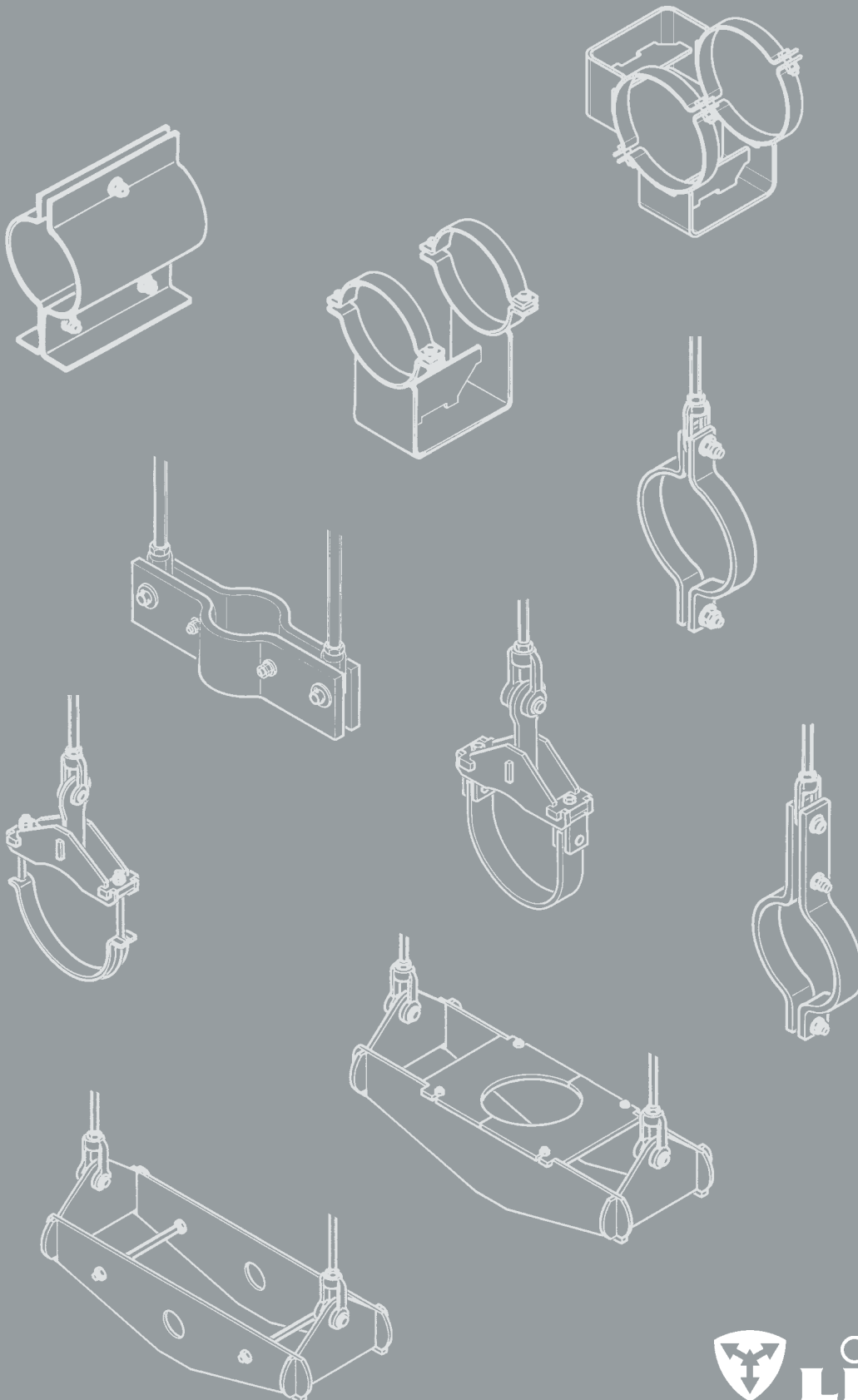


Pipe clamps, clamp bases, pipe connecting parts

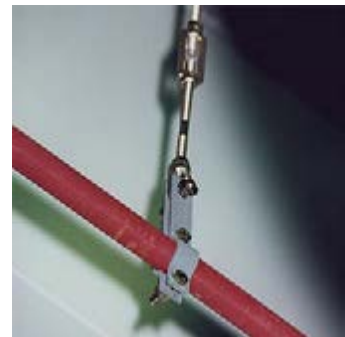
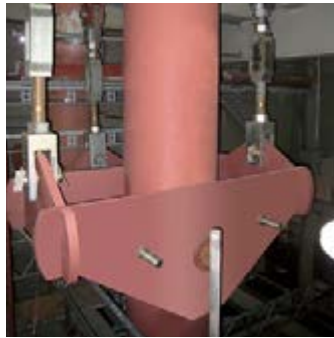
4

PIPE CLAMPS, CLAMP BASES,
PIPE CONNECTING PARTS



PRODUCT
GROUP

4



Pipe clamps, clamp bases, pipe connections

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Lift-off restraints for clamp bases type 49	4.68
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**PRODUCT
GROUP 4**

5

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Product group 4

Field of application

In high temperature pipe systems, pipe clamps and clamp bases are the most highly stressed and hence the most vulnerable components in the support chain due to the effects of such high temperatures. However, pipe clamps are seldom checked, as access is difficult after commissioning due to the surrounding insulation.

Standardization

Pipe clamps, clamp bases, pipe weld-on lugs and U-bolts all fall into the category of pipe connections. For these products, the design criteria of the pipe systems lead to wide variations, and so to a particularly large number of components. The dynamic clamps of product group 3 also belong in principle to this group. The design of both horizontal and vertical piping is determined by:

- diameters
- loads
- temperature of the medium
- insulation thicknesses

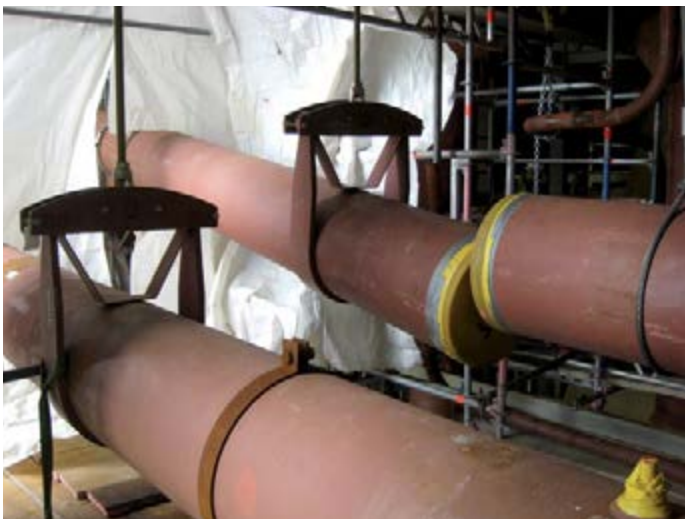
For proper coverage of the whole spectrum with safe components, LISEGA provides a complete program of standardized products for the whole field of application.

Following the special requirements of this field, the corresponding ideal design has been developed.

Diameters range from OD 21.3 to OD 1219, the temperature range extends to 650°C and



the permissible loads – divided into economical areas of operation – cover the highest level of the practical field of application.





These standardized components form an integral part of the LISEGA modular system, so load and connection compatibility are correspondingly assured.

Quality

Because of their critical field of application the design and construction of the pipesurrounding components require special attention.

As a matter of principle, just as much care and attention should be given to the pipe supports as to the piping itself, since the pipe systems can never be better than their supports!

The most important prerequisite for reliable component quality is comprehensive standardization.

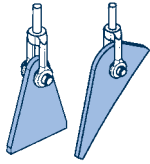
When choosing suitable products the customer should therefore place his confidence in components of proven quality.

Plant designers, constructors and operators can all benefit from the standardization of the whole spectrum of application with state-of-the-art design:

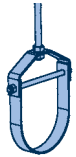
- **complete and clearly structured data tables simplify planning**
- **all supplies from a single source through integration into a comprehensive support program (LISEGA modular system)**
- **superior quality at competitive prices through rational series production and technically advanced designs**
- **consistent standardization enables instant availability**
- **favorable performance / weight ratios, easy-to-install designs and connection compatibility of LISEGA components allow efficient installation**
- **design in accordance with current codes ensures maximum operational safety**
- **heat loss reduced through compact component dimensions**
- **certifications by independent testing institutes can be supplied**
- **for pipe clamps used at higher temperature ranges, materials certified acc. to EN 102043.1 are used**

Product description

Horizontal clamps Type 41, 42, 43, 44



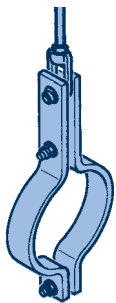
Type 41



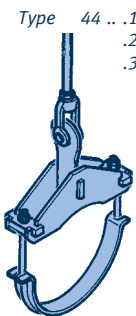
Type 42 .. 17



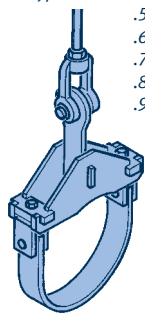
Type 42 .. 19



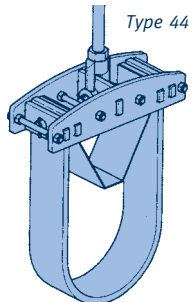
Type 43



Type 44 .. 1
.2
.3



Type 44 .. 4
.5
.6
.7
.8
.9



Type 44 .. 51
.2
.3
.4
.5
.6
.7

1 Weld-on lug type 41

This type is mainly used as a pipe connection for pipe systems under 80°C on horizontal pipes or pipe elbows.

2.1 Horizontal clamp type 42 .. 17

This clamp can be used as a construction clamp or hanger clamp in cold piping systems. The field of application is limited to smaller pipe dimensions.

2.2 Horizontal clamp type 42 .. 19

This clamp is used for larger pipe dimensions.

3 Horizontal clamp type 43

This hanger clamp follows the traditional steel design. Its use is limited to an economical range up to an individual weight of approximately 25kg. Connection to the load chain is made by bolts and LISEGA threaded eye nuts type 60.

The application range of the pipe clamps can extend over several LISEGA load groups due to the interdependency of load on temperature in material properties. For this, the eye nuts are so designed that at least three corresponding bolt diameters can be accommodated.

Same function → reduced weight

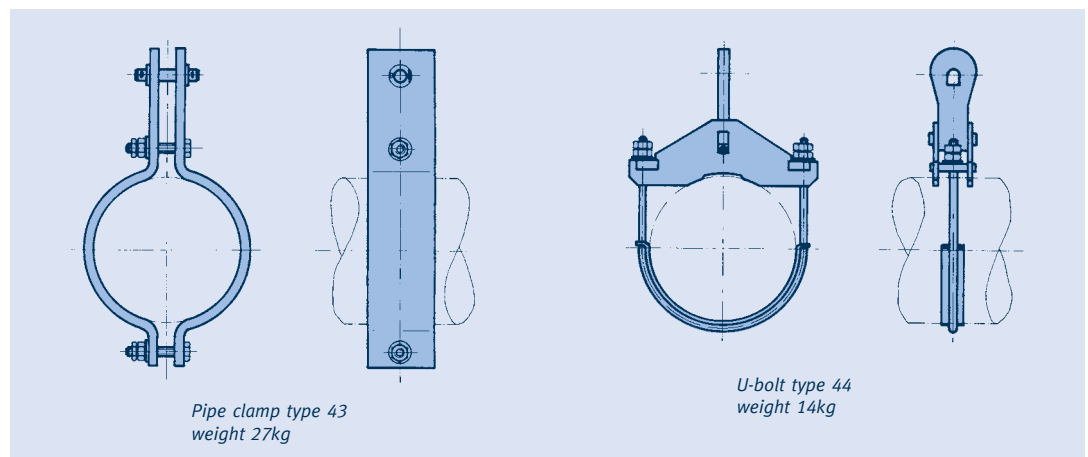
4 Horizontal clamp type 44

A rigid yoke takes up the load from a pipe-surrounding U-bolt with a shim plate. From certain diameters, temperatures or load ranges, a flat steel strap is used instead of a round steel U-bolt.

Completely eliminating welds, the individual components are formfitted with plug connections and bolted to each other (Patent No. DE 3817059).

Horizontal clamp type 44 is used where type 43 reaches economic limits. These are essentially the hightemperature, large pipe diameters in high load ranges.

Connection to the load chain is made with a lug and LISEGA clevis type 61. The connection lug is designed to accommodate connection bolts in a number of LISEGA load groups.



Weight reduction through type 44:

Comparison of a LISEGA pipe clamp with a pipe clamp of traditional shape following the same design criteria, load 32kN, temperature 300°C.

Product description

Riser clamps Type 45, 46, 48

1 Riser clamp type 45

With the riser clamp type 45 the lower load and temperature ranges are covered. This design is particularly economical for its diameter range.

Connection to the vertical piping is made with shear lugs welded to the pipe. The design and fitting of the lugs is the responsibility of the piping manufacturer.

Connection to the load chain is made with connecting bolts and LISEGA threaded eye nuts type 60. At least 3 LISEGA load groups can be covered.

When ordering, the span required (dimension L) must be specified.

2 Riser clamp type 46/48

The design of this riser clamp uses the box shape for its economical use of material.

The individual parts are connected without welding by means of connections, then locked to each other (Patent No. DE 3817015).

Connection to the vertically arranged pipe system can be made in two different ways and so requires two different designs:

- **Type 46, for load support using 4 shear lugs welded to the pipe. Two lugs are in general used only for $NW \leq 150$ and must be so arranged that they are located directly above the side section.**

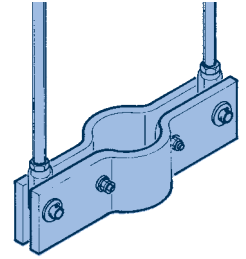
- **Type 48, for load support using trunnions welded to the pipe.**

The bore hole diameter for trunnions amounts to approx. 1/3 of the pipe diameter in accordance with ASME Code Case N3923 and DIN EN 13480 3.

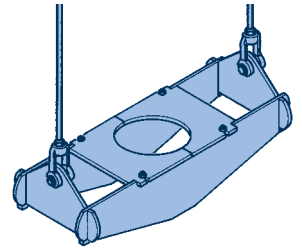
Connection to the load chain is done with integrated lugs designed for connection to LISEGA threaded clevises type 61.

The connecting lugs are shaped in such a way that they can accommodate the connection bolts for several LISEGA load groups.

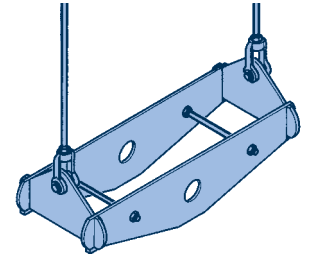
The inner dimensions of the box, which are required for the later trunnion calculations (N dimension) can, depending on the pipe diameter OK, be taken from the table at the bottom right.



Riser clamp type 45 with connections



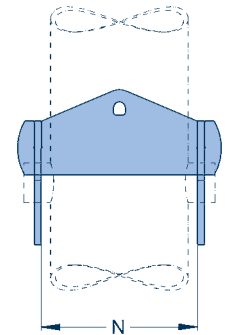
Riser clamp type 46 with connections



Riser clamp type 48 with connections

Materials of pipe clamps and clamp bases

clamp materials type	S235JR	S355J2	16Mo3	13CrMo4-5	21CrMoV5-7	10CrMo9-10	x10CrMoVNB9-1
horizontal clamps							
type 41	x						
type 42	x		x	x		x	x
type 43	x		x	x		x	x
type 44	x	x	x	x	x	x	x
riser clamps							
type 45	x			x		x	x
type 46	x	x	x	x		x	
type 48	x	x	x	x		x	x
clamp bases							
type 49 .. .1 } type 49 .. .2 }	x						
type 49 .. .3 } type 49 .. .4 } type 49 .. .5 }	x	x	x	x		x	x



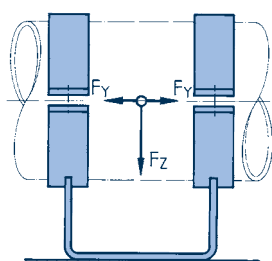
Inner width of box (N-dim.) of riser clamps type 46/48

pipe diameter	N-Dim.
$\leq OD\ 100$	$OD + 12mm$
$OD\ 100 \leq OD\ 400$	$OD + 22mm$
$> OD\ 400$	$OD + 32mm$

Product description

Clamp base Type 49

Clamp bases are generally used as slide bearings (loose supports) for horizontally arranged pipe systems.

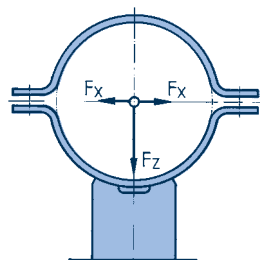


$$F_y = \mu \cdot F_z$$

As with pipe clamps, the application spectrum covers a diameter range from OD 21.3 to OD 1219 and a temperature range up to 600°C; for OD up to 88.9: 650°C.

In addition to the support load, the operating temperature of the pipe system is an essential criterion in the design of clamp bases; the material to be used is determined by this. The installation height is governed by the thickness of the insulation.

Fixed installation heights are assigned to the temperature ranges in order to keep the number of sizes within a reasonable range.



$$F_x = \mu \cdot F_z$$

Possible load applications on a clamp base

μ = friction coefficient

material	μ
Steel / steel	~0.3
Steel / PTFE	~0.1
Steel / high temperature component to 280°C	~0.1...0.18
Steel / high temperature component from 280°C to 350°C	~0.25

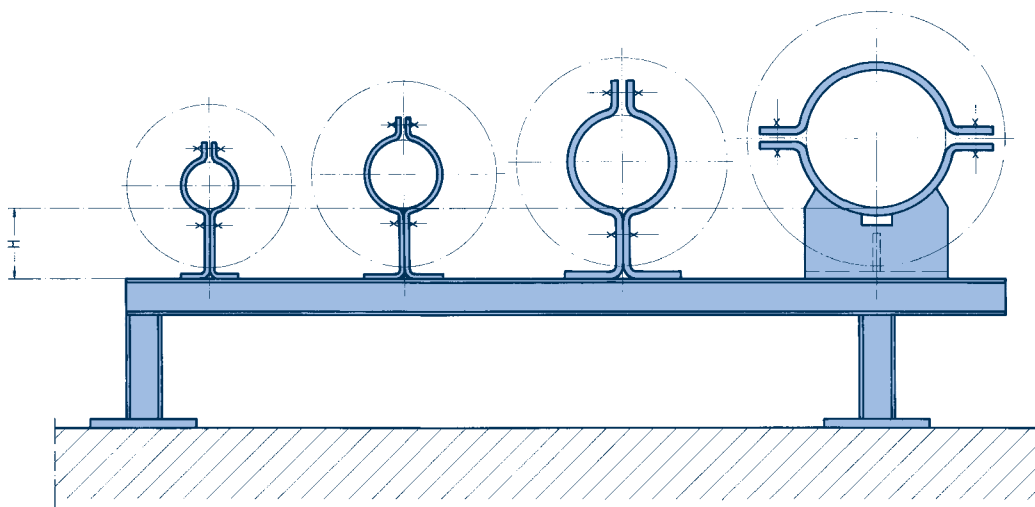
Further information on p. 7.11

The fixed installation heights relate, for all diameters, to the respective lower rim of the pipe and change by 50mm or 100mm increments.

The standard dimensions selected for the support height of the pipes, as well as the length of the slide bases, cover the majority of applications.

Different applications, according to temperature and loads, require different clamp base designs.

If required, components with special dimensions can be supplied. A small selection is shown on p. 4.9 in the section 'Special designs'.



Clamp base heights dependent on temperature of the medium and on pipe diameter

Temp. up to 350°C	H	50	100	150	200
	Pipe Ø	21.3-88.9	21.3-558.8	108-1219	323.9-1219

Temp. up to 500°C	H	100	150	200	250	300
	Pipe Ø	21.3-26.9	33.7-76.1	88.9-193.7	219.1-457.2	508-1219

Temp. up to 560°C	H	150	200	250	300
	Pipe Ø	21.3-76.1	88.9-168.3	193.7-323.9	355.6-1219

Temp. up to 600°C (650°C)	H	150 (200)	200 (250)	250	300
	Pipe Ø	21.3-76.1	88.9-168.3	193.7-323.9	355.6-1219

1 Design for low temperatures and small pipe diameters

The design for this field of application consists of two omega-shaped halves. On installation with the piping the lower section is firmly bolted and forms the slide base.

In the upper section the pipe is held in position by bolting.

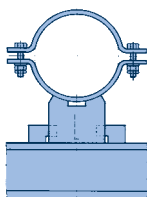
Through the free space under the pipe gained by the design of the component, constant ventilation of this area is ensured. This is essential for cold pipe systems, as otherwise pipe corrosion caused by moisture could result after only a short time. These clamp bases are electro-plated (galvanized) as a standard.

2 Design for medium and high temperatures

This design consists of a shaped lower metal plate, firmly welded to two pipe clamps. The lower section is fitted, according to the respective design load, with a reinforcing gusset.

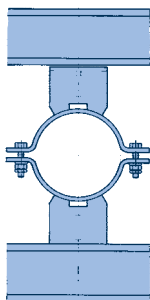
These clamp bases can be used in a variety of ways. By using two lower sections set against each other, a double guide can be easily produced (Fig. 2). By additionally fitting lateral guides, guidance from all sides can be provided.

Examples of use:



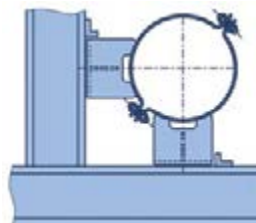
(Fig. 1)

Clamp base type 49 with lift-off restraint. Permissible loads and dimensions, see p. 4.68



(Fig. 2)

Clamp base type 49 ... GP as double guide

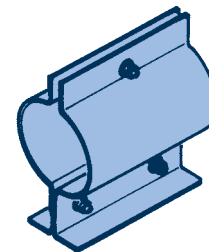


Clamp base type 49 ... -G2A as guide

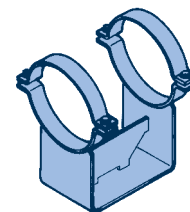
The shape of the base plate permits the simple mounting of lift-off restraints (Fig. 1). The lower section is so designed that it can be fitted with a stainless steel plate as a sliding surface for a slide component. See also 'product supplements', p. 4.7.

3 Special designs

- If required, special lengths or heights are possible. For very large expansion displacement it might be more expedient to arrange for correspondingly long support surfaces on site.
- For special pipe diameters not contained in the selection tables, either corresponding intermediate sizes are supplied, or suitable inlay plates are provided for slight diameter differences.
- If required, double or multiple guides on the basis of standard clamp bases can be supplied (see also "special designs", p. 4.9).



Version 1:
Clamp base for low pipe temperatures
type 491, 492



Version 2:
Clamp base for medium and high temperatures
type 493, .4,5

Product supplements for pipe clamps and clamp bases

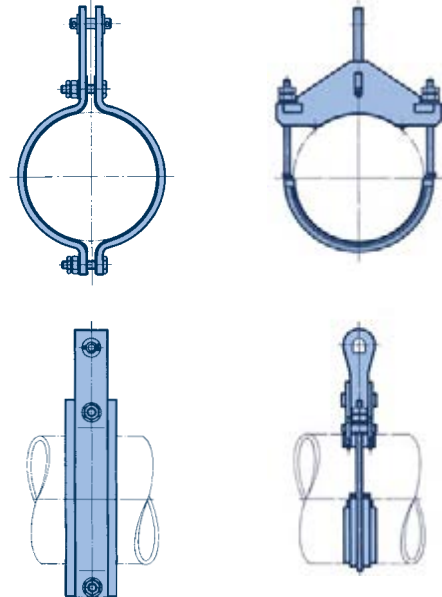
Pipe clamps and clamp bases are often equipped with supplementary parts for special applications. For this purpose LISEGA offers a wide variety of possibilities.

1 Stainless steel inlay plates

For the support of austenitic pipe systems, all LISEGA pipe clamps and clamp bases can be fitted with stainless steel inlay plates of the material 1.4301 (X5 CrNi 1810). These plates must be ordered separately and are offered with the following type numbers:

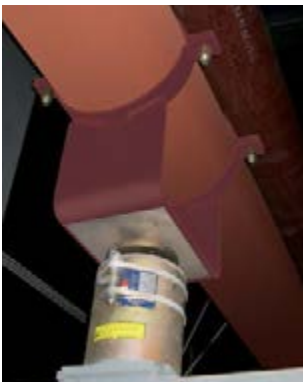
For type series 36: Stainless steel plate 36 ... -IP
 For type series 37: Stainless steel plate 37 ... -IP
 For type series 42: Stainless steel plate 42 ... -IP
 For type series 43: Stainless steel plate 43 ... -IP
 For type series 44: Stainless steel plate 44 ... -IP
 For type series 45: Stainless steel plate 45 ... -IP
 For type series 46/48: Stainless steel plate 46/48 ... -IP
 For type series 49 .. 11/12:
 Stainless steel plate 49 ... -IP
 For type series 49 .. 13/14:
 Stainless steel plate 2x 42 ... -IP

Material thickness: 0.5mm



Type 43 with inlay plate

Type 44 with inlay plate



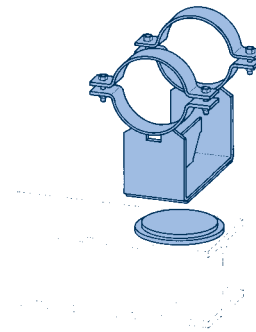
Stainless steel slide plate under clamp base type 49, high temperature slide plate and spring support type 29

2 Stainless steel slide plates

To reduce friction resistance in clamp bases, all of them can be fitted with stainless steel sliding surfaces of the material 1.4301 (X5 CrNi 1810). These sliding surfaces, in combination with PTFE slide plates **type 70** (up to 180°C) or the **new LISEGA hightemperature sliding material (up to 350°C)**, reduce friction forces by approx. 10 – 20% of the support load. See also section 'slide plates' p. 7.10 This version of the clamp bases with slide plates must be ordered separately. For this, please add the type number suffix "SP":

Examples: 49 22 14-SP
 49 27 14-G2A-SP

The installation height of the clamp base increases by approx. 3mm.

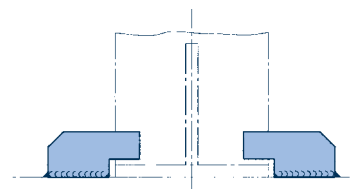


Lift-off restraint

3 Lift-off restraints

type 49 00 01 to 49 00 05

The clamp bases can if required be fitted with lift-off restraints. These restraints ensure that the clamp base remains in position if the support load is too small or the clamp base cannot be welded on. They can be ordered according to the selection tables (p. 4.68).



4 Connection plates type 77

Two pipe clamps types 43 and 44 can be coupled with connection plates. This way the load can be doubled. A selection is shown on p. 4.67.

When ordering, this is made clear by replacing the type designation of the clamps with "77".

Example type 43:

77 09 39 for clamps 43 01 19 – 43 09 59

77 17 39 for clamps 43 10 19 – 43 17 59

77 19 13 for clamps 43 19 19 – 43 19 59

Example type 44:

77 66 38 for type 44 66 38

The load group must be specified for type 44, as the upper connection (type 60) must be correspondingly selected.

5 Anti-corrosion separating tape

Separating tapes are used when the pairing of dissimilar materials in pipe and pipe supports must be electrically separated to prevent local corrosion. This way, the piping can be fitted with supports of more economical martensitic materials, and still be more effectively protected.

The adhesive separating tapes can be applied in a temperature range from -35°C to $+210^{\circ}\text{C}$ and are largely resistant to acids, bases and solvents. They are applied as adhesive tape (in part multilayered) to the grease-free piping at the point where the pipe clamp body surrounds the pipe. The material thickness amounts to only 0.5mm.

The tapes are supplied in different widths to suit the clamps. The order designation of 10m-lengths is:

Order details:

Anti-corrosion separating tape type 42 00 ..

6 Pipe guides type 49 -G..

It is often necessary to limit the piping in its displacement horizontally, vertically or in both directions. On the basis of the type 49 standard designs, pipe guides are offered here as a variant corresponding to the standard design in form and load capacity. The order number is made up from the standard type number and the desired features of the design.

Example:

type 49 standard:

49

type 49 double guide parallel:

49 -G2P

type 49 lateral guide angulated:

49 -G2A

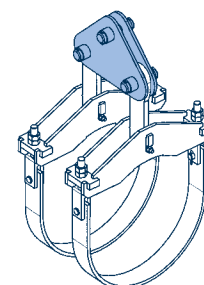
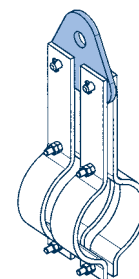
type 49 triple lateral guide:

49 -G3

type 49 foursided guide:

49 -G4

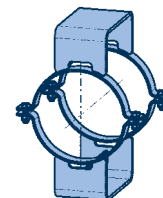
These designs can be fitted with extra slide plates.



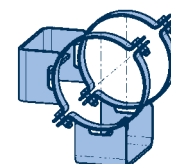
Connection plates type 77 on pipe clamps type 43/44



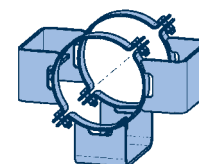
Pipe bearing (type 49 -G2P)



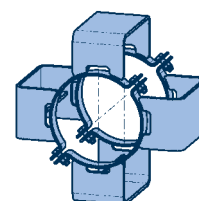
Type 49 -G2P



Type 49 -G2A



Type 49 -G3



Type 49 -G4

type	width [mm]	type	width [mm]
42 00 04	b=40	42 00 11	b=110
42 00 05	b=50	42 00 12	b=120
42 00 06	b=60	42 00 15	b=150
42 00 07	b=70	42 00 17	b=170
42 00 08	b=80	42 00 20	b=200
42 00 09	b=90	42 00 22	b=220
42 00 10	b=100		

Special designs

For pipe supports, the application of standardized components has long since proven itself through enormous savings in time and costs where design, shipment and installation are concerned. This applies particularly to pipe clamps and clamp bases.

However, the general complexity of pipe systems requires an extremely wide range of applications for these components, which in special cases demands the use of special designs. For the technically correct solution it is necessary in such cases to rely on experienced professionals, who can offer tried-and-tested solutions and calculation processes.

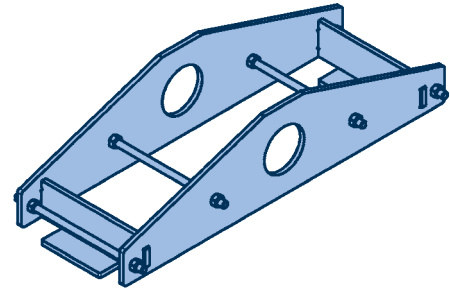
Special designs

The standardized LISEGA program of pipe-surrounding support components is comprehensive and covers all general cases of applications, going well beyond the usual spectrum in this field. In spite of this, more complicated cases sometimes occur where only a special design can provide the best solution. Among other things, special designs are most often called for in the following situations:

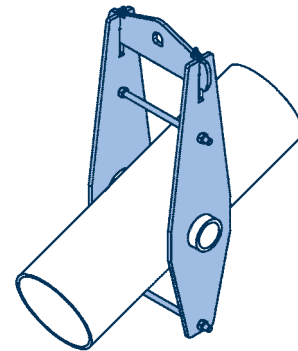
- unusually restricted spaces
- avoidance of interferences
- custom-made anchors
- exceptionally high load requirements
- special pipe diameters
- especially high temperatures (up to 1000°C)
- larger insulation thicknesses
- unusual angles in piping
- special trunnion diameters
- shear lugs

LISEGA's customers are not left alone in such situations. For these special problem cases, an experienced team of technicians and engineers is on hand, ready to react rapidly and flexibly with the right solutions. They are backed up by a range of computer software programs developed in-house. On top of this, a broad repertoire of tried-and-tested basic designs is available.

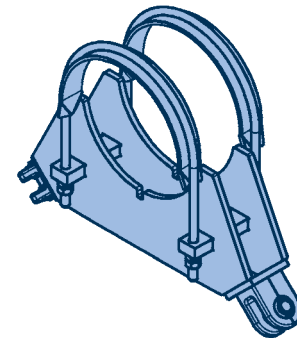
There's no problem that can't be solved – this conviction is powerful motivation for LISEGA's experts. We are happy to give our customers proof of this at any time!



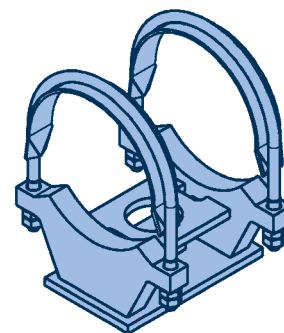
Special design type 48 (seated)



Special design type 48 for an angulating pipe system



Special design type 38



Special design type 49 with displacement control



Support for a vertical pipe section with special design type 45



LISEGA triple joint (special design)

Selection of pipe clamps and clamp bases

The following points are important for application:

- 1 All data needed for determination of the correct component and a clearly defined order are outlined in the selection tables.
- 2 The connection geometries are compatible with those of the LISEGA connection components. Due to the wide load application range, connection components from several LISEGA load groups can be attached.

The dimensions and geometries listed in the selection tables can vary slightly as regards design: The permissible loads apply as shown.

- 3 The lengths of the connecting lugs are so designed that the connection points lie outside the economical insulation thicknesses.
- 4 All pipe clamps and clamp bases can be fitted with corresponding stainless steel inlay plates for use with pipe systems made of austenitic materials. These components can be found on p. 4.7.
- 5 When selecting a suitable pipe clamp the **following sequence** is to be followed:
 - 5.1 Determination of the relevant page for the outer diameter (OD) of the pipe system to be supported. The normal pipe tolerances are covered.
 - 5.2 Determination of the relevant temperature range in the column for the desired support type, horizontal or vertical.
 - 5.3 Determination of the permissible load to be covered. The permissible operational load taken from the selection table must not be exceeded at any time. The linear interpolation of the permissible load for intermediate temperatures is allowed.
 - 5.4 Checking of installation dimension E and width B for agreement with the installation conditions on site. The dimensions can be taken from the selection tables.

5.5 Checking of the span width in riser clamps (L DIM.).

5.6 Decision as to whether trunnions or shear lugs are to be used for riser clamps type 46/48.

5.7 Agreement of the connection with the load chain required can be checked via the LISEGA load group ranges.

5.8 Specify the component selected by entering the relevant LISEGA type number.

6 When selecting a suitable clamp base the points 5.1 – 5.3 should be followed.

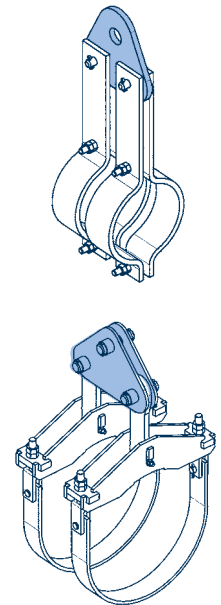
Attention must also be paid to selection of the correct height (dimension H) which depends on the thickness of the insulation.

6.1 The heights specified (dimension H) and the lengths (dimension A) are standard dimensions (see selection tables) and cover the most common cases of application. If required, the components can be supplied with different dimensions.

7 Pipe clamps and clamp bases can be supplied as special designs for unusual applications and conditions (see pp. 4.6 to 4.9 for this).

8 In the design and construction of LISEGA pipe clamps and clamp bases, their application in cases of increased requirements was also taken into account. In accordance with the LISEGA quality management system, separate manufacturing is required for this. The type designation thereby changes in the 5th place by addition of a 5 (see also pp. 0.7 and 0.8 on this).

The selection tables on the following pages offer an overview of the fields of application. They are classified in rising stages according to pipe diameters. All pipe clamps and clamp bases coming into consideration for a planned pipe system can therefore be found on one page. The high-temperature range (600°C – 650°C) is included as a supplementary section.



By coupling two pipe clamps with connection plates type 77 the loads can be doubled. A selection can be found on p. 4.67.

