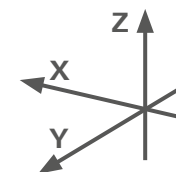
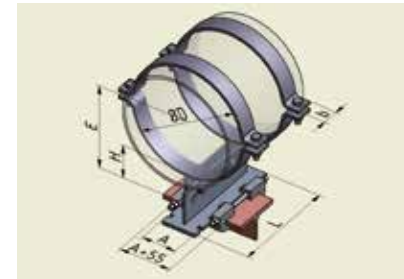
# HYDRA® FIXED SUPPORT

Type series FVN, type 22,  
up to 300 °C, height-adjustable, clampable

## Technical data

- 2-clamp, clampable
- Clamp carrier T-shaped:  
Carrier width 80 to 140 mm  
Support base thickness 7 to 19 mm
- Max. insulation thickness:  
Nominal height H - 30 mm
- Materials:  
Support: S235JR
- Surface protection: steel components hot-dip galvanized
- Height adjustment:  
Infinitely variable, height adjustment scale, self-locking, adaptation to pipe slope up to 10° possible  
Recommended bolting tightening torque 90 Nm
- The clamping system is included

Type 22



## Order example: FVN 22.0200.150-37.2-T140

Type 22, nominal diameter 200, nominal height 150 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Type FVN ...	Nominal loads <sup>2)</sup> and height ranges					Dimensions			Weight
			Nominal height H					A	b	L	
			-F <sub>z</sub>	+F <sub>z</sub>	F <sub>x</sub>	F <sub>x</sub>	F <sub>x</sub>				
DN	D		F <sub>y</sub>	F <sub>z</sub>	F <sub>x</sub>	F <sub>x</sub>	F <sub>x</sub>	mm	mm	mm	approx.
-	mm		kN	kN	kN	kN	kN	mm	mm	mm	kg
100	114.3	22.0100 ... <sup>1)</sup>									
125	139.7	22.0125 ... <sup>1)</sup>	8	6	4	2.8	1.6	100	40	310	11
150	168.3	22.0150 ... <sup>1)</sup>									
175	193.7	22.0175 ... <sup>1)</sup>									
200	219.1	22.0200 ... <sup>1)</sup>									
250	273.0	22.0250 ... <sup>1)</sup>	9	6	4	2.8	1.6	100	50	310	14
300	323.9	22.0300 ... <sup>1)</sup>									

1) Add nominal height, characteristic for material, surface protection and clamp carrier  
2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C



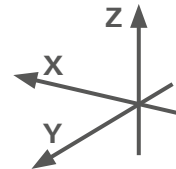
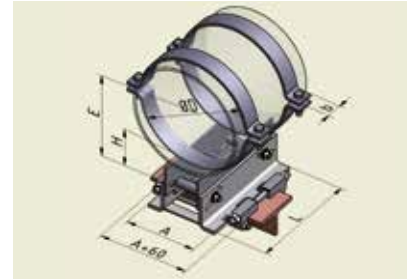
# HYDRA® FIXED SUPPORT

Type series FVN, type 23,  
up to 300 °C, height-adjustable, clampable

## Technical data

- 2-clamp, clampable
- Clamp carrier T-shaped:  
Carrier width 100 to 140 mm  
Support base thickness 7 to 19 mm
- Materials:  
Support: S235JR
- Surface protection: steel components hot-dip galvanized
- Height adjustment:  
Infinitely variable, height adjustment scale, self-locking,  
adaptation to pipe slope up to 10° possible  
Recommended bolting tightening torque 90 Nm
- The clamping system is included

## Type 23



## Order example: FVN 23.0400.150-37.2-T140

Type 23, nominal diameter 400, nominal height 150 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Type FVN ...	Nominal loads <sup>2)</sup> and height ranges					Dimensions			Weight
			Nominal height H					A	b	L	
			-F <sub>z</sub>	+F <sub>z</sub>	100	150	200				
DN	D		F <sub>x</sub> <sup>3)</sup>	F <sub>x</sub>	F <sub>x</sub>	F <sub>x</sub>	mm	mm	mm	approx.	
-	mm		kN	kN	kN	kN	kN	mm	mm	mm	kg
100	114.3	23.0100 ... <sup>1)</sup>	25	6	6	6	6	175	40	340	18
125	139.7	23.0125 ... <sup>1)</sup>						175			
150	168.3	23.0150 ... <sup>1)</sup>						190			
200	219.1	23.0200 ... <sup>1)</sup>	32	6	6	6	6	190	50	340	22
250	273.0	23.0250 ... <sup>1)</sup>						210			
300	323.9	23.0300 ... <sup>1)</sup>						210			
350	355.6	23.0350 ... <sup>1)</sup>	32	6	6	6	6	280	60	340	28
400	406.4	23.0400 ... <sup>1)</sup>						280			
450	457.0	23.0450 ... <sup>1)</sup>						290			
500	508.0	23.0500 ... <sup>1)</sup>	32	6	6	6	6	320	70	340	38
600	610.0	23.0600 ... <sup>1)</sup>						320			

- 1) Add nominal height, characteristic for material, surface protection and clamp carrier
- 2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C
- 3) Attach slip safety locks on both sides of the pipe at the 6 o'clock position to transfer the axial forces.

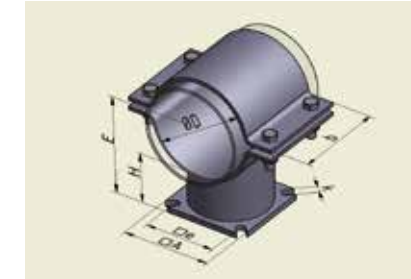
# HYDRA® FIXED SUPPORT

Type series FSN and FSD, type 01 and 02,  
low overall height, fixed height, bolting-on

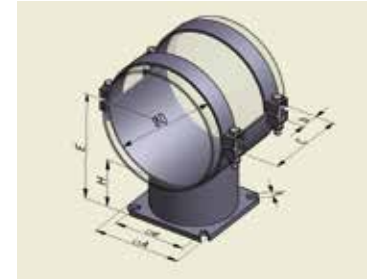
## Technical data

- Pipe shell, bolting on
- Nominal height H = 60 mm  
(for non-insulated pipelines)
- Materials: S235JR
- Surface protection: hot-dip galvanized
- Serie 03 and 04 with borehole for slip safety lock
- Slip safety lock is not included

## FSN 01



## FSN 02



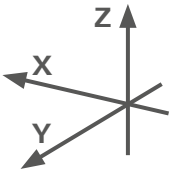
The low overall height is suitable for non-insulated pipelines with temperatures up to 90 °C.

FSN – Fixed support steel to steel, as Fig., loads see Tab.

FSD – Fixed support double with lower and upper support +FZ = -FZ

## Order example: FSN 01.0200.060-37.2

Type 01, nominal diameter 200, nominal height 60 mm, S235JR, hot-dip galvanized



Nominal diameter	Outside pipe diameter	Type FSN ...	Nominal loads <sup>1)</sup>						Installation dimension	Dimensions					Weight			
			-F <sub>z</sub>		+F <sub>z</sub>		F <sub>y</sub> <sup>2)</sup>			F <sub>x</sub>		E	A	b		C	e	k
			FSN	FSD	FSN	FSD	FSN	FSD		FSN	FSD							
DN	D		kN	kN	kN	kN	kN	kN	mm	mm	mm	mm	mm	mm	mm	kg		
80	88.9	01.0080.060 ... <sup>3)</sup>	25	7	25	43	5	8	104	115	90	-	85	14	3.5			
100	114.3	01.0100.060 ... <sup>3)</sup>	25	9	25	43	5	8	117	115	90	-	85	14	3.7			
125	139.7	01.0125.060 ... <sup>3)</sup>	50	17	50	85	10	17	130	150	180	-	115	18	10			
150	168.3	01.0150.060 ... <sup>3)</sup>	50	17	50	85	10	17	144	150	180	-	115	18	11			
200	219.1	01.0200.060 ... <sup>3)</sup>	95	17	95	162	19	32	170	200	200	-	160	18	16			
250	273.0	01.0250.060 ... <sup>3)</sup>	190	37	190	323	38	64	197	250	270	-	200	27	32			
300	323.9	01.0300.060 ... <sup>3)</sup>	190	36	190	323	38	64	222	250	270	-	200	27	35			
350	355.6	02.0350.060 ... <sup>3)</sup>	230	71	230	391	46	78	238	315	100	300	25	33	44			
400	406.4	02.0400.060 ... <sup>3)</sup>			230	391	46	78	263	315			300	250	33	47		
450	457.0	02.0450.060 ... <sup>3)</sup>	280	280	476	56	95	289	360	370	290	33	57					
500	508.0	02.0500.060 ... <sup>3)</sup>	410	410	697	82	139	314	400	440	320	39	79					
600	610.0	02.0600.060 ... <sup>3)</sup>	510	510	867	102	173	365	450	440	370	39	97					

- 1) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C
- 2) Attach slip safety locks on both sides of the pipe at the 6 o'clock position to transfer the axial forces.
- 3) Add characteristic for material and surface protection

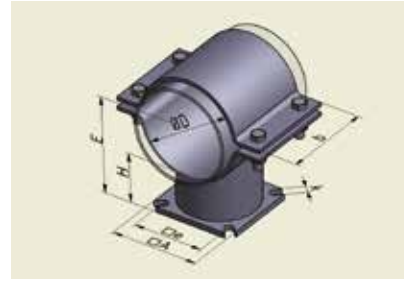
# HYDRA® FIXED SUPPORT

Type series FSN and FSD, type 01,  
up to 600 °C, fixed height, bolting-on

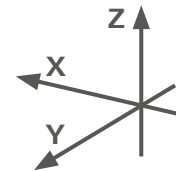
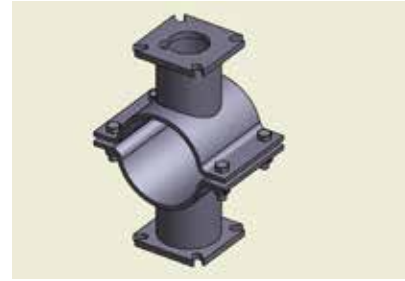
## Technical data

- Single or double, bolting-on
- Nominal height H = 115 mm  
only with material S235JR
- Materials: S235JR, 16Mo3, 13CrMo4-5,  
10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent, see pg. 9
- Surface protection:  
hot-dip galvanized, unthreaded, primed
- Serie 03 with borehole for slip safety lock
- Slip safety lock is not included

## FSN 01



## FSD 01



**FSN – Fixed support steel to steel, as Fig., loads see Tab.**

**FSD – Fixed support double with lower and upper support +FZ = -FZ**

**Order example: FSN 01.0200.150-37.2**

Type 01, nominal diameter 200, nominal height 150 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type FSN ... Type FSD ...	Nominal loads <sup>1)</sup>						Nominal height	Installation dimension	Dimensions					Weight		
			-F <sub>Z</sub>		+F <sub>Z</sub>		F <sub>y</sub> <sup>2)</sup>				F <sub>x</sub>		A	b	e		k	approx.
			FSN	FSD	FSN	FSD	FSN	FSD			FSN	FSD						
DN	D		kN	kN	kN	kN	kN	kN	H	E	mm	mm	mm	mm	kg			
-	mm							mm	mm	mm	mm	mm	mm	mm	kg			
80	88.9	01 . 0080 .115 ... <sup>3)</sup>	25	7	14	24	2	3	115	159	115	90	85	14	4.0			
		01 . 0080 .150 ... <sup>3)</sup>			12	20	2	3	150	194					4.3			
		01 . 0080 .200 ... <sup>3)</sup>			9	15	1	2	200	244					4.7			
		01 . 0080 .250 ... <sup>3)</sup>			7	12	1	2	250	294					5.2			
100	114.3	01 . 0100 .115 ... <sup>3)</sup>	25	9	14	24	2	3	115	172	115	90	85	14	4.2			
		01 . 0100 .150 ... <sup>3)</sup>			12	20	2	3	150	207					4.5			
		01 . 0100 .200 ... <sup>3)</sup>			9	15	1	2	200	257					5			
		01 . 0100 .250 ... <sup>3)</sup>			7	12	1	2	250	307					5.4			
125	139.7	01 . 0125 .115 ... <sup>3)</sup>	37	17	30	51	6	10	115	185	150	180	115	18	10			
		01 . 0125 .150 ... <sup>3)</sup>			25	43	5	9	150	220					11			
		01 . 0125 .200 ... <sup>3)</sup>			19	32	3	5	200	270					11			
		01 . 0125 .250 ... <sup>3)</sup>			14	24	2	3	250	320					12			
150	168.3	01 . 0150 .115 ... <sup>3)</sup>	37	17	30	51	6	10	115	199	150	180	115	18	11			
		01 . 0150 .150 ... <sup>3)</sup>			25	43	5	9	150	234					12			
		01 . 0150 .200 ... <sup>3)</sup>			19	32	3	5	200	284					12			
		01 . 0150 .250 ... <sup>3)</sup>			14	24	2	3	250	334					13			
200	219.1	01 . 0200 .115 ... <sup>3)</sup>	60	17	60	102	12	20	115	225	200	200	160	18	17			
		01 . 0200 .150 ... <sup>3)</sup>			54	85	10	17	150	260					17			
		01 . 0200 .200 ... <sup>3)</sup>			54	68	8	14	200	310					18			
		01 . 0200 .250 ... <sup>3)</sup>			54	54	6	10	250	360					19			
250	273.0	01 . 0250 .115 ... <sup>3)</sup>	140	36	140	238	28	48	115	252	250	270	200	27	34			
		01 . 0250 .150 ... <sup>3)</sup>			120	204	24	41	150	287					35			
		01 . 0250 .200 ... <sup>3)</sup>			106	170	20	34	200	337					37			
		01 . 0250 .250 ... <sup>3)</sup>			106	145	17	29	250	387					38			
300	323.9	01 . 0300 .115 ... <sup>3)</sup>	140	36	140	238	28	48	115	277	250	270	200	27	37			
		01 . 0300 .150 ... <sup>3)</sup>			120	204	24	41	150	312					38			
		01 . 0300 .200 ... <sup>3)</sup>			106	170	20	34	200	362					40			
		01 . 0300 .250 ... <sup>3)</sup>			106	145	17	29	250	412					42			

1) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

2) Attach slip safety locks on both sides of the pipe at the 6 o'clock position to transfer the axial forces.

3) Add the characteristic for material and surface protection

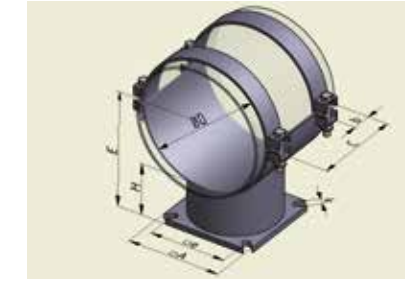
# HYDRA® FIXED SUPPORT

Type series FSN and FSD, type 02,  
up to 600 °C, fixed height, bolting-on

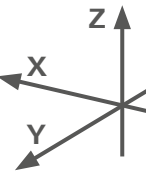
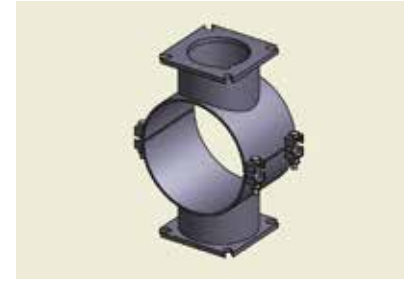
## Technical data

- Single or double, bolting-on
- Nominal height H = 115 mm  
only with material S235JR
- Materials: S235JR, 16Mo3, 13CrMo4-5,  
10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent, see pg. 9
- Surface protection: hot-dip galvanized,  
unthreaded, primed
- Serie 04 with borehole for slip safety lock
- Slip safety lock is not included

## FSN 02



## FSD 02



**FSN – Fixed support steel to steel, as Fig., loads see Tab.**

**FSD – Fixed support double with lower and upper support +FZ = -FZ**

**Order example: FSN 02.0400.150-37.2**

Type 02, nominal diameter 400, nominal height 150 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type FSN ... Type FSD ...	Nominal loads <sup>1)</sup>						Nominal height	Installation dimension	Dimensions					Weight			
			-F <sub>Z</sub>		+F <sub>Z</sub>		F <sub>y</sub> <sup>2)</sup>				F <sub>x</sub>		A	b	C		e	k	approx.
			FSN	FSD	FSN	FSD	FSN	FSD			FSN	FSD							
DN	D		kN	kN	kN	kN	kN	kN	H	E	mm	mm	mm	mm	mm	kg			
-	mm							mm	mm	mm	mm	mm	mm	mm	mm	kg			
350	355.6	02 . 0350 .115 ... <sup>3)</sup>	210	71	210	357	42	71	115	293	315	100	300	250	33	47			
		02 . 0350 .150 ... <sup>3)</sup>			162	272	32	54	150	328						49			
		02 . 0350 .200 ... <sup>3)</sup>			162	130	221	26	44	200						378	52		
		02 . 0350 .250 ... <sup>3)</sup>			162	115	195	23	41	250						428	55		
400	406.4	02 . 0400 .115 ... <sup>3)</sup>	210	71	210	357	42	71	115	318	315	100	300	250	33	50			
		02 . 0400 .150 ... <sup>3)</sup>			162	160	272	32	54	150						353	52		
		02 . 0400 .200 ... <sup>3)</sup>			162	130	221	26	44	200						403	55		
		02 . 0400 .250 ... <sup>3)</sup>			162	115	195	23	41	250						453	58		
450	457.0	02 . 0450 .115 ... <sup>3)</sup>	260	71	260	442	52	88	115	344	360	100	370	290	33	61			
		02 . 0450 .150 ... <sup>3)</sup>			200	200	340	40	68	150						379	63		
		02 . 0450 .200 ... <sup>3)</sup>			192	170	289	34	57	200						429	66		
		02 . 0450 .250 ... <sup>3)</sup>			192	155	263	31	55	250						479	70		
500	508.0	02 . 0500 .115 ... <sup>3)</sup>	400	71	400	680	80	136	115	369	400	100	440	320	39	84			
		02 . 0500 .150 ... <sup>3)</sup>			320	320	527	64	105	150						404	87		
		02 . 0500 .200 ... <sup>3)</sup>			270	270	459	54	91	200						454	91		
		02 . 0500 .250 ... <sup>3)</sup>			270	235	399	47	83	250						504	96		
600	610.0	02 . 0600 .115 ... <sup>3)</sup>	420	71	420	714	84	142	115	420	450	100	440	370	39	105			
		02 . 0600 .150 ... <sup>3)</sup>			420	420	578	84	115	150						455	110		
		02 . 0600 .200 ... <sup>3)</sup>			340	340	510	68	102	200						505	115		
		02 . 0600 .250 ... <sup>3)</sup>			306	300	493	60	102	250						555	121		

1) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

2) Attach slip safety locks on both sides of the pipe at the 6 o'clock position to transfer the axial forces.

3) Add the characteristic for material and surface protection



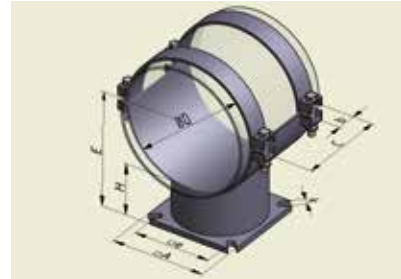
# HYDRA® FIXED SUPPORT

Type series FSN and FSD, type 02,  
up to 600 °C, fixed height, bolting-on

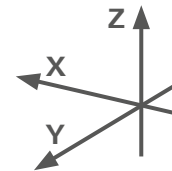
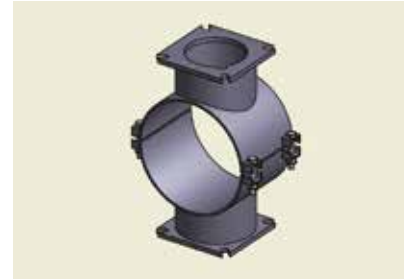
## Technical data

- Single or double, bolting-on
- Nominal height H = 115 mm only with material S235JR
- Materials: S235JR, 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent, see pg. 9
- Surface protection: hot-dip galvanized, unthreaded, primed
- Serie 04 with borehole for slip safety lock
- Slip safety lock is not included

## FSN 02



## FSD 02



**FSN – Fixed support steel to steel, as Fig., loads see Tab.**

**FSD – Fixed support double with lower and upper support +FZ = -FZ**

## Order example: FSN 02.0400.150-37.2

Type 02, nominal diameter 400, nominal height 150 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type FSN ... Type FSD ...	Nominal loads <sup>1)</sup>						Nominal height	Installation dimension	Dimensions					Weight					
			-F <sub>Z</sub>		+F <sub>Z</sub>		F <sub>Y</sub> <sup>2)</sup>				F <sub>X</sub>		H	E	A		b	C	e	k	approx.
			FSN	FSD	FSN	FSD	FSN	FSD			FSN	FSD									
DN	D		kN	kN	kN	kN	kN	kN	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg			
700	711.0	02 . 0700 .115 ... <sup>3)</sup>	520		520	884	104	176	115	471	550	100	550	460	39				140		
		02 . 0700 .150 ... <sup>3)</sup>	520	71	520	884	104	176	150	506									146		
		02 . 0700 .200 ... <sup>3)</sup>	460		460	782	92	156	200	556									152		
		02 . 0700 .250 ... <sup>3)</sup>	410		410	697	82	139	250	606									159		
800	813.0	02 . 0800 .115 ... <sup>3)</sup>	520		520	884	104	176	115	522	550	100	550	460	39				150		
		02 . 0800 .150 ... <sup>3)</sup>	520	71	520	884	104	176	150	557									156		
		02 . 0800 .200 ... <sup>3)</sup>	460		460	782	92	156	200	607									163		
		02 . 0800 .250 ... <sup>3)</sup>	410		410	697	82	139	250	657									170		
900	914.0	02 . 0900 .115 ... <sup>3)</sup>	730		730	1241	146	248	115	572	650	100	650	540	45				196		
		02 . 0900 .150 ... <sup>3)</sup>	730	71	730	1241	146	248	150	607									204		
		02 . 0900 .200 ... <sup>3)</sup>	660		660	1122	132	224	200	657									211		
		02 . 0900 .250 ... <sup>3)</sup>	600		600	1020	120	204	250	707									219		
1000	1016	02 . 1000 .115 ... <sup>3)</sup>	730		730	1241	146	248	115	623	650	100	650	540	45				208		
		02 . 1000 .150 ... <sup>3)</sup>	730	71	730	1241	146	248	150	658									216		
		02 . 1000 .200 ... <sup>3)</sup>	660		660	1122	132	224	200	708									223		
		02 . 1000 .250 ... <sup>3)</sup>	600		600	1020	120	204	250	758									231		

1) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

2) Attach slip safety locks on both sides of the pipe at the 6 o'clock position to transfer the axial forces.

