

SECTION A

HANGER COMPONENTS

STRUCTURAL ATTACHMENT ELEMENTS

CLAMPS

THREADED ACCESSORIES

ANCHOR BOLTS

TRAPEZES

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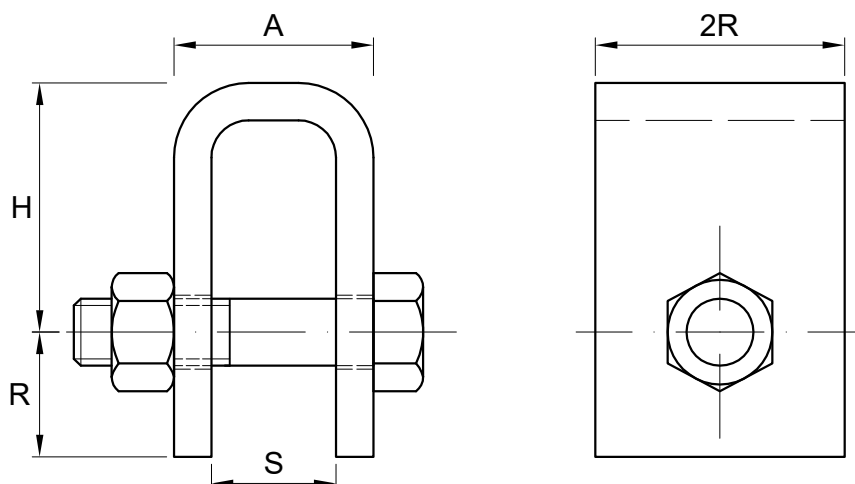
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BEAM ATTACHMENT

FIG.: 2100

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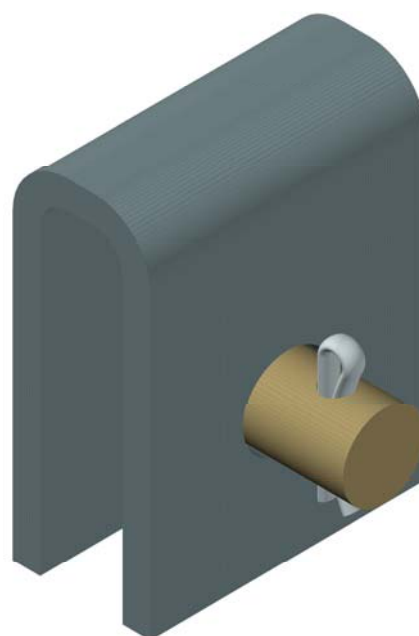


APPLICATION: Upper connection welded to structure; connects with forged eyenut fig. 2333 or with B type variable springs or equivalent upper-connection constant springs.

ORDER FORM:

- Name.
- Figure.
- Number or associated Metric.

MATERIAL: Carbon steel.



No.	Associated ROD	A (mm)	H (mm)	R (mm)	S (mm)	BOLT OR PIN	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	32	40	20	20	M12	0,4	575
2	M16	32	55	25	20	M16	0,5	1200
3	M20	46	60	30	30	M20	1	1800
4	M24	55	60	35	35	M24	1,5	2500
5	M30	69	80	40	45	Ø30	3	4100
6	M36	74	95	50	50	Ø35	4,5	6500

N.B.: For sizes greater than M36, refer to Fig. 2101.

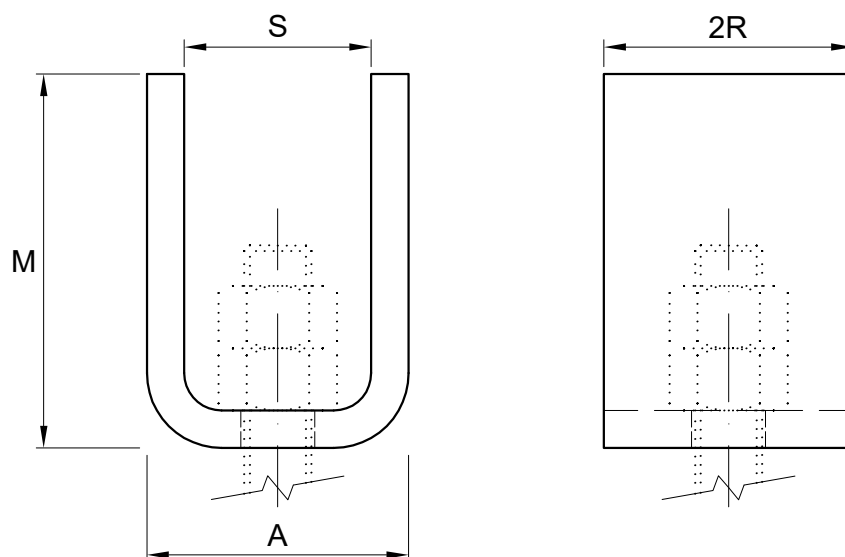
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INVERTED BEAM ATTACHMENT

**FIG.:
2100 INV**

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APPLICATION: Upper connection welded to structure; connects directly with the hanging rod.

ORDER FORM:

- Name.
- Figure.
- Number or associated Metric.

MATERIAL: Carbon steel.



No.	Associated ROD	A (mm)	2R (mm)	M (mm)	S (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	42	40	60	30	0,3	575
2	M16	52	50	80	40	0,4	1200
3	M20	66	60	90	50	0,8	1800
4	M24	70	70	100	50	1,3	2500
5	M30	89	80	130	65	2,6	4100
6	M36	104	100	150	80	4	6500