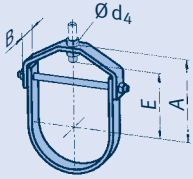
Selection table

OD 21.3

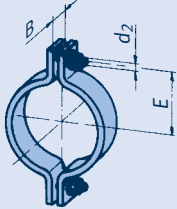
Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

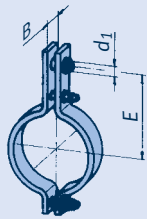
Pipe clamps, clamp bases, OD 21.3 (ND 15), type 42, 43, 45, 49



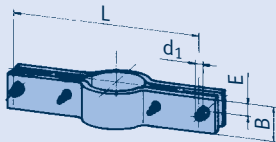
type	permissible load [kN]										600°C	d ₄	E	A	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600							
42 01 17	2.5											10.5	22	43	26	0.14	C-D



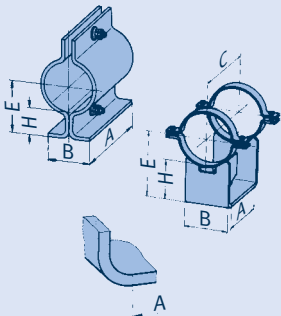
type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
42 01 19	5.3	4.0	2.9								M10	28	30	0.3	C-2	
Heat-resistant materials, see pp. 0.9 and 4.4																



type	permissible load [kN]										600°C	d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
43 01 19	6.1	4.7	3.4									12	100	30	0.5	C-2
43 01 39			5.8	5.2	4.3	3.6	2.3	1.2				12	135	30	0.6	C-2
43 01 49					6.7	5.9	4.5	2.8	2.1	1.5		12	135	30	0.6	C-2



type	permissible load [kN]										600°C	d ₁	E	B	L	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600							
45 01 11	4.4	3.6	2.5									12	25	50	250	2.2	C-4
45 01 11	3.7	2.9	2.1									12	25	50	300	2.5	C-4
45 01 11	2.7	2.2	1.5									12	25	50	400	3.2	C-4
45 01 11	2.1	1.7	1.2									12	25	50	500	3.8	C-4
45 01 11	1.9	1.4	1.0									12	25	50	600	4.4	C-4
45 01 31	9.0	7.6	6.5	5.6	4.9	4.0	2.6	1.3				12	25	70	300	4.2	C-4
45 01 31	6.6	5.6	4.8	4.1	3.6	3.0	1.9	1.0				12	25	70	400	5.3	C-4
45 01 31	5.2	4.4	3.8	3.3	2.8	2.3	1.5	0.8				12	25	70	500	6.4	C-4
45 01 31	4.3	3.7	3.1	2.7	2.3	1.9	1.2	0.6				12	25	70	600	7.5	C-4
45 01 41	8.7	7.8	7.3	6.4	4.9	4.3	3.2	2.0	1.5	1.1		12	25	70	300	4.2	C-4
45 01 41	6.4	5.8	5.4	4.7	3.6	3.2	2.4	1.5	1.1	0.8		12	25	70	400	5.3	C-4
45 01 41	5.0	4.5	4.2	3.7	2.8	2.5	1.9	1.2	0.8	0.6		12	25	70	500	6.4	C-4
45 01 41	4.2	3.7	3.5	3.0	2.3	2.0	1.5	1.0	0.7	0.5		12	25	70	600	7.5	C-4



type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600							
49 01 11	1.1	0.8	0.6									61	100	40	–	50	0.6
49 01 12	1.6	1.2	0.9									111	150	65	–	100	1.3
49 01 25	3.7	2.8	2.4	1.9	1.8							111	175	70	230	100	1.6
49 01 35	4.2	3.8	3.2	2.8	2.6	2.6	2.5	1.7				161	175	100	230	150	2.3
49 01 45	5.4	4.6	4.4	3.9	3.7	3.6	3.4	2.3	1.7	1.3		161	175	100	230	150	2.7

Selection table

OD 26.9

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 26.9 (ND 20), type 42, 43, 45, 49

type	permissible load [kN]										d ₄	E	A	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C						
42 02 17	2.5										10.5	25	48	26	0.15	C-D

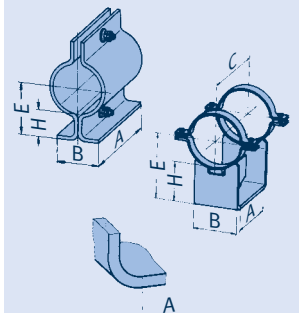
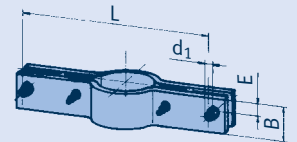
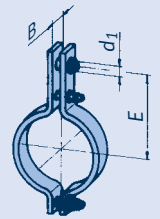
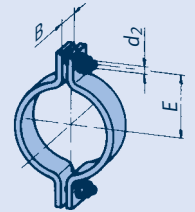
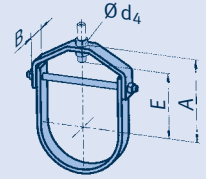
type	permissible load [kN]										d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
42 02 19	5.3	4.0	2.9								M10	33	30	0.3	C-2

Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
43 02 19	6.1	4.7	3.4								12	110	30	0.5	C-2
43 02 39			5.8	5.2	4.3	3.6	2.3	1.2			12	135	30	0.6	C-2
43 02 49					6.7	5.9	4.5	2.8	2.1	1.5	12	135	30	0.6	C-2

type	permissible load [kN]										d ₁	E	B	L	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C						
45 02 11	4.6	3.7	2.6								12	25	50	250	2.2	C-4
45 02 11	3.7	3.0	2.1								12	25	50	300	2.5	C-4
45 02 11	2.7	2.2	1.6								12	25	50	400	3.2	C-4
45 02 11	2.2	1.7	1.2								12	25	50	500	3.8	C-4
45 02 11	1.8	1.4	1.0								12	25	50	600	4.4	C-4
45 02 31	9.3	7.8	6.7	5.8	5.0	4.1	2.7	1.4			12	25	70	300	4.2	C-4
45 02 31	6.8	5.7	4.9	4.2	3.7	3.0	2.0	1.0			12	25	70	400	5.3	C-4
45 02 31	5.3	4.5	3.8	3.3	2.9	2.4	1.5	0.8			12	25	70	500	6.4	C-4
45 02 31	4.4	3.7	3.2	2.7	2.4	2.0	1.2	0.6			12	25	70	600	7.5	C-4
45 02 41	8.9	8.1	7.5	6.5	5.0	4.4	3.3	2.1	1.5	1.1	12	25	70	300	4.2	C-4
45 02 41	6.5	5.9	5.5	4.8	3.7	3.2	2.4	1.5	1.1	0.8	12	25	70	400	5.3	C-4
45 02 41	5.1	4.6	4.3	3.7	2.9	2.5	1.9	1.2	0.9	0.6	12	25	70	500	6.4	C-4
45 02 41	4.2	3.8	3.5	3.1	2.4	2.1	1.6	1.0	0.7	0.5	12	25	70	600	7.5	C-4

type	permissible load [kN]										E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600°C						
49 02 11	1.1	0.8	0.6								63	100	40	–	50	0.6
49 02 12	1.6	1.2	0.9								113	150	65	–	100	1.4
49 02 25	3.7	2.8	2.4	1.9	1.8						113	175	70	230	100	1.6
49 02 35	4.3	3.8	3.3	2.8	2.7	2.6	2.6	1.7			163	175	100	230	150	2.3
49 02 45	5.4	4.6	4.4	4.0	3.7	3.7	3.4	2.3	1.8	1.3	163	175	100	230	150	2.7



Selection table

OD 33.7

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 33.7 (ND 25), type 42, 43, 45, 49

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₄	E	A		
42 03 17	2.5										10.5	32	54	26	0.16 C-D

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B		
42 03 19	5.3	4.0	2.9								M10	36	30	0.4	C-2

Heat-resistant materials, see pp. 0.9 and 4.4

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E	B		
43 03 19	6.1	4.7	3.4								12	120	30	0.6	C-2
43 03 39		6.5	5.8	5.2	4.3	3.6	2.3	1.2			12	165	30	0.8	C-2
43 03 49				6.7	6.7	6.7	5.3	3.4	2.5	1.8	12	165	40	1.1	C-2

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E	B		
45 03 11	5.8	4.6	3.3								12	25	60	250	2.7 C-4
45 03 11	4.7	3.8	2.7								12	25	60	300	3.0 C-4
45 03 11	3.4	2.7	2.0								12	25	60	400	3.8 C-4
45 03 11	2.6	2.2	1.5								12	25	60	500	4.5 C-4
45 03 11	2.2	1.8	1.3								12	25	60	600	5.3 C-4
45 03 31	9.6	8.1	6.9	6.0	5.2	4.3	2.8	1.4			12	25	70	300	4.2 C-4
45 03 32	10	10	9.8	9.3	9.0	9.0	8.9	7.3			12	25	90	300	10.2 C-4
45 03 31	6.9	5.9	5.0	4.3	3.7	3.1	2.0	1.0			12	25	70	400	5.3 C-4
45 03 32	10	10	9.8	9.3	9.0	9.0	8.9	5.3			12	25	90	400	13.0 C-4
45 03 31	5.4	4.6	3.9	3.4	2.9	2.4	1.6	0.8			12	25	70	500	6.4 C-4
45 03 32	10	10	9.8	9.3	9.0	9.0	8.2	4.2			12	25	90	500	15.8 C-4
45 03 31	4.5	3.8	3.2	2.8	2.4	2.0	1.3	0.6			12	25	70	600	7.5 C-4
45 03 32	10	10	9.8	9.3	9.0	9.0	6.8	3.5			12	25	90	600	18.7 C-4
45 03 41	9.3	8.3	7.8	6.8	5.2	4.6	3.5	2.2	1.6	1.2	12	25	70	300	4.2 C-4
45 03 42							8.9	8.7	8.2	6.1	12	25	90	300	10.2 C-4
45 03 41	6.7	6.0	5.6	4.9	3.8	3.3	2.5	1.6	1.1	0.8	12	25	70	400	5.3 C-4
45 03 42							8.9	8.1	6.0	4.5	12	25	90	400	13.0 C-4
45 03 41	5.2	4.7	4.4	3.8	3.0	2.6	1.9	1.2	0.9	0.6	12	25	70	500	6.4 C-4
45 03 42						9.0	8.9	6.4	4.7	3.5	12	25	90	500	15.8 C-4
45 03 41	4.3	3.9	3.6	3.1	2.4	2.1	1.6	1.0	0.7	0.5	12	25	70	600	7.5 C-4
45 03 42						9.0	8.4	5.3	3.9	2.9	12	25	90	600	18.7 C-4

permissible load [kN]														wt. [kg]	
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B		
49 03 11	1.1	0.8	0.6								67	100	45	—	0.7
49 03 12	1.6	1.2	0.9								117	150	70	—	1.5
49 03 25	3.3	2.8	2.4	1.9	1.8						167	175	102	230	2.3
49 03 35	4.6	4.1	3.5	3.0	2.8	2.8	2.7	1.9			167	175	102	230	2.4
49 03 45	5.4	4.6	4.4	4.0	3.7	3.7	3.4	2.3	1.8	1.3	167	175	102	230	2.8

Selection table

OD 42.4

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 42.4 (ND 32), type 42, 43, 45, 49

permissible load [kN]											d ₄	E	A	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C						
42 04 17	2.5										10.5	45	66	26	0.19	C-D

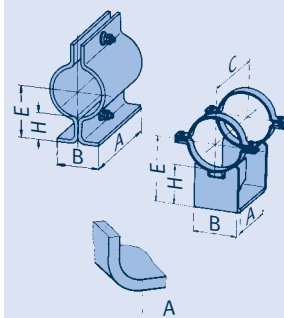
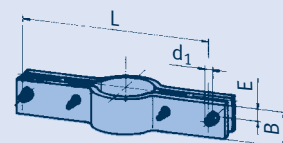
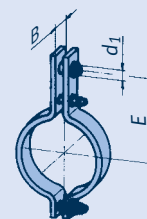
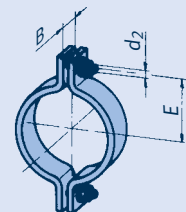
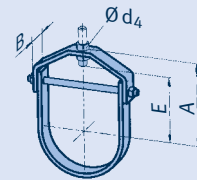
permissible load [kN]											d ₂	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
42 04 19	5.3	4.0	2.9								M10	40	30	0.4	C-2

Heat-resistant materials, see pp. 0.9 and 4.4

permissible load [kN]											d ₁	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
43 04 19	6.1	4.7	3.4								12	135	30	0.7	C-2
43 04 39	6.7	6.5	5.8	5.2	4.3	3.6	2.3	1.2			12	180	30	0.9	C-2
43 04 49			6.7	6.7	6.7	6.7	5.3	3.4	2.5	1.8	12	180	40	1.2	C-2

permissible load [kN]											d ₁	E	B	L	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C						
45 04 11	9.0	7.2	5.1								12	25	70	300	4.3	C-4
45 04 11	6.5	5.2	3.7								12	25	70	400	5.4	C-4
45 04 11	5.1	4.0	2.9								12	25	70	500	6.5	C-4
45 04 11	4.1	3.3	2.4								12	25	70	600	7.6	C-4
45 04 39							5.0	2.8			12	25	70	350	7.2	C-D
45 04 31	18	15	13	11	10	8.4	5.5	2.8			16	30	70	350	7.2	1-4
45 04 32	24	24	23	22	22	21	13	7.1			16	30	100	350	13.4	1-4
45 04 39						5.0	4.1	2.1			12	25	70	450	8.9	C-D
45 04 31	14	12	10	8.8	7.6	6.3	4.1	2.1			16	30	70	450	8.9	1-4
45 04 32	24	24	23	21	19	16	10	5.4			16	30	100	450	16.5	1-4
45 04 39						5.0	3.3	1.7			12	25	70	550	10.5	C-D
45 04 31	11	9.6	8.2	7.1	6.1	5.1	3.3	1.7			16	30	70	550	10.5	1-4
45 04 32	24	23	20	17	15	13	8.5	4.3			16	30	100	550	19.7	1-4
45 04 39					5.0	4.3	2.8	1.4			12	25	70	650	12.2	C-D
45 04 31	9.5	8.0	6.9	5.9	5.1	4.3	2.8	1.4			16	30	70	650	12.2	1-4
45 04 32	23	19	17	14	13	10	7.1	3.6			16	30	100	650	22.8	1-4
45 04 41					9.9	9.0	6.8	4.3	3.2	2.4	12	25	70	350	7.0	C-4
45 04 42					22	22	17	10	8.1	6.0	16	30	100	350	13.4	1-4
45 04 41		10	10	7.7	6.8	5.1	3.2	2.4	1.8	1.2	12	25	70	450	8.6	C-4
45 04 42		23	22	19	17	13	8.3	6.1	4.6	3.7	16	30	100	450	16.5	1-4
45 04 41	10	9.9	9.2	8.0	6.2	5.4	4.1	2.6	1.9	1.4	12	25	70	550	10.3	C-4
45 04 42	24	24	22	19	15	13	10	6.6	4.9	3.7	16	30	100	550	19.7	1-4
45 04 41	9.1	8.3	7.7	6.7	5.2	4.5	3.4	2.2	1.6	1.2	12	25	70	650	11.9	C-4
45 04 42	22	20	19	16	13	11	8.8	5.5	4.1	3.1	16	30	100	650	22.8	1-4

permissible load [kN]											E	A	B	C	H	wt. [kg]
type	100	250	350	450	500	510	530	560	580	600°C						
49 04 11	1.1	0.8	0.6								71	100	45	—	50	0.7
49 04 12	1.6	1.2	0.9								121	150	70	—	100	1.6
49 04 25	3.4	2.9	2.4	2.0	1.8						171	175	102	230	150	2.4
49 04 35	4.7	4.2	3.6	3.1	2.9	2.9	2.8	1.9			171	175	102	230	150	2.4
49 04 45	5.5	4.7	4.5	4.0	3.8	3.7	3.5	2.4	1.8	1.3	171	175	102	230	150	2.9



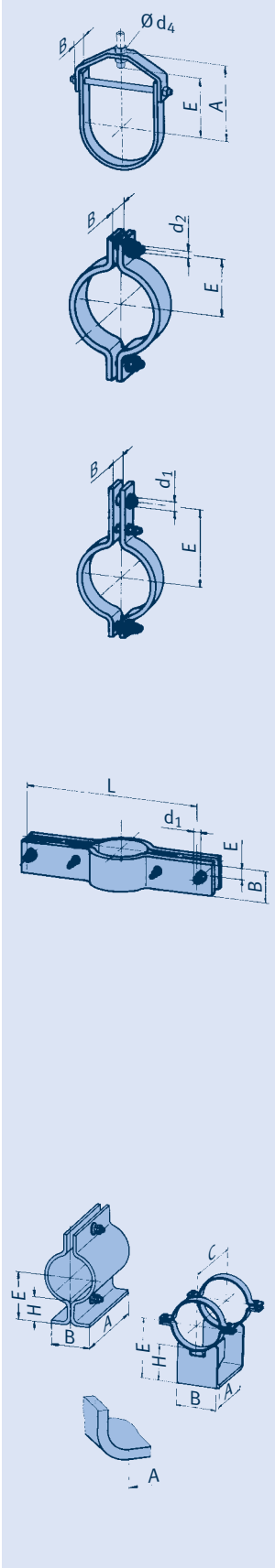
Selection table

OD 48.3

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 48.3 (ND 40), type 42, 43, 45, 49



permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₄	E	A		
42 05 17	2.5										10.5	54	77	26	0.25 C-D

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B		
42 05 19	5.3	4.0	2.9								M10	45	30	0.4	C-2
Heat-resistant materials, see pp. 0.9 and 4.4															

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E	B		
43 05 19	6.1	4.7	3.4								12	140	30	0.7	C-2
43 05 39	6.7	6.5	5.6	4.8	4.3	3.6	2.3	1.2			12	185	30	0.9	C-2
43 05 49		6.7	6.7	6.7	6.7	6.7	5.3	3.4	2.5	1.8	12	185	40	1.2	C-2

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E	B	L	
45 05 11	10	8.1	5.8								12	25	80	300	4.9 C-4
45 05 11	7.7	5.9	4.2								12	25	80	400	6.2 C-4
45 05 11	5.9	4.6	3.3								12	25	80	500	7.4 C-4
45 05 11	4.9	3.7	2.7								12	25	80	600	8.7 C-4
45 05 39							5.0	3.3			12	25	80	350	8.3 C-D
45 05 31	22	18	16	13	12	9.9	6.5	3.3			16	30	80	350	8.3 1-4
45 05 32	24	24	23	22	22	22	17	8.9			16	30	120	350	16.1 1-4
45 05 39						5.0	4.9	2.5			12	25	80	450	10.1 C-D
45 05 31	16	14	12	10	9.0	7.5	4.9	2.5			16	30	80	450	10.1 1-4
45 05 32	24	24	23	22	22	19	13	6.7			16	30	120	450	19.9 1-4
45 05 39						5.0	3.9	2.0			12	25	80	550	12.0 C-D
45 05 31	13	11	9.6	8.3	7.2	6.0	3.9	2.0			16	30	80	550	12.0 1-4
45 05 32	24	24	23	21	19	16	10	5.3			16	30	120	550	23.6 1-4
45 05 39						5.0	4.9	3.2	1.6		12	25	80	650	13.9 C-D
45 05 31	11	9.3	8.0	6.9	6.0	4.9	3.2	1.6			16	30	80	650	13.9 1-4
45 05 32	24	24	20	17	16	13	8.7	4.4			16	30	120	650	27.4 1-4
45 05 41						9.8	8.0	5.0	3.7	2.8	12	25	80	350	8.0 C-4
45 05 42						22	21	13	10	7.5	16	30	120	350	16.1 1-4
45 05 41				10	9.1	8.0	6.0	3.8	2.8	2.1	12	25	80	450	9.9 C-4
45 05 42					22	21	16	10	7.5	5.6	16	30	120	450	19.9 1-4
45 05 41		11	10	9.4	7.2	6.4	4.8	3.0	2.2	1.7	12	25	80	550	11.7 C-4
45 05 42			23	22	19	17	12	8.2	6.0	4.5	16	30	120	550	23.6 1-4
45 05 41	10	9.6	8.9	7.8	6.0	5.3	4.0	2.5	1.8	1.4	12	25	80	650	13.6 C-4
45 05 42		24	23	20	16	14	10	6.8	5.0	3.7	16	30	120	650	27.4 1-4

permissible load [kN]														wt. [kg]	
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B		
49 05 11	1.1	0.8	0.6								74	100	50	—	50 0.8
49 05 12	1.6	1.2	0.9								124	150	75	—	100 1.7
49 05 25	3.4	2.9	2.4	2.0	1.8						174	175	102	230	150 2.4
49 05 35	4.7	4.2	3.6	3.1	2.9	2.9	2.8	1.9			174	175	102	230	150 2.5
49 05 45	5.6	4.8	4.5	4.0	3.8	3.7	3.5	2.4	1.8	1.3	174	175	102	230	150 2.9

Selection table

OD 60.3

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 60.3 (ND 50), type 42, 43, 45, 49

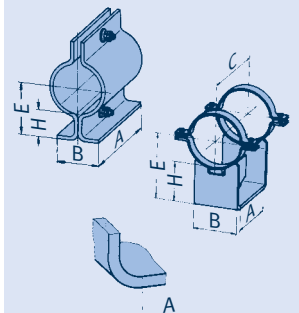
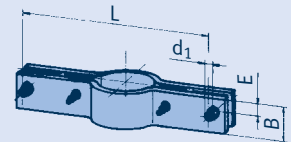
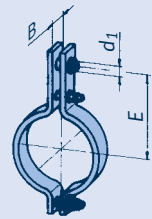
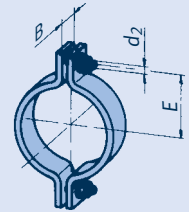
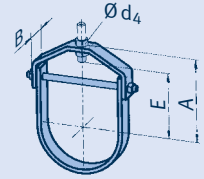
permissible load [kN]											wt. [kg]	load group				
type	100	250	350	450	500	510	530	560	580	600°C						
42 06 17	2.5										10.5	75	94	26	0.27	C-D

permissible load [kN]											wt. [kg]	load group			
type	100	250	350	450	500	510	530	560	580	600°C					
42 06 19	6.7	5.5	4.0								M12	55	40	0.8	C-2
Heat-resistant materials, see pp. 0.9 and 4.4															

type	permissible load [kN]											wt. [kg]	load group		
	100	250	350	450	500	510	530	560	580	600°C	d ₁			E	B
43 06 19	7.5	5.7	4.1								12	155	40	1.2	C-4
43 06 39	9.2	8.6	8.2	7.8	6.3	5.2	3.4	1.8			12	200	50	1.6	C-4
43 06 49						6.0	6.0	4.7	3.4	2.5	12	200	50	2.1	C-4

permissible load [kN]															wt.	load
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E	B	L	[kg]	group
45 06 11	9.0	6.7	4.8								12	25	70	300	4.4	C-4
45 06 12	24	18	13								16	30	80	300	7.4	1-4
45 06 11	6.5	4.8	3.4								12	25	70	400	5.5	C-4
45 06 12	17	13	9.4								16	30	80	400	9.3	1-4
45 06 11	5.1	3.8	2.7								12	25	70	500	6.6	C-4
45 06 12	13	10	7.4								16	30	80	500	11.2	1-4
45 06 11	4.1	3.1	2.2								12	25	70	600	7.7	C-4
45 06 12	11	8.5	6.1								16	30	80	600	13.1	1-4
45 06 39							5.0	3.7			12	25	100	400	11.6	C-D
45 06 31	24	20	17	15	13	11	7.4	3.7			16	30	100	400	11.6	1-4
45 06 32	24	24	23	22	22	22	15	8.0			16	30	120	400	18.1	1-4
45 06 39							5.0	2.9			12	25	100	500	13.9	C-D
45 06 31	18	16	13	11	10	8.6	5.6	2.9			16	30	100	500	13.9	1-4
45 06 32	24	24	23	22	22	18	12	6.2			16	30	120	500	21.9	1-4
45 06 39						5.0	4.5	2.3			12	25	100	600	16.3	C-D
45 06 31	15	13	11	9.6	8.4	7.0	4.5	2.3			16	30	100	600	16.3	1-4
45 06 32	24	24	23	20	18	15	9.8	5.0			16	30	120	600	25.7	1-4
45 06 39						5.0	3.8	1.9			12	25	100	700	18.6	C-D
45 06 31	12	11	9.4	8.1	7.1	5.9	3.8	1.9			16	30	100	700	18.6	1-4
45 06 32	24	22	19	17	15	12	8.2	4.2			16	30	120	700	29.4	1-4
45 06 41						9.8	9.1	5.7	4.2	3.2	12	25	100	400	11.2	C-4
45 06 42						22	19	12	9.0	6.7	16	30	120	400	18.1	1-4
45 06 41					9.9	9.2	7.0	4.4	3.2	2.4	12	25	100	500	13.6	C-4
45 06 42					22	19	14	9.4	7.0	5.2	16	30	120	500	21.9	1-4
45 06 41			10	10	8.5	7.5	5.6	3.5	2.6	2.0	12	25	100	600	15.9	C-4
45 06 42			23	22	18	16	12	7.6	5.6	4.2	16	30	120	600	25.7	1-4
45 06 41		11	10	9.2	7.1	6.3	4.7	3.0	2.2	1.6	12	25	100	700	18.3	C-4
45 06 42	24	23	21	19	15	13	10	6.4	4.7	3.5	16	30	120	700	29.4	1-4

permissible load [kN]																wt.
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B	C	H	[kg]
49 06 11	1.2	0.9	0.7								80	150	50	–	50	1.3
49 06 12	1.7	1.3	0.9								130	200	75	–	100	2.4
49 06 25	4.0	3.4	2.8	2.3	2.1						180	220	110	285	150	3.5
49 06 35	4.7	4.2	3.6	3.1	2.9	2.9	2.8	1.9			180	220	110	285	150	3.6
49 06 45	7.0	6.0	5.7	5.1	4.8	4.7	4.4	3.0	2.3	1.6	180	220	110	290	150	4.2



Selection table

OD 73

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 73 (ND 65), type 42, 43, 45, 46, 48, 49

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₄	E	A		
42 07 17	5.0										13	95	120	32	0.52 C-2

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B		
42 07 19	6.7	5.5	4.0								M12	60	40	0.8	C-2

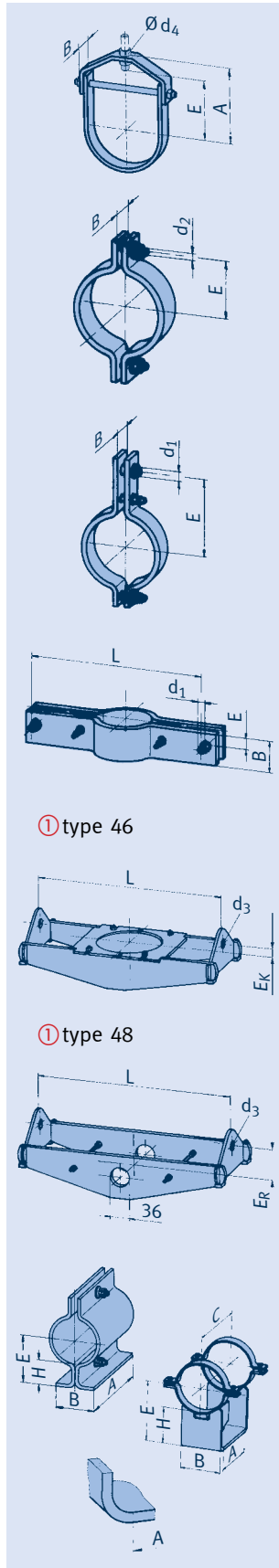
Heat-resistant materials, see pp. 0.9 and 4.4

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E	B		
43 07 19	7.5	5.7	4.1								12	165	40	1.2	C-4
43 07 39	9.2	8.6	8.2	7.8	6.3	5.2	3.4	1.8			12	215	50	1.8	C-4
43 07 49					6.1	6.0	6.0	4.7	3.4	2.5	12	215	50	2.3	C-4

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E	B		
45 07 19			5.0								12	25	70	300	6.6 C-D
45 07 11	17	13	9.2								16	30	70	300	6.6 1-4
45 07 12	27	23	16								16	30	100	300	9.3 1-4
45 07 19			5.0								12	25	70	400	8.2 C-D
45 07 11	14	10	7.5								16	30	70	400	8.2 1-4
45 07 12	22	16	11								16	30	100	400	11.7 1-4
45 07 19			5.0								12	25	70	500	9.9 C-D
45 07 11	11	8.3	6.0								16	30	70	500	9.9 1-4
45 07 12	17	12	9.1								16	30	100	500	14.0 1-4
45 07 19		5.0	4.7								12	25	70	600	11.5 C-D
45 07 11	9.0	6.6	4.7								16	30	70	600	11.5 1-4
45 07 12	13	10	7.3								16	30	100	600	16.4 1-4

permissible load [kN]														L		type 46		type 48		load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K		[kg min]	[kg max]	E _R	[kg min]	[kg max]
4. 07 31	19	18	18	16	11	10	8.0	5.0			21	350	750	15	8.0	15	70	7.0	14	C-4
4. 07 32	22	21	21	20	15	13	10	6.6			21	350	750	25	8.0	17	75	7.0	16	C-4
4. 07 33	46	45	44	41	28	25	20	12			25	350	750	30	12	27	100	11	23	3-5
4. 07 41								7.3	5.3	3.9	21	350	750	15	7.0	15	70	6.0	14	C-4
4. 07 42								11	8.1	5.9	21	350	750	25	9.0	19	85	7.0	17	C-4
4. 07 43					25	24	18	13	10	25	25	350	750	30	12	27	115	9.0	24	3-5

type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580								
49 07 11	1.2	0.9	0.7								87	150	55	–	50	1.5	
49 07 12	1.7	1.3	0.9								137	200	80	–	100	2.6	
49 07 25	4.0	3.4	2.8	2.3	2.1						187	220	110	285	150	3.7	
49 07 35	7.0	6.3	5.5	4.6	4.3	4.3	4.2	2.6			187	220	110	285	150	3.8	
49 07 45	10.1	8.6	8.2	7.4	6.8	6.8	5.8	3.8	2.8	2.0	187	220	110	290	150	4.3	



① type 46

① type 48

Selection table

OD 76.1

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 76.1 (ND 65), type 42, 43, 45, 46, 48, 49

type	permissible load [kN]										d ₄	E	A	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C						
42 08 17	5.0										13	95	120	32	0.54	C-2

type	permissible load [kN]										d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
42 08 19	6.7	5.5	4.0								M12	60	40	0.9	C-2

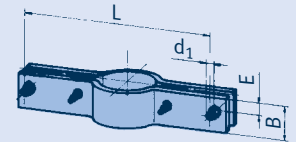
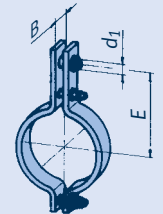
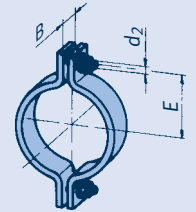
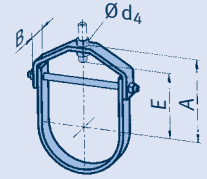
Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
43 08 19	7.5	5.7	4.1								12	165	40	1.2	C-4
43 08 39	9.2	8.6	8.2	7.7	6.3	5.2	3.4	1.8			12	215	50	1.8	C-4
43 08 49				6.3	6.1	6.0	6.0	4.7	3.4	2.5	12	215	50	2.3	C-4

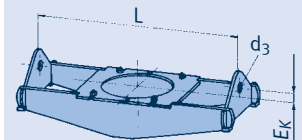
type	permissible load [kN]										d ₁	E	B	L	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C						
45 08 19			5.0								12	25	70	300	6.6	C-D
45 08 11	17	13	9.2								16	30	70	300	6.6	1-4
45 08 12	27	23	16								16	30	100	300	9.4	1-4
45 08 19			5.0								12	25	70	400	8.3	C-D
45 08 11	14	10	7.5								16	30	70	400	8.3	1-4
45 08 12	22	16	11								16	30	100	400	11.7	1-4
45 08 19			5.0								12	25	70	500	9.9	C-D
45 08 11	11	8.3	6.0								16	30	70	500	9.9	1-4
45 08 12	17	12	9.1								16	30	100	500	14.1	1-4
45 08 19		5.0	4.7								12	25	70	600	11.6	C-D
45 08 11	9.0	6.6	4.7								16	30	70	600	11.6	1-4
45 08 12	13	10	7.3								16	30	100	600	16.4	1-4

type	permissible load [kN]										L	type 46		type 48		load group				
	100	250	350	450	500	510	530	560	580	600°C		d ₃	min	max	E _K		[kg min]	[kg max]	E _R	[kg min]
4.①0831	19	18	18	16	11	10	8.0	5.0			21	350	750	15	8.0	15	70	7.0	14	C-4
4. 08 32	23	22	21	20	15	13	10	6.7			21	350	750	15	9.0	18	75	7.0	16	C-4
4. 08 33	47	45	44	41	28	25	20	12			25	350	750	30	13	27	100	11	23	3-5
4. 08 41								7.3	5.3	3.9	21	350	750	15	7.0	15	70	6.0	14	C-4
4. 08 42								11	8.1	5.9	21	350	750	25	9.0	19	85	7.0	17	C-4
4. 08 43					25	24	18	13	10	25	30	350	750	30	12	27	115	9.0	24	3-5

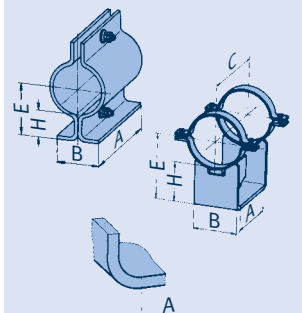
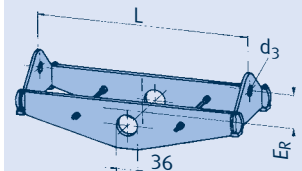
type	permissible load [kN]										E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600°C						
49 08 11	1.2	0.9	0.7								88	150	55	—	50	1.5
49 08 12	1.7	1.3	0.9								138	200	80	—	100	2.6
49 08 25	4.0	3.4	2.8	2.3	2.1						188	220	110	285	150	3.7
49 08 35	7.0	6.3	5.4	4.6	4.3	4.3	4.2	2.6			188	220	110	285	150	3.8
49 08 45	10.3	8.8	8.4	7.6	7.0	6.9	5.9	3.9	2.8	2.1	188	220	110	290	150	4.3



① type 46



① type 48



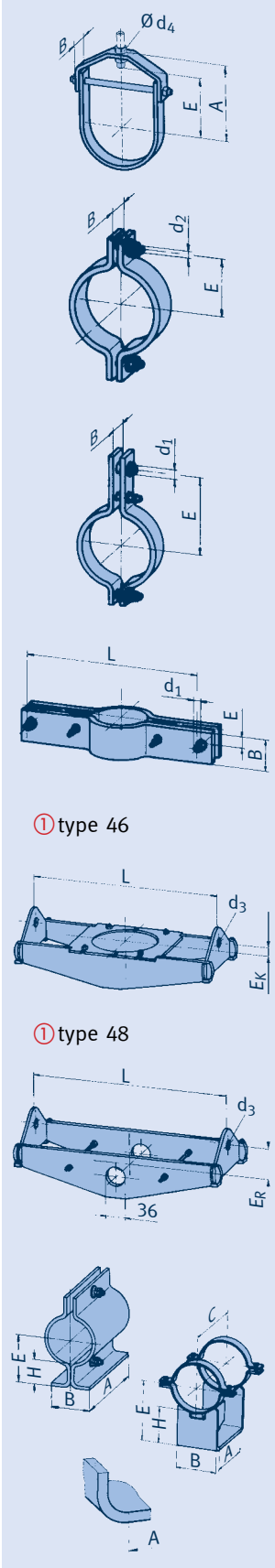
Selection table

OD 88.9

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 88.9 (ND 80), type 42, 43, 45, 46, 48, 49



permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₄	E	A		
42 09 17	5.0										13	100	121	32	0.60 C-2

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B		
42 09 19	6.3	4.5	3.5								M12	70	40	1.0	C-2
Heat-resistant materials, see pp. 0.9 and 4.4															

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E	B		
43 09 18	2.5	2.5	2.5								12	170	40	1.4	C-D
43 09 19	7.4	5.7	4.1								16	170	40	1.4	1-4
43 09 38			2.5	2.5	2.5	2.5	2.5	1.7			12	235	50	1.9	C-D
43 09 39	11	9.9	8.5	7.3	6.3	5.2	3.4	1.7			16	235	50	1.9	1-4
43 09 49					6.1	6.0	6.0	4.7	3.4	2.5	12	235	50	2.5	C-4

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E	B		
45 09 19			5.0								12	25	70	300	6.7 C-D
45 09 11	17	13	9.5								16	30	70	300	6.7 1-4
45 09 12	27	23	16								16	30	100	300	9.5 1-4
45 09 19			5.0								12	25	70	450	9.2 C-D
45 09 11	12	8.9	6.4								16	30	70	450	9.2 1-4
45 09 12	19	14	10								16	30	100	450	13.0 1-4
45 09 19		5.0	3.7								12	25	70	600	11.6 C-D
45 09 11	9.0	6.6	4.7								16	30	70	600	11.6 1-4
45 09 12	13	10	7.3								16	30	100	600	16.5 1-4
45 09 19		5.0	3.7								12	25	70	750	14.1 C-D
45 09 11	7.1	5.2	3.7								16	30	70	750	14.1 1-4
45 09 12	10	7.9	5.6								16	30	100	750	20.1 1-4

permissible load [kN]											L			type 46		type 48		load		
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4.①0931	17	16	16	15	11	10	7.9	5.0			21	350	850	15	8.0	19	75	7.0	16	C-4
4. 09 32	22	21	20	20	15	13	10	6.7			21	350	850	25	8.0	24	85	7.0	19	C-4
4. 09 33	45	44	42	40	28	25	20	12			25	350	850	35	12	35	100	10	27	3-5
4. 09 41								7.3	5.3	3.9	21	350	850	15	8.0	18	75	7.0	17	C-4
4. 09 42								10	8.1	5.9	21	350	850	25	9.0	24	100	8.0	21	C-4
4. 09 43					27	27	26	19	14	10	25	350	850	35	13	36	105	9.0	29	3-5

permissible load [kN]														wt. [kg]				
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B	C	H			
49 09 11	1.8	1.4	1.0								94	150	60	—	50			
49 09 12	2.5	1.9	1.3								144	200	85	—	100			
49 09 25	4.0	3.4	2.8	2.3	2.1						244	270	146	340	200			
49 09 35	7.0	6.3	5.4	4.6	4.3	4.3	4.2	2.6			244	270	146	340	200			
49 09 45	10.3	8.9	8.4	7.6	7.0	6.9	6.5	4.5	3.3	2.4	244	270	146	340	200			

Selection table OD 108

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 108 (ND 100), type 42, 43, 45, 46, 48, 49

type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
42 10 19	10	7.8	6.0								M16	90	50	2.0	1-4	
Heat-resistant materials, see pp. 0.9 and 4.4																