3) Add the characteristic for material and surface protection

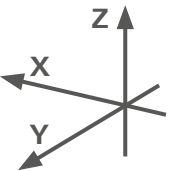
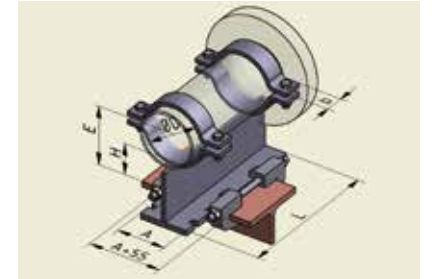
# HYDRA® FIXED SUPPORT

Type series FLV, type 22,  
up to 300 °C / 450 °C, fixed height, clampable, for pre-insulated pipelines

## Technical data

- 2-clamp, clampable
- Clamp carrier T-shaped:  
Carrier width 80 to 140 mm  
Support base thickness 7 to 19 mm
- Max. insulation thickness:  
Nominal height H - 30 mm
- Materials:  
Support: S235JR, 16Mo3  
Material is temperature-dependent, see pg. 9
- Surface protection: steel parts hot-dip galvanized, unthreaded

## Type 22



**The insulation is not included in the delivery!**

## Order example: FLV 22.0100.0200-37.2-T140

Type 22, nominal diameter 100, Pre-insulated diameter 200 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Insulation diameter	Type FLV ...	Nominal loads <sup>1)</sup>				Nominal height	Installation dimension	Dimensions				Weight	
				-F <sub>Z</sub>		+F <sub>Z</sub>				A	S235JR		L		approx.
				F <sub>X</sub>	F <sub>Y</sub>	H	E				b	b			
DN	D	D		kN	kN	kN	kN	mm	mm	mm	mm	mm	mm	mm	kg
20	26.9	90	22.0020.0090 ... <sup>2)</sup>	6	1	3	6	92	105	100	25	30	310	7	
25	33.7	90	22.0025.0090 ... <sup>2)</sup>					88	105		30	30			
32	42.4	110	22.0032.0110 ... <sup>2)</sup>	6	2	3	6	94	115	100	30	30	310	7	
40	48.3	110	22.0040.0110 ... <sup>2)</sup>	7	2	3	7	91	115		30	30			
50	60.3	125	22.0050.0125 ... <sup>2)</sup>	7	2	3	7	92	123		40	40			
65	76.1	140	22.0065.0140 ... <sup>2)</sup>					92	130	100	40	40	310	8	
65	76.1	160	22.0065.0160 ... <sup>2)</sup>	8	3	4	8	102	140						
80	88.9	160	22.0080.0160 ... <sup>2)</sup>					96	140						
80	88.9	180	22.0080.0180 ... <sup>2)</sup>					106	150						
100	114.3	200	22.0100.0200 ... <sup>2)</sup>					103	160	100	40	50	310	10	
125	139.7	200	22.0125.0200 ... <sup>2)</sup>	8	5	4	8	90	160						
125	139.7	225	22.0125.0225 ... <sup>2)</sup>					103	173						

1) The nominal loads apply to support made from S235JR and temperatures up to 80 °C

2) Add characteristic for material, surface protection and clamp carrier

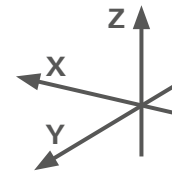
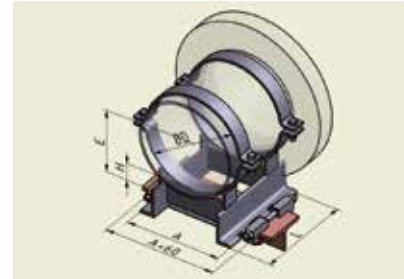
# HYDRA® FIXED SUPPORT

Type series FLV, type 23,  
up to 450 °C, fixed height, clampable, for pre-insulated pipelines

## Technical data

- 2-clamp, clampable
- Clamp carrier T-shaped:  
Carrier width 80 to 140 mm  
Support base thickness 7 to 19 mm
- Max. insulation thickness:  
Nominal height H - 30 mm
- Materials:  
Support: S235JR, 16Mo3  
Material is temperature-dependent, see pg. 9
- Surface protection: steel parts hot-dip galvanized, unthreaded
- The clamping system is included

## Type 23



**The insulation is not included in the delivery!**

## Order example: FLV 23.0300.0450-37.2-T140

Type 23, nominal diameter 300, Pre-insulated diameter 450 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Insulation diameter	Type FLV ...	Nominal loads <sup>2)</sup>				Nominal height	Installation dimension	Dimensions				Weight <sup>1)</sup>
				-F <sub>Z</sub>	+F <sub>Z</sub>	F <sub>X</sub>	F <sub>Y</sub> <sup>4)</sup>			H	E	A	S235JR	
DN	D	D		kN	kN	kN	kN	mm	mm	mm	b	b	mm	approx.
-	mm	mm									mm	mm	mm	kg
100	114.3	200	23.0100.0200 ... <sup>3)</sup>					103	160	203				15
125	139.7	200	23.0125.0200 ... <sup>3)</sup>	25	5	6	25	90	160	203	40	50	340	15
125	139.7	225	23.0125.0225 ... <sup>3)</sup>					103	173	216				
150	168.3	250	23.0150.0250 ... <sup>3)</sup>	32	6	6	32	101	185	232	40	50	340	18
200	219.1	315	23.0200.0315 ... <sup>3)</sup>					108	218	235				
200	219.1	355	23.0200.0355 ... <sup>3)</sup>					128	238	250				
200	219.1	400	23.0200.0400 ... <sup>3)</sup>					150	260	250				
250	273.0	400	23.0250.0400 ... <sup>3)</sup>	32	6	6	32	124	260	324	50	60	340	24
250	273.0	450	23.0250.0450 ... <sup>3)</sup>					149	285	320				
300	323.9	450	23.0300.0450 ... <sup>3)</sup>					123	285	320				
350	355.6	500	23.0350.0500 ... <sup>3)</sup>					132	310	320				
400	406.4	560	23.0400.0560 ... <sup>3)</sup>	32	6	6	32	137	340	350	60	70	340	27
400	406.4	600	23.0400.0600 ... <sup>3)</sup>					157	360	350		70		
450	457.0	630	23.0450.0630 ... <sup>3)</sup>					147	375	360		60		
500	508.0	670	23.0500.0670 ... <sup>3)</sup>	35	6	6	32	141	395	360	70	70	340	37
600	610.0	800	23.0600.0800 ... <sup>3)</sup>					155	460	380				

1) From DN 400, weight for 16Mo3 10 kg heavier

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

3) Add characteristic for material, surface protection and clamp carrier

4) Attach slip safety locks on both sides of the pipe at the 6 o'clock position to transfer the axial forces.

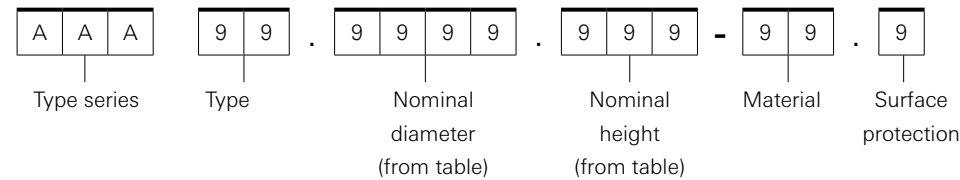
# HYDRA® GUIDES



# HYDRA® GUIDES

Type series, names, variants

## Type designation LSF / LKF / LXF



## Type series

LKF	Guide with PA sliding plate, low-friction sliding
LSF	Guide without sliding plate, steel to steel sliding
LXF	Guide with stainless steel sliding plate

## Type

Characteristic	Types (combinable)
2x	Double guide
3x	Triple guide
4x	Quadruple guide
6x	Double guide, 90°
x1	T-shaped base width 80 mm, 2-clamp
x2	T-shaped base width 100 mm, 2-clamp
x3	Box-shaped base, 2-clamp
x4	Box-shaped base, heavy version, 2-clamp

## Material

Name	Characteristic	max. medium temp* acc. to VGB R510L in °C
S235JRG2	1.0038	37
16Mo3	1.5415	16
13CrMo4-5	1.7335	13
10CrMo9-10	1.7380	10
X6CrNiTi18-10	1.4541	41
X6CrNiMoTi17-12-2	1.4571	71
X10CrMoVNb9-1	1.4903	91
others	-	99

\* Temperature reduction coefficients see page 9  
 \*max. temperature on polyamide sliding plate 90° C

## Surface protection

Name	Characteristic
Unthreated	0
Galvanized	1
Hot-dip galvanized	2 (standard)
Primed	3
Special	4

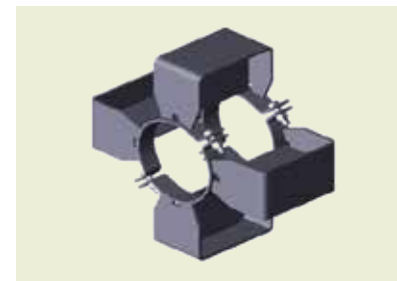
## Type 23



## Type 33



## Type 43



## Type 63



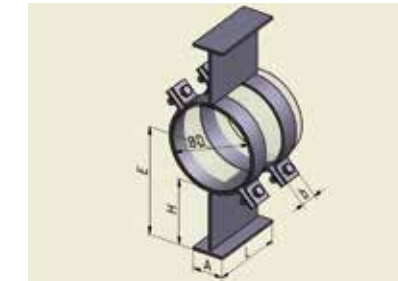
# HYDRA® GUIDES

Type series LKF, LSF and LXF, type 21 and 22, up to 300 °C, fixed height, steel to steel or low-friction sliding, various guide types

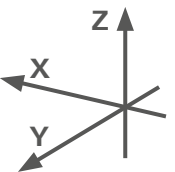
## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced (LKF)  
Sliding plates: Stainless steel (LXF)
- Surface protection:  
steel parts hot-dip galvanized, unthreated, primed
- Coefficients of friction:  
Sliding pairing LKF polyamide-steel: 0.2 to 0.3  
Sliding pairing LXF stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)

## Type 21 and 22



## Type series LKF



## Differences in the type series:

**Type series LKF – with clamped polyamide sliding plate**

**Type series LSF – steel to steel sliding (E dimension 8 mm lower than LKF)**

**Type series LXF – with welded stainless steel sliding plate (E dimension 5 mm lower than LSF)**

## Order example: LKF 21.0080.150-37.2

Type 21, nominal diameter 80, nominal height 150 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type LKF ... Type LSF ... Type LXF ...	Nominal loads <sup>2)</sup> and system dimensions								Dimensions			Weight
			Nominal height H								A	L	b	
DN	D		95		115		150		200		mm	mm	mm	approx. kg
-	mm		±Fz kN	E mm	±Fz kN	E mm	±Fz kN	E mm	±Fz kN	E mm				
40	48.3	21.0040 ... <sup>1)</sup>	16	117	-	-	10	173	223	80	250	40	30	
50	60.3	21.0050 ... <sup>1)</sup>		124	-	-	180	5,5	230				40	
65	76.1	21.0065 ... <sup>1)</sup>		132	-	-	188	-	238				40	
80	88.9	21.0080 ... <sup>1)</sup>		138	-	-	194	-	244				40	
100	114.3	22.0100 ... <sup>1)</sup>	-	-	5,0	172	5,0	207	5,0	257	100	250	40	12
125	139.7	22.0125 ... <sup>1)</sup>			4,5	185	4,5	220	4,5	270				
150	168.3	22.0150 ... <sup>1)</sup>			4,2	199	4,2	234	4,2	284				
200	219.1	22.0200 ... <sup>1)</sup>	-	-	3,7	225	3,7	260	3,7	310	100	250	50	14
250	273.0	22.0250 ... <sup>1)</sup>			3,2	252	3,2	287	3,2	337				
300	323.9	22.0300 ... <sup>1)</sup>			2,9	277	2,9	312	2,9	362				

<sup>1)</sup> Add nominal height and characteristic for material and surface protection  
<sup>2)</sup> The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

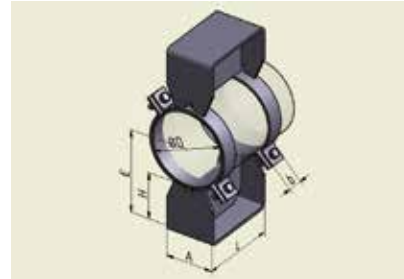
# HYDRA® GUIDES

Type series LKF, LSF and LXF, type 23,  
up to 300 °C, fixed height, steel to steel or low-friction sliding

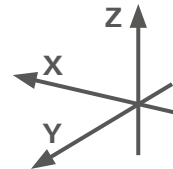
## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: S235JR  
Sliding plate: Polyamide PA 66,  
glass fibre-reinforced (LKF)  
Sliding plate: Stainless steel (LXF)
- Surface protection:  
steel parts hot-dip galvanized, unthreaded, primed
- Coefficients of friction:  
Sliding pairing LKF polyamide-steel: 0.2 to 0.3  
Sliding pairing LXF stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)

Type 23



Type series LKF



## Differences in the type series:

Type series LKF – with clamped polyamide sliding plate

Type series LSF – steel to steel sliding

Type series LXF – with welded stainless steel sliding plate (E dimension 3 mm higher than specified)

## Order example: LKF 23.0150.150-37.2

Type 23, nominal diameter 150, nominal height 150 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type LKF ... Type LSF ... Type LXF ...	Nennlasten <sup>2)</sup>	Nominal loads <sup>2)</sup> and system dimensions				Dimensions			Weight
				Nominal height H				A	L	b	
DN	D		±Fz	115	150	200	-				mm
-	mm		kN	107	150	200	250				
				110	153	203	253				
				Einbaumaß E							
				mm							
100	114.3	23.0100 . . . <sup>1)</sup>	74	172	207	257	307	100	290	40	15
125	139.7	23.0125 . . . <sup>1)</sup>	77	185	220	270	320			40	
150	168.3	23.0150 . . . <sup>1)</sup>	80	199	234	284	334			40	
200	219.1	23.0200 . . . <sup>1)</sup>	102	225	260	310	360			50	
250	273.0	23.0250 . . . <sup>1)</sup>	115	252	287	337	387	175	290	50	29
300	323.9	23.0300 . . . <sup>1)</sup>	127	277	312	362	412			50	
350	355.6	23.0350 . . . <sup>1)</sup>	127	293	328	378	428			60	
400	406.4	23.0400 . . . <sup>1)</sup>		318	353	403	453			60	41
450	457.0	23.0450 . . . <sup>1)</sup>		344	379	429	479	250	290	60	42
500	508.0	23.0500 . . . <sup>1)</sup>		369	404	454	504			70	48
600	610.0	23.0600 . . . <sup>1)</sup>		420	455	505	555			70	53
700	711.0	23.0700 . . . <sup>1)</sup>		471	506	556	606	250	290	90	65
800	814.0	23.0800 . . . <sup>1)</sup>		522	557	607	657			100	84

1) Add nominal height and characteristic for material and surface protection

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

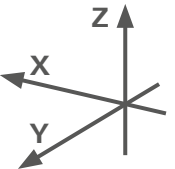
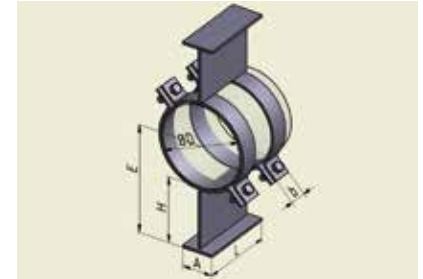
# HYDRA® GUIDES

Type series LSF and LXF, type 21 and 22,  
up to 600 °C, fixed height, steel to steel or low-friction sliding

## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent - see pg. 9  
Sliding plate: Stainless steel (LXL)
- Surface protection: steel parts unthreaded, primed
- Coefficients of friction:  
Sliding pairing LXL stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)

Type 21 and 22



## Differences in the type series:

Type series LSF – steel to steel sliding

Type series LXF – with welded stainless steel sliding plate (E dimension um 3 mm higher than specified)

## Order example: LSF 21.0080.150-16.0

Type 21, nominal diameter 80, nominal height 150 mm 16Mo3, unthreaded

Nominal diameter	Outside pipe diameter	Type LSF ... Type LXF ...	Nominal loads <sup>2)</sup> and system dimensions						Dimensions			Weight
			Nominal height H						A	L	b	
DN	D		±Fz	E	±Fz	E	±Fz	E				mm
-	mm		kN	mm	kN	mm	kN	mm				
40	48.3	21.0040 . . . <sup>1)</sup>	10	173	5,5	223	3,9	273	80	250	30	8
50	60.3	21.0050 . . . <sup>1)</sup>		180		230		280				
65	76.1	21.0065 . . . <sup>1)</sup>		188		238		288				
80	88.9	21.0080 . . . <sup>1)</sup>		194		244		294				
100	114.3	22.0100 . . . <sup>1)</sup>	5,0	207	5,0	257	4,7	307	100	250	40	13
125	139.7	22.0125 . . . <sup>1)</sup>	4,5	220	4,5	270	4,7	320				
150	168.3	22.0150 . . . <sup>1)</sup>	4,2	234	4,2	284	4,7	334				
200	219.1	22.0200 . . . <sup>1)</sup>	3,7	260	3,7	310	3,9	360				
250	273.0	22.0250 . . . <sup>1)</sup>	3,2	287	3,2	337	3,9	387	100	250	50	17
300	323.9	22.0300 . . . <sup>1)</sup>	2,9	312	2,9	362	3,9	412				

1) Add nominal height and characteristic for material and surface protection

2) The nominal loads apply to supports made from 16Mo3 and temperatures up to 150 °C



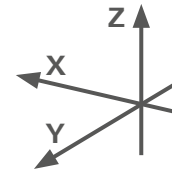
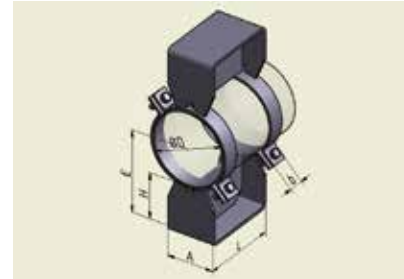
# HYDRA® GUIDES

Type series LSF and LXF, type 23,  
up to 600 °C, fixed height, steel to steel or low-friction sliding

## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent - see pg. 9  
Sliding plate: Stainless steel (LXL)
- Surface protection: steel parts unthreaded, primed
- Coefficients of friction:  
Sliding pairing LXL stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)

Type 23



## Differences in the type series:

Type series LSF – steel to steel sliding

Type series LXF – with welded stainless steel sliding plate (E dimension 3 mm higher than specified)

## Order example: LSF 23.0080.150-16.0

Type 23, nominal diameter 100, nominal height 150 mm, 16Mo3, unthreaded

Nominal diameter	Outside pipe diameter	Type LSF ... Type LXF ...	Nominal loads <sup>2)</sup>	and system dimensions			Dimensions			Weight
				Nominal height H			A	L	b	
				150	200	250				
DN	D		±Fz	Einbaumaß E			A	L	b	approx.
-	mm		kN	mm			mm	mm	mm	kg
100	114.3	23.0100 . . . . <sup>1)</sup>	74	207	257	307	100	290	50	20
125	139.7	23.0125 . . . . <sup>1)</sup>	77	220	270	320				
150	168.3	23.0150 . . . . <sup>1)</sup>	80	234	284	334				
200	219.1	23.0200 . . . . <sup>1)</sup>	102	260	310	360	175	290	50	35
250	273.0	23.0250 . . . . <sup>1)</sup>	115	287	337	387			60	
300	323.9	23.0300 . . . . <sup>1)</sup>	127	312	362	412			60	
350	355.6	23.0350 . . . . <sup>1)</sup>	127	328	378	428	250	290	60	55
400	406.4	23.0400 . . . . <sup>1)</sup>	170	353	403	453				
450	457.0	23.0450 . . . . <sup>1)</sup>		379	429	479				
500	508.0	23.0500 . . . . <sup>1)</sup>		404	454	504				
600	610.0	23.0600 . . . . <sup>1)</sup>	170	455	505	555	250	290	90	64
700	711.0	23.0700 . . . . <sup>1)</sup>		506	556	606			90	
800	814.0	23.0800 . . . . <sup>1)</sup>		557	607	657			100	