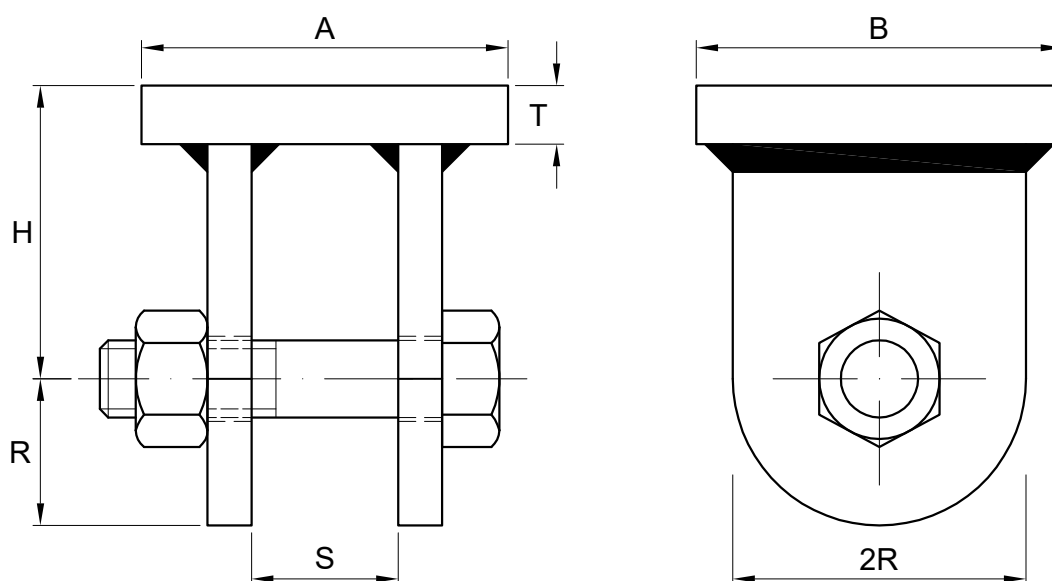
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BEAM ATTACHMENT

FIG.: 2101

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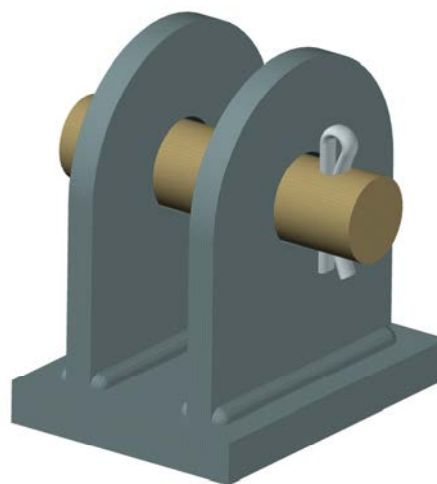
APPLICATION: Upper connection welded to structure; connects with the hanging rod by means of a forged eye nut fig. 2333. It can be connected with B type variable springs or equivalent upper-connection constant springs, or alternatively with special connections to the pipe or equipment.

ORDER FORM:

- Name.
- Figure.
- Number or associated Metric.

MATERIAL: Carbon steel. Can be manufactured in other qualities, on request.

N.B.: For sizes No. 1 to No. 6 (M12 to M36), we recommend referring to fig. 2100 (more economical).



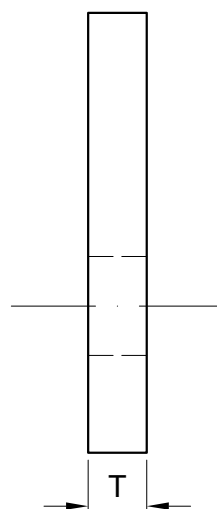
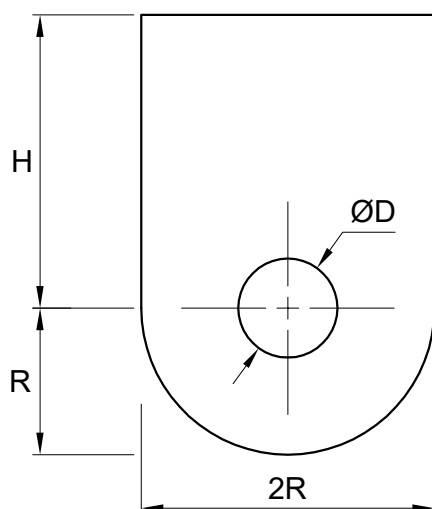
No.	Associated ROD	A (mm)	B (mm)	H (mm)	R (mm)	S (mm)	T (mm)	BOLT OR PIN	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	50	50	40	20	20	8	M12	0,4	575
2	M16	50	65	55	25	20	10	M16	0,7	1200
3	M20	65	80	60	30	30	10	M20	1,4	1800
4	M24	80	90	60	35	35	12	M24	2	2500
5	M30	90	100	80	40	40	15	Ø30	3,5	4100
6	M36	90	120	95	50	40	15	Ø35	5,5	6500
7	M42	110	140	110	60	50	20	Ø40	7,6	8500
8	M48	125	150	115	65	50	25	Ø45	11	11000
9	M56	125	180	135	75	50	25	Ø50	14	15000
10	M64	140	200	155	85	50	30	Ø55	22	20000

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LUG

FIG.: 2105

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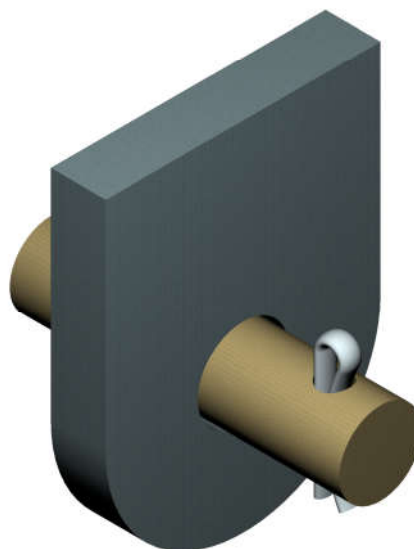


APPLICATION: Upper connection welded to structure; connects with the hanging rod by means of a forged clevis. Can also connect with C type springs. It can be used as lower connection, directly welded to the uninsulated pipe.

ORDER FORM:

- Name.
- Figure.
- Number or associated Metric.

MATERIAL: Carbon steel. Can be manufactured in other qualities, on request.