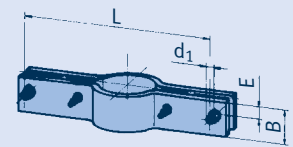
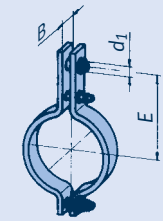
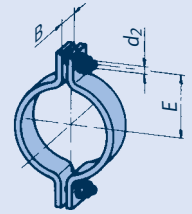
Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										600°C	d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
43 10 18	2.5	2.5	2.5									12	200	50	2.5	C-D
43 10 19	10	8.3	6.0									16	200	50	2.5	1-4
43 10 29			3.3	2.8	2.0							12	240	40	1.3	C-4
43 10 38				2.5	2.5	2.5	2.5	2.4				12	270	50	3.0	C-D
43 10 39			11	10	8.6	7.1	4.6	2.4				16	270	50	3.0	1-4
43 10 48							2.5	2.5	2.5	2.5		12	270	70	4.1	C-D
43 10 49	15	14	14	13	13	13	12	7.8	5.7	4.3		16	270	70	4.1	1-4

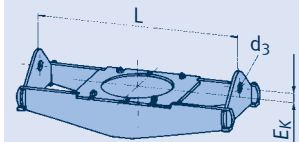
type	permissible load [kN]										600°C	d ₁	E	B	L	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600							
45 10 19			5.0									12	25	80	350	8.7	C-D
45 10 11	17	13	9.7									16	30	80	350	8.7	1-4
45 10 19			5.0									12	25	80	500	11.6	C-D
45 10 11	12	9.3	6.7									16	30	80	500	11.6	1-4
45 10 19			5.0									12	25	80	650	14.4	C-D
45 10 11	9.4	7.0	5.0									16	30	80	650	14.4	1-4
45 10 19		5.0	4.0									12	25	80	800	17.2	C-D
45 10 11	7.5	5.6	4.0									16	30	80	800	17.2	1-4

type	permissible load [kN]										600°C	d ₃	L		type 46		type 48		load group		
	100	250	350	450	500	510	530	560	580	min			max	E _K	[kg min]	[kg max]	E _R	[kg min]		[kg max]	
4.① 10 12	19	14	10								25	350	800	5	9.0	18	70	7.0	16	3-5	
4. 10 31	22	22	21	20	16	15	11	6.6			21	350	950	15	10	26	85	8.0	23	C-4	
4. 10 32	39	37	37	34	23	21	16	10			25	350	950	25	15	37	85	10	31	3-5	
4. 10 33	69	66	64	60	40	37	29	18			34	350	950	35	19	51	120	16	44	3-6	
4. 10 41								10	8.1	5.9	21	350	950	15	10	28	100	8.0	26	C-4	
4. 10 42								14	10	7.9	25	350	950	25	14	36	110	10	31	3-5	
4. 10 43								27	26	20	15	34	350	950	35	18	52	130	15	44	3-6

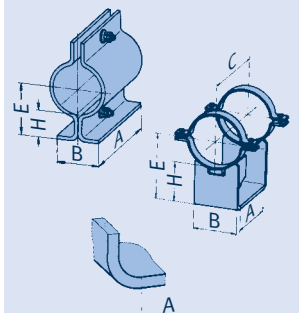
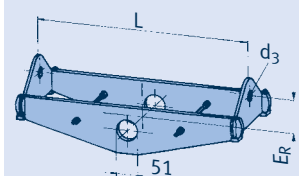
type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600							
49 10 11	2.3	1.8	1.3									154	150	95	—	100	4.0
49 10 12	3.2	2.4	1.8									204	200	125	—	150	6.3
49 10 25	4.9	4.2	3.5	2.8	2.6							254	265	152	345	200	7.9
49 10 35	7.6	6.8	5.8	4.9	4.7	4.6	4.5	2.6				254	265	152	345	200	8.1
49 10 45	10.3	8.9	8.4	7.6	7.0	6.9	6.5	4.5	3.3	2.4		254	270	152	350	200	9.3



① type 46



① type 48



Selection table

OD 114.3

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 114.3 (ND 100), type 42, 43, 45, 46, 48, 49

type	permissible load [kN]										d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
42 11 19	10	7.8	6.0								M16	90	50	2.1	1-4

Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
43 11 18	2.5	2.5	2.5								12	200	50	2.6	C-D
43 11 19	10	8.3	6.0								16	200	50	2.6	1-4
43 11 29			3.3	2.7	2.0						12	240	40	1.5	C-4
43 11 38				2.5	2.5	2.5	2.5	2.4			12	270	50	3.0	C-D
43 11 39			11	9.6	8.6	7.1	4.6	2.4			16	270	50	3.0	1-4
43 11 48							2.5	2.5	2.5	2.5	12	270	70	4.2	C-D
43 11 49	15	14	14	13	13	13	12	7.8	5.7	4.3	16	270	70	4.2	1-4

type	permissible load [kN]										d ₁	E	B	L	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C						
45 11 19			5.0								12	25	80	350	8.8	C-D
45 11 11	17	13	9.7								16	30	80	350	8.8	1-4
45 11 19			5.0								12	25	80	500	11.6	C-D
45 11 11	12	9.3	6.7								16	30	80	500	11.6	1-4
45 11 19			5.0								12	25	80	650	14.4	C-D
45 11 11	9.4	7.0	5.0								16	30	80	650	14.4	1-4
45 11 19			5.0								12	25	80	800	17.3	C-D
45 11 11	7.5	5.6	4.0								16	30	80	800	17.3	1-4

type	permissible load [kN]										d ₃	L		type 46		type 48		load group			
	100	250	350	450	500	510	530	560	580	600°C		min	max	E _k	[kg min]	[kg max]	E _R		[kg min]	[kg max]	
4.①1112	19	14	10								25	350	800	5	9.0	18	70	7.0	16	3-5	
4.1131	22	22	21	20	16	15	11	6.6			21	350	950	15	10	28	85	8.0	23	C-4	
4.1132	37	36	35	33	23	21	16	10			25	350	950	25	16	37	85	10	31	3-5	
4.1133	67	64	63	59	40	37	29	18			34	350	950	35	20	51	120	16	44	3-6	
4.1141								10	8.1	5.9	21	350	950	15	10	29	100	8.0	26	C-4	
4.1142								14	10	7.9	25	350	950	25	14	36	110	10	31	3-5	
4.1143								27	26	20	15	34	350	950	35	18	53	130	15	44	3-6

type	permissible load [kN]										E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600°C						
49 11 11	2.3	1.8	1.3								157	150	95	—	100	4.1
49 11 12	3.2	2.4	1.8								207	200	125	—	150	6.4
49 11 25	5.0	4.2	3.5	2.9	2.7						257	265	152	345	200	7.9
49 11 35	7.6	6.8	5.9	5.0	4.7	4.7	4.5	2.7			257	265	152	345	200	8.3
49 11 45	10.3	8.9	8.4	7.6	7.0	6.9	6.5	4.5	3.3	2.4	257	265	152	350	200	9.4

① type 46

① type 48

Selection table OD 133

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 133 (ND 125), type 42, 43, 45, 46, 48, 49

type	permissible load [kN]										d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
42 13 19	10	7.8	5.5								M16	100	50	2.2	1-4

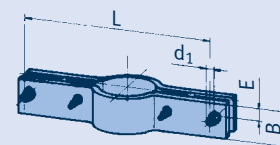
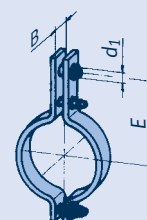
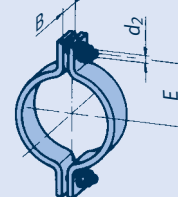
Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
43 13 18	2.5	2.5	2.5								12	220	50	2.8	C-D
43 13 19	10	8.3	6.0								16	220	50	2.8	1-4
43 13 28			2.5	2.5	2.5						12	270	50	2.3	C-D
43 13 29			5.1	4.3	3.1						16	270	50	2.3	1-4
43 13 38					2.5	2.5	2.5	2.5			12	290	60	3.9	C-D
43 13 39	16	13	12	10	8.8	7.3	4.8	2.5			16	290	60	3.9	1-4
43 13 48								2.5	2.5	2.5	12	290	70	5.6	C-D
43 13 49		14	14	13	13	13	10	6.9	5.1	3.8	16	290	70	5.6	1-4

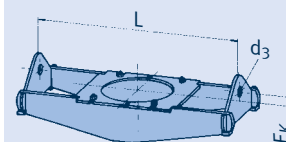
type	permissible load [kN]										d ₁	E	B	L	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C						
45 13 19			5.0								12	25	90	400	11.1	C-D
45 13 11	18	14	10								16	30	90	400	11.1	1-4
45 13 19			5.0								12	25	90	550	14.3	C-D
45 13 11	13	9.7	6.9								16	30	90	550	14.3	1-4
45 13 19			5.0								12	25	90	700	17.5	C-D
45 13 11	9.9	7.4	5.3								16	30	90	700	17.5	1-4
45 13 19		5.0	4.2								12	25	90	850	20.6	C-D
45 13 11	8.0	5.9	4.2								16	30	90	850	20.6	1-4

type	permissible load [kN]										L	type 46		type 48		load group					
	100	250	350	450	500	510	530	560	580	600°C		d ₃	min	max	E _k		[kg min]	[kg max]	E _r	[kg min]	[kg max]
4.①1312	23	19	13								25	370	850	10	12	23	70	8.0	20	3-5	
4.1331	24	23	23	22	20	17	13	7.1			21	400	1000	15	13	34	95	9.0	26	C-4	
4.1332	40	38	38	35	25	22	17	11			25	400	1000	30	17	43	100	13	36	3-5	
4.1333	72	70	67	62	45	40	31	18			34	400	1000	40	26	59	130	19	50	4-6	
4.1341								12	9.2	7.0	21	400	1000	15	13	34	105	11	31	C-4	
4.1342								25	18	13	10	25	400	1000	30	18	45	115	13	38	3-5
4.1343						33	33	31	23	17	34	400	1000	40	26	66	145	20	53	4-6	

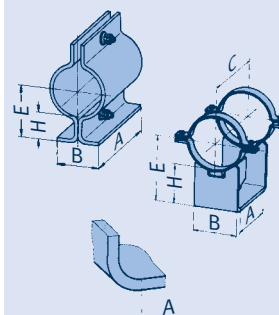
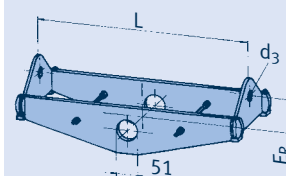
type	permissible load [kN]										E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600°C						
49 13 11	2.5	2.0	1.4								167	150	105	–	100	5.3
49 13 12	3.8	3.0	2.0								217	200	130	–	150	8.3
49 13 25	8.3	7.0	5.8	4.8	4.4						267	270	160	350	200	9.6
49 13 35	12.1	10.9	9.3	8.0	7.5	7.4	7.0	3.7			267	270	160	350	200	9.8
49 13 45							6.5	4.5	3.3	2.4	267	275	160	350	200	9.7



① type 46



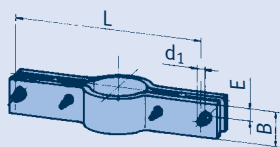
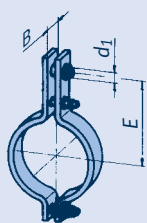
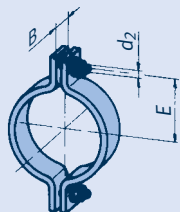
① type 48



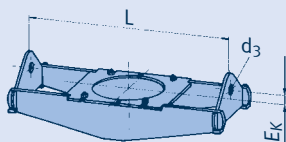
Selection table

OD 139.7

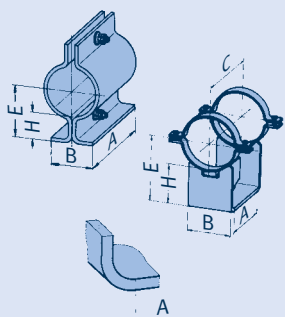
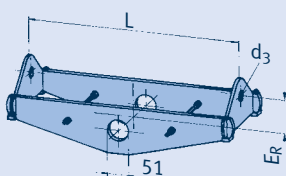
Pipe clamps, clamp bases, OD 139.7 (ND 125), type 42, 43, 45, 46, 48, 49



① type 46



① type 48



type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
42 14 19	9.6	7.4	5.3									M16	105	50	2.4	1-4

Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										600°C	d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
43 14 18	2.5	2.5	2.5									12	225	50	2.9	C-D
43 14 19	10	8.3	5.9									16	225	50	2.9	1-4
43 14 28			2.5	2.5	2.5							12	275	50	2.5	C-D
43 14 29			5.1	4.1	3.1							16	275	50	2.5	1-4
43 14 38					2.5	2.5	2.5	2.4				12	295	60	4.1	C-D
43 14 39	16	13	11	10	8.8	7.3	4.8	2.4				16	295	60	4.1	1-4
43 14 48							2.5	2.5	2.5	2.5		12	295	70	5.7	C-D
43 14 49		14	14	13	13	13	10	6.9	5.1	3.8		16	295	70	5.7	1-4

type	permissible load [kN]										600°C	d ₁	E	B	L	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600							
45 14 19			5.0									12	25	90	400	11.2	C-D
45 14 11	18	14	10									16	30	90	400	11.2	1-4
45 14 19			5.0									12	25	90	550	14.3	C-D
45 14 11	13	9.7	6.9									16	30	90	550	14.3	1-4
45 14 19			5.0									12	25	90	700	17.5	C-D
45 14 11	9.9	7.4	5.3									16	30	90	700	17.5	1-4
45 14 19		5.0	4.2									12	25	90	850	20.7	C-D
45 14 11	8.0	5.9	4.2									16	30	90	850	20.7	1-4

type	permissible load [kN]										600°C	d ₃	L		type 46		type 48		load group	
	100	250	350	450	500	510	530	560	580	min			max	E _K	[kg min]	[kg max]	E _R	[kg min]		[kg max]
4.① 14 12	22	18	12								25	400	850	10	11	24	70	8.0	20	3-5
4. 14 31	24	23	23	22	20	17	13	7.1			21	400	1000	15	13	34	95	10	27	C-4
4. 14 32	41	39	39	36	26	23	17	11			25	400	1000	30	20	44	100	13	36	3-5
4. 14 33	70	68	67	62	45	40	30	18			34	400	1000	40	26	59	130	20	50	4-6
4. 14 41							12	9.3	6.9		21	400	1000	15	14	35	105	11	31	C-4
4. 14 42							25	18	13	10	25	400	1000	30	19	46	115	13	38	3-5
4. 14 43						33	33	31	23	17	34	400	1000	40	25	66	145	20	53	4-6

type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600							
49 14 11	2.5	2.0	1.4									170	150	105	—	100	5.5
49 14 12	3.8	3.0	2.0									220	200	130	—	150	8.5
49 14 25	8.3	7.0	5.9	4.8	4.5							270	270	160	350	200	9.7
49 14 35	12.3	11.0	9.3	8.0	7.6	7.5	7.1	3.8				270	270	160	350	200	10.1
49 14 45							6.5	4.5	3.4	2.5		270	275	160	350	200	9.9

Selection table

OD 159

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 159 (ND 150), type 42, 43, 46, 48, 49

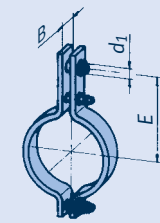
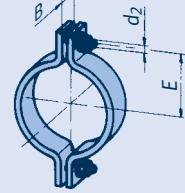
type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
42 16 19	8.6	6.6	4.7								M16	115	50	2.5	1-4	
Heat-resistant materials, see pp. 0.9 and 4.4																

Heat-resistant materials, see pp. 0.9 and 4.4

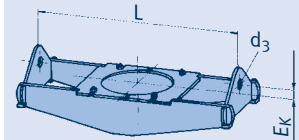
type	permissible load [kN]										600°C	d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
43 16 18	2.5	2.5	2.5									12	245	50	3.1	C-D
43 16 19	9.7	7.5	5.4									16	245	50	3.1	1-4
43 16 28			2.5	2.5	2.5							12	300	50	3.4	C-D
43 16 29	11	9.5	7.9	6.4	4.9							16	300	50	3.4	1-4
43 16 38					2.5	2.5	2.5	2.5				12	315	80	6.9	C-D
43 16 39	15	14	14	13	13	13	8.5	4.3				16	315	80	6.9	1-4
43 16 48								2.5	2.5	2.5		12	315	80	8.4	C-D
43 16 49							12	12	9.3	6.9	5.1	16	315	80	8.4	1-4

type	permissible load [kN]										600°C	d ₃	L		type 46		type 48		load group	
	100	250	350	450	500	510	530	560	580	min			max	E _K	[kg min]	[kg max]	E _R	[kg min]		[kg max]
4.① 16 11	18	15	11								21	400	900	15	11	23	90	9.0	21	C-4
4. 16 12	29	24	17								25	400	900	15	13	32	85	10	25	3-5
4. 16 31		24	23	22	19	17	13	7.0			21	450	1050	25	16	36	100	11	31	C-4
4. 16 32	49	47	47	44	30	28	21	13			25	450	1050	40	23	52	120	17	44	3-5
4. 16 33	84	80	79	71	53	47	36	21			34	450	1050	50	32	75	150	25	63	4-6
4. 16 41								12	9.3	7.0	21	450	1050	25	17	38	110	13	35	C-4
4. 16 42								19	14	10	25	450	1050	40	21	51	130	17	45	3-5
4. 16 43						36	36	35	26	20	34	450	1050	50	33	79	165	26	67	4-6

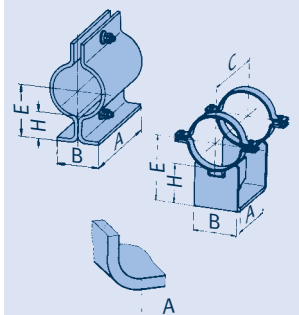
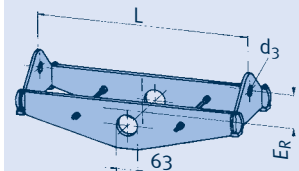
type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600							
49 16 11	2.5	2.0	1.4									180	200	115	—	100	6.7
49 16 14	4.4	3.8	3.6									230	240	140	340	150	9.2
49 16 25	9.5	8.1	6.7	5.5	5.0							280	315	171	395	200	11.0
49 16 35	17	15	13	11	10	10	9.9	5.5				280	320	171	400	200	12.7
49 16 45							9.5	6.5	4.9	3.6		280	320	171	400	200	12.4



① type 46



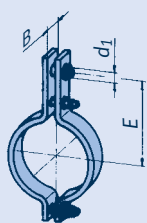
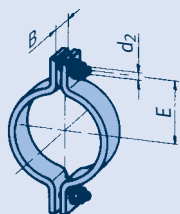
① type 48



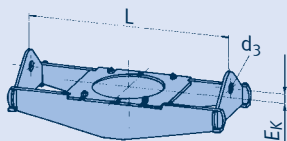
Selection table

OD 168.3

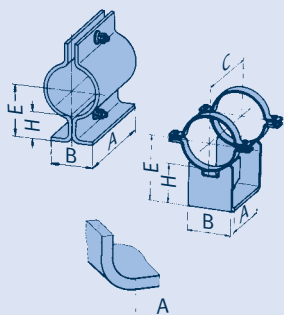
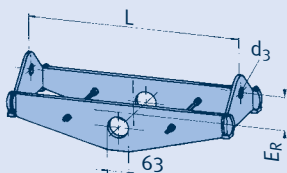
Pipe clamps, clamp bases, OD 168.3 (ND 150), type 42, 43, 46, 48, 49



① type 46



① type 48



type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
42 17 19	8.2	6.3	4.5									M16	120	50	2.6	1-4

Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										600°C	d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
43 17 18	2.5	2.5	2.5									12	250	50	3.2	C-D
43 17 19	9.3	7.1	5.1									16	250	50	3.2	1-4
43 17 28			2.5	2.5	2.5							12	300	50	3.6	C-D
43 17 29	11	9.5	7.9	6.4	4.9							16	300	50	3.6	1-4
43 17 38					2.5	2.5	2.5	2.5				12	320	80	7.3	C-D
43 17 39	15	14	14	13	13	13	8.5	4.3				16	320	80	7.3	1-4
43 17 48								2.5	2.5	2.5		12	320	80	8.5	C-D
43 17 49						12	12	9.3	6.9	5.1		16	320	80	8.5	1-4

type	permissible load [kN]										600°C	d ₃	L		type 46		type 48		load group		
	100	250	350	450	500	510	530	560	580	min			max	E _K	[kg min]	[kg max]	E _R	[kg min]		[kg max]	
4.①1711	18	15	11								21	410	900	15	12	23	90	9.0	22	C-4	
4.1712	29	24	17								25	410	900	15	17	33	85	10	25	3-5	
4.1731		24	23	22	19	17	13	7			21	450	1050	25	16	38	100	11	31	C-4	
4.1732	49	47	47	43	31	28	21	13			25	450	1050	40	23	53	120	17	44	3-5	
4.1733	84	80	79	72	53	47	36	21			34	450	1050	50	33	74	150	26	64	4-6	
4.1741								12	9.3	6.9	21	450	1050	25	17	38	110	13	35	C-4	
4.1742								19	14	10	25	450	1050	40	23	53	130	18	45	3-5	
4.1743							36	36	35	26	20	34	450	1050	50	34	80	165	26	67	4-6

type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580								
49 17 11	2.5	2.0	1.4									184	200	120	—	100	6.9
49 17 14	4.7	4.1	3.9									234	240	152	340	150	9.6
49 17 25	9.6	8.2	6.8	5.6	5.2							284	315	171	395	200	11.1
49 17 35	17	15	13	11	10	10	10	5.6				284	320	171	400	200	12.7
49 17 45							9.6	6.6	4.9	3.6		284	320	171	400	200	12.5

Selection table

OD 193.7

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 193.7 (ND 175), type 42, 43, 46, 48, 49

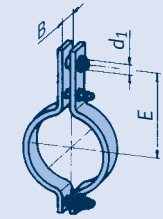
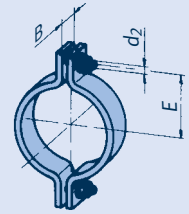
type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
42 19 19	7.1	5.5	3.9									M16	135	50	2.9	1-4

Heat-resistant materials, see pp. 0.9 and 4.4

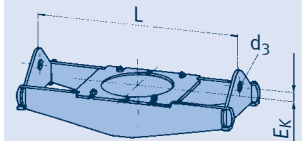
type	permissible load [kN]										600°C	d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
43 19 18	2.5	2.5	2.5									12	270	50	4.7	C-D
43 19 19	12	10	7.2									16	270	50	4.7	1-5
43 19 28			2.5	2.5	2.5							12	335	50	4.2	C-D
43 19 29			6.8	5.5	4.2							16	335	50	4.2	1-5
43 19 38		10	10	9.6	9.4	9.3	9.2	7.5				16	355	70	10.8	1-3
43 19 39	23	21	20	19	19	19	14	7.5				20	355	70	10.8	3-6
43 19 48						11.3	11.3	11.3	11	8.6		16	355	100	15.4	1-3
43 19 49						19	19	15	11	8.6		20	355	100	15.4	3-6

type	permissible load [kN]										600°C	d ₃	L		type 46			type 48			load group
	100	250	350	450	500	510	530	560	580	min			max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]		
4.①1911	24	19	14								21	450	950	15	15	29	80	10	26	C-4	
4.1912	38	31	22								25	460	950	20	18	41	90	13	33	3-5	
4.1921		25	25	23	16						21	460	1000	15	17	39	100	12	32	C-4	
4.1922	42	41	40	37	26						25	460	1000	30	24	51	110	16	42	3-5	
4.1931					15	15	11	6.0			21	550	1150	25	19	41	110	15	32	C-4	
4.1932					28	25	19	10			25	550	1150	30	27	54	110	19	42	3-5	
4.1933	46	43	42	40	39	35	26	13			25	550	1150	40	34	64	130	24	52	3-5	
4.1934	91	83	81	78	70	64	48	25			41	550	1150	50	48	98	160	37	79	4-7	
4.1941								10	8.0	5.9	21	550	1150	25	20	42	115	17	37	C-4	
4.1942								17	13	10	25	550	1150	30	28	58	130	21	50	3-5	
4.1943								24	18	13	25	550	1150	40	36	77	140	26	61	3-5	
4.1944					60	58	46	34	24	41	550	1150	50	53	108	160	39	89	4-7		

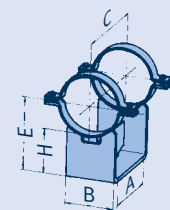
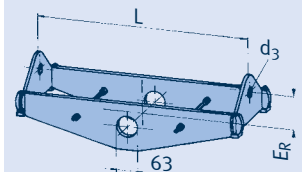
type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600							
49 19 13	4.6	4.2	4.0									197	240	130	345	100	8.7
49 19 14	7.3	6.2	5.9									247	240	152	355	150	11.6
49 19 25	12	11	9.3	7.6	7.0							297	320	181	400	200	13.3
49 19 35	24	21	18	16	15	14	14	9.0				347	315	203	415	250	18.7
49 19 45							13	9.4	7.1	5.2		347	315	203	415	250	18.7



① type 46



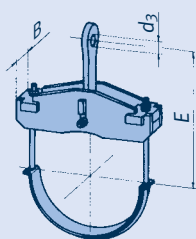
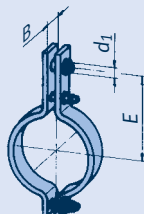
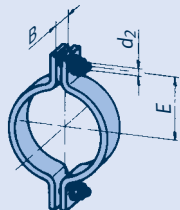
① type 48



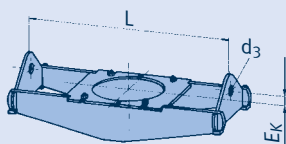
Selection table

OD 219.1

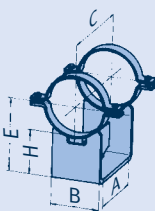
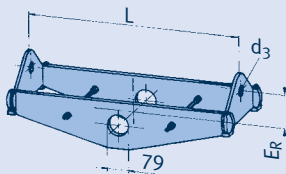
Pipe clamps, clamp bases, OD 219.1 (ND 200), type 42, 43, 44, 46, 48, 49



① type 46



① type 48



type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
42 22 19	6.7	5.2	3.7									M16	145	50	3.1	1-4

Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										600°C	d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
43 22 18	2.5	2.5	2.5									12	295	50	5.0	C-D
43 22 19	11	9.0	6.4									16	295	50	5.0	1-5
43 22 28			2.5	2.5	2.5							12	365	50	5.6	C-D
43 22 29	12	11	9.4	7.7	5.5							16	365	50	5.6	1-5

type	permissible load [kN]										600°C	d ₃	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
44 22 12	30	25	20									34	275	85	9.0	3-6
44 22 31			12	10	9.4	9.3	8.9	6.1				21	375	94	9.0	C-4
44 22 32	34	30	28	26	24	23	20	11				34	375	96	13	4-6
44 22 33	67	59	53	45	41	40	39	20				46	375	122	22	5-8
44 22 41								8.9	6.9	5.1		21	375	103	10	C-4
44 22 42								19	14	11		34	375	110	15	4-6
44 22 43	79	69	66	59	56	55	50	33	24	18		46	375	132	24	5-8

type	permissible load [kN]										600°C	d ₃	L		type 46			type 48			load group
	100	250	350	450	500	510	530	560	580	min			max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]		
4.①2211	24	20	14								21	480	1100	15	16	38	105	12	36	C-4	
4.2212	43	33	24								25	480	1100	25	24	54	110	16	46	3-5	
4.2221		33	33	30	21						25	480	1200	35	26	64	120	18	52	3-5	
4.2222	50	48	48	44	30						34	480	1200	40	30	75	150	24	64	4-6	
4.2231					15	15	11	6.1			21	550	1350	25	21	50	130	17	44	C-4	
4.2232				36	35	32	24	13			25	550	1350	40	36	79	150	25	67	3-5	
4.2233	61	59	57	55	51	45	34	18			41	550	1350	50	44	102	170	32	83	4-7	
4.2234	113	108	105	101	88	79	60	31			46	550	1350	60	64	142	200	48	119	5-8	
4.2241								10	8.0	5.9	21	550	1350	25	22	54	130	19	50	C-4	
4.2242								23	17	12	25	550	1350	40	39	93	155	28	76	3-5	
4.2243							36	32	24	18	41	550	1350	50	48	113	185	34	93	4-7	
4.2244					61	60	55	42	31		46	550	1350	60	69	165	200	51	133	5-8	

type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580								
49 22 13	7.1	6.5	6.2									210	235	130	350	100	10.1
49 22 14	10	9.2	8.6									260	250	156	365	150	13.6
49 22 25	12	12	10	8.9	8.2							360	325	210	410	250	16.5
49 22 35	27	26	22	19	18	17	17	9.6				360	315	210	415	250	20.2
49 22 45							15	10	8.1	6.0		360	315	210	415	250	19.8

Selection table

OD 244.5

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 244.5 (ND 225), type 42, 43, 44, 46, 48, 49

type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
42 24 19	6.1	4.7	3.3									M16	160	50	3.3	1-4

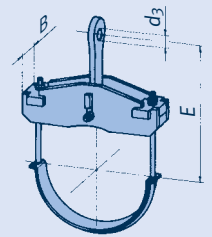
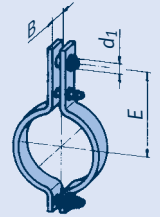
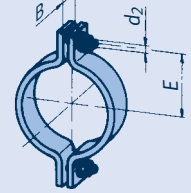
Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										600°C	d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
43 24 18	2.5	2.5	2.5									12	310	50	6.1	C-D
43 24 19	12	11.4	8.2									16	310	50	6.1	1-5
43 24 28			2.5	2.5	2.5							12	390	50	5.8	C-D
43 24 29		10	8.7	7.1	5.5							16	390	50	5.8	1-5

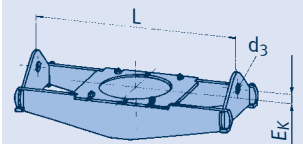
type	permissible load [kN]										600°C	d ₃	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
44 24 12	20	16	13									34	300	75	9.0	3-6
44 24 13	40	35	29									46	330	81	12	5-8
44 24 31			11	9.8	9.1	9.0	8.5	6.0				21	390	94	9.0	C-4
44 24 32			29	26	24	23	20	11				34	390	96	14	4-6
44 24 33	65	57	52	44	41	40	39	20				46	390	122	23	5-8
44 24 41								8.9	6.9	5.0		21	390	103	11	C-4
44 24 42								18	14	11		34	390	110	16	4-6
44 24 43	79	68	65	59	55	54	50	33	24	18		46	390	132	25	5-8

type	permissible load [kN]										600°C	d ₃	L		type 46			type 48			load group
	100	250	350	450	500	510	530	560	580	min			max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]		
4.①2411	30	25	18								25	490	1100	25	21	47	100	14	39	3-5	
4.2412	50	42	30								34	500	1100	35	33	63	120	21	52	4-6	
4.2421			38	35	25						25	500	1200	40	30	68	130	21	56	3-5	
4.2422	57	55	54	49	34						34	520	1200	45	39	80	150	28	70	4-6	
4.2431					18	16	13	7.0			25	550	1350	30	25	56	110	17	47	3-5	
4.2432				41	40	36	27	14			25	550	1350	45	40	86	150	28	74	3-5	
4.2433	66	64	62	59	56	50	38	20			41	550	1350	50	50	110	160	34	88	4-7	
4.2434	122	117	113	109	96	86	66	35			46	550	1350	60	72	156	180	51	124	5-8	
4.2441								12	9.2	6.9	25	550	1350	30	26	61	120	20	54	3-5	
4.2442								24	18	13	25	550	1350	45	43	100	150	29	80	3-5	
4.2443								37	36	27	20	41	550	1350	50	53	123	160	36	98	4-7
4.2444								64	61	46	34	46	550	1350	60	77	178	190	54	142	5-8

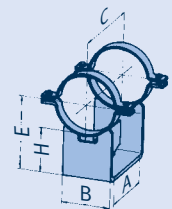
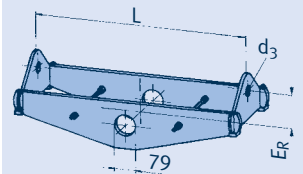
type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600							
49 24 13	7.1	6.6	6.2									222	235	130	350	100	10.6
49 24 14	11	10	9.5									272	250	171	365	150	14.9
49 24 25	21	18	15	12	11							372	315	222	415	250	20.5
49 24 35	34	32	30	26	24	24	21	12				372	320	222	420	250	24.4
49 24 45						24	22	15	11	8.7		372	320	222	420	250	24.4



① type 46



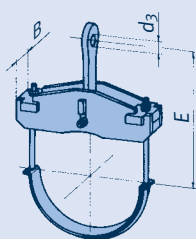
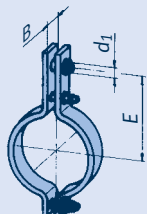
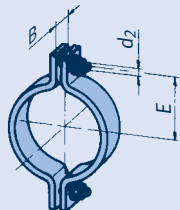
① type 48



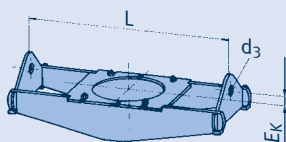
Selection table

OD 267

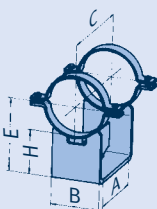
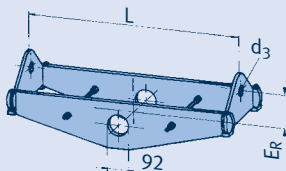
Pipe clamps, clamp bases, OD 267 (ND 250), type 42, 43, 44, 46, 48, 49



① type 46



① type 48



type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
42 26 19	6.3	4.9	3.5									M20	175	60	4.6	3-4

Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										600°C	d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
43 26 18	9.6	9.0	8.6									16	340	70	12.0	1-3
43 26 19	28	21	15									24	340	70	12.0	3-6
43 26 28			11.3	11.3	9.6							16	410	70	10.5	1-3
43 26 29		18	15	12	9.6							24	410	70	10.5	3-6

type	permissible load [kN]										600°C	d ₃	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
44 26 12	26	22	16									34	340	75	10	4-6
44 26 13	61	54	44									46	360	112	20	5-8
44 26 31			10	9.1	8.5	8.4	8.0	5.6				21	425	94	10	C-4
44 26 32			25	23	22	21	19	11				34	425	96	16	4-6
44 26 33			48	40	37	36	35	20				46	425	122	24	5-8
44 26 41								7.9	6.3	4.9		21	425	110	13	C-4
44 26 42								20	15	11		34	425	117	19	4-6
44 26 43	72	61	59	53	50	49	45	33	24	18		46	425	132	27	5-8

type	permissible load [kN]										L		type 46		type 48		load group				
	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]		E _R	[kg min]	[kg max]	
4.① 26 11	35	29	21								25	520	1150	35	25	55	105	18	47	3-5	
4. 26 12	54	43	31								34	550	1150	45	37	69	130	26	59	4-6	
4. 26 21				40	37	26					25	550	1300	30	35	78	140	26	66	3-5	
4. 26 22	58	56	55	51	36						34	560	1300	50	42	99	150	33	85	4-6	
4. 26 31						20	20	15	8.0		25	600	1400	30	35	66	120	21	55	3-5	
4. 26 32					42	40	37	28	15		25	600	1400	50	47	96	150	33	79	3-5	
4. 26 33	73	67	65	62	58	53	40	21			41	600	1400	50	57	120	160	42	98	4-7	
4. 26 34	134	122	119	115	100	90	69	36			46	600	1400	70	83	172	185	57	137	5-8	
4. 26 41								14	10	7.9	25	600	1400	30	36	74	140	25	64	3-5	
4. 26 42								27	20	15	25	600	1400	50	51	111	175	35	90	3-5	
4. 26 43								39	38	28	21	41	600	1400	50	64	137	165	44	110	4-7
4. 26 44						70	70	65	49	36	46	600	1400	70	90	199	205	63	158	5-8	

type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580								
49 26 13	8.7	7.9	7.5									234	240	160	365	100	13.7
49 26 14	17	15	14									284	255	171	395	150	19.3
49 26 25	25	21	18	14	13							384	340	229	450	250	24.6
49 26 35	41	35	34	31	29	25	22	14				384	345	229	460	250	29.3
49 26 45					27	27	25	17	13	9.8		384	345	229	460	250	28.3

Selection table

OD 273

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 273 (ND 250), type 42, 43, 44, 46, 48, 49

permissible load [kN]											d ₂	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
42 27 19	6.2	4.7	3.4								M20	180	60	4.7	3-4

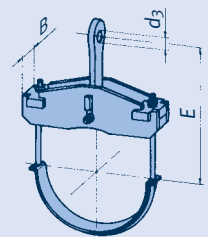
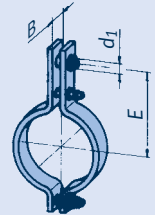
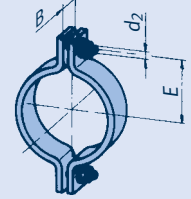
Heat-resistant materials, see pp. 0.9 and 4.4

permissible load [kN]											d ₁	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
43 27 18	9.6	9.0	8.6								16	340	70	12.5	1-3
43 27 19	27	21	15								24	340	70	12.5	3-6
43 27 28			11.3	11.3	9.6						16	415	70	11.0	1-3
43 27 29		18	15	12	9.6						24	415	70	11.0	3-6