1) Add nominal height and characteristic for material and surface protection  
2) The nominal loads apply to supports made from 16Mo3 and temperatures up to 150 °C

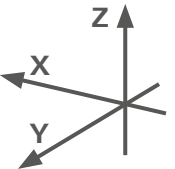
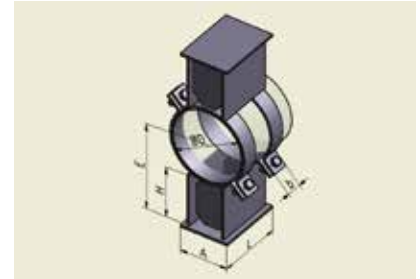
# HYDRA® GUIDES

Type series LSF and LXF, type 24,  
up to 600 °C, fixed height, steel to steel or low-friction sliding

## Technical data

- 2-clamp, clampable
- Max. insulation thickness:  
Nominal height H - 10 mm  
with clamping system H - 30 mm
- Materials:  
Support: 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent - see pg. 9  
Sliding plate: Stainless steel (LXL)
- Surface protection:  
steel parts hot-dip galvanized, unthreaded, primed
- Coefficients of friction:  
Sliding pairing LXL stainless steel PTFE: 0.1 (in conjunction  
with sliding element LGA or LGV - see pg. 29)

Type 24



## Differences in the type series:

Type series LSF – steel to steel sliding

Type series LXF – with welded stainless steel sliding plate (E dimension 3 mm higher than specified)

## Order example: LSF 24.0500.200-37.2

Type 24, nominal diameter 500, nominal height 200 mm, S235JR, hot-dip galvanized

Nominal diameter	Outside pipe diameter	Type LSF ... Type LXF ...	Nominal loads <sup>2)</sup>	and system dimensions				Dimensions			Weight			
				Nominal height H				A	L	b				
				150	200	250	300							
DN	D		±Fz	Einbaumaß E				A	L	b	approx.			
-	mm		kN	mm				mm	mm	mm	kg			
150	168.3	24.0150 . . . . <sup>1)</sup>	100	234	284	334	-	120	250	50	23			
200	219.1	24.0200 . . . . <sup>1)</sup>	135	260	310	360	-				210	250	60	27
250	273.0	24.0250 . . . . <sup>1)</sup>		287	337	387								32
300	323.9	24.0300 . . . . <sup>1)</sup>		312	362	412		35						
350	355.6	24.0350 . . . . <sup>1)</sup>	235	328	378	428	-	270	330	70	37			
400	406.4	24.0400 . . . . <sup>1)</sup>		353	403	453					61			
450	457.0	24.0450 . . . . <sup>1)</sup>		379	429	479					65			
500	508.0	24.0500 . . . . <sup>1)</sup>	300	404	454	504	-	370	330	90	73			
600	610.0	24.0600 . . . . <sup>1)</sup>		455	505	555					97			
700	711.0	24.0700 . . . . <sup>1)</sup>		506	556	606					102			
800	814.0	24.0800 . . . . <sup>1)</sup>	360	-	607	657	707	420	330	110	160			
900	914.0	24.0900 . . . . <sup>1)</sup>		657	707	757	200							
1000	1016.0	24.1000 . . . . <sup>1)</sup>		708	758	808	230							

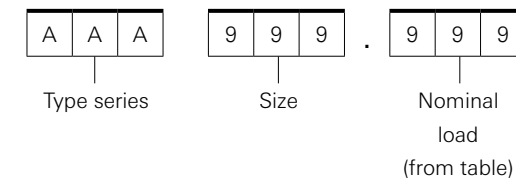
1) Add nominal height and characteristic for material and surface protection  
2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

# HYDRA® ROLLER SUPPORT

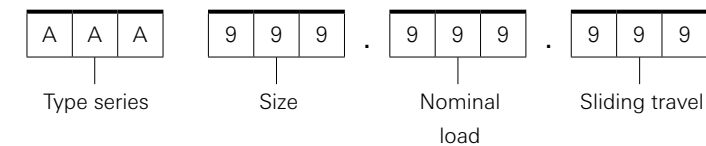
## HYDRA® ROLLER SUPPORT

Type designations

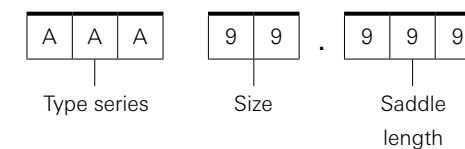
### Type designation RZL / RZG / RKF / RKL / RDF



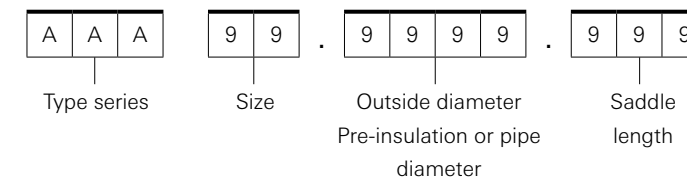
### RDL



### ADJ / AKJ



### ADM / AKM



### Type series

Cylinder roller support	
RZL	Movable support
RZG	Guide support with uplift restraint
Double cone roller support	
RKL	Movable support
RKF	Guide support
Double cylinder roller support	
RDL	Movable support
RDF	Guide support
Uplift restraint for double cone roller support	
AKJ	for insulated pipelines
AKM	for non-insulated pipelines or pre-insulated pipes
Uplift restraint for double cylinder roller support	
ADJ	for insulated pipelines
ADM	for non-insulated pipelines or pre-insulated pipes



# HYDRA® ROLLER SUPPORT

Type series, selection

## Selection of roller support

Loads roller support

$$F = F_N \times K_U \times K_D$$

$F_N$  ...   
 ■ Nominal load corresponds to permitted load of the corresponding dimension (e.g.:  $F_Z$  as support load)

$K_U$  ...   
 ■ Temperature coefficient, see pg. 9   
 ■ If using a saddle, first calculate temperature on support

$K_D$  ...   
 ■ Reduction coefficient from deviation from average contact diameter   
 ■ Only relevant with RDL and RDF, otherwise  $K_D = 1$    
 ■ Reduction from average contact diameter to limit diameter linear up to 70%   
 ■ With lifting off (+ $F_Z$ ),  $K_D = 0.7$  applies

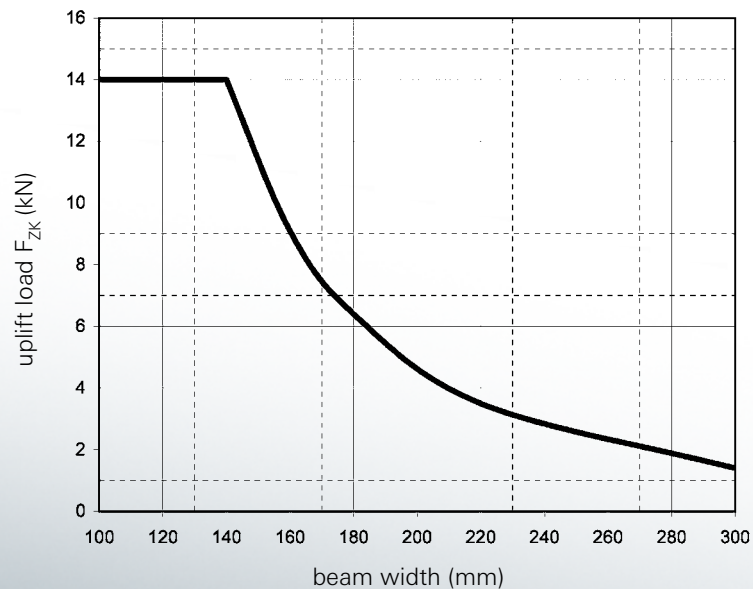
### Allowable uplift load with clamped roller support depending on the beam width

Minimum required beam width 120 mm (smaller beam widths on request)

Allowable uplift load

$$F_Z = \min(F_{Z,R}; F_{Zk})$$

$F_{Z,R}$  see page 58 or 59



Required lateral relocatability (only with RDL)

$$W_{\text{support}} > W + 2 \times W_R$$

$W$  ...   
 ■ Existing lateral displacement

$W_R$  ...   
 ■ Recommended reserve, with RDL = 10 mm

Installation dimension E: Top edge of carrier – pipe centreline (with RZL and RZG)

$$E = E_{\text{roller support}} + E_{\text{support}}$$

Installation dimension E: top edge of support-pipe middle

$$E = 0.532 \times DA + Y$$

$DA$  ...   
 ■ contact diameter   
 $Y$  ...   
 ■ system dimension

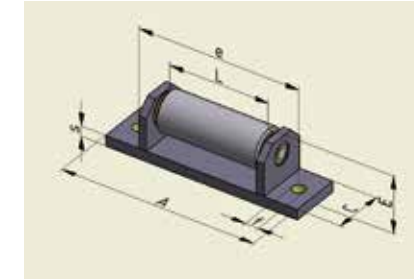
# HYDRA® STEEL TO STEEL CYLINDER ROLLER SUPAPORT

Type series RZL and RZG, movable support type RZL and guide support with uplift restraint type RZG

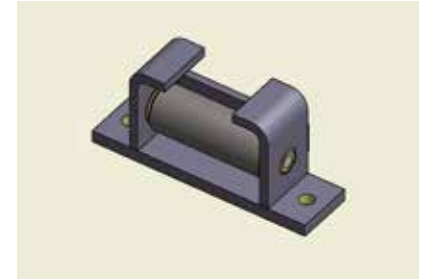
## Technical data

- Clampable size<sup>1)</sup>: 01, 03, 05
- Materials:   
 Housing: S235JR   
 Roller: S355J2 / polyamide (max. 100 °C)   
 RDx 0... / RDx 9...
- Surface protection:   
 steel components hot-dip galvanized
- For usual application in pipeline construction, Roller made from S355J2 and steel parts hot-dip galvanized. Reduced noise transmission and creepage currents. Roller made from polyamide and steel parts hot-dip galvanized, maximum contact temp. 100 °C.
- Description and characteristics
  - Resistance of the roller less than 4%.
  - Bars for lateral guidance up to 20% of the nominal load.
  - Uplift restraint up to 50% of the nominal load.
  - Calculation of the resistance =  $K_L \times F_A$    
 $F_A$  ... effective nominal load.
  - Combined radial-axial support   
 PTFE compound, dirt-repellent and maintenance-free, comprising:   
 Ground rust-free stainless steel shaft.   
 PTFE composite supports with flanged disc.   
 Form-fitting axial securing devices made from rust-free stainless steel.

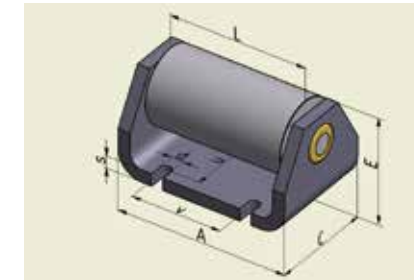
## Movable support RZL, 01 - 05



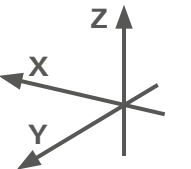
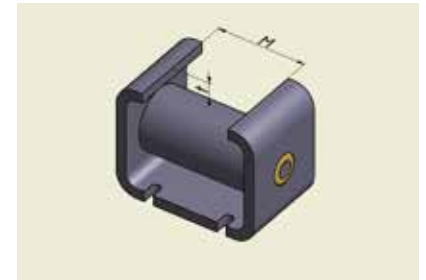
## Guide support RZG, 01 - 05



## Movable support RZL, 08



## Guide support RZG, 08



### Order example: RZG 903.014

Guide support, polyamide roller, size 03, nominal load 14 kN

Contact width	Type RZL ... Type RZG ...	Nominal loads		Coefficient of resistance	Installation dimension	Dimensions					Connection dimensions					Weight approx. kg	
		-F <sub>Z</sub>	F <sub>X</sub>			E	A	C	RZG		d	e	f	u	v		s
									M	t							
mm		kN	kN	-	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
80	001 .008	8	2.4	0.05	45	150	40	48	16	10	125	-	-	-	8	0.9	
100	003 .014	14	4.2		55	190	70	54	18	12	160	10	50	75	8	1.9	
120	005 .024	24	7.2		75	250	90	69	20	14	210	12	70	80	8	4.4	
170	008 .050	50	10.0		125	208	130	130	20	14	-	-	100	110	15	15.0	
80	901 .008	8	2.4	0.07	45	150	40	48	16	10	125	-	-	-	8	0.7	
100	903 .014	14	4.2		55	190	70	54	18	12	160	10	50	75	8	1.4	
120	905 .024	24	7.2		75	250	90	69	20	14	210	12	70	80	8	2.8	
170	908 .050	50	10.0		125	208	130	130	20	14	-	-	100	110	15	7.0	

1) Clamping system KOT - see pg. 27

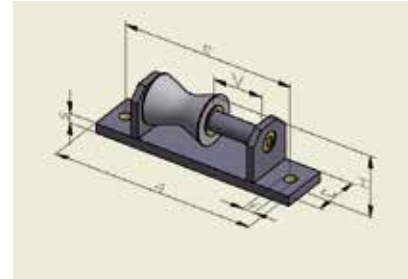
# HYDRA® DOUBLE CONE ROLLER SUPPORT

Type series RKF and RKL,  
guide support type RKF (V=0), movable support laterally relocatable type RKL

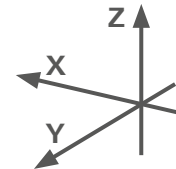
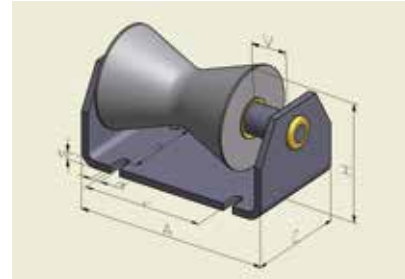
## Technical data

- Clampable size: 01, 02, 03
- Materials:  
Housing: S235J2  
Roller: S355J2 / polyamide (max. 100 °C)  
RKx 0... / RKx 9...
- Surface protection:  
steel components hot-dip galvanized
- For usual application in pipeline construction,  
roller made from S355J2 and steel parts  
hot-dip galvanized.  
Reduced noise transmission and creepage currents,  
roller made from polyamide and steel parts  
hot-dip galvanized, maximum contact temp. 100 °C.
- Description and characteristics:
  - Resistance of the roller approx. 2%
  - Lateral guidance up to 35% of the nominal load
  - Upliftrestraint (see AKx)
  - Calculation of the resistance =  $K_L \times F_A$   
 $F_A$  ... effective nominal load.
  - Combined radial-axial support  
PTFE compound, dirt-repellent and  
maintenance-free, comprising:
  - Ground rust-free stainless steel shaft.
  - PTFE composite supports with flanged disc.
  - Form-fitting axial securing devices  
made from rust-free stainless steel.

## Size 01 - 03



## Size 05



## Order example: RKF 903.005

Guide support, polyamide roller, size 03, nominal load 5 kN

Contact diameter	Type RKF ... Type RKL ...	Nominal loads			Lateral displacement travel V	Coefficient of resistance		System dimension	Dimensions			Connection dimensions					Weight						
		-F <sub>Z</sub>	+F <sub>Z</sub>	F <sub>x</sub>		Axial	Lateral		Y	A <sup>3)</sup>	C	H	d	e <sup>3)</sup>	f	u		RKF	RKL	s	approx.		
DA		kN	kN	kN	RKL	K <sub>L</sub>	K <sub>O</sub>	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
50 - 119	001 .001	1.5	1.5		50	0.05	0.06	44	120	40	53	-	95	10	-	-	-	8	1.0				
85 - 220	002 .006	6	6			0.05	0.06	63	180	70	79	10	150	12	50	75	105	8	2.7				
165 - 325	003 .016	16	16	1)		0.05	0.06	89	250	90	110	12	210	14	70	80	130	8	6.3				
325 - 508	005 .025 005 .050	25 50	25 50			0.02	0.06	128	220	150	165	14	-	-	110	120	170	10	22				
50 - 119	901 .001	1	1		50	0.07	0.06	44	120	40	53	-	95	10	-	-	-	8	0.8				
85 - 220	902 .003	3	3	1)		0.07	0.06	63	180	70	79	10	150	12	50	75	105	8	1.8				
165 - 325	903 .005	5	5			0.07	0.06	89	250	90	110	12	210	14	70	80	130	8	3.9				
325 - 508	905 .015	15	15			0.03	0.06	128	220	150	165	14	-	-	110	120	170	10	12				

1) Maximum 35% of the existing load (-F<sub>Z</sub>) at stop

2) Clamping system KOT - see pg. 27

3) Add lateral displacement at roller support type RKL

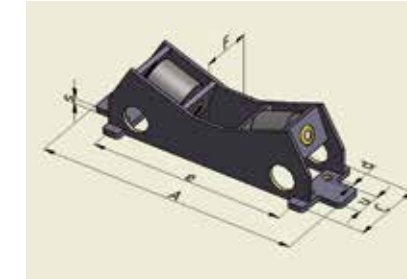
# HYDRA® DOUBLE CYLINDER ROLLER SUPPORT

Type series RDF,  
guide support type RDF

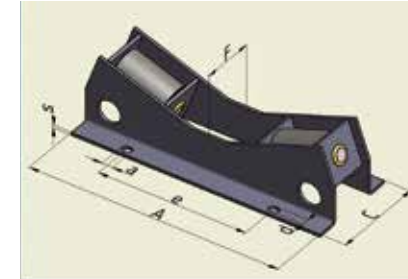
## Technical data

- Clampable size: 02, 03, 05, 08
- Materials:  
Housing: S235J2  
Roller: S355J2 / polyamide (max. 100 °C)  
RZx 0... / RZx 9...
- Surface protection: steel components hot-dip galvanized
- For usual application in pipeline construction,  
roller made from S355J2 and steel parts  
hot-dip galvanized. Reduced noise transmission  
and creepage currents, roller made from  
polyamide and steel parts hot-dip galvanized,  
maximum contact temp. 100 °C.
- Description and characteristics:
  - Resistance of the roller less than 5%
  - Lateral guidance up to 35% of the nominal load

## Size 02 - 08



## Size 11 - 30



- Uplift restraint (see ADx)
- Calculation of the resistance  
 $= K_L \times F_A$   
 $F_A$  ... effective nominal load.
- Combined radial-axial support  
PTFE compound, dirt-repellent

and maintenance-free, comprising:  
Ground rust-free stainless steel  
shaft.  
PTFE composite supports with  
flanged disc.  
Form-fitting axial securing devices  
made from rust-free stainless steel.

## Order example: RDF 016.200

Guide support, steel roller, size 16, nominal load 200 kN

Contact diameter	Type RDF ...	Nominal load	Coefficient of resistance	System dimension	Dimensions			Connection dimensions					Weight		
					A	C	F	d	a	e	u	s		approx.	
DA		-F <sub>Z</sub> <sup>1)</sup>	K <sub>L</sub>	Y	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
110 - 260	002 .006	6	0.04	50	250	75	56	12	-	190	-	8	1.6		
240 - 360	003 .013	13	0.04	52	270	75	58	12	-	210	-	8	2.0		
350 - 560	005 .033	33	0.04	65	385	110	80	12	-	290	40	8	5.5		
560 - 830	008 .059	59	0.04	67	480	120	92	14	-	385	50	8	9.0		
813 - 1350	.050	50	0.03	82	500	260	150	23	33	320	210	8	40.0		
	.200	100	0.03									8	46.0		
1120 - 1920	.100	100	0.03	130	880	320	185	27	37	520	270	8	70.0		
	.350	200	0.03									10	90.0		
1620 - 2620	.200	200	0.03	165	1280	450	270	33	43	830	380	10	175.0		
	.500	300	0.03									12	205.0		
2220 - 3520	.200	200	0.03	170	1550	450	270	33	43	1170	380	10	190.0		
	.300	300	0.03									12	240.0		
	.500	500	0.04									15	300.0		
110 - 260	902 .003	3	0.07	50	250	75	56	12	-	190	-	8	1.1		
240 - 360	903 .005	5	0.07	52	270	75	58	12	-	210	-	8	1.4		
350 - 560	905 .015	15	0.07	65	385	110	80	12	-	290	40	8	3.7		
560 - 830	908 .025	25	0.07	67	480	120	92	14	-	385	50	8	6.2		
813 - 1350	911 .050	50	0.03	82	660	260	150	23	33	320	210	8	22.0		
1120 - 1920	916 .100	100	0.03	130	880	320	185	27	37	520	270	8	55.0		

1) Nominal load applies to the average diameter, it must be reduced to the limit diameter in a linear way up to 70%

2) Clamping system KOT - see pg. 27



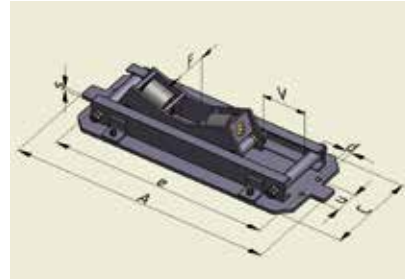
# HYDRA® DOUBLE CYLINDER ROLLER SUPPORT

Type series RDL,  
movable support laterally relocatable type RDL

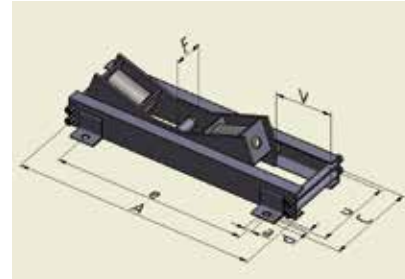
## Technical data

- Clampable size: 02, 03, 05, 08
- Materials:
  - Housing: S235JR
  - Roller: S355J2 / polyamide (max. 100 °C) RDx 0... / RDx 9...
- Surface protection:
  - steel components hot-dip galvanized
- For usual application in pipeline construction, roller made from S355J2 and steel parts hot-dip galvanized. Reduced noise transmission and creepage currents, roller made from polyamide and steel parts hot-dip galvanized, maximum contact temp. 100 °C.
- Description and characteristics:
  - Resistance of the roller less than 5%
  - Lateral guidance up to 35% of the nominal load
  - Uplift restraint (see ADx)

## Size 02 - 08



## Size 11 - 30



- Calculation of the running resistance =  $K_L \times F_A$   
 $F_A$  ... effective nominal load.
- Combined radial-axial support PTFE compound, dirt-repellent and maintenance-free, comprising:

Ground rust-free stainless steel shaft.  
PTFE composite supports with flanged disc. Form-fitting axial securing devices made from rust-free stainless steel.