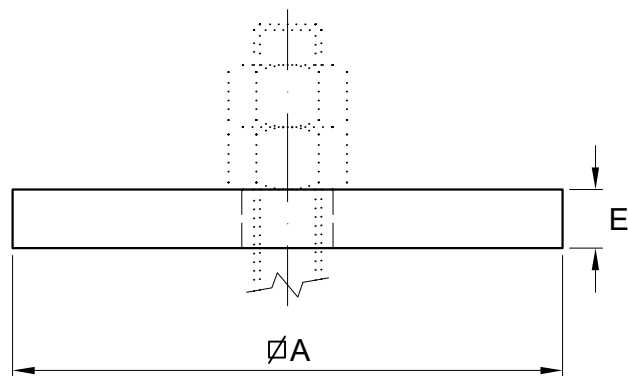
No.	Associated ROD	H (mm)	R (mm)	ØD (mm)	T (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	40	20	13,5	8	0,2	575
2	M16	55	25	17,5	10	0,3	1200
3	M20	60	30	21,5	12	0,5	1800
4	M24	60	35	26	15	0,8	2500
5	M30	80	40	33	20	1,7	4100
6	M36	95	50	38	25	2,8	6500
7	M42	110	60	43	25	3,5	8500
8	M48	115	65	48	30	4,8	11000
9	M56	135	75	53	35	8	15000
10	M64	155	85	58	40	11,5	20000

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SQUARE SUPPORT PLATE

FIG.: 2110

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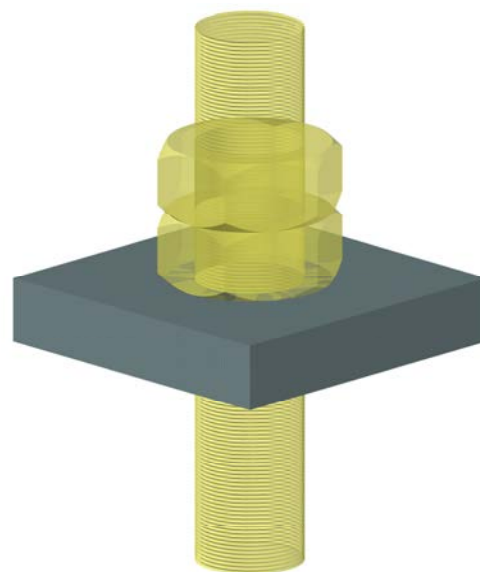


APPLICATION: As a support on hanging rods, both upper and lower. Can be produced in different dimensions, on request.

ORDER FORM:

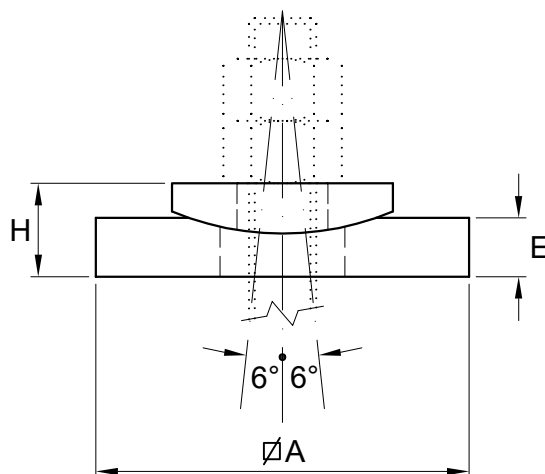
- Name.
- Figure.
- Number or associated Metric.

MATERIAL: Carbon steel. Can be manufactured in other qualities, on request.



No.	Associated ROD	∅ A (mm)	E (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	75	8	0,35	575
2	M16	75	10	0,45	1200
3	M20	100	10	0,75	1800
4	M24	100	12	0,9	2500
5	M30	120	15	1,65	4100
6	M36	120	15	1,6	6500
7	M42	130	20	2,5	8500
8	M48	140	20	2,9	11000
9	M56	150	25	4	15000
10	M64	150	25	3,8	20000

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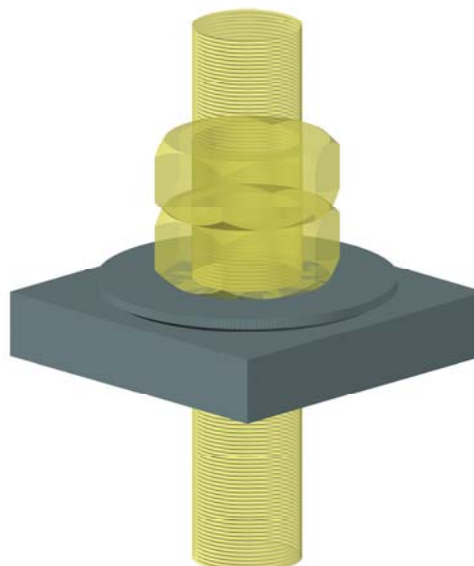


APPLICATION: Support on piping hangers where horizontal movements are significant (6° maximum). The base can be produced with different dimensions, on request.

ORDER FORM:

- Name.
- Figure.
- Number or associated Metric.

MATERIAL: Carbon steel. Can be manufactured in other qualities, on request.



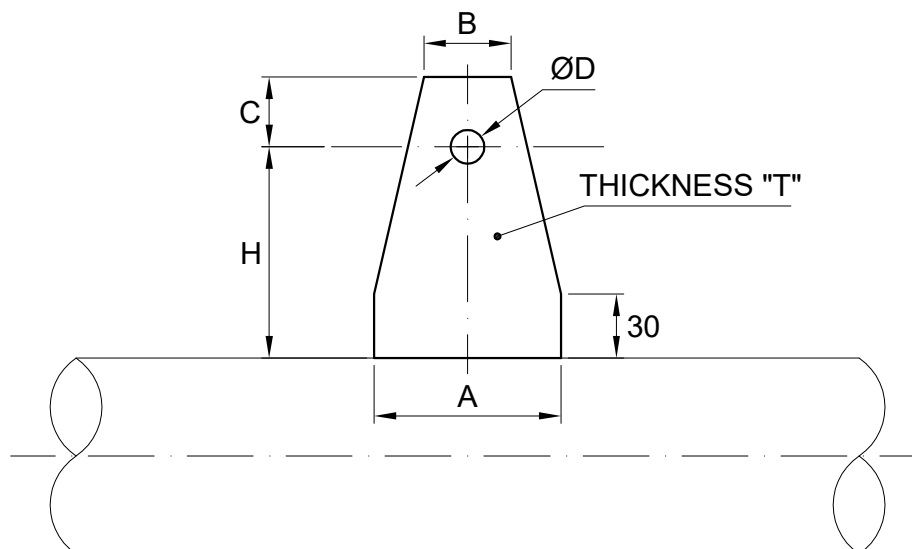
No.	Associated ROD	∅ A (mm)	E (mm)	H (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	50	8	12	0,2	575
2	M16	60	10	15	0,35	1200
3	M20	70	12	17	0,6	1800
4	M24	80	15	21	0,9	2500
5	M30	100	20	26	1,8	4100
6	M36	100	20	27	1,8	6500
7	M42	120	25	33	3,1	8500
8	M48	120	25	34	3,1	11000
9	M56	160	30	42	6,4	15000
10	M64	200	30	42	10	20000