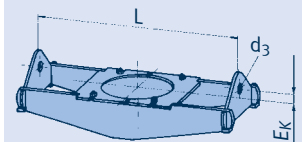
permissible load [kN]											d ₃	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
44 27 12	26	22	16								34	340	75	10	4-6
44 27 13	60	54	44								46	360	112	20	5-8
44 27 31			10	9.2	8.6	8.5	8.1	5.7			21	425	94	10	C-4
44 27 32			26	24	22	21	19	11			34	425	96	16	4-6
44 27 33			48	40	38	37	36	21			46	425	122	25	5-8
44 27 41								8.0	6.4	5.0	21	425	110	13	C-4
44 27 42								20	15	11	34	425	117	19	4-6
44 27 43	73	62	60	54	51	50	46	33	24	18	46	425	132	27	5-8

permissible load [kN]											L			type 46			type 48			load
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4. 27 11	35	29	20								25	480	1150	35	27	57	105	16	47	3-5
4. 27 12	53	43	31								34	520	1150	45	39	70	130	25	59	4-6
4. 27 21				41	39	27					25	550	1300	45	36	80	140	29	69	3-5
4. 27 22	57	55	54	50	36						34	570	1300	50	47	100	150	34	85	4-6
4. 27 31					20	20	15	8.0			25	600	1400	30	35	67	120	22	55	3-5
4. 27 32				42	41	37	28	15			25	600	1400	50	48	97	150	33	79	3-5
4. 27 33	73	67	65	62	58	53	40	21			41	600	1400	50	58	121	160	42	98	4-7
4. 27 34	134	122	119	115	100	89	69	36			46	600	1400	70	88	173	185	57	137	5-8
4. 27 41								14	10	7.9	25	600	1400	30	37	75	140	25	64	3-5
4. 27 42								27	20	14	25	600	1400	50	51	111	175	35	90	3-5
4. 27 43							39	38	28	20	41	600	1400	50	65	138	165	44	111	4-7
4. 27 44						70	70	65	49	35	46	600	1400	70	94	203	205	63	159	5-8

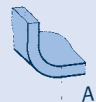
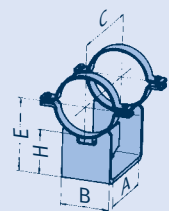
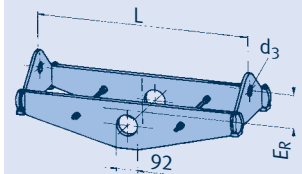
permissible load [kN]											E	A	B	C	H	wt. [kg]
type	100	250	350	450	500	510	530	560	580	600°C						
49 27 13	8.7	7.9	7.5								237	240	160	360	100	13.9
49 27 14	17	15	14								287	255	171	395	150	19.4
49 27 25	25	22	18	14	13						387	340	229	450	250	24.7
49 27 35	39	35	34	31	29	25	22	14			387	345	229	460	250	29.5
49 27 45					28	28	25	17	13	10	387	345	229	460	250	28.5



① type 46



① type 48



Selection table

OD 323.9

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 323.9 (ND 300), type 42, 43, 44, 46, 48, 49

permissible load [kN]													wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E		
42 32 19	5.4	4.2	3.0								M20	205	60	5.3 3-4

Heat-resistant materials, see pp. 0.9 and 4.4

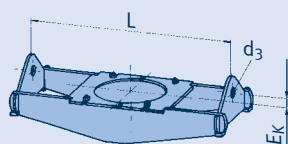
permissible load [kN]													wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E		
43 32 18	9.6	9.0	8.6								16	375	80	16.0 1-3
43 32 19	28	22	15								24	375	80	16.0 3-6
43 32 28			11.3	11.3	11.3						16	440	70	15.0 1-3
43 32 29	29	24	19	16	13						24	440	70	15.0 3-6

permissible load [kN]													wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	E		
44 32 12	38	32	25								46	375	80	17 5-8
44 32 13	73	61	51								51	390	113	28 6-9
44 32 31			21	20	19	18	16	11			25	470	110	19 3-5
44 32 32			46	39	36	35	34	20			41	470	115	27 5-7
44 32 33	89	78	74	62	58	57	55	36			46	470	165	47 5-8
44 32 41								17	13	9.8	25	470	143	22 3-5
44 32 42								32	24	18	41	470	132	31 5-7
44 32 43	90	73	70	63	59	58	57	55	41	30	46	470	189	53 5-8

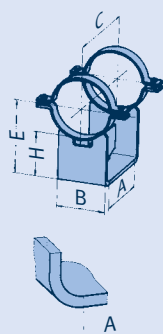
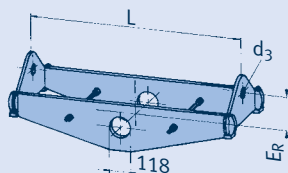
permissible load [kN]											L		type 46		type 48		load			
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4.① 32 11	30	25	18								25	570	1200	35	31	58	120	22	52	3-5
4. 32 12	54	43	31								34	570	1200	40	42	77	140	30	69	4-6
4. 32 13	85	62	49								41	590	1200	55	63	101	135	39	90	5-7
4. 32 21				28	27	20					25	620	1300	30	41	72	120	27	64	3-5
4. 32 22		62	61	56	39						34	650	1300	30	56	111	150	42	93	4-6
4. 32 23	88	85	84	77	55						46	700	1300	30	76	132	160	58	109	5-8
4. 32 31					29	27	21	12			25	620	1400	50	49	89	150	32	76	3-5
4. 32 32				68	63	56	43	22			41	650	1400	50	76	135	180	51	111	4-7
4. 32 33	99	96	93	89	85	75	58	31			46	670	1400	50	89	164	195	61	131	5-8
4. 32 34	125	124	122	115	110	98	75	40			46	670	1400	50	106	190	205	71	154	5-8
4. 32 35	202	185	179	166	144	131	101	53			51	790	1400	50	145	239	200	88	181	6-9
4. 32 41								21	16	11	25	700	1400	50	55	106	165	39	88	3-5
4. 32 42								40	29	21	41	700	1400	50	83	153	180	53	122	4-7
4. 32 43							62	54	40	30	46	700	1400	50	98	190	210	70	145	5-8
4. 32 44							78	70	53	39	46	700	1400	50	115	224	225	80	174	5-8
4. 32 45					102	101	93	70	51	51	51	800	1400	50	154	268	235	101	212	6-9

permissible load [kN]																wt.
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B	C	H	[kg]
49 32 13	13	12	11								262	250	180	375	100	17.2
49 32 14	20	17	16								362	255	229	395	200	27.0
49 32 25	31	26	22	18	16						412	340	248	450	250	27.8
49 32 35	46	40	38	34	32	28	25	16			412	345	254	460	250	32.7
49 32 45	50	43	41	37	34	34	32	22	16	12	412	345	254	460	250	32.3

① type 46



① type 48



Selection table

OD 355.6

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 355.6 (ND 350), type 42, 43, 44, 46, 48, 49

type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
42 36 19	5.1	3.9	2.8								M20	220	60	5.7	3-4	
Heat-resistant materials, see pp. 0.9 and 4.4																

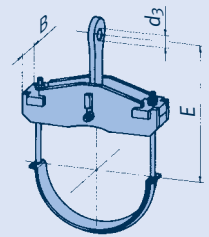
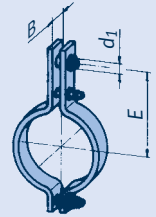
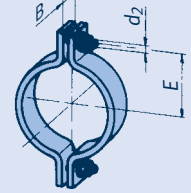
Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										600°C	d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
43 36 18	9.6	9.0	8.6								16	390	90	19.0	1-3	
43 36 19	29	23	16								24	390	90	19.0	3-6	
43 36 28			11.3	11.3	11.3						16	470	90	20.5	1-3	
43 36 29	33	28	23	19	15						24	470	90	20.5	3-6	

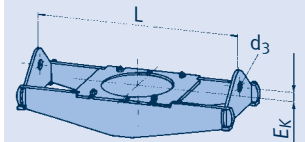
type	permissible load [kN]										600°C	d ₃	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580							
44 36 12	48	41	32								46	400	85	20	6-8	
44 36 13	82	66	53								51	420	113	30	6-9	
44 36 31			21	20	19	18	16	11			25	485	110	21	3-5	
44 36 32			47	39	36	35	34	21			41	485	122	31	5-7	
44 36 33	89	78	74	62	58	57	55	36			46	485	165	49	5-8	
44 36 41								17	13	9.9	25	485	143	24	3-5	
44 36 42								32	24	18	41	485	132	33	5-7	
44 36 43	90	74	70	64	60	59	57	55	42	31	46	485	189	55	5-8	

type	permissible load [kN]										600°C	L		type 46		type 48		load group		
	100	250	350	450	500	510	530	560	580	d ₃		min	max	E _K	[kg min]	[kg max]	E _R		[kg min]	[kg max]
4. 36 11	37	30	21								34	660	1300	35	45	74	120	30	66	4-6
4. 36 12	64	50	40								34	660	1300	40	57	106	130	41	92	4-6
4. 36 13	93	72	55								46	660	1300	60	77	131	145	48	96	6-8
4. 36 21			25	24	17						25	660	1400	30	38	76	115	29	66	3-5
4. 36 22			35	33	24						34	660	1400	40	58	99	140	35	79	4-6
4. 36 23	80	77	76	71	49						41	770	1400	40	84	144	155	60	117	5-7
4. 36 24	100	96	95	88	62						51	790	1400	45	95	166	160	68	131	6-9
4. 36 31				25	24	18	10				25	700	1500	40	52	91	135	32	74	3-5
4. 36 32				32	32	25	13				34	700	1500	50	63	117	160	40	90	4-6
4. 36 33			74	67	60	46	24				41	710	1500	60	89	158	180	60	125	4-7
4. 36 34	134	129	125	120	112	102	79	41			46	720	1500	60	118	226	205	82	173	5-8
4. 36 35	195	186	180	174	167	149	115	61			51	790	1500	70	176	287	230	104	218	6-9
4. 36 41							18	13	10	25	700	1500	40	56	103	155	37	86	3-5	
4. 36 42							25	19	14	34	700	1500	50	68	129	170	46	106	4-6	
4. 36 43								43	32	23	41	800	1500	60	104	183	190	69	141	4-7
4. 36 44							73	72	54	40	46	800	1500	60	136	252	240	102	196	5-8
4. 36 45						139	138	107	80	58	51	800	1500	70	186	335	245	119	256	6-9

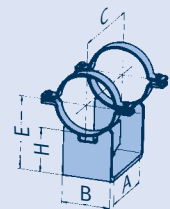
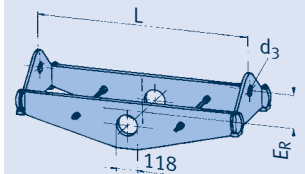
type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580								
49 36 13	22	21	19								278	300	230	445	100	25	
49 36 14	26	22	21								378	300	235	455	200	34	
49 36 25	31	30	30	24	22						428	400	260	510	250	34	
49 36 35	62	59	52	45	42	42	39	23			478	400	280	525	300	46	
49 36 45		56	54	48	45	44	41	28	21	15	478	400	280	525	300	46	



① type 46



① type 48



Selection table

OD 368

Pipe clamps, clamp bases, OD 368 (ND 350), type 42, 43, 44, 46, 48, 49

type	permissible load [kN]										d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
42 37 19	5.0	3.9	2.8								M20	225	60	5.8	3-4
Heat-resistant materials, see pp. 0.9 and 4.4															

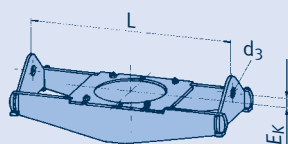
type	permissible load [kN]										d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
43 37 18	9.6	9.0	8.6								16	395	90	18.5	1-3
43 37 19	29	22	16								24	395	90	18.5	3-6
43 37 28			11.3	11.3	11.3						16	475	90	21.0	1-3
43 37 29	33	28	23	19	15						24	475	90	20.5	3-6

type	permissible load [kN]										d ₃	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
44 37 12	48	41	32								46	400	85	20	6-8
44 37 13	70	62	53								51	420	113	31	6-9
44 37 31			22	21	19	18	16	11			25	490	110	21	3-5
44 37 32			47	39	37	36	35	21			41	490	122	31	5-7
44 37 33	91	79	75	63	58	57	56	36			46	490	165	50	5-8
44 37 41								17	13	9.8	25	490	143	24	3-5
44 37 42								32	24	18	41	490	132	33	5-7
44 37 43			70	64	60	59	58	55	42	31	46	490	189	56	5-8

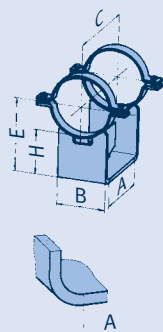
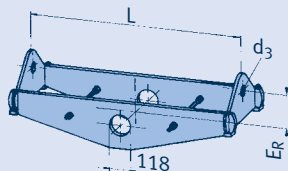
type	permissible load [kN]										L		type 46			type 48			load group	
	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]		[kg max]
4.① 37 11	37	30	21								34	680	1300	35	46	73	120	31	67	4-6
4. 37 12	66	50	40								34	680	1300	40	62	107	130	42	93	4-6
4. 37 13	93	73	55								46	680	1300	60	80	133	145	49	96	6-8
4. 37 21			25	23	17						25	680	1400	30	39	78	115	29	66	3-5
4. 37 22			35	33	24						34	680	1400	40	49	101	140	36	79	4-6
4. 37 23	80	77	76	70	49						41	770	1400	40	79	144	155	61	117	5-7
4. 37 24	100	96	95	88	62						46	790	1400	45	101	169	160	68	132	6-8
4. 37 31					25	24	18	10			25	700	1500	40	53	93	135	32	75	3-5
4. 37 32					32	32	24	13			34	700	1500	50	64	115	160	41	90	4-6
4. 37 33				76	69	61	47	25			41	720	1500	60	89	161	180	62	127	4-7
4. 37 34	137	129	125	121	112	102	79	41			46	740	1500	60	124	229	220	85	177	5-8
4. 37 35	199	199	191	178	167	149	114	61			51	820	1500	70	179	292	230	108	220	6-9
4. 37 41								18	13	10	25	750	1500	40	59	104	155	39	86	3-5
4. 37 42								25	19	13	34	750	1500	50	72	131	170	49	106	4-6
4. 37 43								43	32	23	41	750	1500	60	100	180	190	67	142	4-7
4. 37 44							79	72	54	40	46	750	1500	60	135	255	240	98	197	5-8
4. 37 45					139	138	106	80	58	51	850	1500	70	195	339	245	125	257		6-9

type	permissible load [kN]										E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600°C						
49 37 13	22	21	19								284	300	230	445	100	25
49 37 14	27	23	22								384	300	241	460	200	34
49 37 25	32	31	30	24	23						434	400	260	510	250	35
49 37 35	63	61	54	46	43	42	40	24			484	400	292	525	300	48
49 37 45	66	59	56	50	47	46	43	30	22	16	484	400	292	525	300	47

① type 46



① type 48



Selection table

OD 406.4

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 406.4 (ND 400), type 42, 43, 44, 46, 48, 49

permissible load [kN]											wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C		
42 41 19	8.0	6.2	4.5								M24 255 70 9.7	3-5

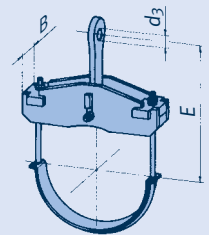
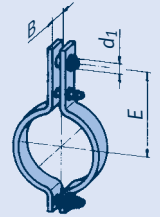
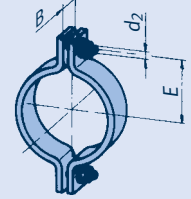
Heat-resistant materials, see pp. 0.9 and 4.4

permissible load [kN]											wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C		
43 41 18	9.6	9.0	8.6								16 430 100 23.0	1-3
43 41 19	30	23	16								24 430 100 23.0	3-6
43 41 28			11.3	11.3	11.3						16 500 100 24.5	1-3
43 41 29	33	28	23	20	15						24 500 100 24.5	3-6

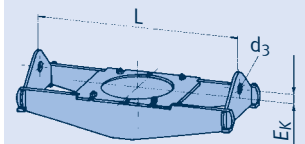
permissible load [kN]											wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C		
44 41 12	59	49	40								51 440 92 26	6-9
44 41 13	93	75	63								61 450 135 35	7-10
44 41 22			36	28	26						41 500 117 25	5-7
44 41 23			61	48	44						51 500 135 38	6-9
44 41 31					18	17	15	11			25 520 110 23	3-5
44 41 35					38	37	36	24			46 520 144 44	5-8
44 41 36	101	93	81	67	63	62	60	33			51 520 149 63	6-9
44 41 41								16	12	9.6	25 520 143 26	3-5
44 41 45								42	31	23	46 520 164 58	5-8
44 41 46	151	139	132	117	109	108	98	64	48	34	51 520 189 92	6-9

permissible load [kN]											L			type 46		type 48			load	
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4. 41 11	44	36	26								34	780	1400	30	60	95	155	43	87	4-6
4. 41 12	75	55	43								41	780	1400	40	73	131	160	56	111	5-7
4. 41 13	109	85	67								46	780	1400	55	109	150	175	73	132	6-8
4. 41 21				29	28	20					25	780	1500	40	59	95	145	40	85	3-5
4. 41 22				41	39	28					34	780	1500	40	77	123	150	49	102	4-6
4. 41 23	95	91	90	84	58						41	820	1500	50	109	185	180	79	149	5-7
4. 41 24	118	114	112	104	73						46	820	1500	60	121	213	180	85	172	6-8
4. 41 31					30	28	21	12			25	800	1600	45	70	116	160	44	99	3-5
4. 41 32					47	44	35	20			41	800	1600	50	98	163	180	64	132	4-7
4. 41 33				83	78	71	55	29			46	800	1600	70	120	205	200	80	159	5-8
4. 41 34	141	129	125	121	112	100	77	41			46	800	1600	70	148	250	220	97	203	5-8
4. 41 35	236	232	225	210	193	174	134	71			51	870	1600	80	221	375	260	149	286	6-9
4. 41 41								21	16	11	25	800	1600	45	76	135	175	51	114	3-5
4. 41 42								36	27	20	41	800	1600	50	107	188	205	73	153	4-7
4. 41 43								51	38	27	46	800	1600	70	131	234	225	85	187	5-8
4. 41 44								77	72	54	46	800	1600	70	164	290	225	106	232	5-8
4. 41 45						142	141	125	94	69	51	900	1600	80	247	422	265	159	322	6-9

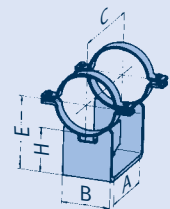
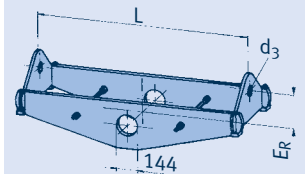
permissible load [kN]											wt. [kg]					
type	100	250	350	450	500	510	530	560	580	600°C						
49 41 13	25	23	22								303	280	260	450	100	33
49 41 14	47	40	37								403	300	241	480	200	44
49 41 25	59	53	43	35	32						453	400	273	535	250	47
49 41 35	90	84	72	61	57	57	55	34			503	400	300	550	300	63
49 41 45	91	83	79	71	66	64	60	41	30	23	503	400	300	550	300	63



① type 46



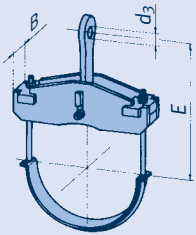
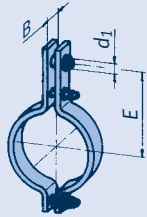
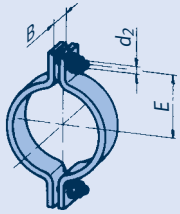
① type 48



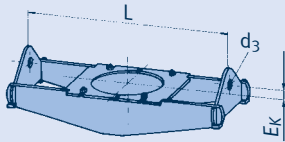
Selection table

OD 419

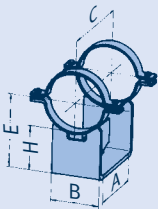
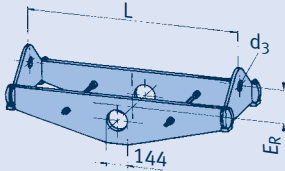
Pipe clamps, clamp bases, OD 419 (ND 400), type 42, 43, 44, 46, 48, 49



① type 46



① type 48



permissible load [kN]													wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E		
42 42 19	8.0	6.2	4.4								M24	260	70	9.7 3-5

Heat-resistant materials, see pp. 0.9 and 4.4

permissible load [kN]													wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₁	E		
43 42 18	9.6	9.0	8.6								16	435	100	23 1-3
43 42 19	29	22	16								24	435	100	23 3-6
43 42 28			11.3	11.3	11.3						16	500	100	24.5 1-3
43 42 29	33	28	23	19	15						24	500	100	25 3-6

permissible load [kN]													wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	E		
44 42 12	59	49	40								51	445	92	26 6-9
44 42 15	151	116	84								61	460	162	60 7-10
44 42 22			36	28	26						41	500	117	26 5-7
44 42 25			75	59	53						51	500	140	44 6-9
44 42 31					18	17	15	11			25	525	110	23 3-5
44 42 35					38	37	36	25			46	525	144	44 5-8
44 42 36		98	85	71	67	65	64	34			51	525	149	64 6-9
44 42 41								16	12	9.6	25	525	143	27 3-5
44 42 45								42	31	23	46	525	164	58 5-8
44 42 46	151	140	133	118	110	108	99	64	48	34	51	525	189	96 6-9

permissible load [kN]											L		type 46		type 48		load				
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group	
4.①4211	43	35	25								34	800	1400	30	62	94	155	44	88	4-6	
4.4212	74	55	43								41	800	1400	40	75	131	160	58	112	5-7	
4.4213	109	85	67								46	800	1400	55	112	162	175	75	132	6-8	
4.4221			29	28	20						25	800	1500	40	61	97	145	41	85	3-5	
4.4222			41	39	28						34	800	1500	40	78	124	150	50	103	4-6	
4.4223	95	91	90	83	58						41	830	1500	50	103	184	180	80	155	5-7	
4.4224	117	114	113	104	73						46	830	1500	60	125	214	180	87	173	6-8	
4.4231					30	28	21	12			25	800	1600	45	72	118	160	44	99	3-5	
4.4232					47	45	35	20			41	800	1600	50	96	166	180	64	133	4-7	
4.4233				83	78	70	54	29			46	800	1600	70	122	204	200	81	160	5-8	
4.4234	139	129	125	121	113	100	77	41			46	810	1600	70	152	261	220	99	204	5-8	
4.4235	234	230	223	209	194	176	136	71			51	890	1600	80	228	381	260	153	287	6-9	
4.4241							21	16	11	25	800	1600	45	78	137	175	51	114		3-5	
4.4242							36	27	20	41	800	1600	50	106	185	205	73	154		4-7	
4.4243							50	38	28	46	800	1600	70	134	237	225	86	187		5-8	
4.4244							77	72	54	40	46	900	1600	70	175	293	225	116	224		5-8
4.4245					140	139	125	94	69	51	900	1600	80	252	427	265	160	323		6-9	

type	permissible load [kN]										E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600°C						
49 42 13	37	32	24								310	300	241	420	100	31
49 42 14	47	40	37								410	300	241	480	200	44
49 42 25	61	53	43	35	32						460	400	273	535	250	48
49 42 35	91	85	72	61	57	57	55	34			510	400	300	555	300	64
49 42 45	92	85	80	72	67	65	61	42	32	23	510	400	300	555	300	64

Selection table

OD 457.2

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 457.2 (ND 450), type 42, 43, 44, 46, 48, 49

type	permissible load [kN]										d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
42 46 19	7.5	5.8	4.1								M24	280	70	10.4	3-5

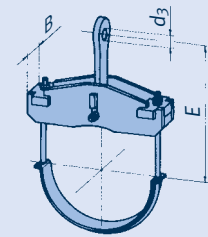
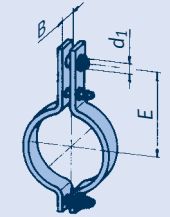
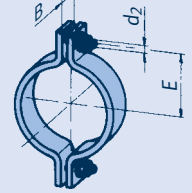
Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										d ₁	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
43 46 18	9.6	9.0	8.6								16	450	100	24	1-3
43 46 19	27	21	15								24	450	100	24	3-6

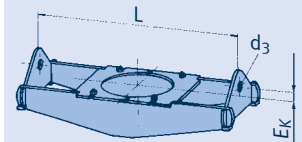
type	permissible load [kN]										d ₃	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
44 46 12	59	50	39								51	470	112	30	6-9
44 46 13	81	66	51								51	470	113	36	7-9
44 46 15	150	117	84								61	480	162	62	7-10
44 46 22			28	22	20						41	540	96	24	5-7
44 46 23			58	45	42						51	540	122	36	6-9
44 46 25			69	55	50						51	540	136	46	6-9
44 46 31					14	13	11	10			25	560	102	25	3-5
44 46 32					32	31	30	20			46	560	135	40	5-8
44 46 35		87	76	63	59	58	57	33			51	560	149	66	6-9
44 46 36	151	145	125	104	98	97	94	52			51	560	209	114	6-9
44 46 41								15	12	9.1	25	560	143	29	3-5
44 46 42								32	24	17	46	560	145	44	5-8
44 46 45		133	126	112	104	103	98	64	47	34	51	560	189	96	6-9
44 46 46	151	148	140	127	120	117	114	91	66	47	51	560	229	145	6-9

type	permissible load [kN]										d ₃	L		type 46			type 48			load group
	100	250	350	450	500	510	530	560	580	600°C		min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	
4.①4611	45	36	26								34	770	1450	35	71	112	150	47	97	4-6
4. 46 12	60	46	35								41	820	1450	40	76	125	155	59	109	5-7
4. 46 13	120	92	73								46	850	1450	50	131	173	170	86	143	6-8
4. 46 14	151	112	89								51	850	1450	60	138	214	185	86	156	6-9
4. 46 21			36	34	24						34	800	1600	45	81	131	160	50	107	4-6
4. 46 22			59	55	40						41	800	1600	50	103	170	170	69	141	5-7
4. 46 23	139	133	132	119	85						46	930	1600	55	160	262	185	113	210	6-8
4. 46 24	156	152	150	138	98						51	930	1600	55	172	298	200	123	232	7-9
4. 46 31					50	46	35	20			41	900	1700	50	117	184	180	75	147	4-7
4. 46 32					58	53	42	22			46	900	1700	50	132	206	190	81	158	5-8
4. 46 33				123	112	101	78	41			46	900	1700	60	184	287	225	116	224	5-8
4. 46 34	275	252	244	236	227	203	156	83			51	930	1700	70	298	456	245	175	331	6-9
4. 46 35	298	285	276	267	257	233	181	94			61	980	1700	85	333	513	250	204	366	7-10
4. 46 41								36	27	20	41	900	1700	50	128	211	195	86	171	4-7
4. 46 42								41	31	22	46	900	1700	50	142	242	210	92	185	5-8
4. 46 43								72	54	40	46	900	1700	60	197	326	235	125	254	5-8
4. 46 44							157	145	109	80	51	1000	1700	70	318	528	295	205	387	6-9
4. 46 45						201	199	163	123	90	61	1000	1700	85	357	577	295	228	416	7-10

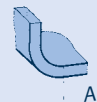
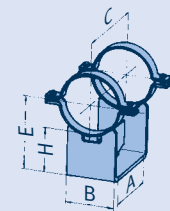
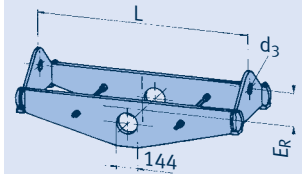
type	permissible load [kN]										E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600°C						
49 46 13	37	32	24								329	350	241	485	100	36
49 46 14	75	57	41								429	350	260	500	200	49
49 46 25		55	44	36	33						479	400	292	535	250	51
49 46 35	100	94	80	68	64	64	62	39			529	400	324	555	300	68
49 46 45	105	95	90	81	75	74	70	48	36	26	529	400	324	555	300	69



① type 46



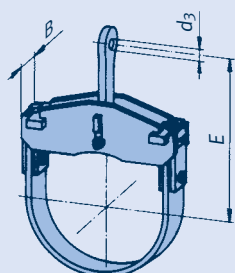
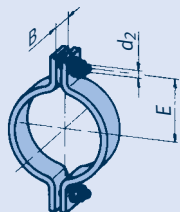
① type 48



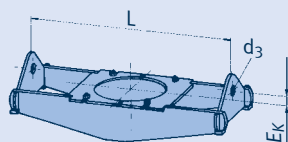
Selection table

OD 508

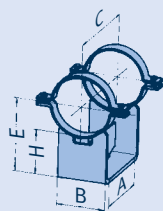
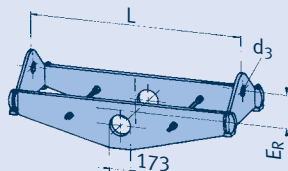
Pipe clamps, clamp bases, OD 508 (ND 500), type 42, 44, 46, 48, 49



① type 46



① type 48



type	permissible load [kN]										600°C	d ₂	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
42 51 19	6.9	5.4	3.8									M24	305	70	11.4	3-5

Heat-resistant materials, see pp. 0.9 and 4.4

type	permissible load [kN]										600°C	d ₃	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600						
44 51 14	10	8.9	7.5									21	500	80	25	1-4
44 51 15	28	24	19									34	500	80	27	4-6
44 51 16	57	48	37									51	500	92	35	6-9
44 51 17	98	81	65									61	500	162	58	7-10
44 51 18	189	158	125									71	520	222	106	8-30
44 51 25			16	13	12							25	570	99	28	3-5
44 51 26			30	23	22							41	570	100	31	5-7
44 51 27			59	47	42							51	570	122	42	6-9
44 51 28			117	100	90							61	570	164	75	7-10
44 51 35					17	16	14	11				25	590	128	37	3-5
44 51 36					35	34	33	23				46	590	144	48	5-8
44 51 37					81	80	68	35				51	590	189	82	6-9
44 51 38		155	147	140	131	122	98	52				61	590	196	118	7-10
44 51 45								19	15	11		25	590	164	42	3-5
44 51 46								40	30	22		46	590	164	63	5-8
44 51 47								65	48	35		51	590	196	108	6-9
44 51 48	222	222	217	202	189	186	164	113	84	63		61	590	254	190	7-10

type	permissible load [kN]										600°C	d ₃	L		type 46			type 48			load group
	100	250	350	450	500	510	530	560	580	min			max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]		
4.① 5111	44	37	26								34	860	1500	35	86	123	160	60	111	4-6	
4. 51 12	68	51	39								41	860	1500	40	94	150	175	71	133	5-7	
4. 51 13	119	93	73								46	900	1500	60	151	193	175	97	159	6-8	
4. 51 14	171	127	101								51	900	1500	65	173	234	180	101	182	6-9	
4. 51 21			42	40	29						34	920	1650	50	104	153	170	67	130	4-6	
4. 51 22			60	55	40						41	920	1650	60	122	192	180	77	151	5-7	
4. 51 23	136	130	129	117	83						46	1000	1650	60	182	295	200	129	231	6-8	
4. 51 24	168	162	160	147	103						61	1050	1650	60	235	335	220	148	259	7-10	
4. 51 31					45	45	35	20			41	1000	1800	60	139	208	200	85	162	4-7	
4. 51 32					59	54	42	23			46	1000	1800	70	154	234	200	97	181	5-8	
4. 51 33				123	113	102	79	41			46	1000	1800	80	208	327	230	136	252	5-8	
4. 51 34	268	250	242	234	227	205	158	84			51	1030	1800	80	324	512	265	199	375	6-9	
4. 51 35	335	308	298	288	282	254	195	104			61	1030	1800	90	393	601	300	248	456	7-10	
4. 51 41							36	27	20	41	1000	1800	60	151	238	210	97	188	4-7		
4. 51 42							41	31	22	46	1000	1800	70	169	270	225	111	209	5-8		
4. 51 43							72	54	40	46	1000	1800	80	230	380	250	149	287	5-8		
4. 51 44						156	145	109	80	51	1050	1800	80	363	589	315	243	435	6-9		
4. 51 45					202	201	182	137	100	61	1050	1800	90	429	687	315	275	499	7-10		

type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600							
49 51 13	46	40	29									354	350	241	500	100	42
49 51 14	84	66	49									454	350	280	500	200	52
49 51 25		62	61	54	50							554	400	330	550	300	70
49 51 35	129	125	107	90	85	84	81	48				554	395	330	565	300	81
49 51 45	148	135	129	116	108	107	99	68	52	38		554	400	330	580	300	87

Selection table

OD 558.8

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 558.8 (ND 550), type 42, 44, 46, 48, 49

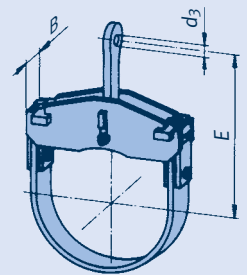
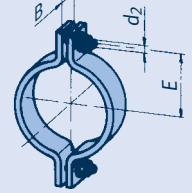
permissible load [kN]											d ₂	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
42 56 19	17	13	9.9								M30	350	90	24	5-6

Heat-resistant materials, see pp. 0.9 and 4.4

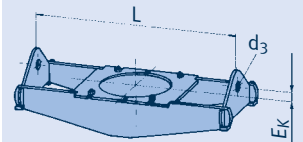
permissible load [kN]											d ₃	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
44 56 14	20	17	15								34	530	85	31	3-6
44 56 15	45	38	29								46	530	107	36	5-8
44 56 16	75	60	45								51	530	113	44	6-9
44 56 17	101	84	67								61	530	162	60	7-10
44 56 18	182	151	120								71	545	222	110	8-30
44 56 25			24	19	18						34	600	100	33	4-6
44 56 26			59	47	43						51	600	122	46	6-9
44 56 27			69	55	51						51	600	132	49	6-9
44 56 28			116	99	90						61	600	164	80	7-10
44 56 35					35	34	33	25			46	620	138	51	5-8
44 56 36					83	82	68	35			51	620	189	89	6-9
44 56 37		137	130	124	120	119	98	52			61	620	196	121	7-10
44 56 38	200	175	166	158	150	149	126	83			61	620	229	166	7-10
44 56 45								40	31	23	46	620	164	68	5-8
44 56 46								65	48	35	51	620	196	121	6-9
44 56 47								86	66	47	61	620	216	152	7-10
44 56 48	222	222	222	211	194	188	167	115	85	63	61	620	254	211	7-10

permissible load [kN]											L		type 46			type 48			load	
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4.①5611	44	34	25								34	820	1550	40	84	130	170	61	117	4-6
4. 56 12	67	52	39								41	880	1550	50	111	162	185	76	128	5-7
4. 56 13	131	98	77								51	920	1550	60	164	227	195	101	177	6-9
4. 56 14	202	155	123								51	930	1550	65	206	283	205	118	237	7-9
4. 56 21				43	41	30					34	960	1700	55	117	171	180	74	140	4-6
4. 56 22				57	55	40					41	960	1700	60	137	203	190	83	159	5-7
4. 56 23		133	131	118	86						51	1100	1700	65	233	323	205	147	247	6-9
4. 56 24	208	200	194	182	128						51	1100	1700	65	282	405	240	182	306	7-9
4. 56 31					53	53	41	22			41	1100	1900	60	168	254	200	107	191	4-7
4. 56 32					71	70	54	30			46	1100	1900	60	204	324	230	130	235	5-8
4. 56 33					95	90	70	40			46	1100	1900	70	239	360	240	148	271	5-8
4. 56 34	276	252	245	237	227	205	158	83			51	1100	1900	90	368	563	270	224	422	6-9
4. 56 35	402	364	352	343	340	306	236	126			61	1180	1900	100	506	746	320	321	553	7-10
4. 56 41								40	29	21	41	1100	1900	60	186	289	225	122	224	4-7
4. 56 42								54	40	30	46	1100	1900	60	229	348	220	140	265	5-8
4. 56 43								72	54	40	46	1100	1900	70	266	419	260	171	318	5-8
4. 56 44							172	145	109	80	51	1100	1900	90	411	654	285	246	470	6-9
4. 56 45							231	217	163	120	61	1200	1900	100	567	860	360	359	623	7-10

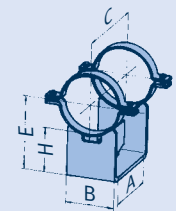
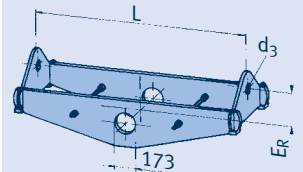
permissible load [kN]											E	A	B	C	H	wt. [kg]
type	100	250	350	450	500	510	530	560	580	600°C						
49 56 13	55	44	32								380	400	241	570	100	71
49 56 14	107	84	62								480	395	292	585	200	89
49 56 25		70	66	56	52						580	450	343	620	300	100
49 56 35	161	147	127	105	99	97	91	55			580	450	350	635	300	116
49 56 45	174	150	142	128	119	111	107	73	55	40	580	450	350	650	300	120



① type 46



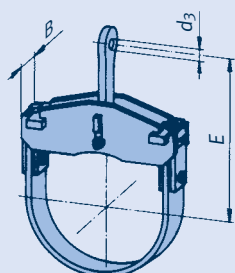
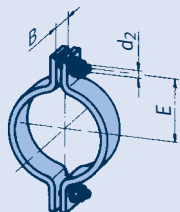
① type 48