## Order example: RDL 016.200.600

Guide support, steel roller, size 16, nominal load 200 kN, lateral displacement 600 mm

Contact diameter	Type RDL ...	Nominal load	Coefficient of resistance		System dimension	Dimensions			Connection dimensions					Weight at V=100
			Axial	Lateral		+V	C	F	a	d	+V	u	s	
DA		-F <sub>Z</sub> <sup>2)</sup>	K <sub>L</sub>	K <sub>O</sub>	Y	A					e			approx.
mm		kN	-	-	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
110 - 260	002 .006. ... <sup>1)</sup>	6	0.04	0.05	50	390	170	56	-	12	290	56	8	11.2
240 - 360	003 .013. ... <sup>1)</sup>	13	0.04	0.05	52	390	170	58	-	12	290	56	8	11.4
350 - 560	005 .033. ... <sup>1)</sup>	33	0.04	0.05	65	520	225	82	-	12	420	60	8	22.1
560 - 830	008 .059. ... <sup>1)</sup>	59	0.04	0.05	67	600	240	96	-	14	500	60	8	28.2
813 - 1350	.050. ... <sup>1)</sup>	50	0.03	0.03	82	830	380	150	33	23	650	330	8	71
	011 .100. ... <sup>1)</sup>	100	0.03	0.03										71
1120 - 1920	.200. ... <sup>1)</sup>	200	0.04	0.03	130	1000	480	185	37	27	760	420	9	164
	016 .200. ... <sup>1)</sup>	200	0.03	0.03										166
1620 - 2620	.350. ... <sup>1)</sup>	350	0.04	0.03	165	1400	640	270	43	33	1160	550	10	171
	022 .300. ... <sup>1)</sup>	300	0.03	0.03										331
2220 - 3520	.500. ... <sup>1)</sup>	500	0.04	0.03	170	1670	640	270	43	33	1370	550	10	343
	030 .300. ... <sup>1)</sup>	300	0.03	0.03										359
110 - 260	.200. ... <sup>1)</sup>	200	0.03	0.02	130	1000	480	185	37	27	760	420	9	364
	092 .003. ... <sup>1)</sup>	3	0.07	0.05										377
240 - 360	.500. ... <sup>1)</sup>	500	0.04	0.03	165	1400	640	270	43	33	1160	550	10	395
	903 .005. ... <sup>1)</sup>	5	0.07	0.05										377
350 - 560	905 .015. ... <sup>1)</sup>	15	0.07	0.05	65	520	225	82	-	12	420	60	8	20.3
560 - 830	908 .025. ... <sup>1)</sup>	25	0.07	0.05	67	600	240	96	-	14	500	60	8	25.4
813 - 1350	911 .050. ... <sup>1)</sup>	50	0.03	0.03	82	830	380	150	33	23	650	330	8	66
1120 - 1920	916 .100. ... <sup>1)</sup>	100	0.03	0.03	130	1000	480	185	37	27	760	420	9	95

1) Add nominal lateral displacement V

2) Nominal load applies to the average diameter, it must be reduced to the limit diameter in a linear way up to 70%

3) Clamping system KOT - see pg. 27

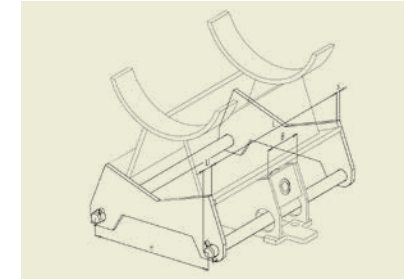
# HYDRA® UPLIFT RESTRAINT

Type series ADJ and ADM  
for double cylinder roller support RDF and saddles for insulated or non-insulated pipelines

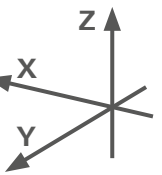
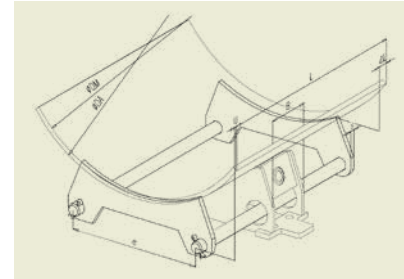
## Technical data

- Materials:
  - Plate: S235JR
  - Rod: S355J2
- Surface protection:
  - steel parts hot-dip galvanized, primed
- Description and characteristics:
  - ADJ: for insulated pipelines
  - ADM: for non-insulated pipelines
- Available displacement travel:
  - ADJ: reduced by the support width B
  - ADM: reduced by the support width B + 2 x ΔL
- an adequate reserve must be included in the calculation
- The uplift restraints can be welded onto supports locally with a suitable overall length.
- To avoid assembly and welding problems for the customer, and to achieve optimum corrosion protection (e.g. hot-dip galvanizing), it is recommended that the uplift restraints should be obtained as a structural unit with the corresponding supports welded on.

## Type ADJ



## Type ADM



## Order example: ADM 16.273.600

Uplift restraint for non-insulated pipelines, size 16, outside diameter pre-insulation or pipe 273 mm, support length 600 mm

Size	Type ADJ ...	Type ADM ...	Nominal load	Support width	Dimensions					ADM outside diameter pre-insulation or pipe		ADM ΔL	Weight approx.					
					L <sup>3)</sup>	U	e	d	s	DA	min		max.	Total <sup>4)</sup>	+			
			F <sub>Z</sub> <sup>2)</sup>	B	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg	kg
02	02 .300	02. ... <sup>1)</sup> .300	3	56	300	20	116	15	6	98	248	16	1.4	1.3	0.3			
03	03 .300	03. ... <sup>1)</sup> .300	3	58	300	20	157	15	6	228	348	16	1.5	1.3	0.3			
05	05 .300	05. ... <sup>1)</sup> .300	7	80	300	23	230	20	8	334	544	18	3.5	3.4	0.5			
08	08 .300	08. ... <sup>1)</sup> .300	13	92	300	28	325	24	10	540	810	20	5.5	5.7	0.7			
11	11 .500	11. ... <sup>1)</sup> .500	29	150	500	39	600	48	15	735	1320	25	27.4	29.7	2.9			
16	16 .500	16. ... <sup>1)</sup> .500	50	185	500	48	710	60	20	1080	1880	30	58.3	61.1	4.5			
22	22 .600	22. ... <sup>1)</sup> .600	66	270	600	52	1070	70	20	1580	2580	30	112.3	118.1	6.1			
30	30 .600	30. ... <sup>1)</sup> .600	66	270	600	52	1340	70	20	2180	3480	30	128.3	140.3	6.1			

1) Add outside diameter pre-insulation or pipe DM

2) Applies to specified standard lengths. With longer lengths: F<sub>Z</sub> (L) = F<sub>Z</sub> \* standard length / actual length

3) L corresponds to the support length, here standard lengths of the uplift restraints

4) Weight with standard length



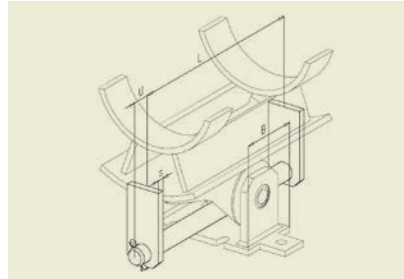
# HYDRA® UPLIFT RESTRAINT

Type series AKJ and AKM  
for double cone roller support RKF/RKL and saddles for insulated or non-insulated pipelines

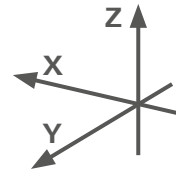
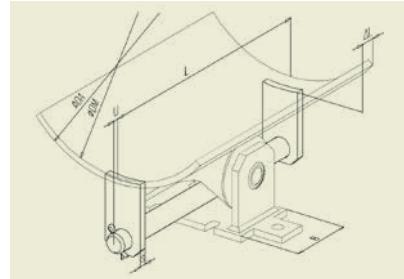
## Technical data

- Materials:
  - Plate: S235JR
  - Rod: S355J2
- Surface protection: steel parts hot-dip galvanized, primed
- Description and characteristics:
  - AKJ: for insulated pipelines
  - AKM: for non-insulated pipelines
- Available displacement travel:
  - AKJ: reduced by the support width B
  - AKM: reduced by the support width  $B + 2 \times \Delta L$ , an adequate reserve must be included in the calculation
- The uplift restraint can be welded onto supports locally with a suitable overall length.
- To avoid assembly and welding problems for the customer and to achieve optimum corrosion protection (e.g. hot-dip galvanizing), it is recommended that the uplift restraint should be obtained as a structural unit with the corresponding supports welded on.

Type AKJ



Type AKM



## Order example: AKM 05.273.600

Uplift restraint for non-insulated pipelines, size 5, outside diameter pre-insulation or pipe 273 mm, support length 600 mm

Size	Type AKJ ...	Type AKM ...	Nominal load	Support width	Dimensions					AKM outside diameter pre-insulation or pipe		AKM	Weight approx.				
					F <sub>Z</sub> <sup>2)</sup>	B	L <sup>3)</sup>	U	d	s	DA		ΔL	Total <sup>4)</sup>		+ 100 mm	
											min			max.	AKJ		AKM
01	01 .300	01. ... <sup>1)</sup> .300	0.5	40	300	15	8	5	40	109	15	0.2		0.08			
02	02 .300	02. ... <sup>1)</sup> .300	3	70	300	20	15	6	73	208	16	0.7		0.3			
03	03 .300	03. ... <sup>1)</sup> .300	13	90	300	28	24	8	150	309	18	2.0		0.7			
05	05 .300	05. ... <sup>1)</sup> .300	31	150	300	35	35	15	-	-	-	5.1	-	1.5			

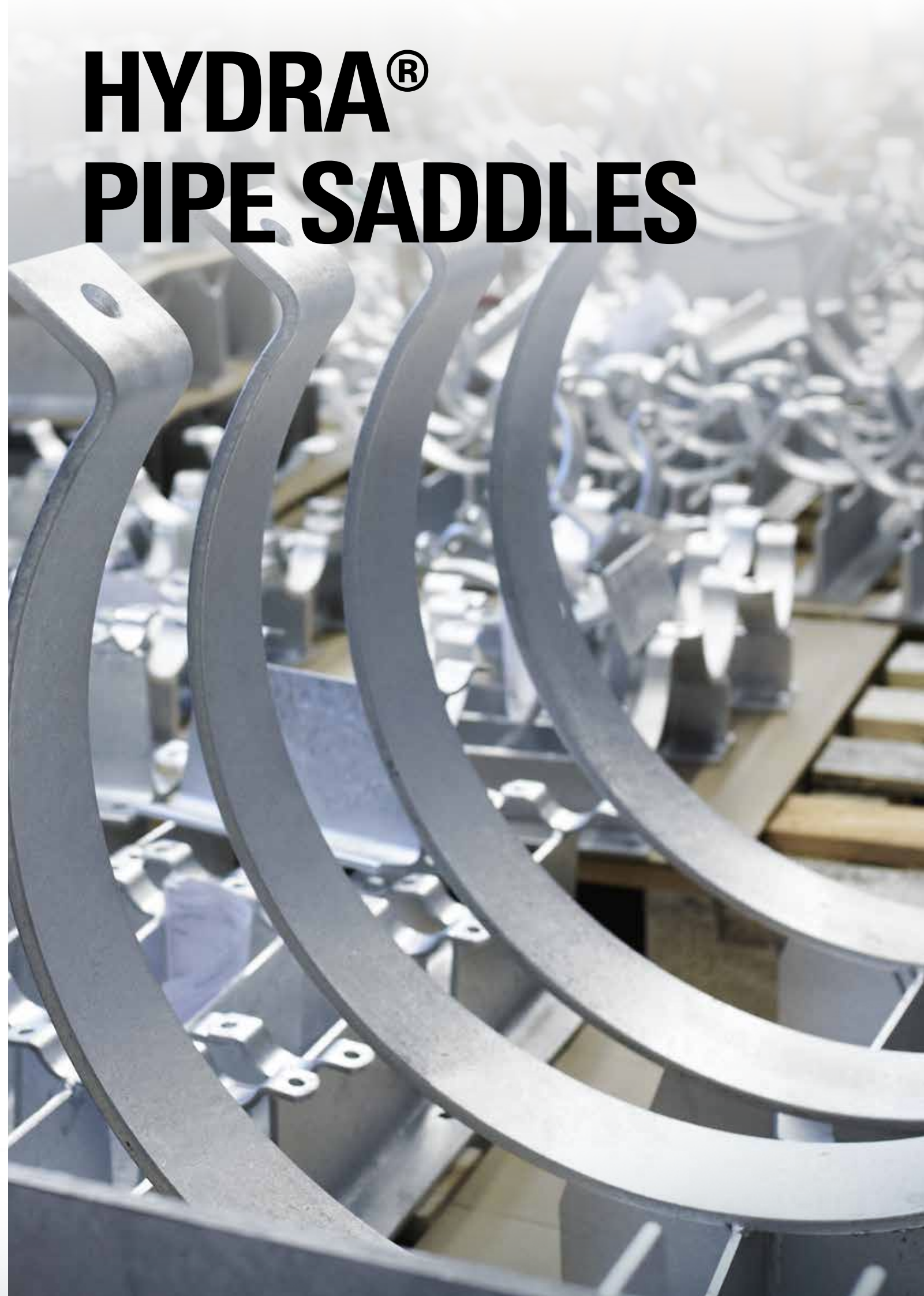
1) Add outside diameter Pre-insulated or pipe DM

2) Applies to specified standard lengths. With longer lengths:  $FZ(L) = FZ \cdot \text{standard length} / \text{actual length}$

3) L corresponds to the support length, here standard lengths of the uplift restraint

4) Weight with standard length

# HYDRA® PIPE SADDLES

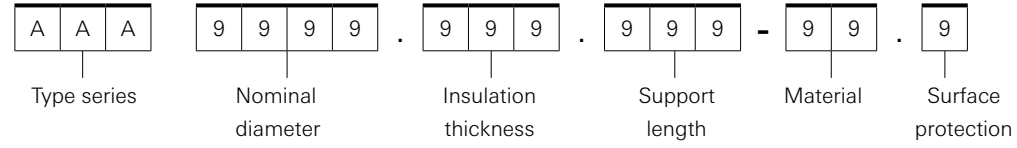




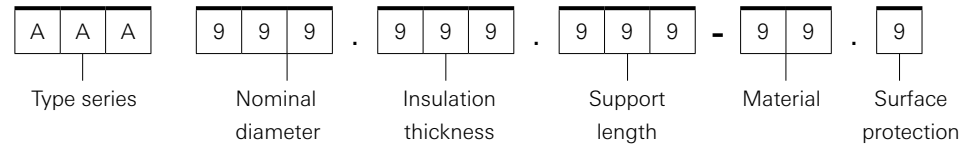
# HYDRA® PIPE SADDLES

Type series, names, variants  
if standard, then no information

## Type designation IDO / IDR / INO / INB / INS / ITB / SMR



## IKO / IKB



## Type series

Insulating supports	
IKO	For welding-on for double cone and double cylinder roller support DN 50 - 450
IKB	with pipe clamp for double cone and double cylinder roller support DN 50 - 450
IDO	For welding-on for double cone and double cylinder roller support DN 100 - 1200
IDR	with pipe clamp for double cone and double cylinder roller support DN 100 - 1200
INO	For welding-on with support shell for double cone and double cylinder roller support DN 500 - 1200
INB	with U-bolt for double cone and double cylinder roller support DN 500 - 1800
INS	with pipe clamp and support shell for double cone and double cylinder roller support DN 500 - 2000
ITB	Insulating base with pipe clamp DN 50 - 350
SMR	Support shell with pipe clamp for pre-insulation pipe DN 90 - 1000

In addition to the supports listed here, we offer support shells in common dimensions.  
DN 150 - 800, lengths 300 - 800 (depending on DN and in 100 mm steps)

## Material

Name	Characteristic	max. medium temp* acc. to VGB R510L in °C
S235JRG2	1.0038	37
16Mo3	1.5415	16
13CrMo4-5	1.7335	13
10CrMo9-10	1.7380	10
X6CrNiTi18-10	1.4541	41
X6CrNiMoTi17-12-2	1.4571	71
X10CrMoVNb9-1	1.4903	91
others	-	99

\* Reduction coefficients see page 9

## Surface protection

Name	Characteristic
unthreated	0
galvanized	1
Hot-dip galvanized	2
Primed	3
Special	4

# HYDRA® PIPE SADDLES

Type series, selection

## Selection of pipe saddles

Saddle loads

$$F = F_N \times K_u$$

$F_N$  ... ■ Nominal load corresponds to the permitted load of the corresponding dimension (e.g.: FZ as nominal load)

$K_u$  ... ■ Temperature coefficient, see pg. 9  
use medium temperature here

Length of the saddles

$$L \geq V + 2 \times V_R + B_L$$

$$V_R \geq 100 \text{ mm}$$

$V$  ... ■ Existing axial displacement

$V_R$  ... ■ Recommended reserve

$B_L$  ... ■ Relevant support width B (only with supports with uplift restraint, otherwise  $B_L = 0$ )

# HYDRA® PIPE SADDLES

Type series IDO and IDR, DN 100 - 1200, for double cylinder and double cone roller support for welding onto the pipe – type IDO, with pipe clamps – type IDR

## Technical data

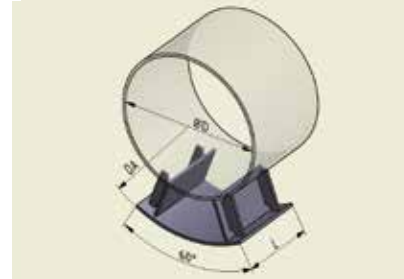
### Materials:

S235JR, 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)

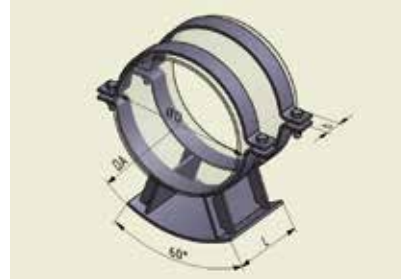
Material is temperature-dependent, see pg. 9

- Surface protection: hot-dip galvanized, unthreaded, primed

## IDO



## IDR



### Order example: IDR 0200.120.500-16.3

Insulating support with pipe clamp, nominal diameter 200, insulation thickness 120 mm, support length 500 mm, 16Mo3, primed

Nominal diameter DN	Pipe outside diameter D mm	Type IDO ... <sup>4)</sup> Type IDR ... <sup>4)</sup>	Nominal loads <sup>2)</sup>			Insulating thickness J mm	Contact diameter DA mm	Dimensions		Weight approx.						Version without/ with rib
			-F <sub>Z</sub> kN	IDR				L <sup>1)</sup> mm	IDR mm	IDO			IDR			
				-F <sub>Z</sub> kN	+F <sub>Z</sub> <sup>3)</sup> kN					300/400 kg	600 kg	700 kg	300/400 kg	600 kg	700 kg	
100	114.3	0100.100.300 0100.120.300 0100.150.300 0100.200.300 0100.250.300	45 40 40 30 30	35	13	100 120 150 200 250	330 370 430 530 630	300	50	7 8 11 14 19	14 16 22 30 42	16 19 26 35 50	10 12 14 18 24	17 19 25 33 44	21 24 31 40 53	- - - + +
125	139.7	0125.100.300 0125.120.300 0125.150.300 0125.200.300 0125.250.300	45 40 40 30 30	35	13	100 120 150 200 250	355 395 455 555 655	300	50	7 8 11 14 19	14 17 23 30 42	17 19 27 36 50	11 12 15 19 25	18 20 26 34 41	23 25 32 41 54	- - - + +
150	168.3	0150.100.300 0150.120.300 0150.150.300 0150.200.300 0150.250.300	45 40 40 30 30	35	13	100 120 150 200 250	385 425 485 585 685	300	50	7 8 11 14 20	15 17 23 31 43	17 20 27 36 51	12 13 16 21 26	19 22 28 36 47	24 27 34 43 56	- - - + +
200	219.1	0200.100.300 0200.120.300 0200.150.300 0200.200.300 0200.250.300	45 40 40 30 30	35	13	100 120 150 200 250	435 475 535 635 735	300	50	8 9 12 15 20	16 18 24 32 45	19 21 28 38 53	14 15 18 22 28	21 24 30 38 50	27 30 37 46 60	- - - + +
250	273.0	0250.100.300 0250.120.300 0250.150.300 0250.200.300 0250.250.300	45 40 40 30 30	35	14	100 120 150 200 250	490 530 590 690 790	300	60	8 9 12 16 21	17 19 25 34 46	20 23 30 40 54	17 18 21 26 32	26 28 34 42 54	33 36 43 52 66	- - - + +
300	323.9	0300.080.300 0300.100.300 0300.120.300 0300.150.300 0300.200.300 0300.250.300	60 45 50 40 30 30	40	15	80 100 120 150 200 250	500 540 580 640 740 840	300	60	8 9 11 13 16 21	16 18 22 28 35 47	18 21 26 33 42 56	18 19 21 24 29 35	26 28 32 38 45 57	33 36 41 47 56 70	- - - + + +
350	355.6	0350.080.300 0350.100.300 0350.120.300 0350.150.300 0350.200.300 0350.250.300	60 45 50 40 30 30	40	15	80 100 120 150 200 250	535 575 615 675 775 875	300	60	8 9 11 13 16 22	16 19 23 29 36 48	19 22 27 34 42 57	19 20 22 26 30 36	27 30 34 39 47 59	36 38 43 49 58 72	- - - + + +
400	406.4	0400.080.300 0400.100.300 0400.120.300 0400.150.300 0400.200.300 0400.250.300	75 60 65 50 40 40	55	21	80 100 120 150 200 250	585 625 665 725 825 925	300	70	11 12 14 17 21 28	22 25 30 37 46 61	26 29 35 44 54 73	29 31 33 37 42 50	40 43 47 54 63 79	53 56 62 69 79 98	- - - + + +