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LUG FOR HORIZONTAL PIPE

FIG.: 2200

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No.	Associated ROD	A (mm)	B (mm)	C (mm)	ØD (mm)	H (mm)	T (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	60	35	20	13,5	110	8	0,4	575
2	M16	70	45	25	17,5	120	10	0,65	1200
3	M20	90	55	35	21,5	120	12	1,05	1800
4	M24	120	70	40	26	130	15	1,9	2500
5	M30	140	80	50	32	130	20	3,1	4100
6	M36	150	90	55	37	140	25	4,6	6500
7	M42	165	110	65	42	150	25	5,8	8500
8	M48	170	115	70	48	160	25	7,2	11000

APPLICATION: For welding to horizontal pipes with or without insulation. In the case of piping without insulation, fig. 2105 lug can be used. This can also be connected to type C springs.

ASSEMBLY: Hanged by forged clevis and rod.

ORDER FORM:

- Name.
- Figure.
- Number or associated Metric.
- Insulation Thickness.

MATERIAL: Compatible with the quality of the piping. Load limitations due to high temperature are the same as those indicated on sheet A-20.

N.B.: They can be manufactured with other "H" dimensions to adapt them to any insulation size.

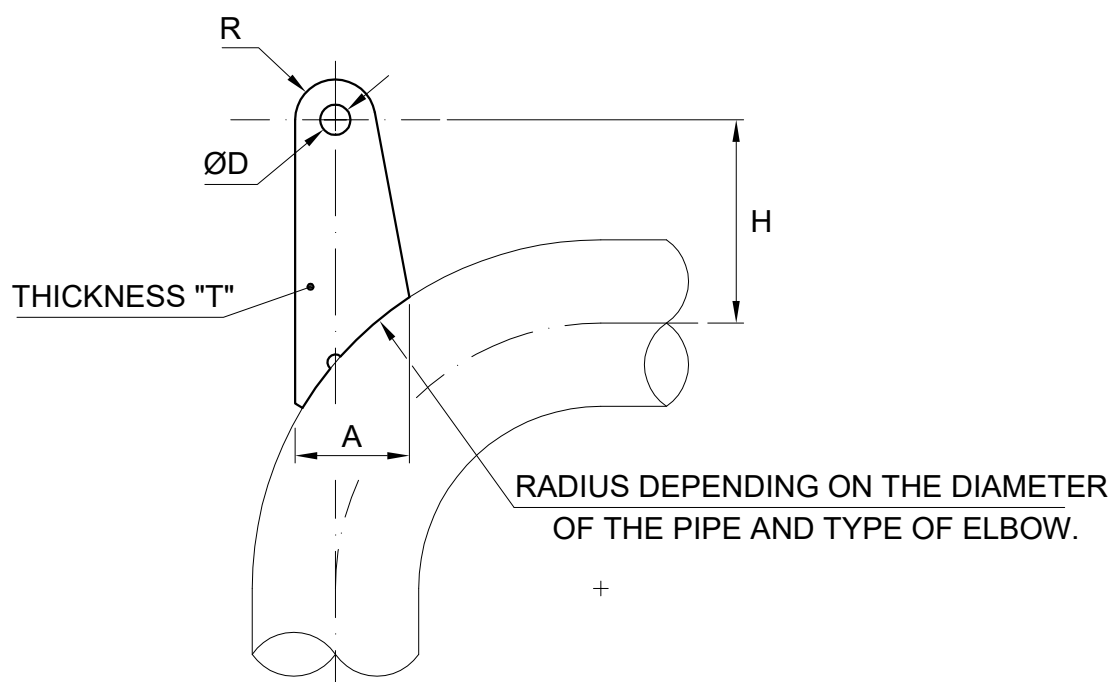
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LUG FOR ELBOW

FIG.: 2201

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No.	Associated ROD	A (mm)	ØD (mm)	H (mm)	R (mm)	T (mm)	MAX. REC. LOAD (Kg)
1	M12	55	13,5	150	20	8	575
2	M16	65	17,5	150	25	10	1200
3	M20	90	21,5	160	35	12	1800
4	M24	105	26	160	40	15	2500
5	M30	130	32	175	50	20	4100
6	M36	145	37	175	55	25	6500
7	M42	160	42	200	65	25	8500
8	M48	200	47	200	80	25	11000

APPLICATION: For welding to any type of elbow or piping bend, with or without insulation. Can be coupled to any diameter or type of elbow.

ASSEMBLY: Hanged by forged clevis and rod.

ORDER FORM:

- Name.
- Figure.
- Number or associated Metric.
- Diameter.
- Type of elbow.
- Insulation Thickness.
- Temperature or pipe quality.

MATERIAL: Compatible with the quality of the piping. Load limitations due to high temperature are the same as those indicated on sheet A-20.

N.B.: Level "H" is meant for a maximum insulation of 100 mm. For greater insulation thicknesses, this value should be increased accordingly.

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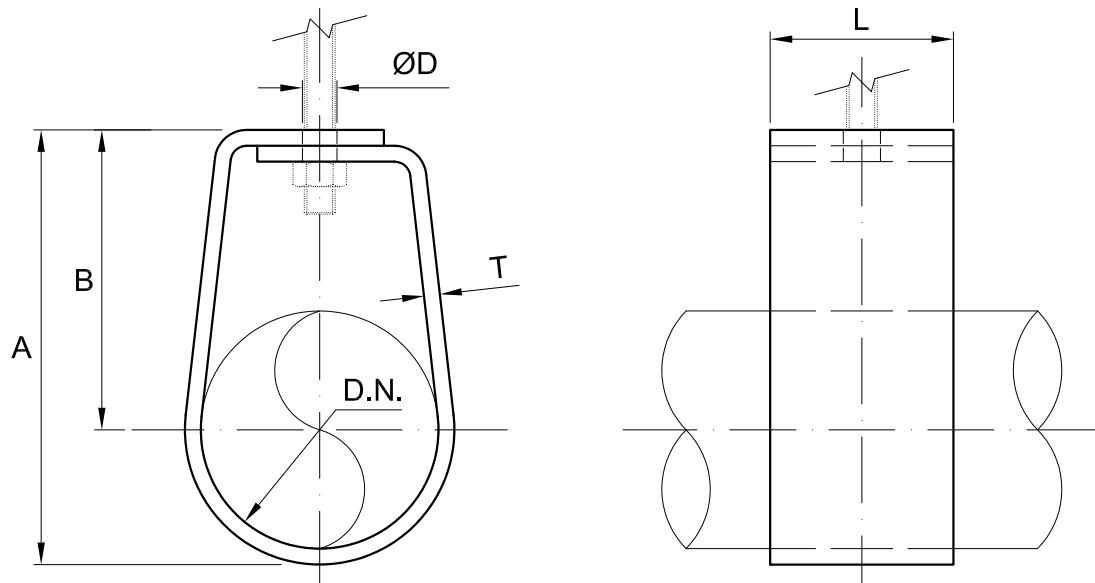