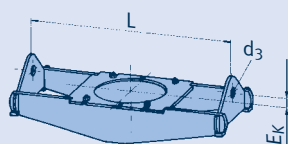
Selection table

OD 609.6

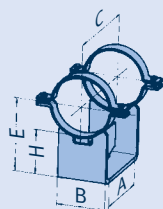
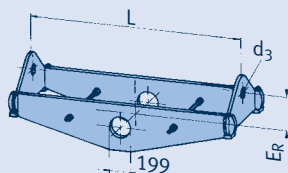
Pipe clamps, clamp bases, OD 609.6 (ND 600), type 42, 44, 46, 48, 49



① type 46



① type 48



permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B		
42 61 19	16	13	9.3								M30	375	90	26	5-6

Heat-resistant materials, see pp. 0.9 and 4.4

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	E	B		
44 61 14	29	24	21								34	560	115	37	3-6
44 61 15	56	45	38								51	560	98	44	6-9
44 61 16	80	69	50								51	560	119	50	6-9
44 61 17	110	87	74								61	560	162	66	7-10
44 61 18	195	159	125								71	580	222	114	8-30
44 61 25			23	22	21						41	645	120	43	4-7
44 61 26			55	43	39						51	645	122	49	6-9
44 61 27			86	71	67						61	645	143	75	7-10
44 61 28			110	92	85						61	645	164	86	7-10
44 61 35				38	37	36	25				46	685	164	62	5-8
44 61 36				78	77	66	35				51	685	189	100	6-9
44 61 37		128	122	116	110	108	91	52			61	685	209	142	7-10
44 61 38	268	248	215	179	169	165	137	82			71	685	229	182	8-30
44 61 45								39	29	21	46	685	182	76	5-8
44 61 46								64	47	34	51	685	196	119	6-9
44 61 47							141	106	81	59	61	685	260	214	7-10
44 61 48	340	305	291	263	247	243	219	142	103	77	71	685	254	244	8-30

permissible load [kN]											L		type 46		type 48		load			
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4.①6111	60	47	35								41	1000	1600	40	122	165	185	87	150	4-7
4.6112	89	69	55								46	1000	1600	45	151	199	195	108	184	6-8
4.6113	127	97	77								51	1000	1600	50	176	244	190	115	191	6-9
4.6114	186	141	112								51	1000	1600	55	217	293	205	130	242	7-9
4.6115	224	167	132								61	1000	1600	65	275	340	230	142	280	7-10
4.6121			60	57	42						41	1010	1800	60	155	231	190	105	190	4-7
4.6122			117	112	80						51	1060	1800	60	252	362	220	150	273	6-9
4.6123	193	186	184	171	120						51	1090	1800	60	310	477	235	188	336	7-9
4.6124	245	236	233	217	152						61	1110	1800	70	381	540	265	231	397	8-10
4.6131					55	53	41	22			41	1200	2000	60	191	266	220	125	217	4-7
4.6132					93	90	70	40			46	1200	2000	70	274	398	235	172	299	5-8
4.6133					127	123	96	53			46	1200	2000	90	324	469	280	202	347	5-8
4.6134	263	247	239	231	220	198	152	80			51	1210	2000	90	417	613	285	264	467	6-9
4.6135	398	361	349	340	337	306	235	125			61	1240	2000	110	565	820	325	357	609	7-10
4.6136	494	472	458	442	419	375	288	156			71	1260	2000	110	677	962	360	433	718	8-30
4.6141								39	30	22	41	1200	2000	60	211	316	230	135	242	4-7
4.6142								71	54	40	46	1200	2000	70	302	463	275	197	350	5-8
4.6143								96	72	53	46	1200	2000	90	365	541	280	233	409	5-8
4.6144								141	106	78	51	1300	2000	90	486	708	295	298	515	6-9
4.6145							256	217	162	120	61	1300	2000	110	646	952	355	403	683	7-10
4.6146						306	303	272	205	150	71	1300	2000	110	766	1127	365	482	793	8-30

permissible load [kN]																wt.
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B	C	H	[kg]
49 61 13	76	74	54								455	400	273	570	150	80
49 61 14	117	88	64								505	395	311	585	200	95
49 61 25		73	70	64	59						605	450	362	620	300	108
49 61 35	172	152	131	108	102	99	94	59			605	450	370	635	300	122
49 61 45	202	173	165	148	138	125	121	83	62	45	605	450	370	650	300	128

Selection table

OD 660.4

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

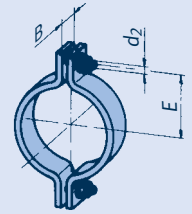
Pipe clamps, clamp bases, OD 660.4 (ND 650), type 42, 44, 46, 48, 49

permissible load [kN]											wt. [kg]	load group			
type ①	100	250	350	450	500	510	530	560	580	600°C					
42 66 19	15	12	8.8								M30	400	90	28	5-6

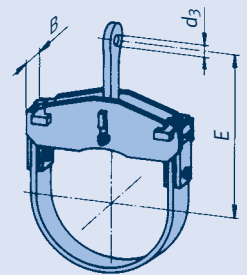
permissible load [kN]											wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C		
44 66 14	34	28	24								41	4-7
44 66 15	58	47	36								51	6-9
44 66 16	86	71	57								51	6-9
44 66 17	130	106	85								61	7-10
44 66 18	183	145	116								71	8-30
44 66 19	306	241	174								71	9-30
44 66 25			22	22	20						41	4-7
44 66 26			61	48	44						51	6-9
44 66 27			101	83	76						61	7-10
44 66 28			169	142	134						71	8-30
44 66 35					40	39	38	25			46	5-8
44 66 36					80	79	77	52			51	6-9
44 66 37					113	112	96	53			61	7-10
44 66 38	281	260	226	188	175	173	139	83			71	8-30
44 66 45								39	30	22	46	5-8
44 66 46								78	60	44	51	6-9
44 66 47						160	153	112	84	60	61	7-10
44 66 48	340	312	298	270	253	249	222	142	105	78	71	8-30

permissible load [kN]											L		type 46			type 48			load	
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _k	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4.② 66 11	60	46	36								41	1030	1650	40	133	177	200	103	173	5-7
4. 66 12	90	71	56								46	1050	1650	50	170	216	215	127	210	6-8
4. 66 13	136	102	81								51	1050	1650	55	212	270	200	137	218	6-9
4. 66 14	217	159	126								61	1050	1650	60	271	355	245	170	291	7-10
4. 66 15	257	196	155								61	1050	1650	70	303	395	235	185	303	8-10
4. 66 21			66	63	45						41	1120	1900	65	188	267	220	133	237	4-7
4. 66 22			118	111	80						51	1250	1900	65	294	390	245	191	312	6-9
4. 66 23		195	192	176	125						51	1250	1900	70	356	491	260	232	385	7-9
4. 66 24	256	246	243	223	158						61	1280	1900	80	408	591	270	281	453	8-10
4. 66 31					61	60	47	25			41	1250	2050	65	228	331	225	150	260	4-7
4. 66 32					91	90	70	40			46	1250	2050	65	301	429	245	190	328	5-8
4. 66 33					155	139	107	57			46	1250	2050	90	364	527	290	233	401	5-8
4. 66 34	273	250	242	234	225	202	155	82			51	1250	2050	90	467	666	305	296	504	6-9
4. 66 35	399	362	350	340	337	308	237	125			61	1320	2050	100	621	885	315	391	643	7-10
4. 66 36	488	474	460	439	421	378	291	155			71	1320	2050	110	735	1044	355	467	759	8-30
4. 66 41								45	33	24	41	1250	2050	65	243	364	235	168	295	4-7
4. 66 42								72	54	40	46	1250	2050	65	332	491	285	221	386	5-8
4. 66 43								100	74	54	46	1250	2050	90	401	588	295	263	461	5-8
4. 66 44								146	110	80	51	1250	2050	90	510	769	315	334	562	6-9
4. 66 45							262	218	164	120	61	1350	2050	100	698	1011	350	433	726	7-10
4. 66 46						329	321	272	204	150	71	1350	2050	110	827	1198	360	518	834	8-30

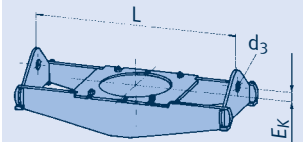
permissible load [kN]																wt.
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B	C	H	[kg]
49 66 13	89	76	56								480	400	300	570	150	86
49 66 14	122	96	71								530	395	330	585	200	101
49 66 25	113	99	81	66	61						630	450	370	620	300	113
49 66 35	167	161	160	128	120	116	103	72			630	450	381	650	300	134
49 66 45	226	194	185	166	154	145	139	96	72	53	630	450	381	650	300	136



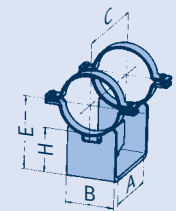
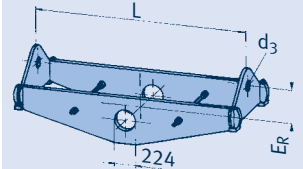
① Heat-resistant materials,
see pp. 0.9 and 4.4



② type 46



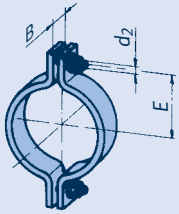
② type 48



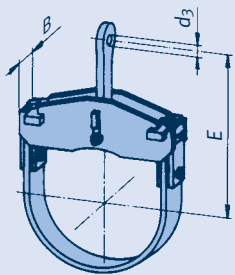
Selection table

OD 711.2

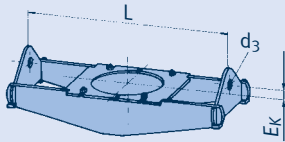
Pipe clamps, clamp bases, OD 711.2 (ND 700), type 42, 44, 46, 48, 49



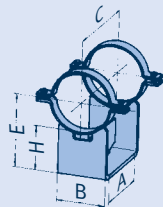
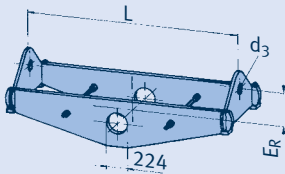
① Heat-resistant materials, see pp. 0.9 and 4.4



② type 46



② type 48



permissible load [kN]											d ₂	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
42 71 19	14	11	8.1								M30	430	90	30	5-6

permissible load [kN]											d ₃	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
44 71 14	42	35	30								41	630	143	58	4-7
44 71 15	95	76	63								51	630	162	71	6-9
44 71 16	125	102	83								61	630	168	82	7-10
44 71 17	152	121	88								71	630	181	99	8-30
44 71 18	188	145	115								71	630	222	133	8-30
44 71 19	307	243	176								71	650	235	187	9-30
44 71 25			33	26	24						41	720	122	51	5-7
44 71 26			56	44	41						51	720	138	63	6-9
44 71 27			78	68	62						61	720	149	88	7-10
44 71 28			118	98	88						71	720	164	100	8-30
44 71 29			168	141	132						71	720	196	143	8-30
44 71 35				40	39	38	25				46	740	164	72	5-8
44 71 36				72	71	67	35				51	740	189	108	6-9
44 71 37				109	108	92	52				61	740	209	156	7-10
44 71 38		235	205	170	160	157	138	82			71	740	229	198	8-30
44 71 39	340	316	274	229	215	210	175	91			71	740	267	257	9-30
44 71 45								42	32	23	46	740	189	95	5-8
44 71 46								90	66	47	51	740	229	180	6-9
44 71 47								115	85	63	61	740	276	243	7-10
44 71 48		298	285	258	242	238	221	143	105	78	71	740	254	262	8-30

permissible load [kN]											L		type 46		type 48		load				
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group	
4.②7111	73	57	44								41	1030	1700	45	168	213	195	124	197	5-7	
4.7112	119	90	72								46	1080	1700	55	212	276	240	147	231	6-8	
4.7113	173	135	107								51	1080	1700	60	256	357	225	160	293	7-9	
4.7114	234	181	144								51	1090	1700	80	312	412	230	191	309	7-9	
4.7115	264	204	162								61	1090	1700	90	349	439	215	214	337	8-10	
4.7121			73	70	50						46	1200	2000	70	232	323	220	152	266	5-8	
4.7122			116	111	80						51	1210	2000	70	315	436	240	195	341	6-9	
4.7123		201	198	185	129						51	1320	2000	70	401	581	250	276	441	7-9	
4.7124	255	245	242	223	158						61	1350	2000	90	487	648	280	309	488	8-10	
4.7131					63	60	46	27			41	1300	2100	70	256	364	235	163	278	4-7	
4.7132					94	90	70	40			46	1300	2100	70	333	459	250	203	342	5-8	
4.7133				180	175	158	121	64			51	1300	2100	100	447	638	285	268	441	6-9	
4.7134	273	250	242	234	225	202	155	82			51	1310	2100	100	519	719	305	313	524	6-9	
4.7135	399	362	350	340	337	307	236	125			61	1390	2100	100	681	949	335	432	676	7-10	
4.7136	533	488	473	457	440	394	303	162			71	1450	2100	130	849	1146	345	522	780	8-30	
4.7141								49	37	27	41	1300	2100	70	284	409	240	186	317	4-7	
4.7142								72	54	40	46	1300	2100	70	361	526	290	236	402	5-8	
4.7143								115	86	63	51	1300	2100	100	492	720	305	297	513	6-9	
4.7144								145	109	80	51	1400	2100	100	577	821	315	375	583	6-9	
4.7145								228	217	163	120	61	1400	2100	100	759	1081	355	462	733	7-10
4.7146						338	335	283	213	155	71	1450	2100	130	936	1316	370	578	879	8-30	

permissible load [kN]											E	A	B	C	H	wt. [kg]
type	100	250	350	450	500	510	530	560	580	600°C						
49 71 13	95	79	58								506	400	320	570	150	92
49 71 14	135	106	78								556	395	350	585	200	107
49 71 25	118	114	100	82	76						656	450	394	635	300	129
49 71 35	203	195	188	157	147	135	120	82			656	450	413	650	300	147
49 71 45	253	218	207	186	173	167	160	111	83	61	656	450	413	650	300	147

Selection table

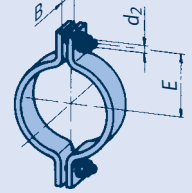
OD 762

Temp. of medium > 600°C
from page 4.52

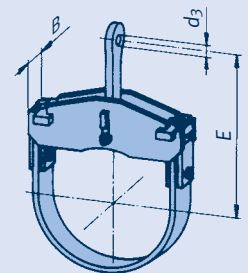
Load doubling via type 77,
see page 4.67

Pipe clamps, clamp bases, OD 762 (ND 750), type 42, 44, 46, 48, 49

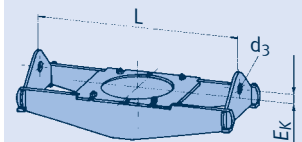
permissible load [kN]																		wt.	load		
type ①	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B	[kg]	group						
42 76 19	13	10	7.7									M30	455	90	31	5-6					
permissible load [kN]																		wt.	load		
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	E	B	[kg]	group						
44 76 14	54	45	37									41	670	156	72	4-7					
44 76 15	83	67	53									51	670	162	73	6-9					
44 76 16	120	95	76									61	670	168	84	7-10					
44 76 17	151	116	87									71	670	181	102	8-30					
44 76 18	196	151	120									71	670	222	133	8-30					
44 76 19	308	239	174									71	690	235	188	9-30					
44 76 25			54	43	40						51	760	138	67	6-9						
44 76 26			76	64	59						61	760	149	91	7-10						
44 76 27			117	97	88						71	760	164	112	8-30						
44 76 28			156	121	113						71	760	196	148	8-30						
44 76 29	307	284	242	192	176						71	760	218	206	9-30						
44 76 35					40	39	38	26				46	770	171	86	5-8					
44 76 36					71	70	67	35				51	770	189	122	6-9					
44 76 37					108	106	91	52				61	770	209	163	7-10					
44 76 38					158	156	139	83				71	770	225	220	8-30					
44 76 39	340	340	338	284	266	261	202	106				71	770	260	297	9-30					
44 76 45								50	38	28	46	770	196	133	5-8						
44 76 46								90	66	47	51	770	218	189	6-9						
44 76 47								115	85	63	61	770	276	253	7-10						
44 76 48							223	143	106	78	71	770	260	285	8-30						
44 76 49			340	340	340	340	309	195	146	108	71	770	279	375	9-30						
permissible load [kN]														L		type 46		type 48		load	
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group	
4. 76 11	74	57	43						41	1120	1750	45	186	231	215	145	218	5-7			
4. 76 12	120	92	73						46	1120	1750	55	232	300	215	161	257	6-8			
4. 76 13	183	137	108						51	1150	1750	65	297	364	245	187	314	7-9			
4. 76 14	236	182	144						51	1150	1750	80	359	446	260	216	343	7-9			
4. 76 15	308	237	188						61	1150	1750	90	451	509	255	256	394	8-10			
4. 76 21			74	69	50				46	1400	2200	70	270	378	250	190	316	5-8			
4. 76 22			117	111	80				51	1400	2200	70	369	500	250	242	403	6-9			
4. 76 23			206	201	190	132				51	1420	2200	80	474	683	300	316	516	7-9		
4. 76 24	301	289	285	262	184				61	1490	2200	90	602	775	300	396	621	8-10			
4. 76 31				71	69	53	30				41	1500	2300	80	324	450	260	210	342	4-7	
4. 76 32				94	90	70	40				46	1500	2300	80	393	531	270	254	402	5-8	
4. 76 33				149	140	109	60				51	1500	2300	100	512	697	310	313	502	6-9	
4. 76 34				237	225	202	155	83				51	1500	2300	100	597	811	330	386	616	6-9
4. 76 35	397	365	352	343	340	306	236	125				61	1500	2300	110	802	1084	360	495	796	7-10
4. 76 36	603	552	535	517	506	461	354	188				71	1580	2300	140	1146	1443	400	695	1023	8-30
4. 76 41							54	41	30	41	1500	2300	80	359	495	275	243	393	4-7		
4. 76 42							72	54	40	46	1500	2300	80	427	605	285	286	469	5-8		
4. 76 43							108	82	60	51	1500	2300	100	571	798	335	361	590	6-9		
4. 76 44							145	109	80	51	1500	2300	100	667	937	340	437	706	6-9		
4. 76 45						253	219	163	120	61	1500	2300	110	880	1231	365	538	881	7-10		
4. 76 46					385	382	326	246	179	71	1600	2300	140	1187	1613	430	751	1152	8-30		
permissible load [kN]																				wt.	
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B	C	H	[kg]					
49 76 13	111	96	71									531	400	343	590	150	104				
49 76 14	157	124	91									581	395	370	585	200	115				
49 76 25	151	144	114	94	87						681	445	400	635	300	136					
49 76 35	274	238	217	182	171	165	147	104				681	450	420	650	300	157				
49 76 45	291	250	238	214	199	193	186	128	96	70	681	450	420	650	300	157					



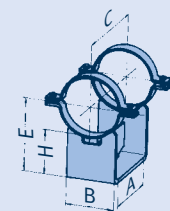
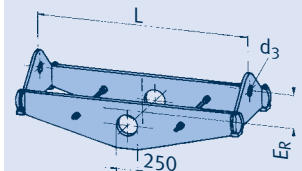
① Heat-resistant materials,
see pp. 0.9 and 4.4



② type 46



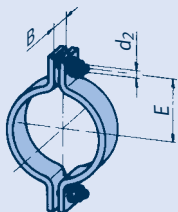
② type 48



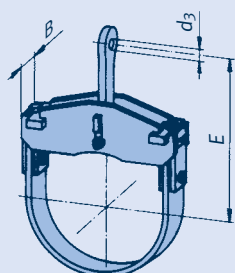
Selection table

OD 812.8

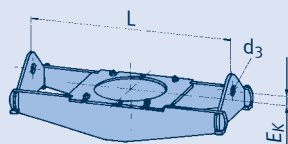
Pipe clamps, clamp bases, OD 812.8 (ND 800), type 42, 44, 46, 48, 49



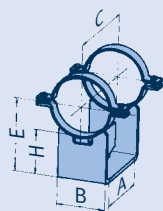
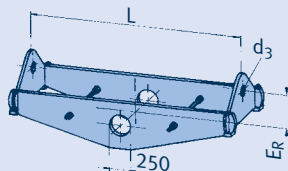
① Heat-resistant materials, see pp. 0.9 and 4.4



② type 46



② type 48



permissible load [kN]											d ₂	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
42 81 19	13	10	7.4								M30	480	90	33	5-6

permissible load [kN]											d ₃	E	B	wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C					
44 81 14	54	44	37								41	700	156	76	4-7
44 81 15	89	71	57								51	700	162	78	6-9
44 81 16	122	98	79								61	700	168	90	7-10
44 81 17	154	119	87								71	700	181	109	8-30
44 81 18	208	168	125								71	700	222	149	8-30
44 81 19	308	239	174								71	720	235	198	9-30
44 81 25			55	43	40						51	790	138	72	6-9
44 81 26			77	65	59						61	790	149	98	7-10
44 81 27			119	100	87						71	790	171	120	8-30
44 81 28			164	127	119						71	790	196	153	8-30
44 81 29	307	292	248	196	180						71	790	218	218	9-30
44 81 35				69	68	67	35				51	810	189	121	6-9
44 81 36				104	103	86	52				61	810	209	173	7-10
44 81 37				150	149	138	83				71	810	225	231	8-30
44 81 38				159	158	153	89				71	810	276	264	8-30
44 81 39	340	340	336	280	259	258	201	105			71	810	260	312	9-30
44 81 45								85	65	47	51	810	218	197	6-9
44 81 46								114	84	63	61	810	283	263	7-10
44 81 47							218	142	105	78	71	810	260	300	8-30
44 81 48			340	340	339	334	310	197	146	108	71	810	286	410	9-30

permissible load [kN]											L			type 46		type 48		load		
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4. 81 11	90	68	55								46	1200	1800	45	214	267	215	162	266	5-8
4. 81 12	135	102	81								51	1200	1800	60	268	331	240	177	279	6-9
4. 81 13	210	156	123								61	1200	1800	70	360	446	255	224	338	7-10
4. 81 14	271	208	165								61	1200	1800	90	447	559	245	257	392	8-10
4. 81 15	323	250	198								71	1200	1800	100	544	615	265	281	448	9-30
4. 81 21			74	70	50						46	1500	2300	80	296	419	250	209	338	5-8
4. 81 22			117	111	80						51	1500	2300	80	405	545	250	271	438	6-9
4. 81 23		226	219	207	145						61	1560	2300	90	586	762	320	386	597	7-10
4. 81 24	332	319	315	289	204						71	1560	2300	100	750	971	320	449	717	8-30
4. 81 31					81	80	62	34			46	1600	2400	90	396	520	280	261	398	5-8
4. 81 32					104	102	80	46			46	1600	2400	90	466	635	300	295	461	5-8
4. 81 33					149	140	109	60			51	1600	2400	100	563	755	330	343	537	6-9
4. 81 34				228	220	198	152	81			51	1600	2400	110	665	903	350	420	654	6-9
4. 81 35	400	363	351	341	338	306	236	125			61	1600	2400	120	881	1166	370	540	854	7-10
4. 81 36	662	606	587	568	556	502	386	207			71	1600	2400	150	1341	1771	415	773	1153	8-30
4. 81 41								60	45	34	46	1600	2400	90	433	598	295	282	447	5-8
4. 81 42								82	62	46	46	1600	2400	90	523	709	300	335	532	5-8
4. 81 43								108	81	60	51	1600	2400	100	631	869	340	394	628	6-9
4. 81 44								147	108	80	51	1600	2400	110	746	1021	350	477	761	6-9
4. 81 45							250	219	163	120	61	1600	2400	120	976	1335	370	591	947	7-10
4. 81 46						398	394	365	273	200	71	1600	2400	150	1350	1879	465	818	1322	8-30

permissible load [kN]											E	A	B	C	H	wt. [kg]
type	100	250	350	450	500	510	530	560	580	600°C						
49 81 13	118	102	74								556	400	362	590	150	109
49 81 14	162	128	94								606	395	400	585	200	122
49 81 25	158	152	130	108	100						706	445	425	635	300	145
49 81 35	280	243	218	184	173	168	150	106			706	450	425	650	300	161
49 81 45	350	301	286	257	240	232	210	154	116	85	706	445	425	650	300	167

Selection table

OD 863.6

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

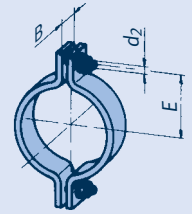
Pipe clamps, clamp bases, OD 863.6 (ND 850), type 42, 44, 46, 48, 49

permissible load [kN]											wt. [kg]	load group			
type ①	100	250	350	450	500	510	530	560	580	600°C					
42 86 19	13	10	7.2								M30	504	100	37	5-6

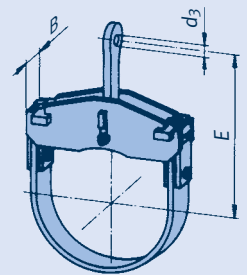
type	permissible load [kN]										d ₃	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
44 86 14	51	42	36								41	735	171	81	4-7
44 86 15	88	70	59								51	735	162	86	6-9
44 86 16	151	119	87								61	735	203	117	7-10
44 86 17	208	173	125								71	735	222	161	8-30
44 86 18	300	221	176								71	735	248	215	8-30
44 86 19	308	238	172								71	760	229	215	9-30
44 86 25			78	65	60						51	815	149	101	7-9
44 86 26			119	100	87						71	815	171	124	8-30
44 86 27			168	137	125						71	815	198	169	8-30
44 86 28			188	149	136						71	815	218	223	8-30
44 86 29	307	296	254	201	184						71	815	218	233	9-30
44 86 35					102	101	87	52			61	845	210	191	7-10
44 86 36					151	150	138	82			71	845	225	248	8-30
44 86 37					187	185	175	91			71	845	276	300	8-30
44 86 38	340	340	333	280	263	260	200	104			71	845	270	319	9-30
44 86 46								109	84	60	61	845	276	294	7-10
44 86 47							216	142	105	78	71	845	276	334	8-30
44 86 48			340	340	340	335	308	197	146	108	71	845	286	441	9-30

permissible load [kN]											L		type 46		type 48		load				
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _k	[kg min]	[kg max]	E _r	[kg min]	[kg max]	group	
4.②8611	90	70	55								46	1230	1850	45	238	286	215	176	296	5-8	
4. 86 12	135	101	80								51	1230	1850	60	284	352	240	198	310	6-9	
4. 86 13	202	156	124								61	1250	1850	70	377	458	255	235	376	7-10	
4. 86 14	273	208	165								61	1250	1850	90	508	572	245	260	437	8-10	
4. 86 15	319	248	196								71	1250	1850	100	563	641	265	283	466	9-30	
4. 86 21			73	70	50						46	1550	2350	80	336	451	250	225	366	5-8	
4. 86 22			116	110	80						51	1550	2350	80	443	592	250	295	469	6-9	
4. 86 23		226	218	181	146						61	1550	2350	90	595	807	320	376	596	7-10	
4. 86 24	331	318	314	262	204						71	1550	2350	100	769	1013	320	469	745	8-30	
4. 86 31					83	80	62	34			46	1650	2450	90	395	530	280	270	417	5-8	
4. 86 32					101	100	80	46			46	1650	2450	90	476	643	300	317	490	5-8	
4. 86 33					153	140	109	60			51	1650	2450	100	558	746	330	371	576	6-9	
4. 86 34				224	218	197	152	80			51	1650	2450	110	678	914	350	450	695	6-9	
4. 86 35	397	361	349	340	337	306	235	124			61	1650	2450	120	896	1218	370	580	903	7-10	
4. 86 36	661	605	586	567	555	504	388	206			71	1650	2450	150	1354	1800	415	786	1214	8-30	
4. 86 41								60	45	34	46	1650	2450	90	461	629	295	303	477	5-8	
4. 86 42								81	61	46	46	1650	2450	90	556	749	300	351	556	5-8	
4. 86 43								106	80	60	51	1650	2450	100	645	884	340	422	665	6-9	
4. 86 44								143	108	80	51	1650	2450	110	769	1042	350	486	770	6-9	
4. 86 45								212	211	162	120	61	1650	2450	120	977	1344	370	625	996	7-10
4. 86 46								373	359	272	200	71	1650	2450	150	1398	1923	465	872	1375	8-30

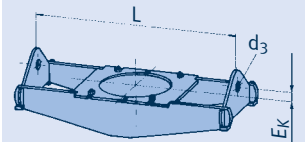
permissible load [kN]																wt.
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B	C	H	[kg]
49 86 13	136	115	84								582	450	360	650	150	126
49 86 14	242	190	154								632	445	420	660	200	145
49 86 25	203	176	153	139	129						732	495	451	715	300	176
49 86 35	411	355	305	252	238	233	209	148			732	495	480	715	300	200
49 86 45	553	406	460	414	353	320	283	199	156	117	732	495	485	755	300	232



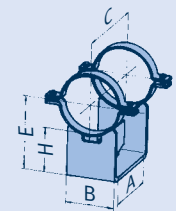
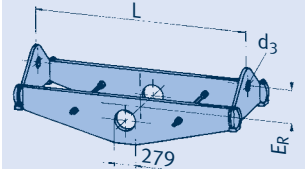
① Heat-resistant materials,
see pp. 0.9 and 4.4



② type 46



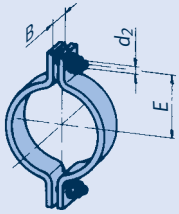
② type 48



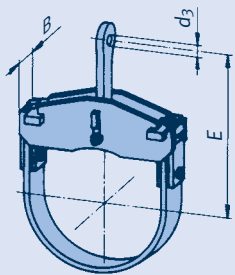
Selection table

OD 914.4

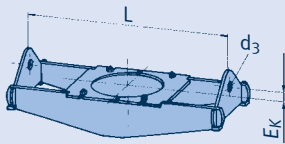
Pipe clamps, clamp bases, OD 914.4 (ND 900), type 42, 44, 46, 48, 49



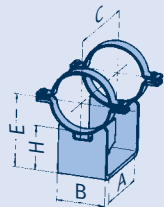
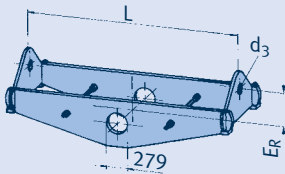
① Heat-resistant materials, see pp. 0.9 and 4.4



② type 46



② type 48



permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B		
42 91 19	13	10	7.6								M30	530	100	40	5-6

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	E	B		
44 91 14	51	43	36								41	760	156	83	4-7
44 91 15	88	70	56								51	760	162	86	6-9
44 91 16	153	117	87								61	760	201	120	7-10
44 91 17	208	170	125								71	760	222	163	8-30
44 91 18	254	209	167								71	760	229	220	8-30
44 91 19	308	238	172								71	785	235	220	9-30
44 91 25			78	65	60						51	840	149	107	7-9
44 91 26			120	101	88						71	840	171	133	8-30
44 91 27			169	133	125						71	840	196	168	8-30
44 91 28			188	149	136						71	840	218	224	9-30
44 91 29	307	297	255	201	184						71	840	218	238	9-30
44 91 35				102	101	85	52				61	870	209	191	7-10
44 91 36				152	150	139	83				71	870	225	251	8-30
44 91 37				186	184	170	90				71	870	276	289	9-30
44 91 38	340	340	329	274	255	252	202	105			71	870	260	340	9-30
44 91 46								115	85	63	61	870	283	293	7-10
44 91 47							218	143	105	78	71	870	260	330	8-30
44 91 48			340	340	340	335	308	198	146	108	71	870	286	439	9-30

permissible load [kN]														L		type 46		type 48		load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K		[kg min]	[kg max]	E _R	[kg min]	[kg max]
4.② 9111	96	72	57								46	1300	1900	50	262	320	255	204	310	5-8
4. 91 12	135	102	81								51	1300	1900	60	309	379	240	214	329	6-9
4. 91 13	214	158	125								61	1300	1900	70	442	514	240	263	407	7-10
4. 91 14	280	210	167								61	1300	1900	90	556	618	265	305	471	8-10
4. 91 15	332	249	197								71	1300	1900	100	616	704	295	339	537	9-30
4. 91 21			84	81	60						46	1600	2400	80	383	514	250	272	407	5-8
4. 91 22			122	117	85						51	1600	2400	90	487	643	270	316	498	6-9
4. 91 23			215	208	197	140					61	1600	2400	100	666	861	300	414	639	7-10
4. 91 24	317	305	301	275	200						71	1600	2400	100	862	1105	325	482	756	8-30
4. 91 25	387	371	367	332	240						71	1600	2400	110	930	1278	345	562	876	9-30
4. 91 31				91	90	70	40				46	1700	2500	100	500	645	300	314	479	5-8
4. 91 32				140	139	109	60				46	1700	2500	110	636	828	330	390	594	5-8
4. 91 33				203	185	145	80				51	1700	2500	110	771	1021	350	469	718	6-9
4. 91 34	444	424	410	399	395	360	277	147			61	1700	2500	130	1152	1500	385	691	1035	7-10
4. 91 35	680	630	610	590	576	518	398	214			71	1760	2500	130	1532	1945	455	913	1291	8-30
4. 91 36	680	680	680	680	676	608	468	252			71	1780	2500	160	1750	2116	440	998	1447	9-30
4. 91 41							72	54	40		46	1700	2500	100	547	737	300	342	537	5-8
4. 91 42							109	81	60		46	1700	2500	110	692	942	345	443	694	5-8
4. 91 43							145	110	80		51	1700	2500	110	851	1154	370	544	849	6-9
4. 91 44					260	255	192	140			61	1700	2500	130	1216	1655	445	764	1136	7-10
4. 91 45					410	364	272	200			71	1800	2500	130	1581	2091	445	946	1451	8-30
4. 91 46				476	468	438	330	240			71	1800	2500	160	1776	2393	490	1109	1642	9-30

type	permissible load [kN]										E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600°C						
49 91 13	137	116	85								607	450	362	650	150	129
49 91 14	249	193	157								657	450	420	660	200	149
49 91 25	203	176	153	140	130						757	500	451	715	300	180
49 91 35	397	346	309	255	240	236	209	148			757	500	483	715	300	203
49 91 45	559	486	466	419	356	323	285	201	156	118	757	495	483	755	300	236

Selection table

OD 965.2

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

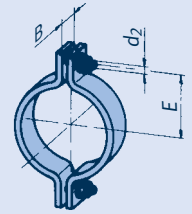
Pipe clamps, clamp bases, OD 965.2 (ND 950), type 42, 44, 46, 48, 49

permissible load [kN]														wt.	load
type ①	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B	[kg]	group
42 97 19	13	10	7.4								M30	554	100	41	5-6

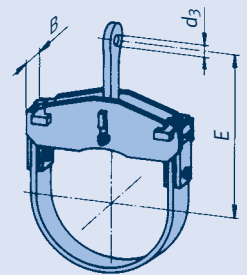
type	permissible load [kN]										d ₃	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
44 97 14	51	43	36								41	785	171	89	4-7
44 97 15	89	71	60								51	785	162	94	6-9
44 97 16	149	119	87								61	785	203	130	7-10
44 97 17	208	173	126								71	800	222	179	8-30
44 97 18	299	233	175								71	800	248	241	9-30
44 97 19	366	295	215								81	820	276	309	10-40
44 97 25			85								51	865	182	118	7-9
44 97 26			123	103	97						71	865	189	144	8-30
44 97 27			171	137	126						71	865	210	193	8-30
44 97 28			246	193	178						71	865	218	246	9-30
44 97 29	380	346	299	247	227						81	880	255	317	10-40
44 97 35					101	99	85	52			61	900	210	200	7-10
44 97 36					148	146	140	83			71	900	225	265	8-30
44 97 37					188	185	170	91			71	900	270	304	8-30
44 97 38					201	199	192	105			71	900	276	352	9-30
44 97 39		340	311	259	241	238	232	155			71	900	286	464	9-30
44 97 46								107	83	61	61	900	276	307	7-10
44 97 47								143	106	78	71	900	276	349	8-30
44 97 48			340	340	340	335	305	198	147	108	71	900	286	463	9-30

permissible load [kN]											L		type 46		type 48		load			
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _k	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4. 97 11	96	72	57								46	1350	2000	50	285	347	295	267	363	5-8
4. 97 12	134	101	80								51	1400	2000	60	338	419	300	300	389	6-9
4. 97 13	216	160	127								61	1400	2000	70	437	546	315	304	450	7-10
4. 97 14	278	209	166								61	1400	2000	90	542	643	330	349	536	8-10
4. 97 15	383	287	227								71	1400	2000	100	745	825	330	406	602	9-30
4. 97 16	492	370	293								81	1400	2000	100	863	995	370	455	690	10-40
4. 97 21			83	80	60						46	1650	2450	80	417	554	305	312	442	5-8
4. 97 22			118	114	85						51	1650	2450	90	523	696	345	351	546	6-9
4. 97 23			208	181	143						61	1650	2450	100	703	888	375	438	670	7-10
4. 97 24		304	295	250	200						71	1650	2450	100	858	1114	405	540	831	8-30
4. 97 25	435	427	419	345	280						71	1650	2450	110	1037	1399	450	670	1019	9-30
4. 97 26	575	556	542	441	360						81	1700	2450	110	1244	1647	460	813	1203	10-40
4. 97 31					90	89	70	40			46	1750	2550	100	511	659	330	336	509	5-8
4. 97 32					139	139	109	60			46	1750	2550	110	639	842	345	429	647	5-8
4. 97 33					201	185	145	80			51	1750	2550	110	764	1002	395	519	777	6-9
4. 97 34				383	380	359	276	147			61	1750	2550	130	1174	1539	430	761	1097	7-10
4. 97 35	680	626	606	586	574	520	400	213			71	1770	2550	130	1556	2000	465	1022	1377	8-30
4. 97 36	680	680	680	680	673	612	471	250			71	1770	2550	160	1805	2257	485	1060	1542	9-30
4. 97 37	760	760	742	715	689	684	570	310			81	1770	2550	160	1897	2506	520	1164	1733	10-40
4. 97 41								71	53	40	46	1750	2550	100	586	777	300	373	589	5-8
4. 97 42								106	80	60	46	1750	2550	110	746	990	345	471	727	5-8
4. 97 43								140	106	80	51	1750	2550	110	875	1166	370	552	858	6-9
4. 97 44								252	189	140	61	1750	2550	130	1249	1679	445	815	1249	7-10
4. 97 45							385	368	270	200	71	1750	2550	130	1599	2152	445	970	1500	8-30
4. 97 46							472	422	318	239	71	1750	2550	160	1807	2433	490	1121	1734	9-30
4. 97 47					586	581	557	419	310		71	1780	2550	160	2166	2914	490	1290	1966	9-30