Nominal diameter DN	Pipe outside diameter D mm	Type IDO ... <sup>4)</sup> Type IDR ... <sup>4)</sup>	Nominal loads <sup>2)</sup>			Insulating thickness J mm	Contact diameter DA mm	Dimensions		Weight approx.						Version without/ with rib
			-F <sub>Z</sub> kN	IDR				L <sup>1)</sup> mm	IDR mm	IDO			IDR			
				-F <sub>Z</sub> kN	+F <sub>Z</sub> <sup>3)</sup> kN					300/400 kg	600 kg	700 kg	300/400 kg	600 kg	700 kg	
450	457.0	0450.080.300 0450.100.300 0450.120.300 0450.150.300 0450.200.300 0450.250.300	75 60 65 50 40 40	55	21	80 100 120 150 200 250	640 680 720 780 880 980	300	70	11 13 15 17 21 28	23 26 31 38 47 63	27 30 36 45 56 76	32 33 35 40 45 54	43 46 51 58 67 83	57 60 66 74 85 103	- - - + + +
500	508.0	0500.080.300 0500.100.300 0500.120.300 0500.150.300 0500.200.300 0500.250.300	95 75 80 65 50 50	55	21	80 100 120 150 200 250	690 730 770 830 930 1030	300	70	12 13 16 18 22 29	24 27 32 39 49 65	29 32 38 47 58 77	34 36 38 42 48 55	46 49 54 61 70 86	61 64 70 78 89 107	- - - + + +
600	610.0	0600.080.300 0600.100.300 0600.120.300 0600.150.300 0600.200.300 0600.250.300	120 95 105 85 60 70	70	26	80 100 120 150 200 250	790 830 870 930 1030 1130	300	90	14 16 19 21 26 36	28 32 37 46 55 72	33 37 45 55 69 95	46 47 50 55 69 109	60 63 69 77 91 138	80 84 91 100 113 138	- - - + + +
700	711.0	0700.080.300 0700.100.300 0700.120.300 0700.150.300 0700.200.300 0700.250.300	155 125 145 115 85 90	90	26	80 100 120 150 200 250	890 930 970 1030 1130 1230	300	90	16 18 22 26 31 42	33 37 43 54 70 94	39 43 54 66 83 112	52 54 58 64 72 84	68 72 81 90 104 128	92 96 106 117 133 161	- - - + + +
800	813.0	0800.080.300 0800.100.300 0800.120.300 0800.150.300 0800.200.300 0800.250.300	155 125 145 115 85 90	90	35	80 100 120 150 200 250	1000 1040 1080 1140 1240 1340	300	100	20 22 26 30 36 47	41 45 54 65 80 106	48 52 63 78 98 126	76 78 89 98 134 159	96 100 108 119 134 159	130 134 145 157 174 203	- - - + + +
900	914.0	0900.080.300 0900.100.300 0900.120.300 0900.150.300 0900.200.300 0900.250.300	150 170 185 145 110 110	110	34	80 100 120 150 200 250	1100 1140 1180 1240 1340 1440	300	100	22 26 31 35 42 54	44 53 63 76 93 121	52 62 74 91 109 144	83 87 92 100 119 123	105 113 122 135 152 179	143 152 163 178 197 228	- - - + + +
1000	1016.0	1000.080.400 1000.100.400 1000.120.400 1000.150.400 1000.200.400 1000.250.400	210 235 195 155 150 150	140	34	80 100 120 150 200 250	1200 1240 1280 1340 1440 1540	400	100	31 37 40 45 59 76	47 56 61 73 97 125	55 65 71 87 116 149	99 104 107 116 132 151	114 122 127 138 162 189	155 164 170 183 210 241	- - - + + +
1100	1120.0	1100.080.400 1100.100.400 1100.120.400 1100.150.400 1100.200.400 1100.250.400	210 235 195 155 150 150	140	34	80 100 120 150 200 250	1305 1345 1385 1445 1545 1645	400	100	33 39 42 47 61 78	50 59 64 77 101 129	59 69 75 92 121 154	107 112 115 125 141 160	123 131 136 148 172 199	168 177 183 197 224 256	- - - + + +
1200	1220.0	1200.080.400 1200.100.400 1200.120.400 1200.150.400 1200.200.400 1200.250.400	290 300 305 245 185 205	210	34	80 100 120 150 200 250	1405 1445 1485 1545 1645 1745	400	100	38 44 51 58 69 95	57 67 78 94 114 156	67 78 91 112 136 186	117 123 130 141 156 183	135 144 155 170 190 231	184 195 207 224 247 294	- - - + + +

1) Longer lengths L (L<sub>max</sub> = 1200 mm) available in 100 mm steps from L > 600 mm with additional average pipe clamp

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

3) Lift-off loads in conjunction with uplift restraint (note permitted lift-off load)

4) Add the characteristic for material and surface protection



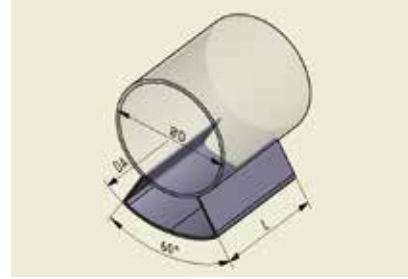
# HYDRA® PIPE SADDLES

Type series IKO and IKB, DN 50 - 450, for double cylinder and double cone roller support for welding onto the pipe – type IKO, with pipe clamps – type IKB

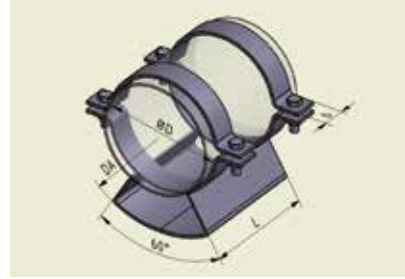
## Technical data

- Materials: S235JR, 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent, see pg. 9
- Surface protection: hot-dip galvanized, unthreaded, primed

## IKO



## IKB



## Order example: IKB 0200.120.400-16.3

Insulating saddle with pipe clamp, nominal diameter 200, insulation thickness 120 mm, support length 400 mm, 16Mo3, primed

Nominal diameter	Pipe outside diameter	Type IKO ... <sup>4)</sup> Type IKB ... <sup>4)</sup>	Nominal loads <sup>2)</sup>		Insulating thickness	Contact diameter	Dimensions		Weight approx.					
			-F <sub>Z</sub>	+F <sub>Z</sub> <sup>3)</sup>			J	DA	L <sup>1)</sup>	IKB	at L =		at L =	
											b	300	400	300
DN	D		kN	kN	mm	mm	mm	mm	kg	kg	kg	kg		
50	60.3	050 .050 .300	9	6	50	175	300	40	1.9	2.5	3.3	3.9		
		050 .080 .300	6		80	235			2.8	3.6	4.2	5.1		
		050 .100 .300	5		100	275			3.3	4.4	4.8	5.9		
		050 .120 .300	5		120	315			3.9	5.2	5.4	6.7		
		050 .150 .300	4		150	375			4.8	6.4	6.3	7.9		
65	76.1	065 .050 .300	8	6	50	190	300	40	1.9	2.6	3.5	4.2		
		065 .080 .300	6		80	250			2.8	3.7	4.4	5.4		
		065 .100 .300	5		100	290			3.4	4.5	5.0	6.1		
		065 .120 .300	5		120	330			4.0	5.3	5.6	6.9		
		065 .150 .300	4		150	390			4.9	6.5	6.5	8.1		
80	88.9	080 .050 .300	7	6	50	205	300	40	2.0	2.7	3.6	4.3		
		080 .080 .300	6		80	265			2.9	3.9	4.5	5.5		
		080 .100 .300	5		100	305			3.5	4.7	5.1	6.3		
		080 .120 .300	4		120	345			4.1	5.4	5.7	7.1		
		080 .150 .300	4		150	405			5.0	6.6	6.6	8.3		
100	114.3	100 .050 .300	7	10	50	230	300	50	2.2	2.8	6.1	6.8		
		100 .080 .300	5		80	290			3.0	4.0	7.0	8.0		
		100 .100 .300	5		100	330			3.6	4.8	7.6	8.8		
		100 .120 .300	4		120	370			4.2	5.6	8.2	9.6		
		100 .150 .300	3		150	430			5.1	7	9.1	11		
125	139.7	125 .050 .300	6	10	50	255	300	50	2.3	3.0	6.7	7.4		
		125 .080 .300	5		80	315			3.2	4.2	7.6	8.6		
		125 .100 .300	4		100	355			3.7	5.0	8.2	9.4		
		125 .120 .300	4		120	395			4.3	5.8	8.8	10.2		
		125 .150 .300	3		150	455			5.2	7	9.7	11		
150	168.3	150 .050 .300	8	10	50	285	300	50	3.0	4.0	8.0	9.0		
		150 .080 .300	7		80	345			4.1	5	9.1	10		
		150 .100 .300	6		100	385			4.9	6	9.9	11		
		150 .120 .300	6		120	425			6	7	11	12		
		150 .150 .300	5		150	485			7	9	12	14		
200	219.1	200 .050 .300	10	10	50	335	300	50	4	5	10	11		
		200 .080 .300	9		80	395			5	7	11	13		
		200 .100 .300	8		100	435			6	8	12	14		
		200 .120 .300	7		120	475			7	9	13	15		
		200 .150 .300	6		150	535			8	11	14	17		

Nominal diameter	Pipe outside diameter	Type IKO ... <sup>4)</sup> Type IKB ... <sup>4)</sup>	Nominal loads <sup>2)</sup>		Insulating thickness	Contact diameter	Dimensions		Weight approx.					
			-F <sub>Z</sub>	+F <sub>Z</sub> <sup>3)</sup>			J	DA	L <sup>1)</sup>	IKB	IKO at L =		IKB at L =	
											b	300	400	300
DN	D		kN	kN	mm	mm	mm	mm	kg	kg	kg	kg		
250	273	250 .050 .300	9	10	50	390	300	60	4	6	14	15		
		250 .080 .300	14		80	450			7	10	17	19		
		250 .100 .300	13		100	490			9	12	18	21		
		250 .120 .300	12		120	530			10	13	19	22		
		250 .150 .300	10		150	590			12	15	21	25		
300	323.9	300 .080 .300	12	10	80	500	300	60	8	11	18	21		
		300 .100 .300	11		100	540			9	12	20	23		
		300 .120 .300	17		120	580			13	17	23	27		
		300 .150 .300	15		150	640			15	20	25	30		
350	355.6	350 .080 .300	18	10	80	535	300	60	10	14	22	25		
		350 .100 .300	17		100	575			12	16	23	27		
		350 .120 .300	23		120	615			16	21	27	32		
		350 .150 .300	21		150	675			18	25	30	36		
400	406.4	400 .080 .300	24	15	80	585	300	70	13	17	32	36		
		400 .100 .300	22		100	625			15	20	34	38		
		400 .120 .300	33		120	665			20	27	39	46		
		400 .150 .300	30		150	725			24	31	42	50		
450	457	450 .080 .300	22	15	80	640	300	70	14	19	34	39		
		450 .100 .300	21		100	680			16	21	36	41		
		450 .120 .300	30		120	720			22	29	42	49		
		450 .150 .300	28		150	780			25	33	45	54		

1) Available lengths L = 300 and L = 400 mm

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

3) Lift-off loads in conjunction with uplift restraint (note permitted lift-off load)

4) Add the characteristic for material and surface protection

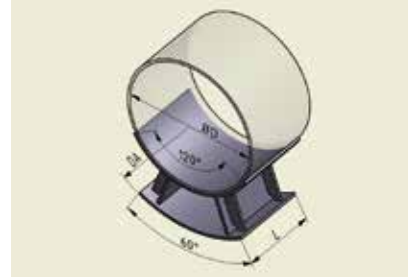
# HYDRA® PIPE SADDLES

Type series INO and INB, DN 500 - 1800, for double cylinder and double cone roller support with support shell for welding onto the pipe – type INO, with support shell and U-bolt – type INB

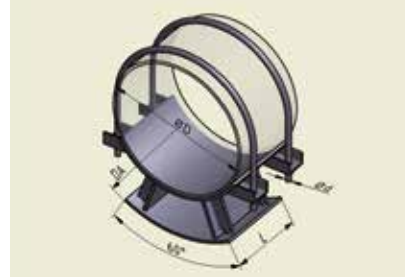
## Technical data

- Materials: S235JR, 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)  
Material is temperature-dependent, see pg. 9
- Surface protection: hot-dip galvanized, unthreaded, primed

## INO



## INB



## Order example: INB 0700.120.500-16.3

Insulating saddle with U-bolt, nominal diameter 700, insulation thickness 120 mm, support length 500 mm, 16Mo3, primed

Nominal diameter	Pipe outside diameter	Type INO ... <sup>4)</sup> Type INB ... <sup>4)</sup>	Nominal loads <sup>2)</sup>			Insulating thickness	Contact diameter	Dimensions		Weight approx. at L =				Version without/with rib		
			INO -F <sub>Z</sub>	INB -F <sub>Z</sub>	+F <sub>Z</sub> <sup>3)</sup>			J	DA	L <sup>1)</sup>	d	INO			INB	
												L	600		L	600
DN	D		kN	kN	kN	mm	mm	mm	mm	kg	kg	kg	kg	-		
500	508	0500.080.300	75	50	28	80	690	300	20	25	50	35	60	o		
		0500.100.300				100	730			27	53	36	63	o		
		0500.120.300				120	770			29	55	38	66	o		
		0500.150.300				150	830			32	62	41	72	o		
		0500.200.300				200	930			38	74	48	84	m		
		0500.250.300				250	1030			43	83	53	93	m		
600	610	0600.080.300	100	65	26	80	790	300	20	30	57	40	69	o		
		0600.100.300				100	830			31	60	41	72	o		
		0600.120.300				120	870			33	63	43	75	o		
		0600.150.300				150	930			37	70	46	81	o		
		0600.200.300				200	1030			42	82	54	94	m		
		0600.250.300				250	1130			47	91	59	103	m		
700	711	0700.080.300	125	80	24	80	890	300	20	34	66	46	79	o		
		0700.100.300				100	930			36	70	47	82	o		
		0700.120.300				120	970			38	73	49	85	o		
		0700.150.300				150	1030			43	84	55	97	m		
		0700.200.300				200	1130			49	95	62	108	m		
		0700.250.300				250	1230			55	106	68	119	m		
800	813	0800.080.300	150	80	23	80	1000	300	20	45	88	58	102	o		
		0800.100.300				100	1040			48	91	59	105	o		
		0800.120.300				120	1080			50	94	61	108	o		
		0800.150.300				150	1140			55	107	69	121	m		
		0800.200.300				200	1240			62	120	76	134	m		
		0800.250.300				250	1340			69	131	83	145	m		
900	914	0900.080.300	175	100	21	80	1105	300	20	51	99	64	64	o		
		0900.100.300				100	1145			54	103	66	118	o		
		0900.120.300				120	1185			56	107	68	122	o		
		0900.150.300				150	1245			63	123	78	138	m		
		0900.200.300				200	1345			72	138	87	153	m		
		0900.250.300				250	1445			79	152	95	168	m		
1000	1016	1000.080.400	250	140	18	80	1205	400	24	74	108	95	131	o		
		1000.100.400				100	1245			77	112	97	135	o		
		1000.120.400				120	1285			81	116	100	139	o		
		1000.150.400				150	1345			90	133	112	156	m		
		1000.200.400				200	1445			100	147	123	170	m		
		1000.250.400				250	1545			110	161	133	184	m		

Nominal diameter	Pipe outside diameter	Type INO ... <sup>4)</sup> Type INB ... <sup>4)</sup>	Nominal loads <sup>2)</sup>			Insulating thickness	Contact diameter	Dimensions		Weight approx. at L =				Version without/with rib		
			INO -F <sub>Z</sub>	INB -F <sub>Z</sub>	+F <sub>Z</sub> <sup>3)</sup>			J	DA	L <sup>1)</sup>	d	INO			INB	
												L	600		L	600
DN	D		kN	kN	kN	mm	mm	mm	mm	kg	kg	kg	kg	-		
1100	1120	1100.080.400	275	140	17	80	1310	400	24	80	117	103	142	o		
		1100.100.400				100	1350			84	121	105	146	o		
		1100.120.400				120	1390			87	125	108	150	o		
		1100.150.400				150	1450			96	142	121	167	m		
		1100.200.400				200	1550			107	158	132	182	m		
		1100.250.400				250	1650			117	172	142	196	m		
1200	1220	1200.080.400	300	190	16	80	1410	400	24	89	130	112	156	o		
		1200.100.400				100	1450			93	134	116	161	o		
		1200.120.400				120	1490			97	139	119	166	o		
		1200.150.400				150	1550			107	158	133	184	m		
		1200.200.400				200	1650			119	176	146	202	m		
		1200.250.400				250	1750			131	193	157	219	m		
1300	1320	1300.080.400	-	202	15	80	1510	400	24	-	-	118	164	o		
		1300.100.400				100	1550			121	167	o				
		1300.120.400				120	1590			123	171	o				
		1300.150.400				150	1650			137	189	m				
		1300.200.400				200	1750			149	205	m				
		1300.250.400				250	1850			159	220	m				
1400	1420	1400.080.400	-	202	14	80	1610	400	24	-	-	126	174	o		
		1400.100.400				100	1650			128	178	o				
		1400.120.400				120	1690			131	182	o				
		1400.150.400				150	1750			145	201	m				
		1400.200.400				200	1850			157	217	m				
		1400.250.400				250	1950			168	231	m				
1500	1520	1500.080.400	-	202	14	80	1710	400	24	-	-	134	185	o		
		1500.100.400				100	1750			136	189	o				
		1500.120.400				120	1790			139	193	o				
		1500.150.400				150	1850			154	212	m				
		1500.200.400				200	1950			166	228	m				
		1500.250.400				250	2050			176	243	m				
1600	1620	1600.080.400	-	205	13	80	1810	400	24	-	-	141	196	o		
		1600.100.400				100	1850			144	200	o				
		1600.120.400				120	1890			147	204	o				
		1600.150.400				150	1950			162	223	m				
		1600.200.400				200	2050			174	240	m				
		1600.250.400				250	2150			185	255	m				
1700	1720	1700.080.400	-	205	12	80	1910	400	24	-	-	152	210	o		
		1700.100.400				100	1950			155	215	o				
		1700.120.400				120	1990			158	220	o				
		1700.150.400				150	2050			174	241	m				
		1700.200.400				200	2150			188	259	m				
		1700.250.400				250	2250			200	277	m				
1800	1820	1800.080.400	-	205	12	80	2010	400	24	-	-	159	221	o		
		1800.100.400				100	2050			162	225	o				
		1800.120.400				120	2090			165	230	o				
		1800.150.400				150	2150			182	252	m				
		1800.200.400				200	2250			196	271	m				
		1800.250.400				250	2350			209	288	m				

1) Longer lengths L (L<sub>max</sub> = 1200 mm) available in 100 mm steps from L > 600 mm with additional average pipe clamp

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

3) Lift-off loads in conjunction with uplift restraint (note permitted lift-off load)

4) Add the characteristic for material and surface protection

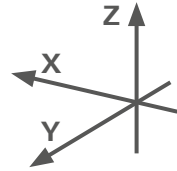


# HYDRA® PIPE SADDLES

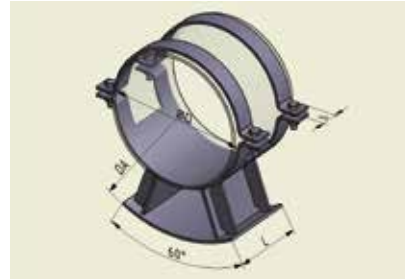
Type series INS, DN 500 - 2000, for double cylinder and double cone roller support with support shell and pipe clamps

## Technical data

- Materials:
  - S235JR, 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)
  - Material is temperature-dependent, see pg. 9
- Surface protection: hot-dip galvanized, unthreaded, primed
- With DN>1200 heavy version



## INS



## Order example: INS 0700.120.500-16.3

Insulating saddle, nominal diameter 700, insulation thickness 120 mm, support length 500 mm, 16Mo3, primed