RING CLAMP

FIG.: 2220

SECTION A

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No.	D.N.	A (mm)	B (mm)	ØD (mm)	FLAT BAR		WEIGHT (Kg)	MAX. REC. LOAD (Kg)
					L (mm)	T (mm)		
1	1/2"	59	46	11,5	25	3	0,11	275
2	3/4"	68	52	11,5	25	3	0,12	275
3	1"	75	55	11,5	30	4	0,22	275
3 a	1 1/4"	90	65,5	11,5	30	4	0,25	275
4	1 1/2"	98	70	11,5	30	4	0,27	275
5	2"	110	76	11,5	30	4	0,30	275
6	2 1/2"	139	98	13,5	35	4	0,43	450
7	3"	156	108	13,5	35	4	0,48	450
8	4"	185	124	17,5	35	4	0,60	550
8 a	5"	216	142	17,5	35	4	0,70	550
9	6"	251	162	21,5	40	4	0,90	750
10	8"	306	192	21,5	50	4	1,35	850

APPLICATION: To support uninsulated pipes. Makes it possible to adjust rod length.

ORDER FORM:

- Name.
- Figure.
- Pipe diameter.

MATERIAL: Carbon steel.

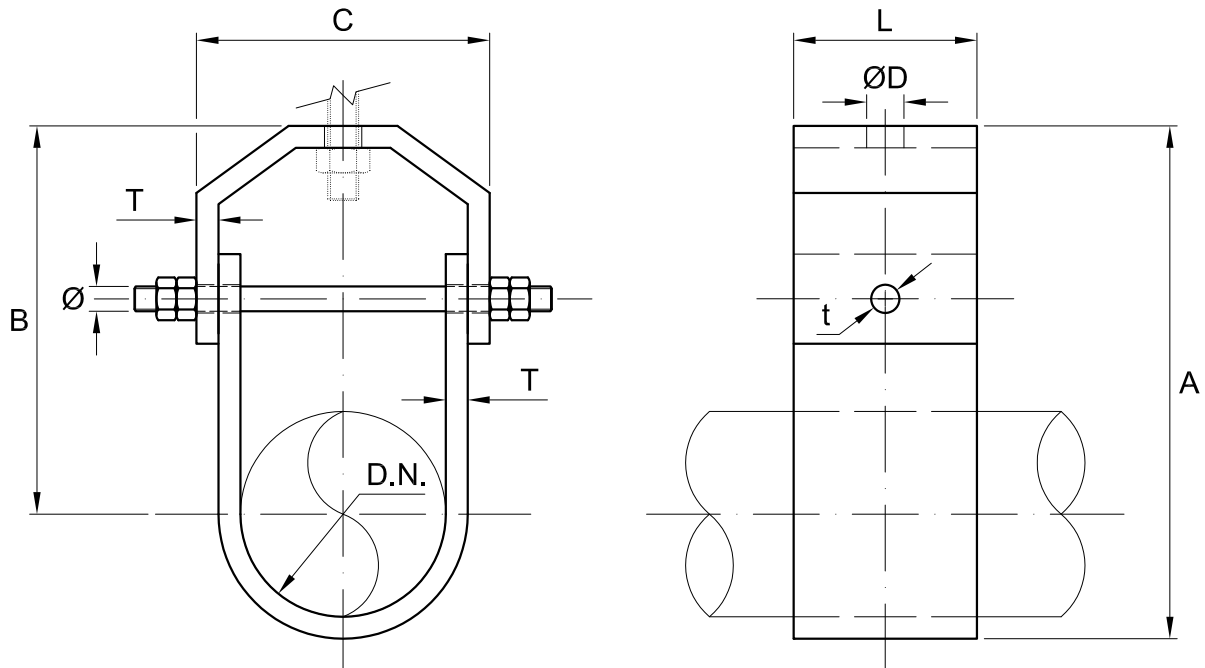
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CLEVIS CLAMP

FIG.: 2221

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No.	D.N.	A (mm)	B (mm)	C (mm)	ØD (mm)	FLAT BAR		Ø (mm)	t (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
						L (mm)	T (mm)				
1	1/2"	75	61	34	11,5	25	3	M8	9,5	0,15	275
2	3/4"	92	75	39	11,5	25	3	M8	9,5	0,18	275
3	1"	99	79	46	11,5	25	3	M8	9,5	0,19	275
3 a	1 1/4"	109	84	55	11,5	25	3	M8	9,5	0,21	275
4	1 1/2"	118	90	61	11,5	25	3	M8	9,5	0,23	275
5	2"	128	95	73	11,5	25	3	M8	9,5	0,25	275
6	2 1/2"	155	112	95	13,5	35	5	M10	11,5	0,7	500
7	3"	170	120	110	13,5	35	5	M10	11,5	0,8	500
8	4"	202	139	135	17,5	35	5	M10	11,5	1	650
8 a	5"	233	157	162	17,5	35	5	M12	13,5	1,1	650
9	6"	263	173	189	21,5	40	5	M12	13,5	1,5	900
10	8"	326	211	240	25,5	45	5	M16	17,5	2,1	900

APPLICATION: To support uninsulated pipes. Makes it possible to adjust rod length.

ORDER FORM:

- Name.
- Figure.
- Pipe diameter.

MATERIAL: Carbon steel.