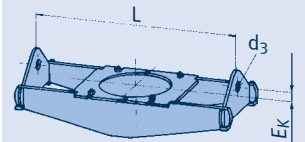
permissible load [kN]																wt.
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B	C	H	[kg]
49 97 13	139	118	87								633	450	400	650	150	137
49 97 14	249	197	160								683	445	460	660	200	159
49 97 25	264	225	178	146	136						783	500	490	715	300	191
49 97 35	414	358	308	255	240	237	231	163			783	500	520	715	300	214
49 97 45	581	500	475	427	386	339	300	212	165	125	783	500	520	755	300	249



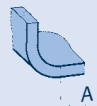
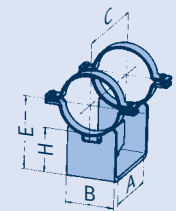
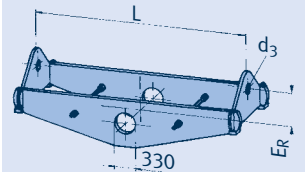
① Heat-resistant materials,
see pp. 0.9 and 4.4



② type 46



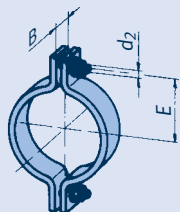
② type 48



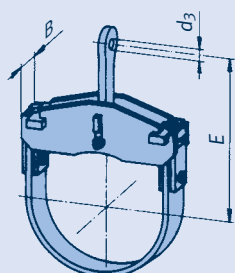
Selection table

OD 1016

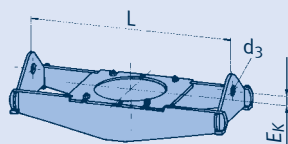
Pipe clamps, clamp bases, OD 1016 (ND 1000), type 42, 44, 46, 48, 49



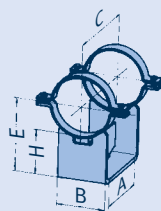
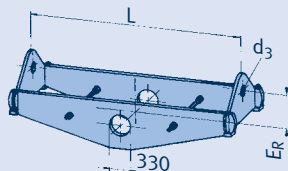
① Heat-resistant materials, see pp. 0.9 and 4.4



② type 46



② type 48



permissible load [kN]													wt.	load
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B	group
42 TO 19	31	23	16								M30	592	150	85 5-6

permissible load [kN]													wt.	load
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	E	B	group
44 TO 14	92	73	60								51	810	162	97 6-9
44 TO 15	149	120	87								61	810	203	137 7-10
44 TO 16	208	173	125								71	850	222	184 8-30
44 TO 17	288	230	174								71	850	248	252 9-30
44 TO 18	373	295	212								81	860	276	323 10-40
44 TO 19	405	359	259								91	915	276	370 20-50
44 TO 24			87	69	63						51	890	182	123 7-9
44 TO 25			123	103	97						71	890	189	150 8-30
44 TO 26			171	137	125						71	890	210	198 8-30
44 TO 27			249	197	180						71	890	218	254 9-30
44 TO 28			299	242	222						81	910	276	326 10-40
44 TO 29	380	380	343	280	258						81	910	283	376 10-40
44 TO 35					99	98	84	52			61	930	210	205 7-10
44 TO 36					146	144	139	83			71	930	225	274 8-30
44 TO 37					188	185	170	91			71	930	270	311 8-30
44 TO 38					199	197	192	105			71	930	276	361 9-30
44 TO 39					242	239	232	155			71	930	286	478 9-30
44 TO 46								107	82	61	61	930	255	315 7-10
44 TO 47								143	106	78	71	930	276	359 8-30
44 TO 48			340	340	333	328	304	198	147	108	71	930	286	476 9-30

permissible load [kN]										L			type 46			type 48			load	
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4.② TO11	97	72	57								46	1570	2200	50	323	395	295	318	411	5-8
4. TO 12	134	101	80								51	1570	2200	60	380	467	300	330	466	6-9
4. TO 13	216	159	126								61	1600	2200	70	492	608	315	352	520	7-10
4. TO 14	321	235	187								61	1600	2200	90	655	817	330	414	600	8-10
4. TO 15	458	351	279								71	1600	2200	100	880	1048	330	506	766	9-30
4. TO 16	606	459	364								81	1600	2200	100	1195	1267	370	609	870	10-40
4. TO 21			86	81	60						46	1800	2600	80	462	619	305	338	531	5-8
4. TO 22			119	114	84						51	1800	2600	90	583	758	345	388	588	6-9
4. TO 23			208	181	141						61	1800	2600	100	782	1002	375	487	743	7-10
4. TO 24			303	253	200						71	1800	2600	100	1016	1232	405	604	903	8-30
4. TO 25		436	427	360	285						71	1800	2600	110	1176	1537	450	798	1123	9-30
4. TO 26	562	541	512	416	390						81	1820	2600	110	1338	1730	460	865	1222	10-40
4. TO 31				91	90	70	40				46	1900	2700	100	561	728	330	391	567	5-8
4. TO 32				141	140	109	60				46	1900	2700	110	710	916	345	474	699	5-8
4. TO 33				188	185	145	80				51	1900	2700	110	852	1107	395	577	850	6-9
4. TO 34				388	359	276	147				61	1900	2700	130	1338	1655	430	802	1192	7-10
4. TO 35	680	627	608	588	574	520	400	213			71	1900	2700	130	1688	2156	465	1097	1492	8-30
4. TO 36	680	680	680	680	676	611	470	250			71	1900	2700	160	1911	2444	485	1143	1679	9-30
4. TO 37	760	760	760	760	760	742	581	310			81	1980	2700	160	2140	2736	520	1370	1889	10-40
4. TO 41							71	53	40		46	1900	2700	100	663	854	300	425	633	5-8
4. TO 42							107	80	60		46	1900	2700	110	828	1082	345	522	794	5-8
4. TO 43							139	108	80		51	1900	2700	110	980	1275	370	617	931	6-9
4. TO 44							253	189	139		61	1900	2700	130	1382	1841	445	910	1352	7-10
4. TO 45						370	367	270	199		71	1900	2700	130	1771	2344	445	1083	1635	8-30
4. TO 46						433	424	320	240		71	1900	2700	160	2029	2649	490	1249	1831	9-30
4. TO 47					588	583	556	419	310		81	1900	2700	160	2407	3182	490	1443	2153	10-40

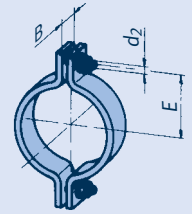
type	permissible load [kN]										600°C	E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580								
49 TO 13	175	133	108								658	435	410	705	150	231	
49 TO 14	299	221	179								708	445	470	715	200	251	
49 TO 25	295	251	200	164	152						808	495	500	760	300	291	
49 TO 35	414	358	308	255	240	237	231	163			808	495	540	760	300	311	
49 TO 45	583	502	477	428	386	339	300	212	165	125	808	500	540	810	300	346	

Selection table

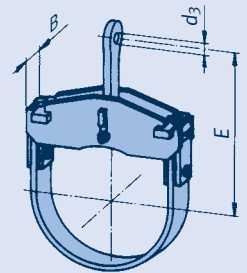
OD 1067

Pipe clamps, clamp bases, OD 1067 (ND 1050), type 42, 44, 46, 48, 49

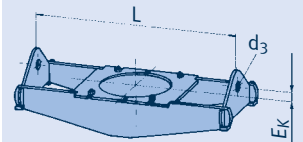
permissible load [kN]														wt.	load						
type ①	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B	[kg]	group						
42 T1 19	31	23	16								M30	618	150	89	5-6						
permissible load [kN]														wt.	load						
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	E	B	[kg]	group						
44 T1 14	92	73	61								51	835	162	104	6-9						
44 T1 15	151	118	87								61	835	203	144	7-10						
44 T1 16	208	172	125								71	875	222	195	8-30						
44 T1 17	293	236	175								71	875	248	266	9-30						
44 T1 18	373	297	214								81	885	276	338	10-40						
44 T1 19	405	357	258								91	940	276	379	20-50						
44 T1 24			87	69	63						51	915	182	129	7-9						
44 T1 25			123	104	97						71	915	189	157	8-30						
44 T1 26			172	137	125						71	915	210	208	8-30						
44 T1 27			252	198	180						71	915	218	266	9-30						
44 T1 28			300	241	223						81	935	276	342	10-40						
44 T1 29	380	380	347	280	258						81	935	283	392	10-40						
44 T1 35					99	98	84	52			61	955	210	215	7-10						
44 T1 36					146	144	139	83			71	955	225	287	8-30						
44 T1 37					188	185	170	91			71	955	270	326	8-30						
44 T1 38					199	197	191	106			71	955	276	377	9-30						
44 T1 39					242	239	233	157			71	955	286	501	9-30						
44 T1 46								107	83	61	61	955	276	331	7-10						
44 T1 47								143	106	79	71	955	276	376	8-30						
44 T1 48			340	340	334	329	304	199	146	108	71	955	286	499	9-30						
permissible load [kN]														L		type 46		type 48		load	
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _k		[kg min]	[kg max]	E _r	[kg min]	[kg max]	group
4.② T111	97	72	57								46	1500	2250	50		336	417	295	312	423	5-8
4. T1 12	134	102	81								51	1640	2250	60		407	498	300	345	493	6-9
4. T1 13	213	159	126								61	1650	2250	70		527	646	315	374	552	7-10
4. T1 14	317	234	186								61	1650	2250	90		702	865	330	436	663	8-10
4. T1 15	464	353	280								71	1650	2250	100		935	1139	330	565	800	9-30
4. T1 16	595	458	364								81	1650	2250	100		1124	1300	370	635	900	10-40
4. T1 21			84	81	60						46	1850	2650	80		504	642	305	365	560	5-8
4. T1 22			118	114	84						51	1850	2650	90		627	790	345	404	607	6-9
4. T1 23			208	182	140						61	1850	2650	100		832	1066	375	507	767	7-10
4. T1 24			295	256	200						71	1850	2650	100		1034	1290	405	631	930	8-30
4. T1 25		435	422	364	286						71	1850	2650	110		1251	1624	450	789	1164	9-30
4. T1 26	594	544	508	413	390						81	1870	2650	110		1424	1824	460	903	1265	10-40
4. T1 31				93	90	70	40				46	1950	2750	100		603	763	330	407	602	5-8
4. T1 32				141	140	109	60				46	1950	2750	110		757	969	345	493	721	5-8
4. T1 33				188	185	145	80				51	1950	2750	110		904	1164	395	599	876	6-9
4. T1 34				388	359	277	147				61	1950	2750	130		1417	1722	430	836	1235	7-10
4. T1 35	680	627	608	588	574	520	400	213			71	1950	2750	130		1865	2256	465	1121	1543	8-30
4. T1 36	680	680	680	680	676	614	473	250			71	1950	2750	160		2026	2557	485	1190	1735	9-30
4. T1 37	760	760	760	760	760	741	580	310			81	1950	2750	160		2265	2859	520	1387	1969	10-40
4. T1 41							71	54	40		46	1950	2750	100		708	896	300	441	670	5-8
4. T1 42							107	81	60		46	1950	2750	110		873	1138	345	546	838	5-8
4. T1 43							147	108	80		51	1950	2750	110		1052	1372	370	645	964	6-9
4. T1 44							253	189	140		61	1950	2750	130		1481	1926	445	943	1398	7-10
4. T1 45						358	356	270	200		71	1950	2750	130		1877	2462	445	1126	1688	8-30
4. T1 46						479	431	324	240		71	1950	2750	160		2139	2842	490	1299	1876	9-30
4. T1 47						582	580	570	419	310	81	1950	2750	160		2601	3357	490	1490	2216	10-40
permissible load [kN]														wt.							
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B	C	H	[kg]					
49 T1 13	172	134	109								684	435	440	705	150	243					
49 T1 14	301	222	180								734	445	500	715	200	263					
49 T1 25	296	251	200	166	154						834	495	530	760	300	304					
49 T1 35	414	358	308	255	240	237	231	163			834	495	570	760	300	324					
49 T1 45	579	498	473	425	387	342	302	214	165	125	834	500	570	810	300	361					



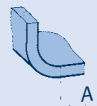
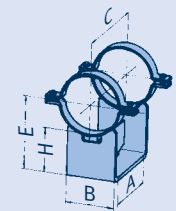
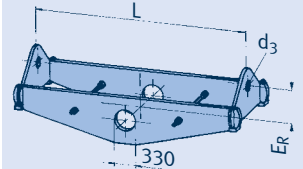
① Heat-resistant materials, see pp. 0.9 and 4.4



② type 46



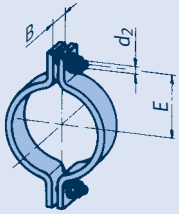
② type 48



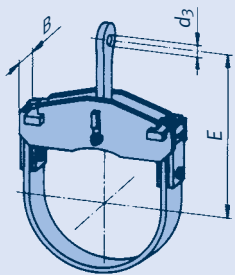
Selection table

OD 1118

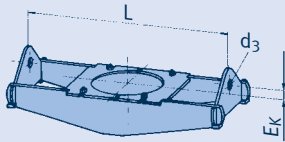
Pipe clamps, clamp bases, OD 1118 (ND 1100), type 42, 44, 46, 48, 49



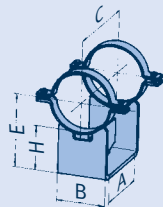
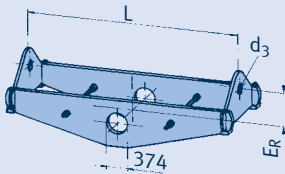
① Heat-resistant materials, see pp. 0.9 and 4.4



② type 46



② type 48



permissible load [kN]													wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E		
42 T2 19	31	23	16								M30	644	150	93 5-6

permissible load [kN]													wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	E		
44 T2 14	92	74	59								51	860	109	6-9
44 T2 15	151	113	87								61	860	151	7-10
44 T2 16	207	164	125								71	900	200	8-30
44 T2 17	294	232	174								71	900	277	9-30
44 T2 18	369	296	214								81	915	346	10-40
44 T2 19	405	358	259								91	965	397	20-50
44 T2 24			88	69	63						51	940	132	7-9
44 T2 25			123	104	98						71	940	161	8-30
44 T2 26			172	137	125						71	940	213	8-30
44 T2 27			249	195	181						71	940	272	9-30
44 T2 28			301	241	223						81	960	349	10-40
44 T2 29	380	380	348	280	259						81	960	401	10-40
44 T2 35					100	98	84	52			61	980	220	7-10
44 T2 36					146	144	139	83			71	980	294	8-30
44 T2 37					188	185	170	91			71	980	332	8-30
44 T2 38					200	197	193	106			71	980	384	9-30
44 T2 39					242	239	233	157			71	980	511	9-30
44 T2 46								107	83	61	61	980	338	7-10
44 T2 47								143	106	79	71	980	383	8-30
44 T2 48			340	340	334	329	305	199	147	109	71	980	509	9-30

permissible load [kN]											L		type 46		type 48		load			
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K	[kg min]	[kg max]	E _R	[kg min]	[kg max]	group
4.② T2 11	97	72	57								46	1560	2300	50	362	458	295	357	480	5-8
4. T2 12	136	101	80								51	1570	2300	60	427	540	300	373	573	6-9
4. T2 13	213	159	126								61	1670	2300	70	562	685	315	459	608	7-10
4. T2 14	320	235	187								61	1670	2300	90	718	918	330	514	721	8-10
4. T2 15	471	354	280								71	1690	2300	100	992	1206	330	612	868	9-30
4. T2 16	598	459	364								81	1690	2300	100	1230	1409	370	680	984	10-40
4. T2 21			90	81	60						46	1900	2700	80	532	677	305	415	637	5-8
4. T2 22			119	116	85						51	1900	2700	90	664	833	345	496	667	6-9
4. T2 23			208	178	142						61	1900	2700	100	869	1118	375	546	817	7-10
4. T2 24			300	252	200						71	1900	2700	100	1097	1355	405	679	992	8-30
4. T2 25		435	429	366	285						71	1900	2700	110	1385	1713	450	843	1238	9-30
4. T2 26	539	524	508	419	390						81	1970	2700	110	1545	1965	460	983	1335	10-40
4. T2 31				92	90	70	40				46	2000	2800	100	642	807	330	436	661	5-8
4. T2 32				141	140	109	60				46	2000	2800	110	806	1020	345	536	774	5-8
4. T2 33				186	185	144	80				51	2000	2800	110	958	1226	395	606	894	6-9
4. T2 34				389	360	277	146				61	2000	2800	130	1491	1809	430	893	1300	7-10
4. T2 35	680	629	610	590	576	518	399	213			71	2030	2800	130	1963	2377	465	1159	1634	8-30
4. T2 36	680	680	680	680	673	612	471	250			71	2030	2800	160	2134	2691	485	1280	1828	9-30
4. T2 37	760	760	760	760	760	741	580	310			81	2030	2800	160	2382	3000	520	1482	2111	10-40
4. T2 41								72	54	40	46	2000	2800	100	754	956	300	497	719	5-8
4. T2 42								107	80	60	46	2000	2800	110	926	1187	345	600	890	5-8
4. T2 43								146	108	80	51	2000	2800	110	1109	1440	370	687	1026	6-9
4. T2 44								257	189	140	61	2000	2800	130	1571	2040	445	966	1430	7-10
4. T2 45						406	367	271	200	71	2000	2800	130	1989	2574	445	1202	1784	8-30	
4. T2 46							480	430	324	240	71	2000	2800	160	2292	2993	490	1329	1981	9-30
4. T2 47						589	584	569	419	310	81	2000	2800	160	2773	3519	490	1570	2318	10-40

type	permissible load [kN]											E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600°C							
49 T2 13	174	135	110									709	435	450	700	150	251
49 T2 14	305	223	181									759	445	510	715	200	272
49 T2 25	298	254	204	167	155							859	495	550	760	300	315
49 T2 35	414	358	308	255	240	237	231	163				859	495	590	760	300	335
49 T2 45	581	500	475	427	389	343	304	214	166	126		859	500	590	810	300	373

Selection table

OD 1168

Temp. of medium > 600°C
from page 4.52

Load doubling via type 77,
see page 4.67

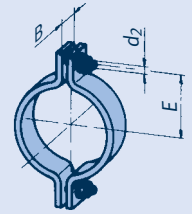
Pipe clamps, clamp bases, OD 1168 (ND 1150), type 42, 44, 46, 48, 49

permissible load [kN]														wt.	load
type ①	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B	[kg]	group
42 T3 19	31	23	16								M30	670	150	97	5-6

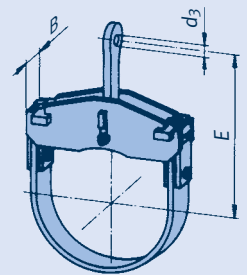
type	permissible load [kN]										d ₃	E	B	wt. [kg]	load group
	100	250	350	450	500	510	530	560	580	600°C					
44 T3 14	95	75	63								51	885	162	113	6-9
44 T3 15	152	116	87								61	885	203	156	7-10
44 T3 16	208	168	125								71	925	222	211	8-30
44 T3 17	302	240	174								71	925	248	288	9-30
44 T3 18	360	290	210								81	985	276	368	10-40
44 T3 19	405	357	258								91	1000	276	414	20-50
44 T3 24			87	68	63						51	965	182	138	7-9
44 T3 25			124	104	98						71	965	189	169	8-30
44 T3 26			173	137	125						71	965	210	223	8-30
44 T3 27			251	199	182						71	965	225	307	9-30
44 T3 28			302	237	221						81	985	276	365	10-40
44 T3 29	380	380	346	274	256						81	985	283	419	10-40
44 T3 35					100	98	84	52			61	1005	210	231	7-10
44 T3 36					146	144	140	83			71	1005	225	308	8-30
44 T3 37					188	185	170	91			71	1005	270	348	8-30
44 T3 38					200	197	192	106			71	1005	276	403	9-30
44 T3 39					231	231	225	156			71	1020	286	539	9-30
44 T3 46								107	83	61	61	1005	276	354	7-10
44 T3 47								144	106	79	71	1005	276	402	8-30
44 T3 48			340	340	334	329	301	198	148	109	71	1005	298	532	9-30

permissible load [kN]											L		type 46		type 48		load			
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _k	[kg min]	[kg max]	E _r	[kg min]	[kg max]	group
4.② T311	95	72	57								46	1630	2350	50	389	482	295	373	493	5-8
4. T3 12	135	101	80								51	1650	2350	60	459	577	300	391	588	6-9
4. T3 13	213	159	126								61	1720	2350	70	598	730	315	494	658	7-10
4. T3 14	318	234	186								61	1720	2350	90	761	969	330	531	756	8-10
4. T3 15	471	355	282								71	1750	2350	100	1050	1271	330	639	891	9-30
4. T3 16	592	460	365								81	1750	2350	100	1263	1443	370	714	1029	10-40
4. T3 21			87	80	60						46	1950	2750	80	565	707	305	428	651	5-8
4. T3 22			124	116	85						51	1950	2750	90	704	876	345	511	693	6-9
4. T3 23			209	179	143						61	1950	2750	100	907	1171	375	607	879	7-10
4. T3 24			301	252	201						71	1950	2750	100	1160	1422	405	704	1021	8-30
4. T3 25		434	422	366	285						71	1950	2750	110	1424	1795	450	878	1274	9-30
4. T3 26	580	531	514	421	390						81	2060	2750	110	1637	2060	460	983	1380	10-40
4. T3 31					93	90	70	40			46	2050	2850	100	678	849	330	453	675	5-8
4. T3 32					141	139	107	60			46	2050	2850	110	859	1070	345	555	797	5-8
4. T3 33					184	183	145	80			51	2050	2850	110	1013	1287	395	632	926	6-9
4. T3 34				398	394	357	275	147			61	2050	2850	130	1576	1904	430	928	1343	7-10
4. T3 35	665	617	602	589	576	522	402	213			71	2050	2850	130	2119	2497	465	1167	1688	8-30
4. T3 36	680	680	680	680	673	608	468	250			71	2100	2850	160	2264	2798	485	1339	1885	9-30
4. T3 37	760	760	760	760	759	742	580	310			81	2100	2850	160	2524	3209	520	1548	2180	10-40
4. T3 41								71	54	40	46	2050	2850	100	798	992	300	512	741	5-8
4. T3 42								106	80	60	46	2050	2850	110	995	1257	345	621	916	5-8
4. T3 43								147	108	80	51	2050	2850	110	1188	1508	370	716	1054	6-9
4. T3 44								258	189	140	61	2050	2850	130	1662	2131	445	1005	1476	7-10
4. T3 45							410	367	271	200	71	2050	2850	130	2104	2700	445	1249	1838	8-30
4. T3 46							480	424	319	240	71	2120	2850	160	2471	3158	490	1417	2044	9-30
4. T3 47					588	583	571	420	309		81	2120	2850	160	2941	3684	490	1672	2399	10-40

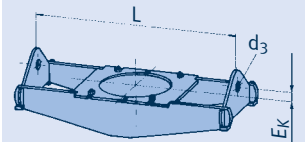
permissible load [kN]																wt.
type	100	250	350	450	500	510	530	560	580	600°C	E	A	B	C	H	[kg]
49 T3 13	174	137	111								734	435	470	700	150	261
49 T3 14	308	225	183								784	445	540	715	200	284
49 T3 25	300	255	204	167	156						884	495	580	760	300	328
49 T3 35	414	358	308	255	240	237	231	163			884	495	620	760	300	348
49 T3 45	578	497	472	425	396	359	347	240	180	132	884	500	620	810	300	388



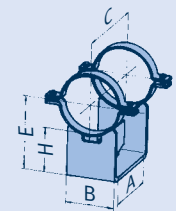
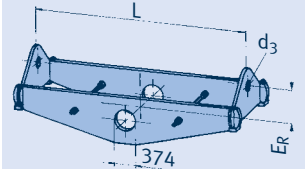
① Heat-resistant materials,
see pp. 0.9 and 4.4



② type 46



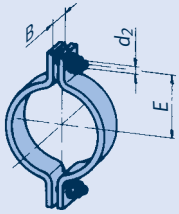
② type 48



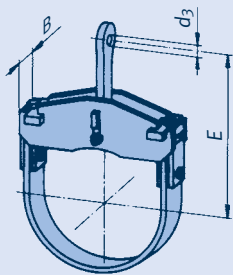
Selection table

OD 1219

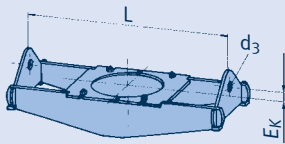
Pipe clamps, clamp bases, OD 1219 (ND 1200), type 42, 44, 46, 48, 49



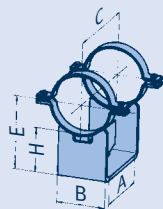
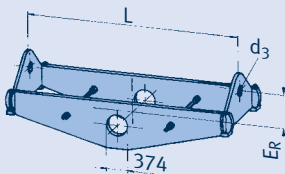
① Heat-resistant materials, see pp. 0.9 and 4.4



② type 46



② type 48



permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₂	E	B		
42 T4 19	31	23	16								M30	694	150	100	5-6

permissible load [kN]														wt. [kg]	load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	E	B		
44 T4 14	95	76	60								51	910	162	119	6-9
44 T4 15	152	121	87								61	910	203	167	7-10
44 T4 16	208	166	125								71	950	222	217	8-30
44 T4 17	301	235	174								71	950	248	301	9-30
44 T4 18	361	290	210								81	1010	276	376	10-40
44 T4 19	405	359	260								91	1030	276	424	20-50
44 T4 24			90	70	64						51	990	182	143	7-9
44 T4 25			124	102	95						71	990	189	172	8-30
44 T4 26			170	134	125						71	990	210	228	8-30
44 T4 27			250	197	182						71	990	225	313	9-30
44 T4 28			301	239	221						81	1010	283	395	10-40
44 T4 29	380	380	347	277	256						81	1020	283	432	10-40
44 T4 35					100	98	85	52			61	1030	210	236	7-10
44 T4 36					151	149	140	83			71	1030	225	318	8-30
44 T4 37					188	185	170	92			71	1030	270	355	8-30
44 T4 38					200	197	192	106			71	1030	276	410	9-30
44 T4 39					234	231	227	157			71	1045	286	549	9-30
44 T4 46								107	83	61	61	1030	276	360	7-10
44 T4 47								144	106	79	71	1030	276	409	8-30
44 T4 48			340	340	334	330	303	200	148	110	71	1030	298	544	9-30

permissible load [kN]														L		type 46		type 48		load group
type	100	250	350	450	500	510	530	560	580	600°C	d ₃	min	max	E _K		[kg min]	[kg max]	E _R	[kg min]	[kg max]
4.② T411	97	72	57								46	1780	2400	50	419	512	295	402	506	5-8
4. T4 12	134	101	80								51	1780	2400	60	497	602	300	418	603	6-9
4. T4 13	213	159	126								61	1780	2400	70	638	777	315	512	690	7-10
4. T4 14	320	235	186								61	1800	2400	90	874	1024	330	567	793	8-10
4. T4 15	481	354	281								71	1800	2400	100	1112	1341	330	670	928	9-30
4. T4 16	592	459	364								81	1800	2400	100	1384	1565	370	766	1129	10-40
4. T4 21			90	80	60						46	2000	2800	80	600	752	305	441	666	5-8
4. T4 22			122	116	85						51	2000	2800	90	757	923	345	527	709	6-9
4. T4 23			208	179	141						61	2000	2800	100	976	1230	375	629	911	7-10
4. T4 24			297	252	200						71	2000	2800	100	1216	1504	405	734	1057	8-30
4. T4 25		435	427	367	285						71	2030	2800	110	1521	1892	450	923	1317	9-30
4. T4 26	580	540	505	410	390						81	2120	2800	110	1725	2156	460	1026	1425	10-40
4. T4 31				92	90	70	40				46	2100	2900	100	726	896	330	473	690	5-8
4. T4 32				141	140	109	60				46	2100	2900	110	911	1116	345	580	817	5-8
4. T4 33				189	185	144	80				51	2100	2900	110	1073	1348	395	654	952	6-9
4. T4 34				396	392	360	277	146			61	2100	2900	130	1651	1992	430	967	1415	7-10
4. T4 35	656	609	594	581	574	522	402	213			71	2170	2900	130	2199	2587	465	1241	1733	8-30
4. T4 36	680	680	680	680	675	613	472	250			71	2180	2900	160	2409	2915	485	1402	1942	9-30
4. T4 37	760	760	760	759	751	741	580	310			81	2180	2900	160	2701	3383	520	1571	2238	10-40
4. T4 41							71	54	40		46	2100	2900	100	846	1049	300	533	761	5-8
4. T4 42							105	80	60		46	2100	2900	110	1055	1328	345	647	948	5-8
4. T4 43							146	108	80		51	2100	2900	110	1245	1574	370	741	1088	6-9
4. T4 44							247	189	140		61	2100	2900	130	1761	2240	445	1039	1515	7-10
4. T4 45					405	361	270	200			71	2100	2900	130	2224	2836	445	1297	1889	8-30
4. T4 46					473	426	321	240			71	2230	2900	160	2630	3277	490	1500	2108	9-30
4. T4 47					568	565	420	310			81	2230	2900	160	3142	3861	490	1770	2531	10-40

type	permissible load [kN]										E	A	B	C	H	wt. [kg]
	100	250	350	450	500	510	530	560	580	600°C						
49 T4 13	175	137	112								760	435	490	700	150	271
49 T4 14	308	227	185								810	445	560	715	200	294
49 T4 25	301	256	206	169	157						910	495	610	760	300	341
49 T4 35	488	422	363	298	280	277	270	192			910	495	650	760	300	367
49 T4 45	575	494	470	422	393	360	348	240	180	132	910	500	650	810	300	402

Selection table OD 21.3 - 42.4

Temperatures 600-650°C

4

Pipe clamps, clamp bases, OD 21.3 (ND 15), type 45, 49

type	permissible load [kN]										wt. [kg]	load group
	600	610	620	630	640	650°C	d ₁	E	B	L		
45 01 51	3.5	3.1	2.7	2.3	2.0	1.7	12	25	70	300	3.9	C-4
45 01 51	2.6	2.2	1.9	1.7	1.5	1.2	12	25	70	400	5.0	C-4
45 01 51	2.0	1.8	1.5	1.3	1.1	1.0	12	25	70	500	6.1	C-4
45 01 51	1.7	1.5	1.3	1.1	0.9	0.8	12	25	70	600	7.2	C-4

type	permissible load [kN]										wt. [kg]	
	600	610	620	630	640	650°C	E	A	B	C	H	
49 01 55	4.4	4.0	3.6	3.2	2.8	2.5	211	250	140	330	200	5.6

Pipe clamps, clamp bases, OD 26.9 (ND 20), type 45, 49

type	permissible load [kN]										wt. [kg]	load group
	600	610	620	630	640	650°C	d ₁	E	B	L		
45 02 51	3.6	3.2	2.7	2.4	2.1	1.8	12	25	70	300	3.9	C-4
45 02 51	2.6	2.3	2.0	1.7	1.5	1.3	12	25	70	400	5.0	C-4
45 02 51	2.0	1.8	1.6	1.3	1.2	1.0	12	25	70	500	6.1	C-4
45 02 51	1.7	1.5	1.3	1.1	1.0	0.8	12	25	70	600	7.2	C-4

type	permissible load [kN]										wt. [kg]	
	600	610	620	630	640	650°C	E	A	B	C	H	
49 02 55	4.5	4.0	3.6	3.2	2.8	2.5	213	250	140	330	200	5.7

Pipe clamps, clamp bases, OD 33.7 (ND 25), type 43, 45, 49

type	permissible load [kN]										wt. [kg]	load group
	600	610	620	630	640	650°C	d ₁	E	B	L		
43 03 59	4.4	3.9	3.4	3.0	2.7	2.3	12	235	50		1.4	C-2

type	permissible load [kN]										wt. [kg]	load group
	600	610	620	630	640	650°C	d ₁	E	B	L		
45 03 51	3.7	3.3	2.8	2.5	2.1	1.8	12	25	70	300	3.9	C-4
45 03 52	9.3	9.3	9.2	8.0	6.9	6.0	12	25	100	300	8.1	C-4
45 03 51	2.7	2.4	2.0	1.8	1.5	1.3	12	25	70	400	5.0	C-4
45 03 52	8.8	7.7	6.7	5.9	5.1	4.4	12	25	100	400	10.5	C-4
45 03 51	2.1	1.8	1.6	1.4	1.2	1.0	12	25	70	500	6.1	C-4
45 03 52	6.9	6.0	5.3	4.6	4.0	3.4	12	25	100	500	12.8	C-4
45 03 51	1.7	1.5	1.3	1.1	1.0	0.8	12	25	70	600	7.2	C-4
45 03 52	5.6	5.0	4.3	3.7	3.2	2.8	12	25	100	600	15.2	C-4

type	permissible load [kN]										wt. [kg]	
	600	610	620	630	640	650°C	E	A	B	C	H	
49 03 55	4.7	4.2	3.8	3.3	2.9	2.6	217	250	140	330	200	6.0

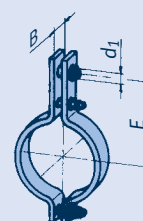
Pipe clamps, clamp bases, OD 42.4 (ND 32), type 43, 45, 49

type	permissible load [kN]										wt. [kg]	load group
	600	610	620	630	640	650°C	d ₁	E	B	L		
43 04 59	4.4	3.9	3.4	3.0	2.7	2.3	12	240	50		1.4	C-2

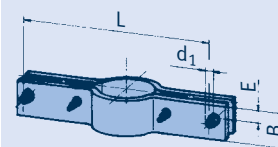
type	permissible load [kN]										wt. [kg]	load group
	600	610	620	630	640	650°C	d ₁	E	B	L		
45 04 51	7.3	6.4	5.5	4.8	4.2	3.5	12	25	70	350	6.6	C-4
45 04 52	18	16	14	12	10	9.2	16	30	100	350	12.8	1-4
45 04 51	5.5	4.8	4.2	3.6	3.2	2.7	12	25	70	450	8.2	C-4
45 04 52	14	12	10	9.3	8.1	6.9	16	30	100	450	15.9	1-4
45 04 51	4.4	3.9	3.4	2.9	2.5	2.2	12	25	70	550	9.9	C-4
45 04 52	11	9.9	8.6	7.5	6.5	5.6	16	30	100	550	19.0	1-4
45 04 51	3.7	3.2	2.8	2.4	2.1	1.8	12	25	70	650	11.5	C-4
45 04 52	9.4	8.3	7.2	6.3	5.4	4.7	16	30	100	650	22.2	1-4

type	permissible load [kN]										wt. [kg]	
	600	610	620	630	640	650°C	E	A	B	C	H	
49 04 55	5.2	4.7	4.1	3.7	3.2	2.9	221	250	140	330	200	6.1

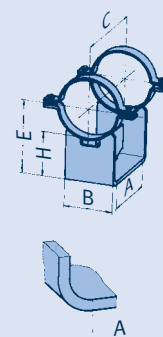
type 43



type 45



type 49



Selection table OD 48.3 - 73

Temperatures 600-650°C

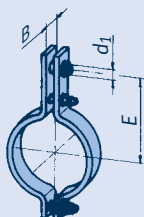
Pipe clamps, clamp bases, OD 48.3 (ND 40), type 43, 45, 49

type	permissible load [kN]					650°C	d ₁	E	B	wt. [kg]	load group
	600	610	620	630	640						
43 05 59	4.4	3.9	3.4	3.0	2.7	2.3	12	240	50	1.4	C-2

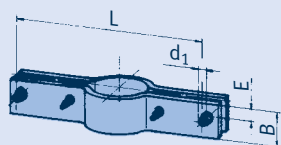
type	permissible load [kN]					650°C	d ₁	E	B	L	wt. [kg]	load group
	600	610	620	630	640							
45 05 51	8.6	7.5	6.6	5.7	5.0	4.2	12	25	80	350	7.5	C-4
45 05 52	20	20	17	15	13	11	16	30	120	350	15.4	1-4
45 05 51	6.5	5.7	4.9	4.3	3.7	3.2	12	25	80	450	9.4	C-4
45 05 52	17	15	13	11	10	8.6	16	30	120	450	19.1	1-4
45 05 51	5.2	4.5	3.9	3.4	3.0	2.5	12	25	80	550	11.3	C-4
45 05 52	13	12	10	9.2	8.0	6.9	16	30	120	550	22.9	1-4
45 05 51	4.3	3.8	3.3	2.8	2.5	2.1	12	25	80	650	13.2	C-4
45 05 52	12	10	8.8	7.7	6.7	5.7	16	30	120	650	26.7	1-4

type	permissible load [kN]					650°C	E	A	B	C	H	wt. [kg]
	600	610	620	630	640							
49 05 55	5.2	4.7	4.2	3.7	3.2	2.9	224	250	140	330	200	6.2