Nominal diameter	Pipe outside diameter	Type INS ... <sup>4)</sup>	Nominal loads <sup>2)</sup>		Insulating thickness	Contact diameter	Dimensions		Weight approx. at L =		Version without/with rib
			-F <sub>Z</sub>	+F <sub>Z</sub> <sup>3)</sup>			L <sup>1)</sup>	b	L	600	
DN	D		kN	kN	J	DA	mm	mm	kg	kg	-
-	mm				mm	mm					
500	508	0500.080.300	100	15	80	690	300	70	44	72	o
		0500.100.300			100	730			45	75	o
		0500.120.300			120	770			47	78	o
		0500.150.300			150	830			51	85	o
		0500.200.300			200	930			56	95	m
		0500.250.300			250	1030			61	104	m
600	610	0600.080.300	100	19	80	790	300	90	55	89	o
		0600.100.300			100	830			56	92	o
		0600.120.300			120	870			58	95	o
		0600.150.300			150	930			62	102	o
		0600.200.300			200	1030			68	112	m
		0600.250.300			250	1130			73	121	m
700	711	0700.080.300	130	19	80	890	300	90	63	102	o
		0700.100.300			100	930			65	106	o
		0700.120.300			120	970			66	109	o
		0700.150.300			150	1030			71	118	m
		0700.200.300			200	1130			78	130	m
		0700.250.300			250	1230			84	141	m
800	813	0800.080.300	130	26	80	1000	300	100	88	140	o
		0800.100.300			100	1040			90	144	o
		0800.120.300			120	1080			92	148	o
		0800.150.300			150	1140			97	158	m
		0800.200.300			200	1240			105	170	m
		0800.250.300			250	1340			111	182	m
900	914	0900.080.300	170	25	80	1105	300	100	98	157	o
		0900.100.300			100	1145			101	162	o
		0900.120.300			120	1185			103	166	o
		0900.150.300			150	1245			110	179	m
		0900.200.300			200	1345			119	194	m
		0900.250.300			250	1445			127	208	m

Nominal diameter	Pipe outside diameter	Type INS ... <sup>4)</sup>	Nominal loads <sup>2)</sup>		Insulating thickness	Contact diameter	Dimensions		Weight approx. at L =		Version without/with rib
			-F <sub>Z</sub>	+F <sub>Z</sub> <sup>3)</sup>			L <sup>1)</sup>	b	L	600	
DN	D		kN	kN	J	DA	mm	mm	kg	kg	-
-	mm				mm	mm					
1100	1120	1100.080.400	230	25	80	1310	400	100	125	172	o
		1100.100.400			100	1350			128	176	o
		1100.120.400			120	1390			131	181	o
		1100.150.400			150	1450			141	194	m
		1100.200.400			200	1550			152	210	m
		1100.250.400			250	1650			162	224	m
1000	1016	1000.080.400	230	25	80	1205	400	100	115	158	o
		1000.100.400			100	1245			118	163	o
		1000.120.400			120	1285			122	167	o
		1000.150.400			150	1345			131	181	m
		1000.200.400			200	1445			141	195	m
		1000.250.400			250	1545			151	209	m
1200	1220	1200.080.400	300	25	80	1410	400	100	137	188	o
		1200.100.400			100	1450			141	194	o
		1200.120.400			120	1490			145	199	o
		1200.150.400			150	1550			155	214	m
		1200.200.400			200	1650			167	232	m
		1200.250.400			250	1750			179	249	m
1400	1420	1400.080.400	300	50	80	1605	400	100	161	217	o
		1400.100.400			100	1645			165	223	o
		1400.120.400			120	1685			169	229	o
		1400.150.400			150	1745			179	244	m
		1400.200.400			200	1845			192	262	m
		1400.250.400			250	1945			204	279	m
1600	1620	1600.080.400	300	50	80	1805	400	100	180	244	o
		1600.100.400			100	1845			185	250	o
		1600.120.400			120	1885			189	256	o
		1600.150.400			150	1945			199	271	m
		1600.200.400			200	2045			212	289	m
		1600.250.400			250	2145			224	306	m
1800	1820	1800.080.400	300	50	80	2005	400	100	200	270	o
		1800.100.400			100	2045			204	276	o
		1800.120.400			120	2085			208	282	o
		1800.150.400			150	2145			219	298	m
		1800.200.400			200	2245			233	316	m
		1800.250.400			250	2345			245	334	m
2000	2020	2000.080.400	300	50	80	2205	400	100	219	297	o
		2000.100.400			100	2245			224	303	o
		2000.120.400			120	2285			228	309	o
		2000.150.400			150	2345			239	325	m
		2000.200.400			200	2445			253	344	m
		2000.250.400			250	2545			266	362	m

1) Longer lengths L (L<sub>max</sub> = 1200 mm) available in 100 mm steps from L > 600 mm with additional average pipe clamp

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

3) Lift-off loads in conjunction with uplift restraint (note permitted lift-off load)

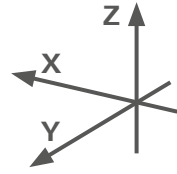
4) Add the characteristic for material and surface protection

# HYDRA® CLAMP

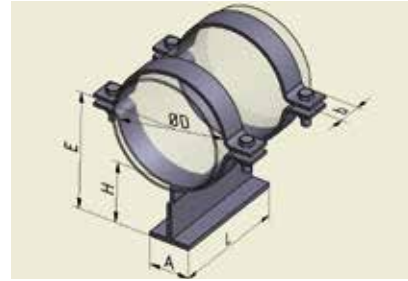
Type series ITB, DN 50 - 350,  
for cylinder roller support with T-base and pipe clamps

## Technical data

- Materials:
  - S235JR, 16Mo3, 13CrMo4-5, 10CrMo9-10, X10CrMoVNb9-1 (P91)
  - Material is temperature-dependent, see pg. 9
- Surface protection: hot-dip galvanized, unthreaded, primed



## ITB



## Order example: ITB 0150.120.500-16.3

Insulating base, nominal diameter 150, insulation thickness 120 mm, support length 500 mm, 16Mo3, primed

Nominal diameter	Pipe outside diameter	Type ITB ... <sup>4)</sup>	Nominal loads <sup>2)</sup>			Max. insulating thickness	Height	Installation dimension	Dimensions			Weight	
			-F <sub>Z</sub>	+F <sub>Z</sub> <sup>3)</sup>	+F <sub>Y</sub>				A	L <sup>1)</sup>	b		
DN	D		kN	kN	kN	mm	mm	mm	mm	mm	mm	approx. kg	
50	60.3	0050.050.300	5	5	6.5	50	76	70	300	40		4	
		0050.080.300			4.7	80	101					4	
		0050.100.300			3.8	100	121					151	4
		0050.120.300			3.2	120	141					171	4
		0050.150.300			2.6	150	171					201	5
65	76.1	0065.050.300	5	5	6.5	50	76	70	300	40		4	
		0065.080.300			4.7	80	101					139	4
		0065.100.300			3.8	100	121					159	4
		0065.120.300			3.2	120	141					179	5
		0065.150.300			2.6	150	171					209	5
80	89.9	0080.050.300	5	5	6.5	50	76	70	300	40		4	
		0080.080.300			4.7	80	101					146	4
		0080.100.300			3.8	100	121					166	5
		0080.120.300			3.2	120	141					186	5
		0080.150.300			2.6	150	171					216	5
100	114.3	0100.050.300	15	10	7.2	50	78	70	300	40		5	
		0100.080.300			5.2	80	103					160	5
		0100.100.300			4.2	100	123					180	6
		0100.120.300			3.5	120	143					200	6
		0100.150.300			2.9	150	173					230	6
125	139.7	0125.080.300	15	10	5.1	80	108	100	300	40		8	
		0125.100.300			4.1	100	128					198	8
		0125.120.300			3.5	120	148					218	8
		0125.150.300			2.8	150	178					248	8
		0125.200.300			2.2	200	228					298	9
150	168.3	0150.080.300	15	10	5.1	80	108	100	300	40		8	
		0150.100.300			4.1	100	128					212	9
		0150.120.300			3.5	120	148					232	9
		0150.150.300			2.8	150	178					262	9
		0150.200.300			2.2	200	228					312	9

Nominal diameter	Pipe outside diameter	Type ITB ... <sup>4)</sup>	Nominal loads <sup>2)</sup>			Max. insulating thickness	Height	Installation dimension	Dimensions			Weight	
			-F <sub>Z</sub>	+F <sub>Z</sub> <sup>3)</sup>	+F <sub>Y</sub>				A	L <sup>1)</sup>	b		
DN	D		kN	kN	kN	mm	mm	mm	mm	mm	mm	approx. kg	
200	219.1	0200.080.300	15	10	5.1	80	108	100	300	50		11	
		0200.100.300			4.1	100	128					238	11
		0200.120.300			3.5	120	148					258	11
		0200.150.300			2.8	150	178					288	11
		0200.200.300			2.2	200	228					338	12
250	273	0250.080.300	15	10	5.1	80	108	100	300	50		12	
		0250.100.300			4.1	100	128					265	12
		0250.120.300			3.5	120	148					285	12
		0250.150.300			2.8	150	178					315	12
		0250.200.300			2.2	200	228					365	13
150	168.3	0150.120.300	20	10	6.3	120	148	140	300	40		13	
		0150.150.300			5.1	150	178					262	13
		0150.200.300			3.8	200	228					312	14
200	219.1	0200.120.300	20	10	7.8	120	148	140	300	50		15	
		0200.150.300			6.3	150	178					288	16
		0200.200.300			4.8	200	228					338	16
250	273	0250.120.300	20	10	7.8	120	148	140	300	50		16	
		0250.150.300			6.3	150	178					315	17
		0250.200.300			4.8	200	228					365	17
300	323.9	0300.120.300	20	10	7.8	120	148	140	300	50		17	
		0300.150.300			6.3	150	178					340	18
		0300.200.300			4.8	200	228					390	18
350	355.6	0350.120.300	20	10	9.4	120	148	140	300	60		19	
		0350.150.300			7.6	150	178					356	20
		0350.200.300			5.7	200	228					406	21

- 1) Longer lengths L (L<sub>max</sub> = 600 mm) available in 100 mm steps
- 2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C
- 3) Lift-off loads in conjunction with uplift restraint (note permitted lift-off load)
- 4) Add the characteristic for material and surface protection



# HYDRA® PIPE TRAY

Type series SMR , DN 90 - 1000,  
for double cylinder and double cone roller support for Pre-insulation pipe

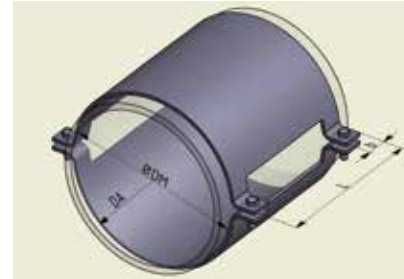
## Technical data

- Materials:  
S235JR, 16Mo3, 13CrMo4-5, 10CrMo9-10,  
X10CrMoVNb9-1 (P91)  
Material is temperature-dependent, see pg. 9
- Surface protection:  
hot-dip galvanized, unthreaded, primed

Shape 1



Shape 2



## Order example: SMR 0550.300.1-16.3

Insulating saddle, Pre-insulation or outside pipe diameter 550 mm, support length 300 mm, shape 1, 16Mo3, primed

Pre-insulated pipe diameter	Type SMR ...	Nominal loads <sup>4)</sup>			Contact diameter	Dimensions		Weight approx. with support length			
		F <sub>v</sub>	+F <sub>Z</sub> <sup>5)</sup>			L <sup>3)</sup>	b	L		2 x L	
			Shape 1	Shape 2				Shape 1	Shape 2	Shape 1	Shape 2
DM		kN	kN	kN	mm	mm	mm	kg	kg	kg	kg
-											
90	0090 .220 ... <sup>2)</sup>	5	1		100	220	30	2,0	3,0	3,2	5,3
110	0110 .220 ... <sup>2)</sup>	6	1		120			2,4	3,5	3,8	6,3
125	0125 .220 ... <sup>2)</sup>	7	2	5	135			2,8	4,2	4,4	7,6
140	0140 .220 ... <sup>2)</sup>	8	2		150			3,2	4,9	5,2	9,0
160	0160 .220 ... <sup>2)</sup>	10	2		170			3,6	5,5	5,9	10,1
170	0170 .220 ... <sup>2)</sup>	10	3		182	300	40	5,1	7,4	8,0	13,3
180	0180 .220 ... <sup>2)</sup>	11	3		192			5,3	7,8	8,5	14,0
200	0200 .300 ... <sup>2)</sup>	12	3		212			5,9	8,5	9,3	15,5
225	0225 .300 ... <sup>2)</sup>	14	4		237			6,7	9,9	10,8	18,2
250	0250 .300 ... <sup>2)</sup>	15	4		262			7,3	11	11,9	20
280	0280 .300 ... <sup>2)</sup>	17	5	7	292			8,1	12	13,2	22
300	0300 .300 ... <sup>2)</sup>	18	5		312			8,6	13	14,1	24
315	0315 .300 ... <sup>2)</sup>	19	5		327			9,0	13	14,8	25
325	0325 .300 ... <sup>2)</sup>	20	5		337			9	14	15	26
355	0355 .300 ... <sup>2)</sup>	22	6		367			10	15	17	28
400	0400 .300 ... <sup>2)</sup>	25	7		412	300	60	12	18	19	33
450	0450 .300 ... <sup>2)</sup>	28	11		466			20	27	31	49
500	0500 .300 ... <sup>2)</sup>	31	13	14	516			22	30	35	57
550	0550 .300 ... <sup>2)</sup>	34	14		566			24	33	38	62
560	0560 .300 ... <sup>2)</sup>	35	21		580			37	44	54	79
600	0600 .300 ... <sup>2)</sup>	37	23		620			40	47	58	84
630	0630 .300 ... <sup>2)</sup>	39	24	26	650			42	50	62	92
670	0670 .300 ... <sup>2)</sup>	42	25		690			44	53	66	97
710	0710 .300 ... <sup>2)</sup>	44	26		730			47	56	69	102
800	0800 .300 ... <sup>2)</sup>	50	26		820			52	63	77	115
900	0900 .300 ... <sup>2)</sup>	75	34	34	924	400	100	86	111	133	205
1000	1000 .300 ... <sup>2)</sup>	84			1024			95	122	146	226

1) Pressure resistance insulation:  $p \geq 0.3 \text{ N/mm}^2$

2) Add the shape and characteristic for material and surface protection

3) Up to DM= 200 longer lengths L ( $L_{max} = 600 \text{ mm}$ ) available in 100 mm steps

4) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

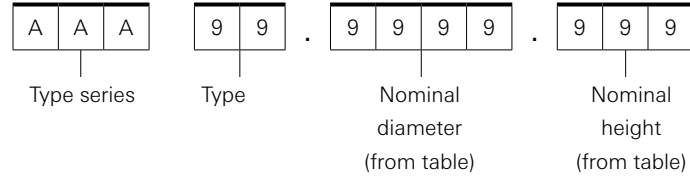
5) Uplift loads in conjunction with uplift restraint (note permitted uplift load)

# HYDRA® SPECIAL VERSIONS

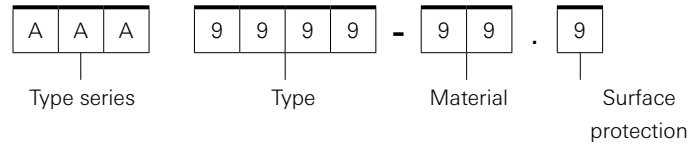
# HYDRA® SPECIAL VERSIONS

Type series, names, variants

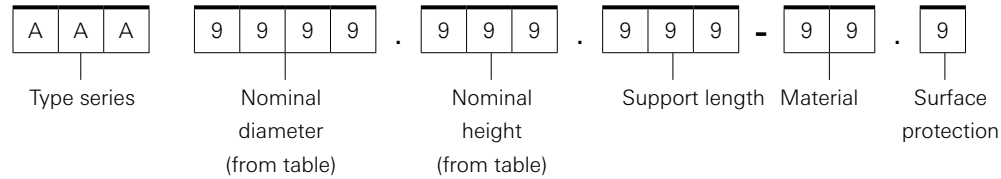
## Type designation LKL / LKG / FLN



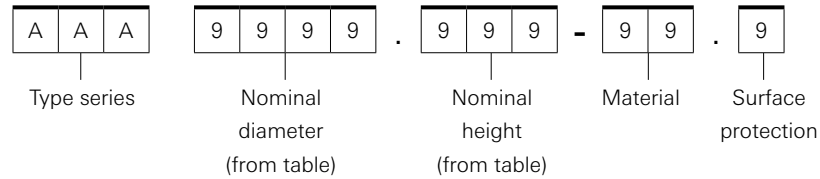
## LBN



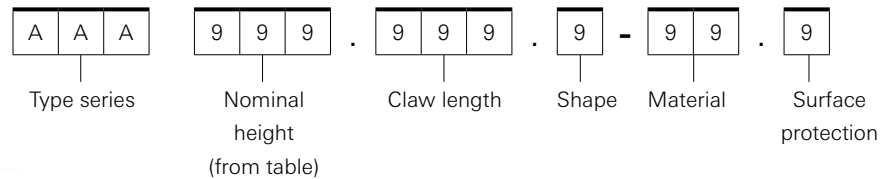
## LPR / LUR / LSN / LSV



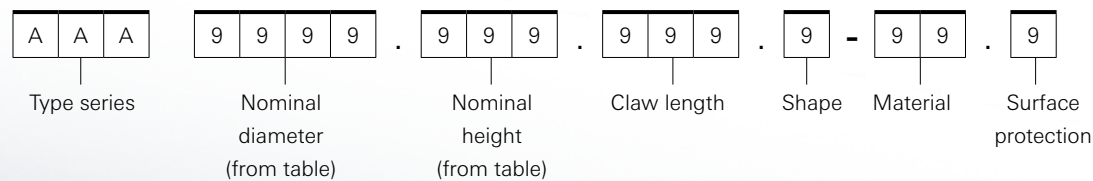
## LFA



## PAN / PAV



## PRN / PRV



# HYDRA® SPECIAL VERSIONS

Type series, names, variants  
if standard, then no information

## Type series

Non-insulated pipelines	
LKL	Movable support, PA sliding plate, up to 95 °C
LKG	Guide support, U-Bolt Clamp, PA sliding plate, up to 95 °C
FLN	Fixed support, U-Bolt Clamp or 1-clamp, up to 95 °C
LBN	Guide support, U-shaped, up to 80 °C
LPR	Movable support, 2-clamp, up to 300 °C
Insulated pipelines	
LUR	Movable support, 2-clamp, box-shaped, up to 500 or 540 °C
LSN / LSV	Movable support / fixed support, calliper-shaped to weld on, up to 500 °C
LFA	Fixed support, to weld on, up to 500 °C
PAN	Vertikal pipe support to weld on, normal version
PAV	Vertikal pipe support to weld on, stronger version
PRN	Vertikal pipe support with 2 clamps, normal version
PRV	Vertikal pipe support with 2 clamps, stronger version

## Material

Name	Characteristic	max. temp. to VGB R510L in °C
S235JRG2	1.0038	37
16Mo3	1.5415	16
13CrMo4-5	1.7335	13
10CrMo9-10	1.7380	10
X6CrNiTi18-10	1.4541	41
X6CrNiMoTi17-12-2	1.4571	71
X10CrMoVNb9-1	1.4903	91
others	-	99

\* Temperature reduction coefficients see page 9  
\*max. temperature on polyamide sliding plate 90° C

## Surface protection

Name	Characteristic
Unthreated	0
Galvanized	1
Hot-dip galvanized	2
Primed	3
Special	4



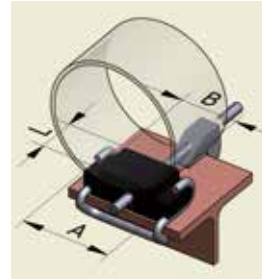
# HYDRA® MOVABLE AND GUIDE SUPPORT

Type series LKL movable support and LKG guide support with U-Bolt, type 10, up to 95 °C, low overall height, fixed height

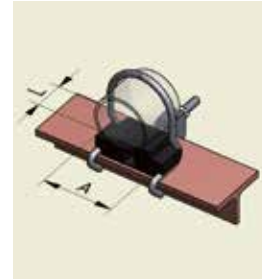
## Technical data

- To clamp on structural steel
- Nominal height H = 40 mm (for non-insulated pipelines)
- Clamp carrier T-shaped: Carrier width 80 to 140 mm Support base thickness 7 to 19 mm
- Materials: Bracket / support: S235JR Clamping claws: S235JR, forged Sliding plate: Polyamide PA 66, glass fibre-reinforced
- Surface protection: steel components hot-dip galvanized
- Bolting (threaded rods), nuts for clamping system Thread: M12 Recommended bolting tightening torque: 70 Nm
- Friction coefficient: Sliding pairing PA-steel hot-dip galvanized: 0.2 to 0.3

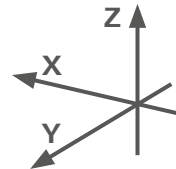
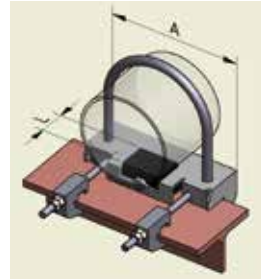
LKL 10