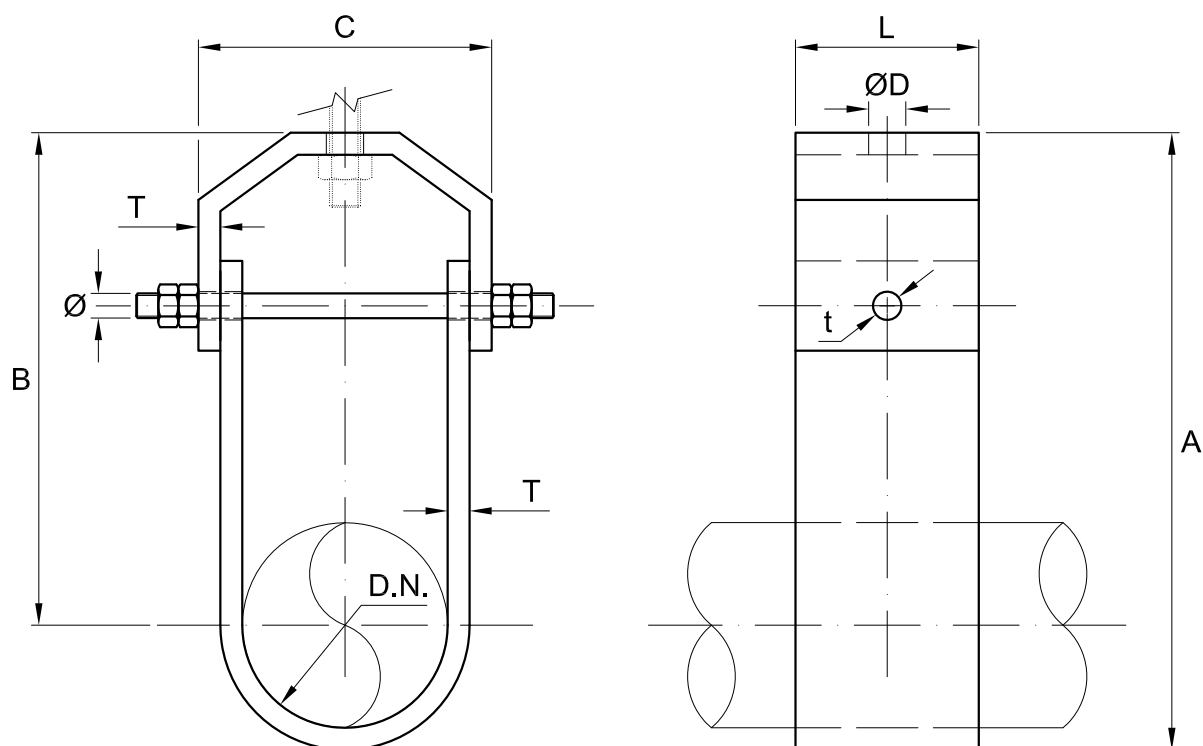
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LONG CLEVIS CLAMP

FIG.: 2222

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No.	D.N.	A (mm)	B (mm)	C (mm)	ØD (mm)	FLAT BAR		Ø (mm)	t (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
						L (mm)	T (mm)				
1	1/2"	125	111	34	11,5	25	3	M8	9,5	0,21	275
2	3/4"	142	125	39	11,5	25	3	M8	9,5	0,23	275
3	1"	149	129	46	11,5	25	3	M8	9,5	0,25	275
3 a	1 1/4"	159	134	55	11,5	25	3	M8	9,5	0,27	275
4	1 1/2"	168	140	61	11,5	25	3	M8	9,5	0,29	275
5	2"	228	195	73	11,5	25	3	M8	9,5	0,4	275
6	2 1/2"	255	212	95	13,5	35	5	M10	11,5	1	500
7	3"	270	220	110	13,5	35	5	M10	11,5	1,1	500
8	4"	302	239	135	17,5	35	5	M10	11,5	1,25	650
8 a	5"	333	257	162	17,5	35	5	M12	13,5	1,4	650
9	6"	363	273	189	21,5	40	5	M12	13,5	1,75	900
10	8"	426	311	240	25,5	45	5	M16	17,5	2,4	900

APPLICATION: To support insulated pipes. Makes it possible to adjust rod length.

ORDER FORM:

- Name.
- Figure.
- Pipe diameter.

MATERIAL: Carbon steel.

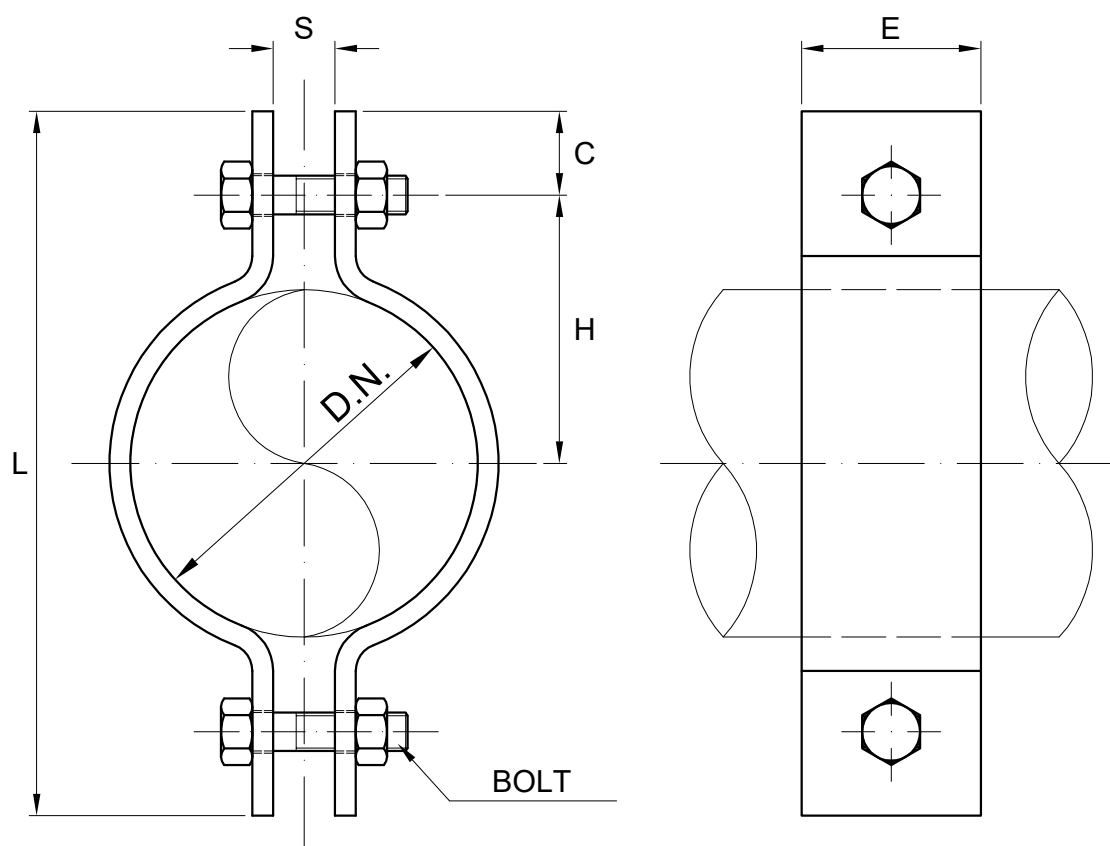
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TWO-BOLT CLAMP