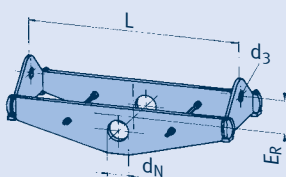
type 43



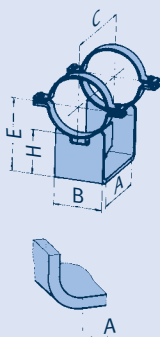
type 45



type 48



type 49



Pipe clamps, clamp bases, OD 60.3 (ND 50), type 43, 45, 49

type	permissible load [kN]					650°C	d ₁	E	B	wt. [kg]	load group
	600	610	620	630	640						
43 06 59	4.7	4.6	4.6	4.6	4.2	3.6	12	250	50	2.4	C-4

type	permissible load [kN]					650°C	d ₁	E	B	L	wt. [kg]	load group
	600	610	620	630	640							
45 06 51	9.3	8.6	7.5	6.5	5.6	4.8	12	25	100	400	10.7	C-4
45 06 52	20	18	15	13	12	10	16	30	120	400	17.4	1-4
45 06 51	7.5	6.6	5.7	5.0	4.3	3.7	12	25	100	500	13.0	C-4
45 06 52	16	14	12	10	9.0	7.9	16	30	120	500	21.2	1-4
45 06 51	6.0	5.3	4.6	4.0	3.5	3.0	12	25	100	600	15.4	C-4
45 06 52	13	11	9.9	8.6	7.5	6.4	16	30	120	600	24.9	1-4
45 06 51	5.1	4.5	3.9	3.4	2.9	2.5	12	25	100	700	17.7	C-4
45 06 52	10	9.6	8.3	7.3	6.3	5.4	16	30	120	700	28.7	1-4

type	permissible load [kN]					650°C	E	A	B	C	H	wt. [kg]
	600	610	620	630	640							
49 06 55	5.9	5.3	4.8	4.2	3.7	3.3	230	250	140	330	200	6.6

Pipe clamps, clamp bases, OD 73 (ND 65), type 43, 48, 49

type	permissible load [kN]					650°C	d ₁	E	B	wt. [kg]	load group
	600	610	620	630	640						
43 07 59	4.7	4.6	4.6	4.6	4.2	3.6	12	255	50	2.5	C-4

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		[kg]		load group
	600	610	620	630	640					min	max	min	max	
48 07 51	7.9	7.0	6.2	5.4	4.6	4.1	21	36	70	350	750	6.0	14	C-4
48 07 52	11	10	9.0	8.0	7.0	6.0	21	36	70	350	750	8.0	18	C-4
48 07 53	19	17	15	13	11	10	25	36	100	350	750	10	23	3-5

type	permissible load [kN]					650°C	E	A	B	C	H	wt. [kg]
	600	610	620	630	640							
49 07 55	5.9	5.3	4.8	4.2	3.7	3.3	237	250	140	330	200	6.8

Selection table OD 76.1 - 133

Temperatures 600-650°C

Pipe clamps, clamp bases, OD 76.1 (ND 65), type 43, 48, 49

type	600	610	permissible load [kN]			650°C	d ₁	E	B	wt. [kg]	load group
			620	630	640						
43 08 59	4.7	4.6	4.6	4.6	4.2	3.6	12	255	50	2.5	C-4

type	600	610	permissible load [kN]			650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640					min	max	min	max	
48 08 51	7.9	7.0	6.2	5.4	4.6	4.1	21	36	70	350	750	6.0	14	C-4
48 08 52	11	10	9.0	8.0	7.0	6.0	21	36	70	350	750	8.0	18	C-4
48 08 53	19	17	15	13	11	10	25	36	100	350	750	10	23	3-5

type	600	610	permissible load [kN]			650°C	E	A	B	C	H	wt. [kg]
			620	630	640							
49 08 55	6.1	5.5	4.9	4.4	3.8	3.4	238	250	140	330	200	6.9

Pipe clamps, clamp bases, OD 88.9 (ND 80), type 43, 48, 49

type	600	610	permissible load [kN]			650°C	d ₁	E	B	wt. [kg]	load group
			620	630	640						
43 09 59	4.7	4.6	4.6	4.6	4.2	3.6	12	260	50	2.7	C-4

type	600	610	permissible load [kN]			650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640					min	max	min	max	
48 09 51	8.1	7.2	6.4	5.5	4.8	4.2	21	36	75	350	850	7.0	17	C-4
48 09 52	11	10	9.0	7.9	6.8	6.0	21	36	85	350	850	7.0	21	C-4
48 09 53	19	17	15	13	11	10	25	36	100	350	850	10	28	3-5

type	600	610	permissible load [kN]			650°C	E	A	B	C	H	wt. [kg]
			620	630	640							
49 09 55	8.9	8.0	7.2	6.3	5.6	4.9	294	305	170	385	250	10.0

Pipe clamps, OD 108 (ND 100), type 43, 48

type	600	610	permissible load [kN]			650°C	d ₁	E	B	wt. [kg]	load group
			620	630	640						
43 10 59	9.7	9.2	8.2	7.1	6.1	5.1	16	270	70	5.1	1-4

type	600	610	permissible load [kN]			650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640					min	max	min	max	
48 10 51	11	10	9.1	8.0	7.0	6.1	21	51	85	350	950	9.0	25	C-4
48 10 52	15	13	12	10	9.2	8.0	25	51	95	350	950	10	30	3-5
48 10 53	30	27	24	21	18	16	34	51	140	350	950	17	48	3-6

Pipe clamps, OD 114.3 (ND 100), type 43, 48

type	600	610	permissible load [kN]			650°C	d ₁	E	B	wt. [kg]	load group
			620	630	640						
43 11 59	9.7	9.2	8.2	7.1	6.1	5.1	16	275	70	5.2	1-4

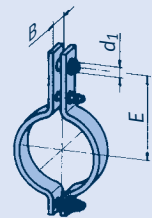
type	600	610	permissible load [kN]			650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640					min	max	min	max	
48 11 51	11	10	9.1	8.0	7.0	6.1	21	51	85	350	950	9.0	25	C-4
48 11 52	15	13	12	10	9.2	8.0	25	51	95	350	950	10	30	3-5
48 11 53	30	27	24	21	18	16	34	51	140	350	950	17	48	3-6

Pipe clamps, OD 133 (ND 125), type 43, 48

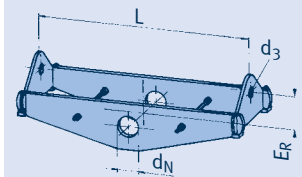
type	600	610	permissible load [kN]			650°C	d ₁	E	B	wt. [kg]	load group
			620	630	640						
43 13 59	9.7	9.6	9.5	8.9	7.9	6.8	16	290	80	8.1	1-4

type	600	610	permissible load [kN]			650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640					min	max	min	max	
48 13 51	13	12	10	9.2	8.0	7.0	21	51	95	400	1000	11	30	C-4
48 13 52	19	17	15	13	11	9.9	25	51	110	400	1000	13	37	3-5
48 13 53	33	29	26	23	19	17	34	51	150	400	1000	21	55	4-6

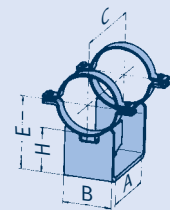
type 43



type 48



type 49



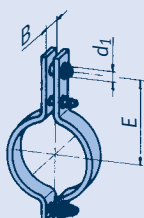
Selection table OD 139.7 - 219.1

Temperatures 600-650°C

Pipe clamps, OD 139.7 (ND 125), type 43, 48

type	permissible load [kN]					650°C	d ₁	E	B	wt. [kg]	load group
	600	610	620	630	640						
43 14 59	9.7	9.6	9.5	8.9	7.9	6.8	16	295	80	8.2	1-4

type 43



type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 14 51	13	12	10	9.2	8.0	7.0	21	51	95	400	1000	11	30	C-4
48 14 52	19	17	15	13	11	9.9	25	51	110	400	1000	14	37	3-5
48 14 53	33	29	26	23	19	17	34	51	150	400	1000	21	55	4-6

Pipe clamps, OD 159 (ND 150), type 43, 48

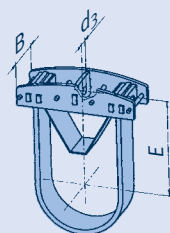
type	permissible load [kN]					650°C	d ₁	E	B	wt. [kg]	load group
	600	610	620	630	640						
43 16 59	9.7	9.6	9.5	8.9	7.9	6.8	16	315	80	8.8	1-4

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 16 51	13	12	10	9.2	8.0	7.0	21	63	100	450	1050	12	31	C-4
48 16 52	21	19	17	15	13	11	25	63	125	450	1050	15	40	3-5
48 16 53	40	36	32	28	24	21	34	63	150	450	1050	26	69	4-6

Pipe clamps, OD 168.3 (ND 150), type 43, 48

type	600	610	permissible load [kN]			650°C	d ₁	E	B	wt. [kg]	load group
			620	630	640						
43 17 59	9.7	9.6	9.5	8.9	7.9	6.8	16	320	80	9.1	1-4

type 44

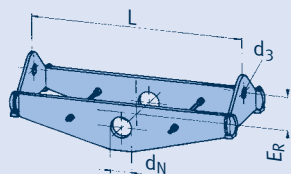


type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 17 51	13	12	10	9.2	8.0	7.0	21	63	100	450	1050	12	31	C-4
48 17 52	21	19	17	15	13	11	25	63	125	450	1050	15	40	3-5
48 17 53	40	36	32	28	24	21	34	63	150	450	1050	26	70	4-6

Pipe clamps, OD 193.7 (ND 175), type 43, 48

type	600	610	permissible load [kN]				650°C	d ₁	E	B	wt. [kg]	load group
			620	630	640							
43 19 59	15.1	14.9	14.9	14.8	13.4	11.6	20	355	100	16	3-6	

type 48



type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 19 51	11	10	9.0	8.0	6.9	6.0	21	63	110	550	1150	16	34	C-4
48 19 52	17	17	15	13	11	10	25	63	125	550	1150	20	45	3-5
48 19 53	28	25	22	19	16	14	25	63	150	550	1150	25	59	3-5
48 19 54	50	44	39	34	29	26	41	63	160	550	1150	51	102	4-7

Pipe clamps, OD 219.1 (ND 200), type 44, 48

type	permissible load [kN]					650°C	d ₃	E	B	max. insul.	wt. [kg]	load group
	600	610	620	630	640							
44 22 51	11	10	8.9	7.7	6.7	5.6	21	430	115	280	18	C-4
44 22 52	27	23	20	18	15	13	34	460	105	280	33	4-6
44 22 53	40	35	30	26	23	19	46	485	165	280	50	5-8

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 22 51	11	10	9.2	8.1	7.1	6.1	21	79	130	550	1350	16	43	C-4
48 22 52	26	23	20	17	15	13	25	79	150	550	1350	23	67	3-5
48 22 53	34	31	27	24	20	18	41	79	170	550	1350	30	79	4-7
48 22 54	61	54	48	42	36	31	46	79	200	550	1350	54	133	5-8

Selection table OD 244.5 - 323.9

Temperatures 600-650°C

4

Pipe clamps, OD 244.5 (ND 225), type 44, 48

type	600	610	permissible load [kN]				650°C	d ₃	E	max	max.	wt.	load
			620	630	640	B				insul.	[kg]	group	
44 24 51	11	10	9.1	8.0	6.8	5.8	21	440	120	280	20	C-4	
44 24 52	26	23	19	17	15	12	34	475	105	280	34	4-6	
44 24 53	40	35	30	27	23	19	46	500	172	280	53	5-8	

type	600	610	permissible load [kN]				650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640	min					max	min	max		
48 24 51	14	12	11	9.7	8.4	7.3	25	79	110	550	1350	17	47	3-5	
48 24 52	27	25	22	19	17	14	25	79	150	550	1350	27	71	3-5	
48 24 53	40	36	32	28	24	21	41	79	160	550	1350	38	97	4-7	
48 24 54	68	60	53	46	40	35	46	79	180	550	1350	62	153	5-8	

Pipe clamps, OD 267 (ND 250), type 44, 48

type	600	610	permissible load [kN]				650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
			620	630	640								
44 26 51	11	10	9.1	8.1	6.8	5.8	21	455	125	280	21	C-4	
44 26 52	27	23	20	17	15	13	34	485	112	280	36	4-6	
44 26 53	42	37	32	28	24	20	46	505	182	280	57	5-8	

type	600	610	permissible load [kN]				650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640	min					max	min	max		
48 26 51	15	14	12	11	9.5	8.3	25	92	120	600	1400	21	52	3-5	
48 26 52	29	26	23	20	17	15	25	92	150	600	1400	29	75	3-5	
48 26 53	41	37	33	29	25	22	41	92	160	600	1400	41	100	4-7	
48 26 54	74	65	58	50	43	38	46	92	195	600	1400	68	158	5-8	

Pipe clamps, OD 273 (ND 250), type 44, 48

type	600	610	permissible load [kN]				650°C	d ₃	E	max	max.	wt.	load
			620	630	640	B				insul.	[kg]	group	
44 27 51	10	10	9.1	8.1	6.8	5.8	21	455	125	280	21	C-4	
44 27 52	27	23	20	17	15	13	34	485	112	280	37	4-6	
44 27 53	40	37	32	28	24	20	46	505	182	280	57	5-8	

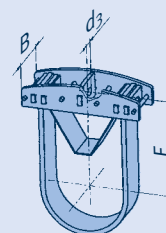
type	600	610	permissible load [kN]			650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640					min	max	min	max	
48 27 51	15	14	12	11	9.5	8.3	25	92	120	600	1400	21	53	3-5
48 27 52	29	26	23	20	17	15	25	92	150	600	1400	29	75	3-5
48 27 53	41	37	33	29	25	22	41	92	160	600	1400	41	100	4-7
48 27 54	74	65	58	50	43	38	46	92	195	600	1400	69	159	5-8

Pipe clamps, OD 323.9 (ND 300), type 44, 48

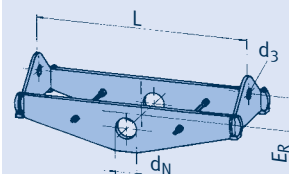
type	permissible load [kN]						max B	max. insul.	wt. [kg]	load group		
	600	610	620	630	640	650°C						
44 32 51	18	18	18	15	13	11	25	500	100	290	35	3-5
44 32 52	30	30	29	27	23	20	34	510	175	290	55	4-6
44 32 53	60	59	53	47	40	34	46	530	147	290	80	5-8
44 32 54	82	80	70	62	53	43	51	545	195	290	105	6-9

type	600	610	permissible load [kN]			650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640					min	max	min	max	
48 32 51	23	21	18	16	14	12	25	118	150	700	1400	32	70	3-5
48 32 52	40	39	34	30	26	23	41	118	180	700	1400	48	103	4-7
48 32 53	60	53	47	41	35	31	46	118	180	700	1400	61	129	5-8
48 32 54	71	68	60	52	45	40	46	118	210	700	1400	75	156	5-8
48 32 55	92	90	80	70	61	53	51	118	250	800	1400	94	183	6-9
48 32 56	150	136	120	106	92	80	51	118	250	800	1400	120	238	6-9

type 44



type 48



Selection table OD 355.6 - 406.4

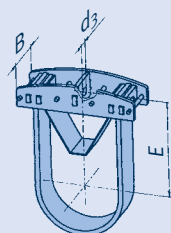
Temperatures 600-650°C

Pipe clamps, OD 355.6 (ND 350), type 44, 48

type	permissible load [kN]					650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640							
44 36 51	21	20	18	16	13	11	25	520	105	290	39	3-5
44 36 52	30	30	29	27	23	20	34	525	182	290	59	4-6
44 36 53	56	54	52	46	39	33	46	545	147	290	84	5-8
44 36 54	92	80	69	61	52	43	51	555	195	290	113	6-9

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 36 51	20	18	16	13	12	10	25	118	140	700	1500	32	72	3-5
48 36 52	28	25	22	19	16	14	34	118	160	700	1500	37	87	4-6
48 36 53	48	42	37	32	28	24	41	118	180	800	1500	65	126	4-7
48 36 54	73	71	63	55	48	42	46	118	220	800	1500	89	178	5-8
48 36 55	120	105	93	81	70	62	51	118	240	800	1500	108	220	6-9
48 36 56	177	158	140	122	106	93	51	118	240	800	1500	138	286	6-9

type 44

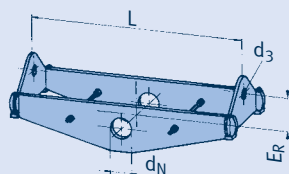


Pipe clamps, OD 368 (ND 350), type 44, 48

type	permissible load [kN]					650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640							
44 37 51	20	19	18	16	14	12	25	530	112	290	41	3-5
44 37 52	30	30	29	28	24	20	34	535	190	290	63	4-6
44 37 53	54	53	52	47	40	33	46	550	150	290	87	5-8
44 37 54	91	79	69	60	51	43	51	560	195	290	115	6-9

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 37 51	20	18	16	13	12	10	25	118	140	750	1500	33	72	3-5
48 37 52	28	25	22	19	16	14	34	118	160	750	1500	39	87	4-6
48 37 53	48	42	37	32	28	24	41	118	180	750	1500	63	127	4-7
48 37 54	73	71	63	55	48	42	46	118	220	750	1500	86	179	5-8
48 37 55	120	105	93	81	70	62	51	118	240	850	1500	113	221	6-9
48 37 56	177	158	140	122	106	93	51	118	240	850	1500	145	287	6-9

type 48



Pipe clamps, OD 406.4 (ND 400), type 44, 48

type	permissible load [kN]					650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640							
44 41 51	19	18	17	15	13	11	25	560	112	300	44	3-5
44 41 52	45	44	42	37	32	26	46	580	140	300	84	5-8
44 41 53	78	77	68	60	51	43	51	580	200	300	121	6-9
44 41 54	108	106	94	81	68	57	51	590	190	300	138	6-9

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 41 51	23	21	18	16	14	12	25	144	160	800	1600	43	96	3-5
48 41 52	41	36	32	28	24	21	41	144	180	800	1600	62	128	4-7
48 41 53	54	49	43	38	33	29	46	144	200	800	1600	72	149	5-8
48 41 54	82	72	64	56	48	42	46	144	240	800	1600	94	195	5-8
48 41 55	137	125	110	96	83	73	51	144	230	900	1600	128	254	6-9
48 41 56	196	186	165	144	125	109	61	144	230	900	1600	177	348	7-10

Selection table OD 419 - 508

Temperatures 600-650°C

4

Pipe clamps, OD 419 (ND 400), type 44, 48

type	permissible load [kN]					650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640							
44 42 51	18	18	18	16	14	12	25	565	115	300	45	3-5
44 42 52	46	45	44	38	33	28	46	585	140	300	87	5-8
44 42 53	77	76	71	62	53	45	51	585	210	300	127	6-9
44 42 54	105	104	94	82	69	57	51	595	195	300	140	6-9

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 42 51	23	21	18	16	14	12	25	144	160	800	1600	43	97	3-5
48 42 52	41	36	32	28	24	21	41	144	180	800	1600	62	128	4-7
48 42 53	54	49	43	38	33	29	46	144	200	800	1600	73	150	5-8
48 42 54	82	72	64	56	48	42	46	144	240	900	1600	103	196	5-8
48 42 55	137	125	110	96	83	73	51	144	230	900	1600	129	255	6-9
48 42 56	196	186	165	144	125	109	61	144	230	900	1600	178	349	7-10

Pipe clamps, OD 457.2 (ND 450), type 44, 48

type	permissible load [kN]					650°C	d ₃	E	max	max.	wt.	load
	600	610	620	630	640				B	insul.	[kg]	
44 46 51	19	19	18	16	14	12	25	590	122	300	50	3-5
44 46 52	38	37	33	29	24	20	46	600	140	300	80	5-8
44 46 53	71	70	64	56	48	40	51	605	195	300	128	6-9
44 46 54	108	106	101	89	76	64	51	620	315	300	176	6-9
44 46 55	144	143	137	120	103	89	61	640	255	300	218	7-10

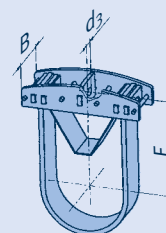
type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 46 51	39	36	32	28	24	21	41	144	170	900	1700	73	142	4-7
48 46 52	46	41	36	32	27	24	46	144	190	900	1700	78	152	5-8
48 46 53	73	70	62	54	47	41	46	144	230	900	1700	110	211	5-8
48 46 54	153	144	128	111	96	84	51	144	255	1000	1700	185	340	6-9
48 46 55	168	161	143	126	109	95	61	144	275	1000	1700	199	363	7-10
48 46 56	260	242	214	187	162	142	61	144	275	1000	1700	241	496	7-10

Pipe clamps, OD 508 (ND 500), type 44, 48

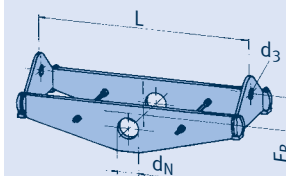
type	permissible load [kN]					650°C	d ₃	E	max	max.	wt.	load
	600	610	620	630	640				B	insul.	[kg]	
44 51 51	19	18	17	15	13	11	25	615	122	300	54	3-5
44 51 52	39	38	36	32	27	23	46	630	140	300	92	5-8
44 51 53	76	75	72	63	54	45	51	635	230	300	152	6-9
44 51 54	122	113	99	86	72	60	61	650	220	300	209	7-10
44 51 55	161	160	146	128	110	94	61	665	280	300	264	7-10

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 51 51	41	36	32	28	24	21	41	173	185	1000	1800	87	164	4-7
48 51 52	46	41	36	32	28	24	46	173	200	1000	1800	94	174	5-8
48 51 53	78	71	63	55	48	42	46	173	235	1000	1800	129	240	5-8
48 51 54	144	144	128	111	96	84	51	173	275	1050	1800	186	352	6-9
48 51 55	202	179	158	138	119	105	61	173	310	1050	1800	236	407	7-10
48 51 56	284	266	236	206	178	156	61	173	310	1050	1800	303	547	7-10

type 44



type 48



Selection table OD 558.8 - 660.4

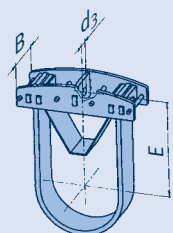
Temperatures 600-650°C

Pipe clamps, OD 558.8 (ND 550), type 44, 48

type	permissible load [kN]					650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640							
44 56 51	37	36	36	32	27	23	46	655	140	300	100	5-8
44 56 52	77	76	72	63	54	46	51	665	242	300	167	6-9
44 56 53	117	114	100	86	73	60	61	675	230	300	225	7-10
44 56 54	145	143	134	116	97	80	61	690	312	300	273	7-10
44 56 55	229	226	199	173	145	120	71	705	277	300	369	8-30

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 56 51	44	39	34	30	26	23	41	173	200	1100	1900	103	184	4-7
48 56 52	61	54	48	42	37	32	46	173	235	1100	1900	128	226	5-8
48 56 53	79	71	63	55	48	42	46	173	240	1100	1900	148	264	5-8
48 56 54	149	141	125	109	94	83	51	173	280	1100	1900	216	391	6-9
48 56 55	236	217	192	168	146	128	61	173	355	1200	1900	327	546	7-10
48 56 56	324	322	288	251	217	190	61	173	355	1200	1900	401	672	7-10

type 44

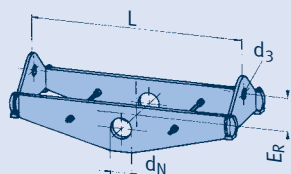


Pipe clamps, OD 609.6 (ND 600), type 44, 48

type	permissible load [kN]					650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640							
44 61 51	39	38	37	33	28	24	46	695	140	310	113	5-8
44 61 52	80	79	73	64	55	46	51	705	255	310	186	6-9
44 61 53	116	113	99	86	72	60	61	715	239	310	246	7-10
44 61 54	164	162	159	137	115	96	71	740	230	310	332	8-30
44 61 55	249	245	221	194	163	135	71	750	328	310	445	8-30

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 61 51	43	39	34	30	26	23	41	199	220	1200	2000	123	209	4-7
48 61 52	83	73	65	57	49	43	46	199	225	1200	2000	171	294	5-8
48 61 53	101	93	83	72	62	55	46	199	280	1200	2000	194	338	5-8
48 61 54	147	141	125	110	95	83	51	199	295	1300	2000	249	418	6-9
48 61 55	223	215	190	166	143	126	61	199	355	1300	2000	331	573	7-10
48 61 56	280	266	236	207	179	157	71	199	350	1300	2000	429	689	8-30
48 61 57	424	399	353	308	267	234	71	199	350	1300	2000	517	851	8-30

type 48



Pipe clamps, OD 660.4 (ND 650), type 44, 48

type	permissible load [kN]					650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640							
44 66 51	36	36	35	32	27	23	46	720	140	310	119	5-8
44 66 52	76	75	72	63	54	45	51	730	260	310	200	6-9
44 66 53	120	113	99	86	72	60	61	745	250	310	265	7-10
44 66 54	164	162	157	136	114	95	71	770	235	310	355	8-30
44 66 55	247	244	222	194	163	135	71	775	338	310	477	8-30

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 66 51	51	45	40	35	30	26	41	224	230	1250	2050	155	262	4-7
48 66 52	82	72	64	56	48	42	46	224	230	1250	2050	190	320	5-8
48 66 53	113	99	88	77	66	58	46	224	280	1250	2050	223	377	5-8
48 66 54	158	144	127	111	96	84	51	224	310	1250	2050	263	458	6-9
48 66 55	226	219	194	170	147	129	61	224	330	1350	2050	361	615	7-10
48 66 56	300	270	239	209	181	159	71	224	350	1350	2050	448	709	8-30
48 66 57	440	401	355	310	268	235	71	224	350	1350	2050	534	874	8-30

Selection table OD 711.2 - 812.8

Temperatures 600-650°C

4

Pipe clamps, OD 711.2 (ND 700), type 44, 48

type	600	610	permissible load [kN]				650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
			620	630	640								
44 71 51	50	50	45	39	34	28	46	740	165	310	146	5-8	
44 71 52	75	74	72	63	54	45	51	760	270	310	217	6-9	
44 71 53	116	112	99	85	72	60	61	770	255	310	286	7-10	
44 71 54	148	147	142	123	103	86	61	785	217	310	326	7-10	
44 71 55	206	203	187	161	136	113	71	795	287	310	449	8-30	
44 71 56	265	262	248	218	186	155	71	810	265	310	542	9-30	

type	600	610	permissible load [kN]				650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640	min					max	min	max		
48 71 51	56	49	43	38	33	29	41	224	230	1300	2100	168	280	4-7	
48 71 52	77	72	64	56	48	42	46	224	230	1300	2100	201	333	5-8	
48 71 53	127	112	99	87	75	66	51	224	280	1300	2100	247	416	6-9	
48 71 54	154	141	125	109	95	83	51	224	310	1400	2100	292	471	6-9	
48 71 55	228	218	194	170	147	129	61	224	335	1400	2100	383	640	7-10	
48 71 56	316	282	250	218	189	166	71	224	355	1450	2100	495	759	8-30	
48 71 57	469	427	379	330	286	251	71	224	355	1450	2100	600	1016	9-30	

Pipe clamps, OD 762 (ND 750), type 44, 48

type	600	610	permissible load [kN]				650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
			620	630	640								
44 76 51	50	49	46	40	35	29	46	770	175	310	160	5-8	
44 76 52	78	77	72	63	54	45	51	790	280	310	235	6-9	
44 76 53	116	113	99	86	72	60	61	800	265	310	305	7-10	
44 76 54	164	162	160	138	116	97	71	815	252	310	421	8-30	
44 76 55	225	222	210	181	153	127	71	820	330	310	537	9-30	
44 76 56	322	320	292	256	220	180	81	835	322	310	700	10-40	

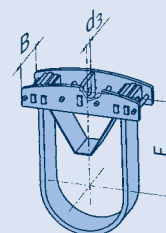
type	600	610	permissible load [kN]				650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
			620	630	640	min					max	min	max		
48 76 51	61	54	48	42	36	32	41	250	260	1500	2300	214	345	4-7	
48 76 52	82	72	64	56	48	42	46	250	260	1500	2300	252	393	5-8	
48 76 53	121	107	94	83	72	63	51	250	310	1500	2300	300	480	6-9	
48 76 54	144	143	127	110	96	84	51	250	340	1500	2300	344	558	6-9	
48 76 55	230	216	192	168	145	127	61	250	330	1500	2300	425	713	7-10	
48 76 56	364	322	286	250	217	190	71	250	410	1600	2300	632	960	8-30	
48 76 57	507	485	430	375	325	285	71	250	410	1600	2300	798	1214	9-30	

Pipe clamps, OD 812.8 (ND 800), type 44, 48

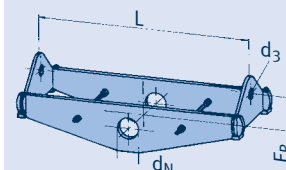
type	600	610	permissible load [kN]				650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
			620	630	640								
44 81 51	76	75	73	64	55	46	51	825	295	320	257	6-9	
44 81 52	119	113	99	86	72	60	61	840	277	320	335	7-10	
44 81 53	164	162	150	130	109	91	71	850	245	320	436	8-30	
44 81 54	166	164	163	151	127	106	71	855	287	320	493	8-30	
44 81 55	225	222	208	180	151	126	71	855	340	320	572	9-30	
44 81 56	325	323	294	258	221	180	81	875	338	320	754	10-40	

type	permissible load [kN]						L				wt. [kg]		load group	
	600	610	620	630	640	650°C	d ₃	d _N	E _R	min	max	min		max
48 81 51	69	61	54	47	41	36	46	250	280	1600	2400	257	395	5-8
48 81 52	85	82	73	63	55	48	46	250	300	1600	2400	292	451	5-8
48 81 53	118	107	95	83	72	63	51	250	330	1600	2400	329	519	6-9
48 81 54	151	144	128	111	96	85	51	250	350	1600	2400	379	598	6-9
48 81 55	232	219	194	170	147	129	61	250	350	1600	2400	474	773	7-10
48 81 56	381	366	324	283	245	215	71	250	450	1600	2400	706	1100	8-30
48 81 57	563	545	483	421	365	320	71	250	450	1600	2400	901	1390	9-30

type 44



type 48



Selection table OD 863.6 - 965.2

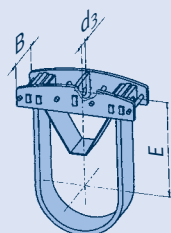
Temperatures 600-650°C

Pipe clamps, OD 863.6 (ND 850), type 44, 48

type	permissible load [kN]						650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640	650							
44 86 51	85	76	65	57	49	41	51	845	270	320	265	6-9	
44 86 52	122	116	100	88	76	65	61	870	245	320	340	7-10	
44 86 53	164	160	139	121	102	85	71	880	236	320	438	8-30	
44 86 54	203	188	163	143	120	100	71	890	280	320	499	8-30	
44 86 55	225	222	197	171	144	119	71	885	335	320	583	9-30	
44 86 56	339	335	292	256	220	180	81	910	347	320	806	10-40	

type	permissible load [kN]						650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640	min					max	min	max		
48 86 51	74	65	58	50	43	38	46	279	280	1650	2450	290	434	5-8	
48 86 52	89	87	77	68	59	51	46	279	300	1650	2450	323	496	5-8	
48 86 53	122	112	100	88	76	66	51	279	330	1650	2450	365	566	6-9	
48 86 54	171	157	139	121	105	92	51	279	350	1650	2450	423	662	6-9	
48 86 55	256	246	218	191	165	145	61	279	350	1650	2450	576	892	7-10	
48 86 56	409	387	343	301	261	229	71	279	450	1650	2450	779	1192	8-30	
48 86 57	617	575	510	444	385	338	71	279	450	1650	2450	989	1500	9-30	

type 44

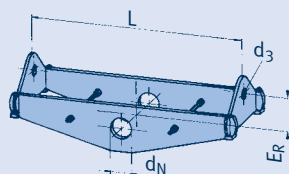


Pipe clamps, OD 914.4 (ND 900), type 44, 48

type	permissible load [kN]						650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640								
44 91 51	81	79	72	63	54	45	51	870	305	320	299	6-9	
44 91 52	116	113	99	86	72	60	61	895	293	320	380	7-10	
44 91 53	164	162	148	128	107	90	71	905	255	320	487	8-30	
44 91 54	166	164	163	155	130	109	71	915	312	320	567	8-30	
44 91 55	225	222	208	179	151	126	71	910	360	320	649	9-30	
44 91 56	330	328	294	258	221	180	81	935	357	320	849	10-40	

type	permissible load [kN]					650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640					min	max	min	max	
48 91 51	81	71	63	55	48	42	46	279	300	1700	2500	315	468	5-8
48 91 52	121	108	96	84	73	64	46	279	330	1700	2500	373	575	5-8
48 91 53	163	144	128	111	96	84	51	279	350	1700	2500	428	659	6-9
48 91 54	278	252	223	197	171	150	61	279	385	1700	2500	623	948	7-10
48 91 55	393	366	324	283	245	215	71	279	470	1800	2500	829	1205	8-30
48 91 56	473	432	383	334	290	254	71	279	450	1800	2500	921	1350	9-30
48 91 57	685	646	573	501	434	380	81	279	450	1800	2500	1160	1695	10-40

type 48



Pipe clamps, OD 965.2 (ND 950), type 44, 48

type	permissible load [kN]						650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640								
44 97 51	77	75	65	57	49	41	51	895	287	320	298	6-9	
44 97 52	110	109	97	85	73	60	61	920	250	320	373	7-10	
44 97 53	160	157	139	121	102	85	71	930	250	320	483	8-30	
44 97 54	184	181	161	141	121	100	71	940	296	320	549	8-30	
44 97 55	218	217	191	167	143	119	71	935	350	320	664	9-30	
44 97 56	332	330	291	255	220	180	81	960	360	320	886	10-40	

type	permissible load [kN]						L					wt. [kg]		load group
	600	610	620	630	640	650°C	d ₃	d _N	E _R	min	max	min	max	
48 97 51	81	80	71	62	53	47	46	330	300	1750	2550	360	552	5-8
48 97 52	127	126	111	98	85	74	46	330	330	1750	2550	437	664	5-8
48 97 53	166	147	130	114	98	86	51	330	350	1750	2550	469	721	6-9
48 97 54	289	255	226	197	171	150	61	330	385	1750	2550	672	1015	7-10
48 97 55	398	373	330	288	250	219	71	330	470	1850	2550	899	1295	8-30
48 97 56	468	444	393	343	297	261	71	330	450	1850	2550	965	1450	9-30
48 97 57	718	665	590	516	447	392	81	330	450	1850	2550	1215	1825	10-40

Selection table OD 1016 - 1118

Temperatures 600-650°C

4

Pipe clamps, OD 1016 (ND 1000), type 44, 48

type	permissible load [kN]						650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640								
44 T0 51	73	72	65	57	49	40	51	920	290	320	314	6-9	
44 T0 52	114	111	96	85	73	60	61	950	255	320	396	7-10	
44 T0 53	164	159	138	121	102	85	71	960	255	320	513	8-30	
44 T0 54	193	187	162	142	120	100	71	970	303	320	587	8-30	
44 T0 55	234	223	193	170	146	119	71	970	340	320	715	9-30	
44 T0 56	329	327	288	252	217	180	81	990	365	320	930	10-40	
44 T0 57	422	419	385	338	290	240	91	1000	370	320	1151	20-50	

type	permissible load [kN]						650°C		d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640	min						max	min	max		
48 T0 51	100	89	79	68	59	52	46	330	300	1800	2600	388	591	5-8		
48 T0 52	155	137	121	106	92	80	46	330	330	1800	2600	470	710	5-8		
48 T0 53	171	159	141	124	107	94	51	330	350	1800	2600	507	769	6-9		
48 T0 54	301	280	248	216	187	164	61	330	385	1800	2600	730	1100	7-10		
48 T0 55	426	410	363	319	276	242	71	330	470	1900	2600	980	1405	8-30		
48 T0 56	510	486	431	376	326	286	71	330	450	1900	2600	1090	1560	9-30		
48 T0 57	766	735	652	570	494	433	81	330	450	1900	2600	1380	1987	10-40		

Pipe clamps, OD 1067 (ND 1050), type 44, 48

type	600	610	permissible load [kN]			650°C	d ₃	E	max	max.	wt.	load
			620	630	640				B	insul.	[kg]	group
44 T1 51	75	74	64	56	48	40	51	950	295	320	333	6-9
44 T1 52	114	113	97	85	73	60	61	980	265	320	424	7-10
44 T1 53	164	160	140	121	102	85	71	985	261	320	546	8-30
44 T1 54	196	185	160	141	120	100	71	1000	312	320	619	8-30
44 T1 55	237	224	194	170	144	119	71	1000	350	320	758	9-30
44 T1 56	338	335	292	256	220	180	81	1020	382	320	991	10-40
44 T1 57	427	421	391	343	290	240	91	1030	385	320	1226	20-50

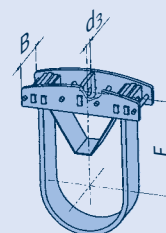
type	permissible load [kN]						650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640	min					max	min	max		
48 T1 51	99	87	77	68	59	51	46	330	300	1850	2650	404	605	5-8	
48 T1 52	151	139	123	107	93	81	46	330	330	1850	2650	493	742	5-8	
48 T1 53	163	161	143	125	108	95	51	330	350	1850	2650	531	802	6-9	
48 T1 54	282	280	248	218	188	165	61	330	385	1850	2650	763	1140	7-10	
48 T1 55	430	407	361	315	273	239	71	330	470	1950	2650	1015	1445	8-30	
48 T1 56	516	484	429	375	325	285	71	330	450	1950	2650	1135	1615	9-30	
48 T1 57	766	733	650	566	491	430	81	330	450	1950	2650	1435	2050	10-40	