LKG 10, DN 15-80



LKG 10, DN 100-300



## Order example: LKL 10.0080.040-37.2-T140

Type 10, nominal diameter 80, nominal height 40 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Type LKL ... Type LKG ...	Nominal loads			Perm. displacement Movable support	Dimensions						Weight				
			-F <sub>Z</sub>	+F <sub>Z</sub>	F <sub>X</sub>		W <sub>X</sub>	LKL			LKG			LKL approx.	LKG approx.		
								A	L	B	A	L	mm			kg	
DN	D		kN	kN	kN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg
-	mm		kN	kN	kN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg
15	21.3	10.0015.040 ... <sup>1)</sup>	2	1	2	±25	85	50	50	85	50	0.9	0.9				
20	26.9	10.0020.040 ... <sup>1)</sup>															
25	33.7	10.0025.040 ... <sup>1)</sup>															
32	42.4	10.0032.040 ... <sup>1)</sup>	2	1	2	±35	85	50	50	85	50	0.9	0.9				
40	48.3	10.0040.040 ... <sup>1)</sup>															
50	60.3	10.0050.040 ... <sup>1)</sup>															
65	76.1	10.0065.040 ... <sup>1)</sup>	2	1	2	±35	115	50	70	115	50	0.9	1				
80	88.9	10.0080.040 ... <sup>1)</sup>															
100	114.3	10.0100.040 ... <sup>1)</sup>								196						3.0	
125	139.7	10.0125.040 ... <sup>1)</sup>								214	50	0.9				3.2	
150	168.3	10.0150.040 ... <sup>1)</sup>								242						4.6	
200	219.1	10.0200.040 ... <sup>1)</sup>	5							294						5.0	
250	273.0	10.0250.040 ... <sup>1)</sup>	9							348	50	0.9				5.4	
300	323.9	10.0300.040 ... <sup>1)</sup>	9			±35	115	50	70	398						5.8	

1) Add characteristic for material, surface protection and clamp carrier

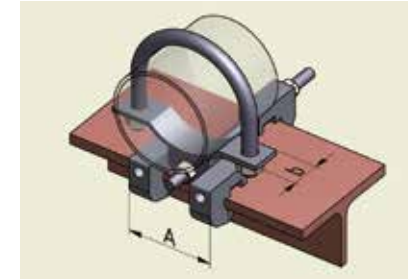
# HYDRA® FIXED SUPPORT

Type series FLN, type 10 and 11, up to 95 °C, low overall height, fixed height

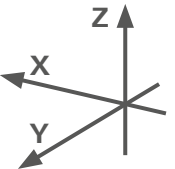
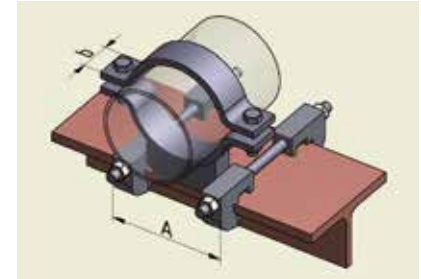
## Technical data

- To clamp on structural steel
- Nominal height H = 40 mm (for non-insulated pipelines)
- Clamp carrier T-shaped: Carrier width 80 to 140 mm Support base thickness 7 to 19 mm
- Materials: Bracket / clamp / carrier: S235JR Clamping claws: S235JR, forged
- Surface protection: steel components hot-dip galvanized
- Bolting (threaded rods), nuts for clamping system Thread: M12 Recommended bolting tightening torque: 70 Nm
- Friction coefficient: Sliding pairing PA-steel hot-dip galvanized: 0.2 to 0.3

FLN 10



FLN 11



## Order example: FLN 10.0080.040-37.2-T140

Type 10, nominal diameter 80, nominal height 40 mm, S235JR, hot-dip galvanized, clamp carrier T140

Nominal diameter	Outside pipe diameter	Type FLN 10 ... Type FLN 11 ...	Nominal loads / dimensions								Nominal loads / dimensions						Weight approx.
			FLN 10								FLN 11						
			-F <sub>Z</sub>	+F <sub>Z</sub>	F <sub>X</sub>	F <sub>Y</sub>	A	b	-F <sub>Z</sub>	+F <sub>Z</sub>	F <sub>X</sub>	F <sub>Y</sub>	A	b	kg		
DN	D		kN	kN	kN	kN	mm	mm	kN	kN	kN	kN	mm	mm	kg		
-	mm		kN	kN	kN	kN	mm	mm	kN	kN	kN	kN	mm	mm	kg		
15	21.3	...0015.040-37.2	-	-	-	-	-	-	2	2	4	4	25	25	1		
20	26.9	...0020.040-37.2															
25	33.7	...0025.040-37.2															
32	42.4	...0032.040-37.2	2	1	2	2	25	25	2	2	4	4	25	30	1		
40	48.3	...0040.040-37.2															
50	60.3	...0050.040-37.2															
65	76.1	...0065.040-37.2	2	1	2	2	100	30	2	2	5	6	100	40	2		
80	88.9	...0080.040-37.2															
100	114.3	...0100.040-37.2											140				
125	139.7	...0125.040-37.2	3	1	2	2	130	35	3	3	5	8	140	40	4		
150	168.3	...0150.040-37.2											150				
200	219.1	...0200.040-37.2	5				170		5				170				
250	273.0	...0250.040-37.2	9	1	2	2	200	50	9	5	6	8	200	50	6		
300	323.9	...0300.040-37.2	12				250		12				250				

# HYDRA® GUIDE SUPPORT

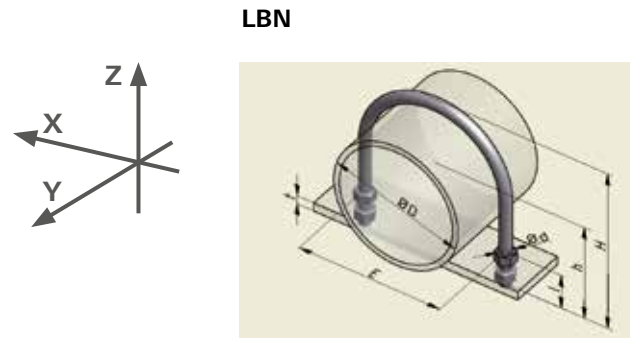
Type series LBN,  
up to 80 °C, U-Bolt, fixed height

## Technical data

- U-Bolt
- Fixed height (for non-insulated pipelines)
- Materials:  
S235JR, stainless steel
- Surface protection: galvanized, unthreaded

## Order example: LBN 0082-37.1

Nominal diameter 65, S235JR, galvanized



Nominal diameter	Outside pipe diameter	Type LBN ...	Nominal loads <sup>2)</sup>		Dimensions						Weight
			F <sub>z</sub>	F <sub>x</sub>	E	H	I	d	Max. t	sp <sup>3)</sup>	
DN	D		kN	kN	mm	mm	mm	M	mm	mm	kg
-	mm										
15	21.3	0029 - ... <sup>1)</sup>	2	= 0.1 x F <sub>Z</sub>	35	53	40	6	9	4	0.04
20	26.9	0034 - ... <sup>1)</sup>	2		40	64	40	6	14	4	0.04
25	33.7	0038 - ... <sup>1)</sup>	3		46	74	40	8	15	4	0.09
32	42.4	0046 - ... <sup>1)</sup>	5		56	86	45	10	17	4	0.16
40	48.3	0052 - ... <sup>1)</sup>	5		62	92	45	10	17	4	0.17
50	60.3	0064 - ... <sup>1)</sup>	8		76	109	50	12	17	4	0.29
65	76.1	0082 - ... <sup>1)</sup>	8		94	125	50	12	17	4	0.33
80	88.9	0094 - ... <sup>1)</sup>	8		106	139	50	12	17	4	0.36
100	114.3	0120 - ... <sup>1)</sup>	15		136	171	60	16	17	4	0.81
125	139.7	0148 - ... <sup>1)</sup>	15		164	197	60	16	17	4	0.91
150	168.3	0176 - ... <sup>1)</sup>	15		192	225	60	16	17	4	1.0
200	219.1	0228 - ... <sup>1)</sup>	22		248	289	70	20	17	5	2.1
250	273.0	0282 - ... <sup>1)</sup>	22		302	343	70	20	17	5	2.4
300	323.9	0332 - ... <sup>1)</sup>	22		352	394	70	20	17	5	2.7
350	355.6	0378 - ... <sup>1)</sup>	32		402	439	80	24	21	7	4.4
400	406.4	0428 - ... <sup>1)</sup>	32		452	489	80	24	21	7	4.9
500	508.0	0530 - ... <sup>1)</sup>	32	554	591	80	24	21	7	5.8	
600	610.0	0638 - ... <sup>1)</sup>	44	668	707	100	30	25	7	11	
800	813.0	0840 - ... <sup>1)</sup>	44	870	910	100	30	25	7	14	

1) Add the characteristic for material and surface protection

2) The nominal loads apply to supports made from S235JR and temperatures up to 80 °C

3) sp = clearance between round steel bracket and pipe

# HYDRA® MOVEABLE SUPPORT

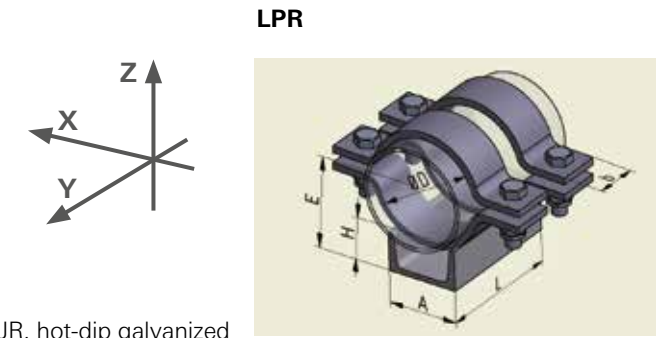
Type series LPR,  
up to 300 °C, 2-clamp, fixed height

## Technical data

- 2-clamp with U-section
- Fixed height (for non-insulated pipelines)
- Materials:  
S235JR
- Surface protection: hot-dip galvanized

## Order example: LPR 0080.036.150-37.2

Nominal diameter 80, nominal height 36 mm, length 150 mm, S235JR, hot-dip galvanized



Nominal diameter	Outside pipe diameter	Type LPR ...	Nominal loads <sup>1)</sup>				Nominal height	Installation dimension	Dimensions		Weight
			-F <sub>z</sub>	+F <sub>z</sub>	F <sub>x</sub>	F <sub>y</sub> <sup>2)</sup>			A	L	
DN	D		kN	kN	kN	kN	mm	mm	mm	mm	approx. kg
-	mm										
80	88.9	080.036.150... <sup>3)</sup>	26	3.9	2.1	13	36	81	80	150	3.1
100	114.3	100.042.150... <sup>3)</sup>	44	6.1	4.7	22	42	99			5.3
125	139.7	125.044.150... <sup>3)</sup>	44	6.0	4.7	22	44	114			5.7
150	168.3	150.045.150... <sup>3)</sup>	44	6.1	4.7	22	45	130			6.3
200	219.1	200.049.200... <sup>3)</sup>	44	6.0	3.8	22	49	158	120	200	8.7
250	273.0	250.052.200... <sup>3)</sup>	53	6.2	4.5	26	52	188			12
300	323.9	300.053.200... <sup>3)</sup>	53	6.3	4.5	26	53	215			13
350	355.6	350.054.200... <sup>3)</sup>	53	6.1	4.5	26	54	232			14
400	406.4	400.062.250... <sup>3)</sup>	77	9.2	5.9	38	62	266	200	250	25
450	457	450.065.250... <sup>3)</sup>	77	9.2	5.9	38	65	294			27
500	508	500.067.250... <sup>3)</sup>	77	9.0	5.9	38	67	321			28
550	559	550.069.250... <sup>3)</sup>	99	13	7.6	49	69	348			36
600	610	600.070.250... <sup>3)</sup>	99	13	7.6	49	70	375			38
700	711	700.072.250... <sup>3)</sup>	99	13	7.6	49	72	428			42
800	813	800.076.250... <sup>3)</sup>	126	17	11	63	76	482			62

1) The nominal loads apply to supports made from S235JR at temperatures up to 80 °C and minimum contact 50 mm from edge length L

2) Only applies when used as axial stop (stopping point) and only with slip-through protection

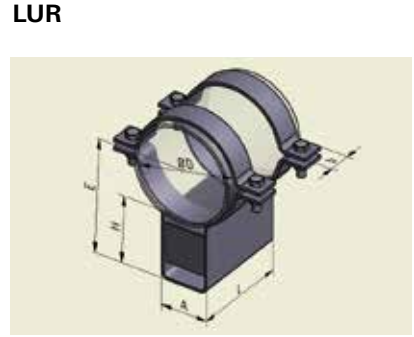
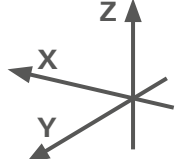
3) Add the characteristic for material and surface protection



# HYDRA® MOVEABLE SUPPORT

Type series LUR,  
up to 540 °C, 2-clamp, fixed height

- Technical data**
- 2-clamp, box-shaped
  - Materials: S235JR, 16Mo3, 13CrMo5-5  
Material is temperature-dependent, see pg 9
  - Surface protection: hot-dip galvanized, primed, unthreaded



**For other load combinations FX / FY, the following must apply:**  
 $(\text{exist } F_x / \text{perm } F_x)^2 + (\text{exist } F_y / \text{perm } F_y)^2 < 4$   
 perm  $F_{xx}$  from the following table, taking account of temperature reduction

**Order example: LUR 0150.171.200-16.0**  
 Nominal diameter 150, nominal height 171 mm, length 200 mm, 16Mo3, unthreaded

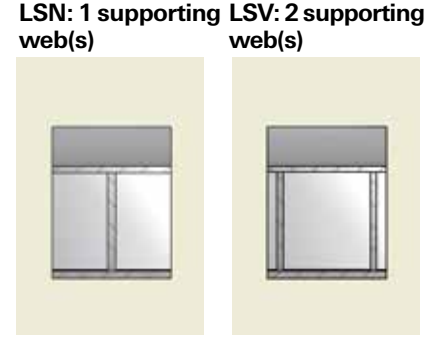
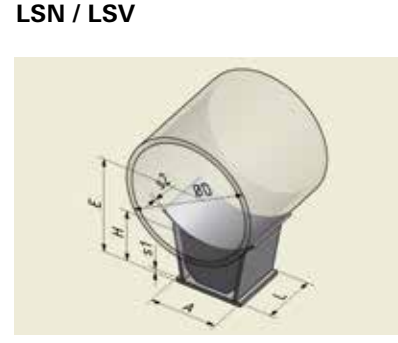
Nominal diameter	Pipe outside diameter	Type LUR ...	Material	Nominal loads <sup>1)</sup>				Max. insulation thickness	Nominal height	Installation dimension	Dimensions			Weight
				-Fz	+Fz	Fx	Fy <sup>3)</sup>				H	A	L	
DN	D			kN	kN	kN	kN	mm	mm	mm	mm	mm	kg	
80	88.9	0080.102.200-... <sup>1)</sup>	S235JRG2	22	4.2	1.7	11	92	102	146	80	200	4.2	
		0080.162.200-... <sup>1)</sup>	16Mo3					152	162	206	80	200	5.5	
		0080.212.200-... <sup>1)</sup>	13CrMo4-5					192	212	256	80	200	6.5	
100	114.3	0100.108.200-... <sup>1)</sup>	S235JRG2	27	6.8	2.1	14	98	108	165	80	200	6.4	
		0100.168.200-... <sup>1)</sup>	16Mo3					158	168	225	80	200	7.6	
		0100.218.200-... <sup>1)</sup>	13CrMo4-5					198	218	275	80	200	8.7	
		0125.110.200-... <sup>1)</sup>	S235JRG2					100	110	180	80	200	6.9	
125	139.7	0125.170.200-... <sup>1)</sup>	16Mo3	27	6.7	2.1	14	160	170	240	80	200	8.1	
		0125.220.200-... <sup>1)</sup>	13CrMo4-5					200	220	290	80	200	9.2	
		0150.111.200-... <sup>1)</sup>	S235JRG2					101	111	195	80	200	7.4	
150	168.3	0150.171.200-... <sup>1)</sup>	16Mo3	27	6.7	2.1	14	161	171	255	80	200	8.7	
		0150.221.200-... <sup>1)</sup>	13CrMo4-5					201	221	305	80	200	9.7	
		0200.165.250-... <sup>1)</sup>	S235JRG2					155	165	274	120	250	12	
200	219.1	0200.225.250-... <sup>1)</sup>	16Mo3	33	6.7	3.1	16	215	225	334	120	250	14	
		0250.168.250-... <sup>1)</sup>	S235JRG2					158	168	304	120	250	15	
250	273	0250.228.250-... <sup>1)</sup>	16Mo3	39	7.0	3.7	20	218	228	364	120	250	17	
		0300.169.250-... <sup>1)</sup>	S235JRG2					159	169	331	120	250	16	
300	323.9	0300.229.250-... <sup>1)</sup>	16Mo3	39	7.2	3.7	20	219	229	391	120	250	18	
		0350.170.250-... <sup>1)</sup>	S235JRG2					160	170	348	120	250	17	
350	355.6	0350.230.250-... <sup>1)</sup>	16Mo3	39	6.9	3.7	20	220	230	408	120	250	19	
		0400.189.330-... <sup>1)</sup>	S235JRG2					179	189	392	200	330	32	
400	406.4	0400.249.330-... <sup>1)</sup>	16Mo3	61	10.3	6.6	31	239	249	452	200	330	36	
		0450.192.330-... <sup>1)</sup>	S235JRG2					182	192	420	200	330	34	
450	457	0450.252.330-... <sup>1)</sup>	16Mo3	61	10.3	6.6	31	242	252	480	200	330	37	
		0500.193.330-... <sup>1)</sup>	S235JRG2					183	193	447	200	330	36	
500	508	0500.253.330-... <sup>1)</sup>	16Mo3	61	10.1	6.6	31	243	253	507	200	330	39	
		0550.195.330-... <sup>1)</sup>	S235JRG2					185	195	474	200	330	43	
550	559	0550.255.330-... <sup>1)</sup>	16Mo3	79	14.2	8.4	39	245	255	534	200	330	46	
		0600.196.330-... <sup>1)</sup>	S235JRG2					186	196	501	200	330	45	
600	610	0600.256.330-... <sup>1)</sup>	16Mo3	79	14.2	8.4	39	246	256	561	200	330	48	
		0700.198.330-... <sup>1)</sup>	S235JRG2					188	198	554	200	330	50	
700	711	0700.262.330-... <sup>1)</sup>	16Mo3	79	14.2	8.4	39	252	262	614	200	330	53	
		0800.202.330-... <sup>1)</sup>	S235JRG2					192	202	608	200	330	69	
800	813	0800.262.330-... <sup>1)</sup>	16Mo3	88	19.1	9.4	44	252	262	668	200	330	72	

1) Add the characteristic for material and surface protection  
 2) The nominal loads apply to supports made from S235JR at temperatures up to 80 °C and minimum contact 50 mm from edge length L  
 3) Only applies when used as axial stop (stopping point) and only with slip-through protection

# HYDRA® MOVABLE OR FIXED SUPPORT

Type series LSN and LSV,  
saddle, movable or fixed supports, supporting shell, box-shaped, to weld on

- Technical data**
- Materials: S235JR, 16Mo3  
Material is temperature-dependent, see pg. 9
  - Surface protection: primed, unthreaded



**With additional torques M<sub>y</sub> and M<sub>x</sub> the following must apply:**  
 exist  $F_y + \text{exist } M_x / E < F_y$   
 exist  $F_x + \text{exist } M_y / E < F_x$

**Order example: LSV 400.100.120-16.3**  
 Nominal diameter 400, nominal height 100 mm, length 120 mm, 16Mo3, primed

Nominal diameter	Pipe outside diameter	Type LSN ... Type LSV ...	Nominal loads <sup>1)</sup>			Nominal height	Installation dimension	Dimensions					Weight		
			-Fz	Fx	Fy			A	L	s <sub>1</sub>	s <sub>2</sub>	Site weld min		approx.	
DN	D		kN	kN	kN	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
300	323.9	LSN 0300.077.120-... <sup>2)</sup>	110	35	30	77	239	140	120	8	6	4	4	3.4	
		LSV 0300.077.120-... <sup>2)</sup>	170	50	50	170	60	60	170	60	60	3.8			
350	355.6	LSN 0350.075.120-... <sup>2)</sup>	130	45	30	75	253	160	120	8	6	4	4	3.8	
		LSV 0350.075.120-... <sup>2)</sup>	170	60	60	170	60	60	170	60	60	4.2			
400	406.4	LSN 0400.100.120-... <sup>2)</sup>	140	45	30	100	303	220	120	8	6	4	4	5.0	
		LSV 0400.100.120-... <sup>2)</sup>	210	65	60	210	65	60	210	65	60	5.8			
450	457	LSN 0450.100.120-... <sup>2)</sup>	150	50	40	100	329	220	120	8	8	5	5	6.0	
		LSV 0450.100.120-... <sup>2)</sup>	290	100	85	290	100	85	290	100	85	6.9			
500	508	LSN 0500.115.150-... <sup>2)</sup>	170	55	50	115	369	300	150	10	8	5	5	9.6	
		LSV 0500.115.150-... <sup>2)</sup>	330	110	95	330	110	95	330	110	95	11			
550	559	LSN 0550.120.150-... <sup>2)</sup>	170	55	50	120	400	300	150	10	8	5	5	10	
		LSV 0550.120.150-... <sup>2)</sup>	330	110	95	330	110	95	330	110	95	12			
600	610	LSN 0600.120.150-... <sup>2)</sup>	180	60	50	120	430	350	150	10	8	5	5	12	
		LSV 0600.120.150-... <sup>2)</sup>	340	120	100	340	120	100	340	120	100	13			
700	711	LSN 0700.120.170-... <sup>2)</sup>	210	95	60	120	476	420	170	10	8	5	5	16	
		LSV 0700.120.170-... <sup>2)</sup>	460	150	150	460	150	150	460	150	150	18			
800	813	LSN 0800.120.170-... <sup>2)</sup>	220	110	60	120	527	480	170	10	8	5	5	18	
		LSV 0800.120.170-... <sup>2)</sup>	500	160	160	500	160	160	500	160	160	21			
900	914	LSN 0900.150.190-... <sup>2)</sup>	270	120	65	150	607	540	190	12	10	6	6	27	
		LSV 0900.150.190-... <sup>2)</sup>	550	210	190	550	210	190	550	210	190	31			
1000	1016	LSN 1000.150.190-... <sup>2)</sup>	290	140	70	150	658	600	190	12	10	6	6	30	
		LSV 1000.150.190-... <sup>2)</sup>	600	220	200	600	220	200	600	220	200	35			
1200	1220	LSN 1200.150.190-... <sup>2)</sup>	330	220	70	150	760	740	190	12	10	6	6	38	
		LSV 1200.150.190-... <sup>2)</sup>	670	280	250	670	280	250	670	280	250	44			
1400	1420	LSN 1400.150.210-... <sup>2)</sup>	340	270	85	150	860	870	210	12	10	6	6	51	
		LSV 1400.150.210-... <sup>2)</sup>	850	340	290	850	340	290	850	340	290	62			
1600	1620	LSN 1600.150.210-... <sup>2)</sup>	340	320	85	150	960	1000	210	12	10	6	6	59	
		LSV 1600.150.210-... <sup>2)</sup>	970	340	300	970	340	300	970	340	300	72			
1800	1820	LSN 1800.150.250-... <sup>2)</sup>	680	540	140	150	1060	1160	250	15	10	6	6	86	
		LSV 1800.150.250-... <sup>2)</sup>	1210	540	420	1210	540	420	1210	540	420	102			
2000	2020	LSN 2000.150.250-... <sup>2)</sup>	680	540	140	150	1160	1280	250	15	10	6	6	96	
		LSV 2000.150.250-... <sup>2)</sup>	1300	540	420	1300	540	420	1300	540	420	115			