FIG.: 2224

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APPLICATION: For supporting uninsulated piping. Also use on support pipe shoes.

ASSEMBLY: Hanged by forged eye nut and rod.

MANUFACTURE: Light series, normal series and heavy series. For loads above those considered, special series will be manufactured.

MATERIAL: Carbon steel, up to 380°C pipe temperature.
Alloy steel type 0.5Mo, for pipe temperature up to 500°C.
Alloy steel type 1Cr-0.5Mo, for pipe temperature up to 540°C.
Alloy steel type 2.25Cr-1Mo, for pipe temperature up to 575-600°C.
Can also be manufactured in stainless steel.

ORDER FORM:

- Name.
- Figure.
- Series.
- Pipe diameter.
- Temperature or pipe quality.

N.B.: Can be manufactured in other diameters, special or larger, than those indicated.

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TWO-BOLT CLAMP

FIG.: 2224 L

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LIGHT SERIES

No.	D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	BOLT	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	1/2"	13	30	86	25	15	M8	0,12	200
2	3/4"	13	33	92	25	15	M8	0,18	200
3	1"	13	36	98	30	15	M8	0,22	200
3 a	1 1/4"	13	40	106	30	15	M8	0,28	200
4	1 1/2"	16	45	122	30	15	M10	0,4	300
5	2"	16	51	134	30	15	M10	0,45	300
6	2 1/2"	19	62	162	40	20	M12	0,9	425
7	3"	19	70	178	40	20	M12	1,1	425
8	4"	25	85	220	50	25	M16	1,6	500
8 a	5"	25	100	250	50	25	M16	2	500
9	6"	25	118	286	50	25	M16	2,7	600
10	8"	25	144	338	50	25	M16	3,1	600
11	10"	32	182	428	60	25	M20	5,5	900
12	12"	32	208	480	60	25	M20	6,3	900
13	14"	32	232	528	70	25	M20	9,5	1200
14	16"	32	258	580	70	25	M20	10,5	1200
15	18"	32	284	632	80	25	M20	14	1300
16	20"	32	322	708	80	25	M20	19	1500
17	24"	38	375	826	100	30	M24	27	1650
18	26"	38	405	886	100	30	M24	30	1650
19	28"	38	430	936	100	30	M24	31	1650
20	30"	38	470	1016	100	30	M24	44	1800
21	32"	38	500	1076	100	30	M24	47	1800
22	34"	38	520	1116	100	30	M24	55	1800
23	36"	38	550	1176	100	30	M24	61	1800

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NORMAL SERIES

No.	D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	BOLT	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	1/2"	13	34	94	30	15	M8	0,2	250
2	3/4"	13	36	98	30	15	M8	0,3	250
3	1"	16	39	110	30	15	M10	0,5	350
3 a	1 1/4"	16	43	118	30	15	M10	0,6	350
4	1 1/2"	19	47	132	60	20	M12	1	550
5	2"	19	53	144	60	20	M12	1,1	550
6	2 1/2"	25	63	176	60	25	M16	1,5	800
7	3"	25	71	192	60	25	M16	1,7	800
8	4"	32	90	244	60	25	M20	3	1000
8 a	5"	32	103	270	60	25	M20	3,5	1000
9	6"	32	130	324	80	25	M20	5,5	1200
10	8"	32	160	384	80	25	M20	6,7	1450
11	10"	32	190	444	80	30	M20	9,5	1450
12	12"	32	215	494	80	30	M20	10,5	1650
13	14"	32	245	554	100	30	M20	17,5	1650
14	16"	32	270	604	100	30	M20	19	1650
15	18"	38	298	672	100	30	M24	22	1875
16	20"	38	325	726	100	30	M24	24	1875
17	24"	38	395	866	100	30	M24	38	2300
18	26"	38	425	926	100	30	M24	41	2300
19	28"	38	450	976	100	30	M24	43	2300
20	30"	47	485	1064	150	30	M30	70	2750
21	32"	47	510	1114	150	30	M30	74	2750
22	34"	47	535	1164	150	30	M30	95	3500
23	36"	47	560	1214	150	30	M30	100	3500