Pipe clamps, OD 1118 (ND 1100), type 44, 48

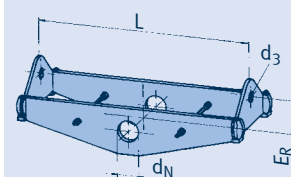
type	600	610	permissible load [kN]			650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
			620	630	640							
44 T2 51	76	73	63	55	48	40	51	980	300	320	351	6-9
44 T2 52	110	108	95	83	71	60	61	1010	265	320	440	7-10
44 T2 53	164	157	136	120	102	85	71	1015	268	320	566	8-30
44 T2 54	200	182	158	138	119	100	71	1020	318	320	662	8-30
44 T2 55	232	221	191	168	144	119	71	1030	355	320	792	9-30
44 T2 56	324	323	292	256	220	180	81	1050	392	320	1041	10-40
44 T2 57	427	421	385	337	290	240	91	1065	390	320	1285	20-50

type	permissible load [kN]						650°C	d ₃	d _N	E _R	L		wt. [kg]		load group
	600	610	620	630	640	min					max	min	max		
48 T2 51	99	87	77	68	58	51	46	374	300	1900	2700	436	653	5-8	
48 T2 52	142	139	123	107	93	81	46	374	330	1900	2700	535	788	5-8	
48 T2 53	181	161	143	125	108	95	51	374	350	1900	2700	570	880	6-9	
48 T2 54	279	279	248	218	189	166	61	374	385	1900	2700	780	1165	7-10	
48 T2 55	433	408	361	315	273	240	71	374	470	2000	2700	1035	1530	8-30	
48 T2 56	502	485	430	375	325	285	71	374	450	2000	2700	1160	1655	9-30	
48 T2 57	766	731	648	567	492	431	81	374	450	2000	2700	1515	2150	10-40	

type 44



type 48



Selection table OD 1168 - 1219

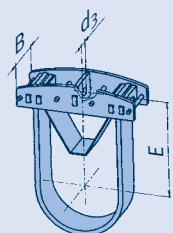
Temperatures 600-650°C

Pipe clamps, OD 1168 (ND 1150), type 44, 48

type	permissible load [kN]						650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640								
44 T3 51	73	72	64	56	48	40	51	1005	312	320	372	6-9	
44 T3 52	120	112	97	85	73	60	61	1025	275	320	485	7-10	
44 T3 53	164	156	136	119	102	85	71	1045	274	320	594	8-30	
44 T3 54	196	184	160	140	120	100	71	1045	328	320	699	8-30	
44 T3 55	241	218	189	166	142	119	71	1060	360	320	831	9-30	
44 T3 56	328	326	286	251	215	180	81	1075	392	320	1078	10-40	
44 T3 57	427	421	381	334	287	240	91	1095	395	320	1335	20-50	

type	permissible load [kN]						L					wt. [kg]		load group
	600	610	620	630	640	650°C	d ₃	d _N	E _R	min	max	min	max	
48 T3 51	94	87	77	68	59	52	46	374	300	1950	2750	456	673	5-8
48 T3 52	139	139	123	108	93	82	46	374	330	1950	2750	559	816	5-8
48 T3 53	173	161	143	126	109	96	51	374	350	1950	2750	595	907	6-9
48 T3 54	279	278	248	216	187	164	61	374	385	1950	2750	809	1242	7-10
48 T3 55	441	408	361	315	273	240	71	374	470	2050	2750	1130	1580	8-30
48 T3 56	510	486	431	376	326	286	71	374	450	2050	2750	1205	1780	9-30
48 T3 57	766	733	650	568	492	431	81	374	450	2050	2750	1575	2217	10-40

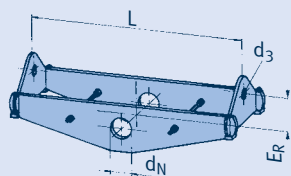
type 44



Pipe clamps, OD 1219 (ND 1200), type 44, 48

type	permissible load [kN]						650°C	d ₃	E	max B	max. insul.	wt. [kg]	load group
	600	610	620	630	640								
44 T4 51	77	74	64	56	48	40	51	1035	322	320	397	6-9	
44 T4 52	116	112	97	85	73	60	61	1050	280	320	506	7-10	
44 T4 53	164	158	137	120	102	85	71	1080	284	320	633	8-30	
44 T4 54	197	186	161	141	121	100	71	1075	335	320	739	8-30	
44 T4 55	236	219	190	166	143	119	71	1090	370	320	874	9-30	
44 T4 56	337	325	281	247	212	180	81	1110	405	320	1130	10-40	
44 T4 57	427	421	381	334	287	240	91	1125	405	320	1404	20-50	

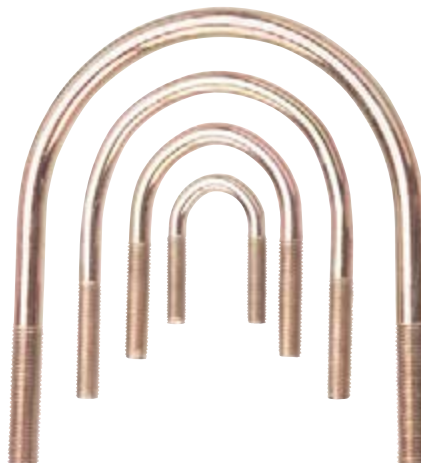
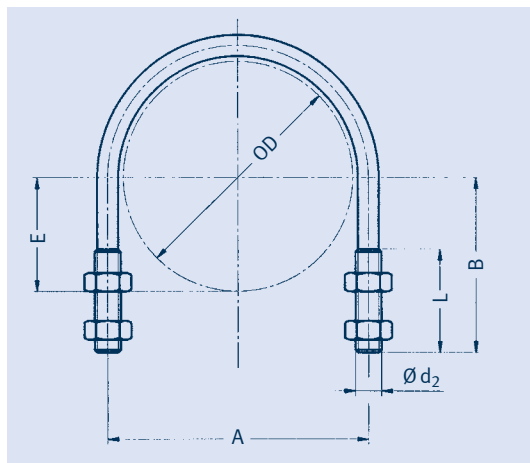
type 48



type	permissible load [kN]						L					wt. [kg]		load group
	600	610	620	630	640	650°C	d ₃	d _N	E _R	min	max	min	max	
48 T4 51	90	88	78	69	59	52	46	374	300	2000	2800	521	694	5-8
48 T4 52	139	139	123	108	93	82	46	374	330	2000	2800	577	839	5-8
48 T4 53	165	161	143	125	108	95	51	374	350	2000	2800	617	934	6-9
48 T4 54	282	280	248	216	188	164	61	374	385	2000	2800	885	1285	7-10
48 T4 55	446	407	361	316	274	240	71	374	470	2100	2800	1175	1635	8-30
48 T4 56	523	485	430	375	325	285	71	374	450	2100	2800	1255	1830	9-30
48 T4 57	740	733	649	568	492	432	81	374	450	2100	2800	1635	2287	10-40

U-bolts Type 40

4



U-bolts type 40 01 .8 to 40 91 .8

Type 40 mainly serves to fasten warm pipe systems of max. 80°C to existing steel structures.

type	OD	A	B	d ₂ x L	E	weight [kg]
40 01 .8	21.3	30	70	M6 x 65	11	0.05
40 02 .8	26.9	35	70	M6 x 65	13	0.05
40 03 .8	33.7	40	70	M6 x 65	17	0.05
40 04 .8	42.4	53	75	M10 x 65	21	0.15
40 05 .8	48.3	60	75	M10 x 65	24	0.16
40 06 .8	60.3	72	85	M10 x 70	30	0.18
40 07 .8	73.0	87	95	M12 x 75	37	0.30
40 08 .8	76.1	91	95	M12 x 75	38	0.31
40 09 .8	88.9	103	100	M12 x 75	44	0.32
40 10 .8	108.0	123	115	M12 x 75	54	0.36
40 11 .8	114.3	130	115	M12 x 75	57	0.37
40 14 .8	139.7	155	130	M12 x 75	70	0.42
40 17 .8	168.3	188	155	M16 x 95	84	0.91
40 22 .8	219.1	238	180	M16 x 95	110	1.08
40 27 .8	273.0	295	215	M20 x 110	137	2.07
40 32 .8	323.9	350	245	M20 x 110	162	2.35
40 36 .8	355.6	381	260	M20 x 110	178	2.55
40 41 .8	406.4	432	285	M20 x 110	203	2.80
40 46 .8	457.2	485	320	M24 x 125	229	4.55
40 51 .8	508.0	537	345	M24 x 125	254	4.90
40 61 .8	609.6	638	395	M24 x 125	305	5.70
40 71 .8	711.2	740	450	M24 x 125	356	6.50
40 76 .8	762.0	790	475	M24 x 125	381	6.90
40 91 .8	914.4	943	550	M24 x 125	457	8.00

5th digit: 1 = S235JR
3 = X5CrNi18-10



Order details:
type 408

Scope of delivery:
incl. 4 nuts

Weld-on lugs for pipes

Type 41

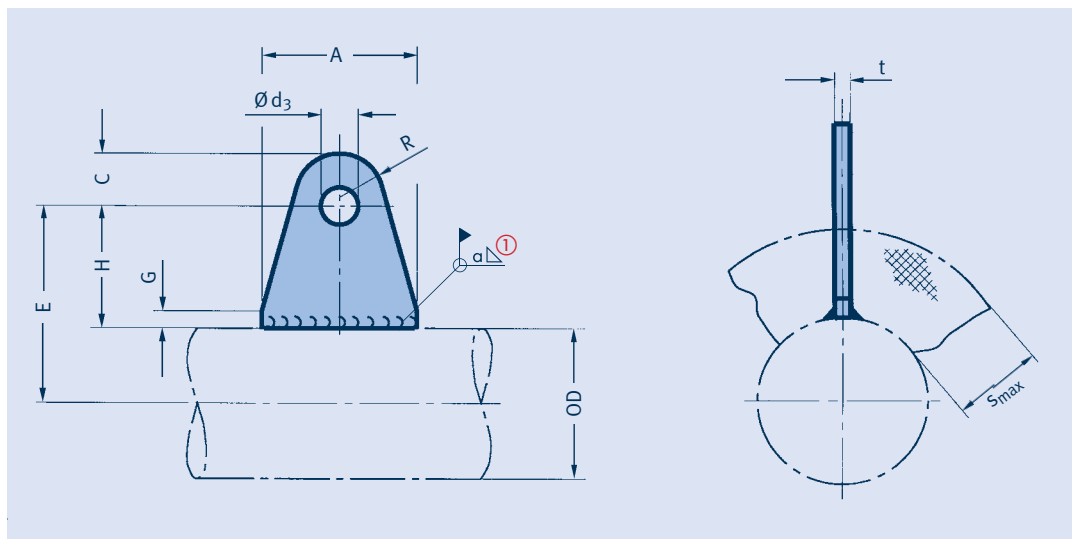
Weld-on lugs for pipes type 49 D9 11 to 49 79 12

- ① Permissible load at 80°C = normal operating conditions (load case H) of the corresponding load group (3rd place in the type designation, see "Max. permissible load for static components", p. 0.6).

Existing stress in the specified weld seam
 $< 50 \text{ N/mm}^2$ at 4° angled tension.

Material: S235JR

type 41 .. 11 $s_{\max} = 10\text{mm}$
 type 41 .. 12 $s_{\max} = 100\text{mm}$



type	A	Ø d ₃	H	R	C	G	t	a ①	weight [kg]
41 D9 11	30	10.5	25	15	15	10	8	3.0	0.06
41 D9 12	30	10.5	115	15	15	10	8	3.0	0.23
41 29 11	35	12.5	25	17.5	22	10	10	3.0	0.11
41 29 12	65	12.5	115	17.5	22	10	10	3.0	0.49
41 39 11	45	16.5	30	22.5	28	10	12	4.5	0.21
41 39 12	70	16.5	120	22.5	28	10	12	4.5	0.75
41 49 11	80	20.5	40	30	37	10	15	4.5	0.53
41 49 12	120	20.5	125	30	37	10	15	4.5	1.60
41 59 11	85	24.5	40	32.5	40	10	20	5.5	0.75
41 59 12	130	24.5	130	32.5	40	10	20	5.5	2.30
41 69 11	120	34	50	40	50	10	25	6.5	1.60
41 69 12	165	34	140	40	50	10	25	6.5	4.10
41 79 11	170	41	60	50	65	10	30	6.5	3.20
41 79 12	230	41	150	50	65	10	30	6.5	7.30

Reduction factors of permissible load
 at increased temperatures:

T	F perm. (T)
250°C	0.7 F perm. (80°C)
350°C	0.5 F perm. (80°C)

Order details:

weld-on lugs for pipes
 type 41 .9 1.

Weld-on lugs for pipe elbows

Type 41

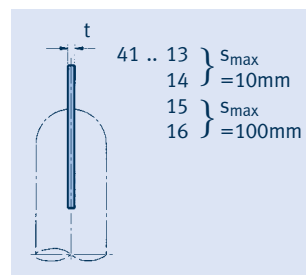
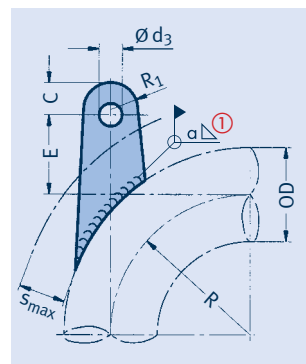
4

S _{max} = 10mm				S _{max} = 100mm									
type	E	a	weight [kg]	type	E	a	weight [kg]	OD	load① group	C	R ₁	t	d ₃
41 06 13	35	3.0	0.13	41 06 15	135	3.0	0.44	60.3	C-2	22	17.5	8	12.5
41 07 13	30	3.0	0.13	41 07 15	135	3.0	0.44	73	C-2	22	17.5	8	12.5
41 08 13	35	3.0	0.13	41 08 15	135	3.0	0.44	76.1	C-2	22	17.5	8	12.5
41 09 13	30	3.0	0.13	41 09 15	135	3.0	0.44	88.9	C-2	22	17.5	8	12.5
41 09 14	35	3.0	0.24	41 09 16	140	4.5	0.75	88.9	2-3	28	22.5	10	16.5
41 10 13	30	3.0	0.13	41 10 15	135	3.0	0.44	108	C-2	22	17.5	8	12.5
41 10 14	35	3.0	0.25	41 10 16	140	4.5	0.75	108	2-3	28	22.5	10	16.5
41 11 13	30	3.0	0.14	41 11 15	135	3.0	0.45	114.3	C-2	22	17.5	8	12.5
41 11 14	35	3.0	0.25	41 11 16	140	4.5	0.75	114.3	2-3	28	22.5	10	16.5
41 13 13	25	3.0	0.14	41 13 15	135	3.0	0.46	133	C-2	22	17.5	8	12.5
41 13 14	30	3.0	0.25	41 13 16	140	4.5	0.77	133	2-3	28	22.5	10	16.5
41 14 13	25	3.0	0.14	41 14 15	135	3.0	0.47	139.7	C-2	22	17.5	8	12.5
41 14 14	40	4.5	0.62	41 14 16	145	4.5	1.60	139.7	3-4	37	30	15	20.5
41 16 13	25	3.0	0.14	41 16 15	135	3.0	0.47	159	C-2	22	17.5	8	12.5
41 16 14	40	4.5	0.62	41 16 16	145	4.5	1.70	159	3-4	37	30	15	20.5
41 17 13	25	3.0	0.25	41 17 15	140	4.5	0.78	168.3	2-3	28	22.5	10	16.5
41 17 14	40	5.5	0.87	41 17 16	150	5.5	2.30	168.3	4-5	40	32.5	18	24.5
41 19 13	20	3.0	0.25	41 19 15	135	4.5	0.78	193.7	2-3	28	22.5	10	16.5
41 19 14	35	5.5	0.88	41 19 16	145	5.5	2.30	193.7	4-5	40	32.5	18	24.5
41 22 13	20	3.0	0.25	41 22 15	135	4.5	0.80	219.1	2-3	28	22.5	10	16.5
41 22 14	35	5.5	0.90	41 22 16	145	5.5	2.30	219.1	4-5	40	32.5	18	24.5
41 24 13	15	3.0	0.25	41 24 15	130	4.5	0.80	244.5	2-3	28	22.5	10	16.5
41 24 14	30	5.5	0.90	41 24 16	145	5.5	2.40	244.5	4-5	40	32.5	18	24.5
41 26 13	10	3.0	0.25	41 26 15	125	4.5	0.80	267	2-3	28	22.5	10	16.5
41 26 14	25	5.5	0.90	41 26 16	140	5.5	2.40	267	4-5	40	32.5	18	24.5
41 27 13	15	3.0	0.26	41 27 15	130	4.5	0.80	273	2-3	28	22.5	10	16.5
41 27 14	25	5.5	0.90	41 27 16	145	5.5	2.40	273	4-5	40	32.5	18	24.5
41 32 13	15	4.5	0.62	41 32 15	130	4.5	1.70	323.9	3-4	37	30	15	20.5
41 32 14	25	6.5	1.40	41 32 16	145	6.5	3.70	323.9	5-6	50	40	20	34
41 36 13	-10	4.5	0.62	41 36 15	115	4.5	1.70	355.6	3-4	37	30	15	20.5
41 36 14	5	6.5	1.50	41 36 16	125	6.5	3.70	355.6	5-6	50	40	20	34
41 37 13	0	4.5	0.62	41 37 15	120	4.5	1.80	368	3-4	37	30	15	20.5
41 37 14	15	6.5	1.50	41 37 16	130	6.5	3.70	368	5-6	50	40	20	34
41 41 13	-15	4.5	0.65	41 41 15	105	4.5	1.80	406.4	3-4	37	30	15	20.5
41 41 14	-5	6.5	1.50	41 41 16	115	6.5	3.70	406.4	5-6	50	40	20	34
41 42 13	-10	4.5	0.65	41 42 15	115	4.5	1.80	419	3-4	37	30	15	20.5
41 42 14	5	6.5	1.50	41 42 16	125	6.5	3.80	419	5-6	50	40	20	34
41 46 13	-20	5.5	0.90	41 46 15	100	5.5	2.40	457.2	4-5	40	32.5	18	24.5
41 46 14	0	6.5	3.40	41 46 16	120	6.5	7.10	457.2	6-7	65	50	25	41
41 51 13	-30	5.5	0.90	41 51 15	95	5.5	2.50	508	4-5	40	32.5	18	24.5
41 51 14	-10	6.5	3.40	41 51 16	110	6.5	7.10	508	6-7	65	50	25	41
41 56 13	-40	5.5	0.90	41 56 15	85	5.5	2.50	558.8	4-5	40	32.5	18	24.5
41 56 14	-20	6.5	3.40	41 56 16	105	6.5	7.10	558.8	6-7	65	50	25	41
41 61 13	-45	5.5	0.90	41 61 15	80	5.5	2.50	609.6	4-5	40	32.5	18	24.5
41 61 14	-30	6.5	3.40	41 61 16	95	6.5	7.10	609.6	6-7	65	50	25	41
41 66 13	-55	5.5	0.90	41 66 15	70	5.5	2.50	660.4	4-5	40	32.5	18	24.5
41 66 14	-35	6.5	3.40	41 66 16	85	6.5	7.10	660.4	6-7	65	50	25	41
41 71 13	-65	5.5	0.90	41 71 15	60	5.5	2.50	711.2	4-5	40	32.5	18	24.5
41 71 14	-45	6.5	3.40	41 71 16	80	6.5	7.20	711.2	6-7	65	50	25	41
41 76 13	-75	5.5	0.90	41 76 15	50	5.5	2.50	762	4-5	40	32.5	18	24.5
41 76 14	-55	6.5	3.40	41 76 16	70	6.5	7.20	762	6-7	65	50	25	41

① Permissible loads at 80°C = normal operating conditions (load case H) of the specified load group in each case (see "Max. permissible load for static components", p. 0.6).

Stress existing in the specified weld seam
< 50 N/mm² at 4° angled tension.

Weld-on lugs for pipe elbows (R ≈ 1.5 OD)
type 41 06 13 to 41 76 16



Reduction factors of permissible load at increased temperatures:

T	F perm. (T)
250°C	0.7 F perm. (80°C)
350°C	0.5 F perm. (80°C)

Order details:
weld-on lug for pipe elbows R ≈ 1.5 OD
type 41 .. 1.

Connection plates

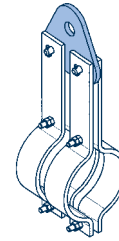
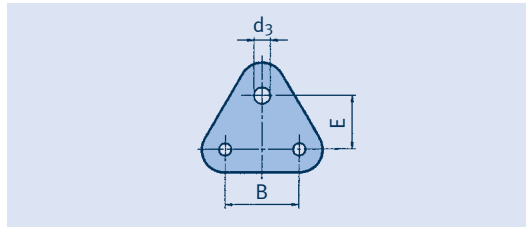
Type 77

Connection plates for coupling pipe clamps type 43

type 77 09 39 to 77 19 39

By coupling 2 pipe clamps with type 77 the loads can be doubled.

Order details:
connection plate
type 77.. 39



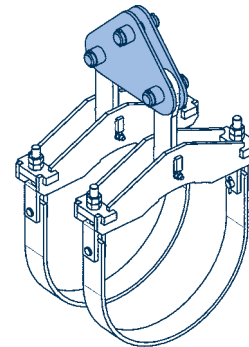
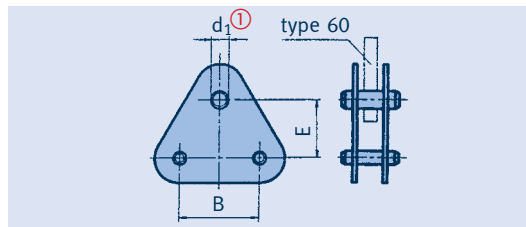
type	for clamps	load-group	d ₃	E	B	weight [kg]
77 09 39	43 01 19 to 43 09 59	D-5	25	65	90	0.8
77 17 39	43 10 19 to 43 17 59	3-6	34	70	90	1.2
77 19 39	43 19 19 to 43 19 59	4-7	46	90	105	2.4

Connection plates for coupling pipe clamp type 44 up to 600°C

type 77 22 .. to 77 T4 ..

Type designation of the connection plates: the figures 44 of the clamps to be coupled must be replaced by the figures 77.

Example:
connection plate for
type 44 66 38 → 77 66 38.



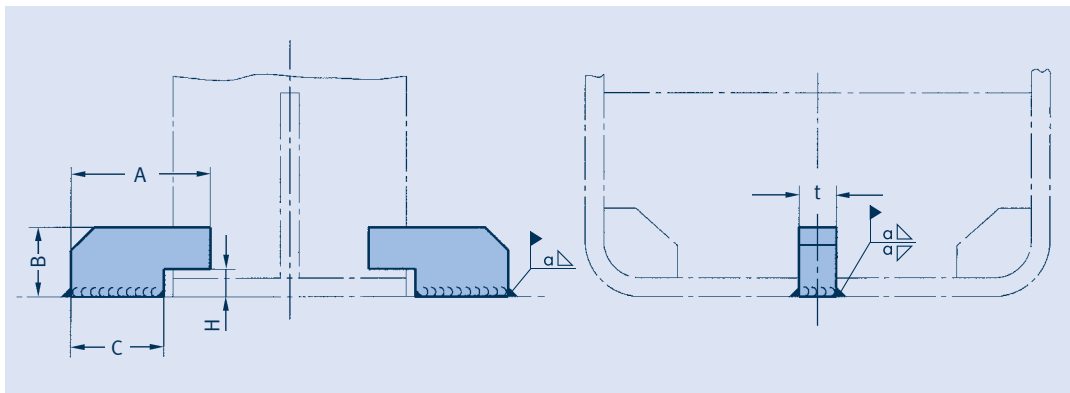
type	load group ①	d ₁ ①		E	Bmax	weight [kg]
		min	max			
77 22 .. to 77 27 ..	5-10	33	60	135	180	10-23
77 32 .. to 77 37 ..	5-30	33	70	140	225	11-32
77 41 .. to 77 46 ..	6-30	40	70	140	275	16-52
77 51 .. to 77 56 ..	7-50	45	90	200	300	30-75
77 61 .. to 77 91 ..	7-50	45	90	190	325	31-78
77 97 .. to 77 T4 ..	7-50	45	90	190	390	47-81

① The load group for the upper connection (type 60) must be stated when ordering.

Order details:
connection plate
type 77.. ..
load group ...

Lift-off restraints for clamp bases Type 49

4



Lift-off restraints for
clamp base type 49
type 49 00 01 to 49 00 05

type	for clamp bases	A	B	C	H	t	α	wt./pair [kg]
49 00 01	49 01 11 to 49 17 11	35	15	23	8	8	3.0	0.1
49 00 01	49 01 12 to 49 14 12	35	15	23	8	8	3.0	0.1
49 00 01	49 01 25 to 49 11 25	35	15	23	8	8	3.0	0.1
49 00 01	49 01 35 to 49 06 35	35	15	23	8	8	3.0	0.1
49 00 01	49 01 45 to 49 11 45	35	15	23	8	8	3.0	0.1
49 00 01	49 01 55 to 49 09 55	35	15	23	8	8	3.0	0.1
49 00 02	49 19 13 to 49 32 13	55	32	35	17	12	4.0	0.3
49 00 02	49 16 14 to 49 32 14	55	32	35	17	12	4.0	0.3
49 00 02	49 13 25 to 49 32 25	55	32	35	17	12	4.0	0.3
49 00 02	49 07 35 to 49 32 35	55	32	35	17	12	4.0	0.3
49 00 02	49 13 45 to 49 32 45	55	32	35	17	12	4.0	0.3
49 00 03	49 36 13 to 49 51 45	80	45	55	22	15	5.0	0.7
49 00 04	49 56 13 to 49 91 45	110	50	80	22	20	7.0	1.5
49 00 05	49 97 13 to 49 T4 45	115	50	85	22	25	8.0	1.9

The following shortduration lift-off loads are permissible for the clamp bases:
type 49 01 .. to 49 76 .. 10%
type 49 81 .. to 49 T4 .. 7%
of the catalog load.

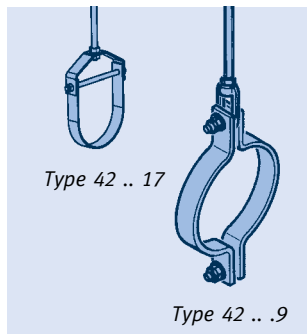
Order details:
lift-off restraint
type 49 00 ..

On request special lift-off restraints for type 49 ... -SP can be delivered.



Installation and operating instructions

Type 42, 43, 44, 45, 46, 48



1 Transport and storage

Care must be taken during transport that none of the clamp components is damaged. When stored in the open the clamps must be protected from dirt and water.

2 Delivery condition

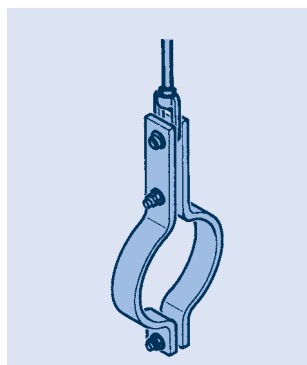
LISEGA pipe clamps are delivered ready for installation, with all the necessary bolts. For reason of more effective dispatch clamps can be supplied partially assembled.

3 Installation

3.1 Horizontal clamp

Type 42

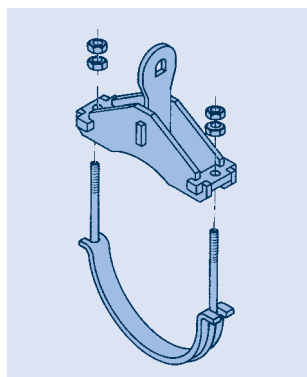
This clamp is used as a horizontal clamp in connection with threaded eye nut type 60. When tightening the bolts, care must be taken that the clamp halves are parallel to each other. The bolts are to be secured with lock nuts.



Type 43

Type 43

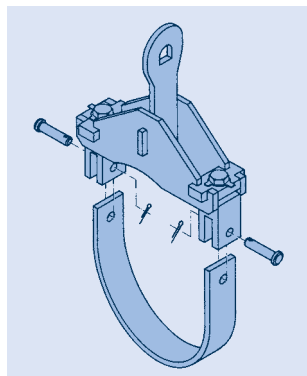
Connection is made with this horizontal clamp via a separate connection bolt with a threaded eye nut type 60. The bolts must be secured with the cotter pins provided; otherwise proceed as with type 42.



Type 44 U-bolt design

Type 44, U-bolt/ strap for temperatures up to 600°C

These clamps consist of an upper section with a connecting lug and, depending on load and temperature range, a U-bolt with an inlay plate or a flat steel strap as lower section. For installation, remove the pre-assembled lower part by loosening the locking nuts or removing the connection bolts. The upper section is seated on the piping and the lower one inserted and held by tightening the U-bolt or flat steel strap. After alignment of the clamp the bolts are to be firmly tightened. The U-bolts are secured with lock nuts and the flat steel straps with tab washers under the hexagon nuts.



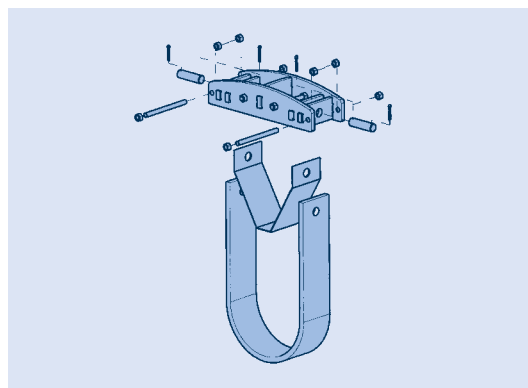
Type 44 strap design

Type 44 for temperatures over 600°C

These clamps consist of an upper section with a connection lug and restrainer and a flat steel strap as lower part.

For installation the restraint and strap must be taken off by removing the outer threaded pins and the connection bolts. After attaching the upper section to the hanging part the restraint and strap can be reconnected.

They are then bolted on and the threaded pins fitted. All parts must then be firmly screwed on.

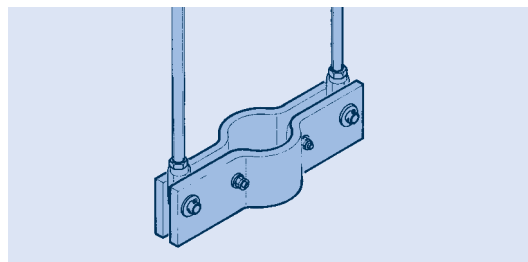


Installation of type 44 for temperatures over 600°C

3.2 Riser clamps

Type 45

When installing these clamps care must be taken to place the spacers supplied onto the bolts between the clamp halves. The bolts are then tightened and locked. The clamp is hung up via the outer support bolts, which are secured with washers and cotter pins. The specified height of the clamp is set by tightening the suspended parts and creating a force-and-formfitting connection with the shear lugs.

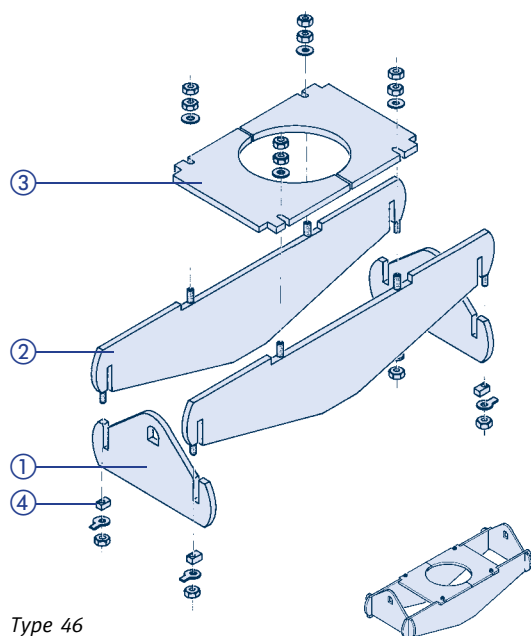


Riser clamp type 45 with connection components

Type 46

This riser clamp is supplied in single parts sealed in plastic shrink wrap.

For installation it is best to first fit the front plates ① into the suspended parts. These parts should be tightened at the lowest level, then both side plates ② can be attached one after another. In the case of large clamps, the opposite side must hereby be temporarily propped up.



Type 46

After that, the top plates ③ for the shear lugs are inserted and bolted on. The connection points between front and side plates are secured by aligning and firmly tightening the pre-assembled locking plates ④.

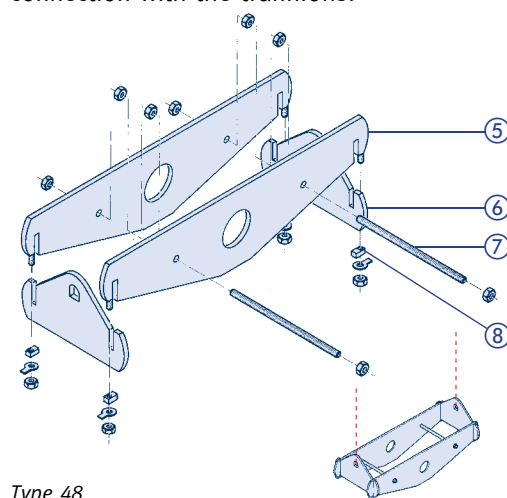
The specified height is set by tightening the suspended parts, creating a force and formfitting connection with the shear lugs.

Type 48

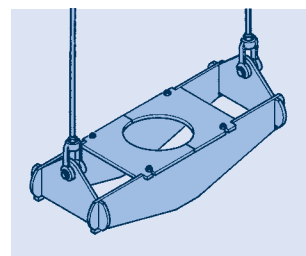
This riser clamp is supplied in single parts sealed in shrink wrap. First of all, a side plate ⑤ should be prepared by attaching the threaded pins ⑦.

For installation, both side plates are seated on the trunnions and connected with the threaded pins. The nuts should be only loosely tightened here. For large clamps the components should be temporarily propped up.

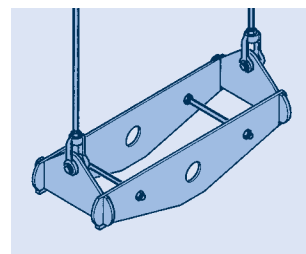
The front plates ⑥ can now be pushed from below into the intake slots and connected to the suspended parts. The connection points between front and side plates are made by aligning and firmly tightening the pre-assembled locking plates ⑧. The specified height of the clamp is set by tightening the suspended parts, creating a force-and-formfitting connection with the trunnions.



Type 48



Riser clamp type 46 with connection components



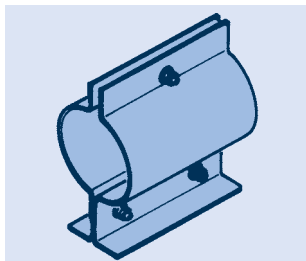
Riser clamp type 48 with connection components

4 Inspection and maintenance

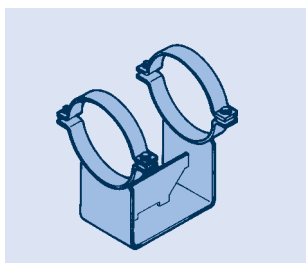
The horizontal clamp functions flawlessly in any operating condition if the secured boltings are free of any play. Under normal operating conditions maintenance is not required.

Installation and operating instructions

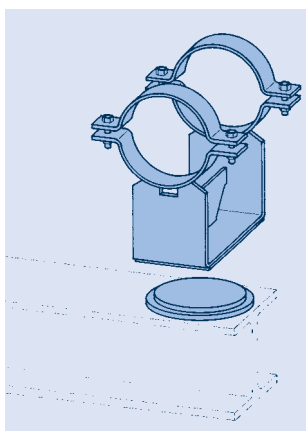
Type 49 Clamp bases



Clamp bases for smaller pipe diameters type 49 .. .1, 49 .. .2



Clamp bases for larger pipe diameters type 49 .. .3, .. .4, .. .5



Clamp base type 49 with slide plate

1 Transport and storage

Care must be taken during transport that no clamp base components are damaged. When stored in the open, the clamp bases must be protected from dirt and water.

2 Delivery condition

If not agreed otherwise, LISEGA clamp bases are delivered pre-assembled and ready for installation. For reasons of efficient dispatch clamp bases can be delivered partially assembled. In any event the clamp base is supplied with all the necessary bolts.

3 Installation

Type 49

LISEGA clamp bases are slidable supports that are fastened to pipe systems by clamping tension. On installation it is essential that the whole clamp base bottom lies flush and can slide unobstructed over the given stretches.

If required, the lower parts can be welded to the supporting surface.

Different designs are used depending on the height of the support bearing, the pipe diameter, the support load and the operating temperature. The following points are hereby to be observed:

Type 49 .. .1 and 49 .. .2

This clamp base design is made up of two halves to be fitted to each side of the pipe. The cornered surfaces form the base. In this lower part the clamp base halves are firmly bolted to each other. The upper bolting serves for clamping tension in the piping against slipping.

Type 49 .. .3, 49 .. .4 and 49 .. .5

The foot of the clamp base forms a firm support for the pipe to be laid in. The upper half provides clamping tension and is to be firmly bolted.

4 Inspection and maintenance

Under normal circumstances no maintenance is required.



Type 49 .. .1 and 49 .. .2



Type 49 .. .3, 4



Type 49 .. .3, 4, 5