1) The nominal loads apply to supports made from S235JR at temperatures up to 80 °C  
 2) Add the characteristic for material and surface protection

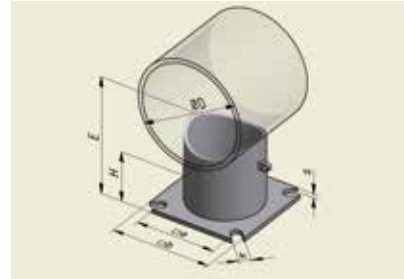
# HYDRA® FIXED SUPPORT

Type series LFA,  
to weld on, fixed height

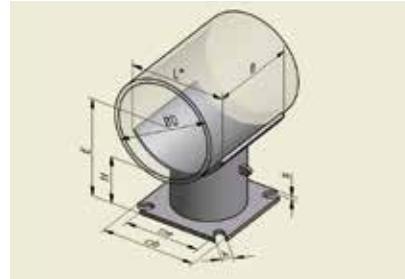
## Technical data

- Materials: S235JR, 16Mo3  
Material is temperature-dependent, see pg. 9
- Surface protection: primed, unthreaded
- Support eye nut from DN 500

## LFA < DN 700



## LFA > DN 700



## Order example: LFA 0400.238-16.3

Nominal diameter 400, nominal height 238 mm, 16Mo3, primed

Nominal diameter	Pipe outside diameter	Type LFA ...	Nominal loads <sup>1)</sup>				Nominal height	Installation dimension	Dimensions					Site weld min	k <sup>3)</sup>	Weight		
			-F <sub>z</sub>	+F <sub>x</sub>	F <sub>y</sub>	F <sub>x</sub>			H	E	B	L*	b				e	s
DN	D		kN	kN	kN	kN	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg		
80	88.9	0080.094 ... <sup>2)</sup>	17	17	10	5.0	94	139	-	-	115	85	10	3	14	1.7		
		0080.154 ... <sup>2)</sup>	17	17	6.5	3.0	154	199			2.2							
100	114.3	0100.098 ... <sup>2)</sup>	17	17	10	5.0	98	155	-	-	115	85	10	3	14	1.7		
		0100.158 ... <sup>2)</sup>	17	17	6.5	3.0	158	215			2.3							
125	139.7	0125.100 ... <sup>2)</sup>	31	31	25	12	100	170	-	-	150	115	12	3	18	2.6		
		0125.160 ... <sup>2)</sup>	31	31	17	8.0	160	230			3.2							
150	168.3	0150.103 ... <sup>2)</sup>	31	31	25	12	103	187	-	-	150	115	12	3	18	2.6		
		0150.163 ... <sup>2)</sup>	31	31	17	8.0	163	247			3.2							
200	219.1	0200.155 ... <sup>2)</sup>	54	54	46	23	155	265	-	-	200	160	15	3	18	6.0		
		0200.215 ... <sup>2)</sup>	54	54	34	17	215	325			7.1							
250	273.0	0250.159 ... <sup>2)</sup>	110	107	110	55	159	295	-	-	250	200	15	4	27	10		
		0250.219 ... <sup>2)</sup>	110	107	85	42	219	355			12							
300	323.9	0300.161 ... <sup>2)</sup>	110	107	110	55	161	323	-	-	250	200	15	4	27	10		
		0300.221 ... <sup>2)</sup>	110	107	85	42	221	383			12							
350	355.6	0350.161 ... <sup>2)</sup>	190	162	190	95	161	339	-	-	315	250	20	5	33	18		
		0350.221 ... <sup>2)</sup>	190	162	145	72	221	399			21							
400	406.4	0400.178 ... <sup>2)</sup>	190	162	190	95	178	381	-	-	315	250	20	5	33	19		
		0400.238 ... <sup>2)</sup>	190	162	145	72	238	441			22							
450	457	0450.181 ... <sup>2)</sup>	250	192	250	125	181	409	-	-	360	290	20	5	33	23		
		0450.241 ... <sup>2)</sup>	250	192	190	95	241	469			27							
500	508	0500.183 ... <sup>2)</sup>	380	269	380	190	183	437	-	-	400	320	20	6	39	32		
		0500.243 ... <sup>2)</sup>	380	269	290	145	243	497			37							
600	610	0600.186 ... <sup>2)</sup>	470	307	470	235	186	491	-	-	450	370	25	6	39	42		
		0600.246 ... <sup>2)</sup>	470	307	380	190	246	551			48							
700	711	0700.188 ... <sup>2)</sup>	600	342	600	300	188	543	-	-	600	600	550	460	25	6	39	94
		0700.248 ... <sup>2)</sup>	600	342	500	250	248	603			101							
800	813	0800.190 ... <sup>2)</sup>	600	342	600	300	190	596	-	-	600	600	550	460	25	6	39	92
		0800.250 ... <sup>2)</sup>	600	342	500	250	250	656			99							
900	914	0900.190 ... <sup>2)</sup>	820	412	820	410	190	647	-	-	700	700	650	540	30	7	45	128
		0900.250 ... <sup>2)</sup>	820	412	700	350	250	707			137							
1000	1016	1000.190 ... <sup>2)</sup>	820	412	820	410	190	698	-	-	700	700	650	540	30	7	45	126
		1000.250 ... <sup>2)</sup>	820	412	700	350	250	758			135							

1) The nominal loads apply to supports made from S235JR at temperatures up to 80 °C

2) Add the characteristic for material and surface protection

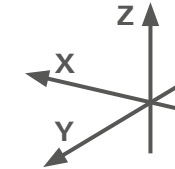
3) Up to DN 300: boltings 5.6; from DN 350: boltings 8.8

# HYDRA® VERTIKAL PIPE SUPPORT

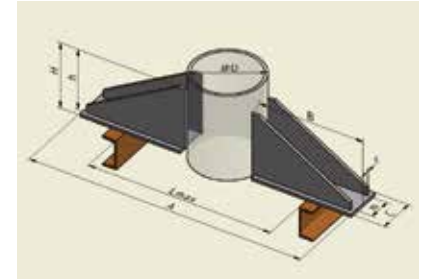
Type series PAN,  
up to 540 °C, vertical pipeline, to weld onto pipe, to prop up

## Technical data

- Materials: S235JR, 16Mo3, 13CrMo5-5  
Material is temperature-dependent, see pg 9
- Surface protection: hot-dip galvanized, primed, unthreaded
- Types  
Shape 1: 1 weld-on web (DN: 20 - 100)  
Shape 2: 2 weld-on web (DN: 50 - 600)



## PAN, presentation shape 2



## Order example: PAN 200.415.2-37.3

Height 200 mm, width 415 mm, shape 2, S235JR, primed

Nominal diameter	Pipe outside diameter	Type PAN ...	Nominal loads <sup>1)</sup>			Dimensions										Site weld min	Weight	
			-F <sub>z</sub>	F <sub>x</sub>	F <sub>y</sub>	A	B	C	H	h	s	m	L <sub>max</sub>	a	approx.			
DN	D		kN	kN	kN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
20	26.9	105.160.1 ... <sup>2)</sup>	6	3	0.6	347	160	50	105	100	5	-	285	2.5	1.4			
25	33.7	105.160.1 ... <sup>2)</sup>				354							290					
32	42.4	105.160.1 ... <sup>2)</sup>				362							300					
40	48.3	105.160.1 ... <sup>2)</sup>				368							305					
50	60.3	135.300.1 ... <sup>2)</sup>	6	3	0.6	660	300	50	135	129	6	-	600	3	3.6			
65	76.1	135.300.1 ... <sup>2)</sup>				676							615					
80	88.9	135.300.1 ... <sup>2)</sup>				690							625					
100	114.3	135.300.1 ... <sup>2)</sup>				714							650					
50	60.3	150.305.2 ... <sup>2)</sup>	20	10	10	646	305	80	150	144	6	48	595	V-joint	7.2			
65	76.1	150.305.2 ... <sup>2)</sup>				669							605					
80	88.9	150.305.2 ... <sup>2)</sup>				686							620					
100	114.3	150.305.2 ... <sup>2)</sup>				825							770					
125	139.7	170.365.2 ... <sup>2)</sup>	30	15	15	854	365	100	170	162	8	64	785	13.4				
150	168.3	170.365.2 ... <sup>2)</sup>				886							815					
200	219.1	200.415.2 ... <sup>2)</sup>				1025							970					
250	273.0	200.415.2 ... <sup>2)</sup>				1084							1025					
300	323.9	200.415.2 ... <sup>2)</sup>	38	19	19	1138	415	150	200	192	8	100	1075	19.2				
350	355.6	200.415.2 ... <sup>2)</sup>				1171							1110					
400	406.4	260.415.2 ... <sup>2)</sup>				1220							1160					
450	457.0	260.415.2 ... <sup>2)</sup>				1273							1215					
500	508.0	260.415.2 ... <sup>2)</sup>	64	32	32	1325	415	150	260	252	8	114	1265	22				
550	559.0	260.415.2 ... <sup>2)</sup>				1377							1315					
600	610.0	260.415.2 ... <sup>2)</sup>				1429							1370					

1) The nominal loads apply to supports made from S235JR at temperatures up to 80 °C and L=L<sub>max</sub>

At L<L<sub>max</sub> the following can be applied: F(L) = 0.95 x F(L<sub>max</sub>) x ((L<sub>max</sub> - D) / (L - D))

2) Add the characteristic for material and surface protection

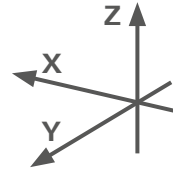


# HYDRA® VERTIKAL PIPE SUPPORT

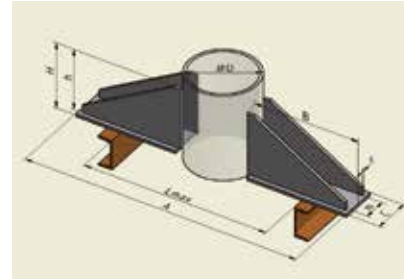
Type series PAV,  
up to 540 °C, vertical pipeline, heavy version, to weld onto pipe, to prop up

## Technical data

- Materials: S235JR, 16Mo3, 13CrMo5-5  
Material is temperature-dependent, see pg 9
- Surface protection: hot-dip galvanized, primed, unthreaded



## PAV



## Order example: PAV 260.415.2-37.3

Height 260 mm, width 415 mm, shape 2, S235JR, primed

Nominal diameter	Pipe outside diameter	Type PAV ...	Nominal loads <sup>1)</sup>			Dimensions								Weight	
			-F <sub>Z</sub>	F <sub>X</sub>	F <sub>Y</sub>	A	B	C	H	h	s	m	L <sub>max</sub>	approx.	
DN	D		kN	kN	kN	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
100	114.3	180 .365 .2 ... <sup>2)</sup>	42	21	21	820	365	110	180	170	10	70	760	17.6	
125	139.7	180 .365 .2 ... <sup>2)</sup>				851							790		
150	168.3	180 .365 .2 ... <sup>2)</sup>				883							820		
200	219.1	260 .415 .2 ... <sup>2)</sup>	90	45	45	1029	415	150	260	248	12	92	965	34	
250	273.0	260 .415 .2 ... <sup>2)</sup>				1087							1025		
300	323.9	260 .415 .2 ... <sup>2)</sup>				1141							1080		
350	355.6	260 .415 .2 ... <sup>2)</sup>				1173							1110		
400	406.4	330 .415 .2 ... <sup>2)</sup>				1213							1150		
450	457	330 .415 .2 ... <sup>2)</sup>	150	75	75	1266	415	180	330	318	12	136	1205	42	
500	508	330 .415 .2 ... <sup>2)</sup>				1319							1255		
550	559	330 .415 .2 ... <sup>2)</sup>				1372							1310		
600	610	410 .415 .2 ... <sup>2)</sup>	220	110	110	1425	415	180	410	398	12	136	1360	48	
700	711	410 .415 .2 ... <sup>2)</sup>				1528							1465		
800	813	410 .415 .2 ... <sup>2)</sup>				1632							1570		

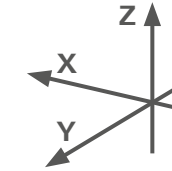
1) The nominal loads apply to supports made from S235JR at temperatures up to 80 °C and L=L<sub>max</sub>  
At L<L<sub>max</sub> the following can be applied:  $F(L) = 0.95 \times F(L_{max}) \times ((L_{max} - D) / (L - D))$   
2) Add the characteristic for material and surface protection

# HYDRA® VERTIKAL PIPE SUPPORT

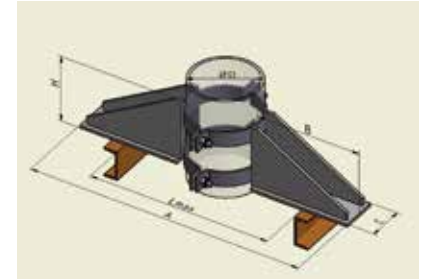
Type series PRN,  
up to 540 °C, vertical pipeline, with clamps to prop up

## Technical data

- 2-clamp
- Materials: S235JR, 16Mo3, 13CrMo5-5  
Material is temperature-dependent, see pg 9
- Surface protection: hot-dip galvanized, primed, unthreaded
- Types:  
Shape 1: 1 weld-on web (DN: 20 - 80)  
Shape 2: 2 weld-on webs (DN: 50 - 800)



## PRN, shape 2



## Order example: PRN 0250.200.415.2-37.2

Nominal diameter 250, height 200 mm, length 415 mm, shape 2, S235JR, hot-dip galvanized

Nominal diameter	Pipe outside diameter	Type PRN ...	Nominal loads <sup>1)</sup>			Dimensions					Weight		
			-F <sub>Z</sub> <sup>3)</sup>	F <sub>X</sub>	F <sub>Y</sub>	A	B	C	H	L <sub>max</sub>	approx.		
DN	D		kN	kN	kN	mm	mm	mm	mm	mm	mm	mm	kg
20	26.9	020 .105 .160 .1 ... <sup>2)</sup>	1.4	0.7	0.1	356.9	160	50	105	295	2.0		
25	33.7	025 .105 .160 .1 ... <sup>2)</sup>				363.7				300			
32	42.4	032 .105 .160 .1 ... <sup>2)</sup>				372.4				310			
40	48.3	040 .105 .160 .1 ... <sup>2)</sup>				378.3				315			
50	60.3	050 .135 .300 .1 ... <sup>2)</sup>	1.5	0.8	0.2	672.3	300	50	135	610	5.0		
65	76.1	065 .135 .300 .1 ... <sup>2)</sup>	688.1			625							
80	88.9	080 .135 .300 .1 ... <sup>2)</sup>	701.9			640							
50	60.3	050 .150 .305 .2 ... <sup>2)</sup>	1.7	0.9	0.2	664.07	305	80	150	600	8.7		
65	76.1	065 .150 .305 .2 ... <sup>2)</sup>	683.88			620							
80	88.9	080 .150 .305 .2 ... <sup>2)</sup>	699.89			635							
100	114.3	100 .170 .365 .2 ... <sup>2)</sup>	2.7	1.4	0.3	843.5	365	100	170	780	17		
125	139.7	125 .170 .365 .2 ... <sup>2)</sup>				871.94				810			
150	168.3	150 .170 .365 .2 ... <sup>2)</sup>				902.83				840			
200	219.1	200 .200 .415 .2 ... <sup>2)</sup>	2.9	1.5	0.3	1042.77	415	150	200	980	25		
250	273.0	250 .200 .415 .2 ... <sup>2)</sup>				1101.15				1040			
300	323.9	300 .200 .415 .2 ... <sup>2)</sup>				1154.86				1090			
350	355.6	350 .200 .415 .2 ... <sup>2)</sup>				1187.89				1125			
400	406.4	400 .260 .415 .2 ... <sup>2)</sup>	4.1	2.1	0.4	1244.51	415	150	260	1180	41		
450	457.0	450 .260 .415 .2 ... <sup>2)</sup>	1293.18			1230							
500	508.0	500 .260 .415 .2 ... <sup>2)</sup>	1345.55			1285							
550	559	550 .260 .415 .2 ... <sup>2)</sup>	9.5	4.8	1.0	1407.86	415	150	260	1345	71		
600	610	600 .260 .415 .2 ... <sup>2)</sup>				1459.77				1395			
700	711	700 .260 .415 .2 ... <sup>2)</sup>				1562.18				1500			
800	813	800 .260 .415 .2 ... <sup>2)</sup>				1665.26				1605			

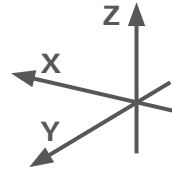
1) The nominal loads apply to supports made from S235JR at temperatures up to 80 °C and L=L<sub>max</sub>  
At L<L<sub>max</sub> the following can be applied:  $F(L) = 0.95 \times F(L_{max}) \times ((L_{max} - D) / (L - D))$   
2) Add the characteristic for material and surface protection  
3) For the transmission of axial forces, attach anti-slip devices to the pipe (6 o'clock position)

# HYDRA® VERTIKAL PIPE SUPPORT

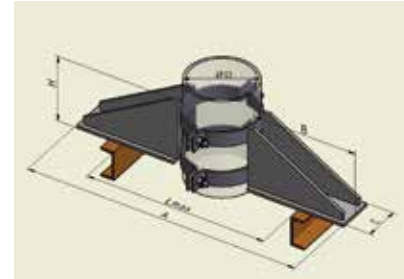
Type series PRV,  
up to 540 °C, vertical pipeline, heavy version, with clamps to prop up

## Technical data

- 2-clamp
- Materials: S235JR, 16Mo3, 13CrMo4-5  
Material is temperature-dependent, see pg 9
- Surface protection: hot-dip galvanized, primed, unthreaded



## PRV



## Order example: PRV 0250.260.415.2-37.2

Nominal diameter 250, height 200 mm, length 415 mm, shape 2, S235JR, hot-dip galvanized

Nominal diameter DN	Pipe outside diameter D mm	Type PRV ...	Nominal loads <sup>1)</sup>			Dimensions					Weight approx. kg
			-F <sub>Z</sub> <sup>3)</sup> kN	F <sub>x</sub> kN	F <sub>y</sub> kN	A mm	B mm	C mm	H mm	L <sub>max</sub> mm	
100	114.3	100 .180 .365 .2 -... <sup>2)</sup>	3.8	1.9	0.4	845	365	110	180	780	27
125	139.7	125 .180 .365 .2 -... <sup>2)</sup>				874				810	27
150	168.3	150 .180 .365 .2 -... <sup>2)</sup>				905				840	28
200	219.1	200 .260 .415 .2 -... <sup>2)</sup>	6.0	3.0	0.6	1055	415	150	260	995	48
250	273.0	250 .260 .415 .2 -... <sup>2)</sup>				1112				1050	50
300	323.9	300 .260 .415 .2 -... <sup>2)</sup>				1166				1105	52
350	355.6	350 .260 .415 .2 -... <sup>2)</sup>				1198				1135	54
400	406.4	400 .330 .415 .2 -... <sup>2)</sup>				1249				1185	77
450	457	450 .330 .415 .2 -... <sup>2)</sup>	13.0	6.5	1.3	1298	415	180	330	1235	80
500	508	500 .330 .415 .2 -... <sup>2)</sup>	20.0	10.0	2.0	1361				1300	108
550	559	550 .330 .415 .2 -... <sup>2)</sup>	20.0	10.0	2.0	1413				1350	113

1) The nominal loads apply to supports made from S235JR at temperatures up to 80 °C and  $L=L_{max}$

At  $L < L_{max}$  the following can be applied:  $F(L) = 0.95 \times F(L_{max}) \times ((L_{max} - D) / (L - D))$

2) Add the characteristic for material and surface protection

3) For the transmission of axial forces, attach anti-slip devices to the pipe