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HEAVY SERIES

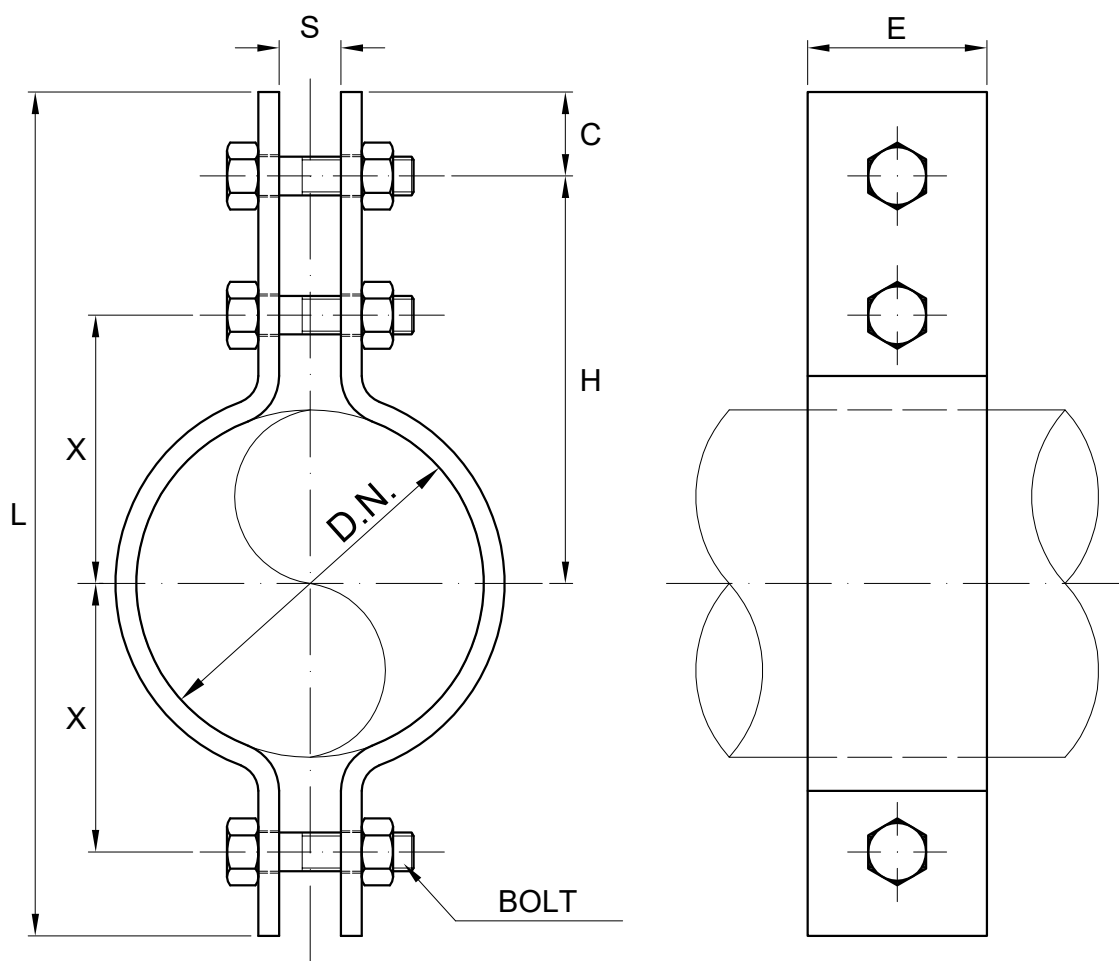
No.	D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	BOLT	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	3"	32	81	226	60	30	M20	3	1350
2	4"	38	105	286	80	30	M24	5,5	2000
2 a	5"	38	120	316	80	30	M24	6	2000
3	6"	38	135	346	80	30	M24	7,5	2500
4	8"	38	180	436	100	30	M24	13,5	2800
5	10"	38	205	486	100	30	M24	15,5	2800
6	12"	47	260	614	100	30	M30	26	3300
7	14"	47	275	644	100	30	M30	28	3300
8	16"	47	300	694	100	30	M30	30	3300
9	18"	47	330	754	150	30	M30	48	3750
10	20"	47	355	804	150	30	M30	51	3750
11	24"	47	435	964	150	30	M30	71	4400
12	26"	47	470	1034	150	30	M30	78	4400
13	28"	47	485	1064	150	30	M30	82	4400
14	30"	47	510	1114	150	30	M30	89	4400
15	32"	47	535	1164	150	30	M30	93	4400
16	34"	47	545	1184	180	30	M30	115	6250
17	36"	47	560	1214	180	30	M30	142	6250

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THREE-BOLT CLAMP

FIG.: 2229

SECTION A
16



APPLICATION: For hanging insulated piping.

ASSEMBLY: Hang by forged eye nut and rod.

MANUFACTURE: Light series, normal series and heavy series. For loads above those considered, special series will be manufactured.

MATERIAL: Carbon Steel, up to 380°C pipe temperature.
Alloy steel type 0.5Mo, for pipe temperature up to 500°C.
Alloy steel type 1Cr-0.5Mo, for pipe temperature up to 540°C.
Alloy steel type 2.25Cr-1Mo, for pipe temperature up to 575-600°C.
Can also be manufactured in stainless steel.

ORDER FORM:

- Name.
- Figure.
- Series.
- Pipe diameter.
- Insulation thickness or "H" dimension, if required larger.
- Temperature or pipe quality.

N.B.: Can be manufactured in other diameters, special or larger, than those indicated. In the case of higher operating loads than those appearing in the standard clamps on the following sheets, the following should be indicated: pipe diameter, operating temperature, insulation thickness (if applicable) and operating load.

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LIGHT SERIES

No.	D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	X (mm)	BOLT	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	1/2"	13	59	114	25	15	29	M8	0,25	300
2	3/4"	13	62	120	25	15	32	M8	0,3	300
3	1"	16	69	137	30	15	36	M10	0,4	350
3 a	1 1/4"	16	73	145	30	15	40	M10	0,5	350
4	1 1/2"	19	90	178	30	20	50	M12	0,8	500
5	2"	19	96	190	30	20	56	M12	0,9	500
6	2 1/2"	25	108	223	50	25	65	M16	1,8	650
7	3"	25	117	241	50	25	74	M16	2,1	650
8	4"	25	128	263	50	25	85	M16	2,3	650
8 a	5"	25	143	293	50	25	100	M16	2,5	650
9	6"	25	161	329	60	25	118	M16	4,2	800
10	8"	32	207	426	60	25	155	M20	5,8	1000
11	10"	32	242	496	70	25	190	M20	9,5	1200
12	12"	32	265	542	70	25	213	M20	10,5	1200
13	14"	38	304	624	80	30	244	M24	16,5	1650
14	16"	38	332	680	80	30	272	M24	18	1650
15	18"	38	357	730	100	30	297	M24	24	2000
16	20"	38	385	786	100	30	325	M24	26	2000
17	24"	38	450	911	100	30	385	M24	39	2000
18	26"	38	470	951	120	30	405	M24	48	2250
19	28"	38	510	1036	120	30	450	M24	53	2250
20	30"	38	560	1111	120	30	475	M24	57	2250
21	32"	38	590	1171	120	30	505	M24	61	2250
22	34"	38	615	1221	150	30	530	M24	80	2250
23	36"	38	650	1276	150	30	550	M24	83	2250

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THREE-BOLT CLAMP

FIG.: 2229 N

SECTION A
18

NORMAL SERIES

No.	D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	X (mm)	BOLT	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	1/2"	16	67	133	30	15	34	M10	0,5	400
2	3/4"	16	71	141	30	15	38	M10	0,6	400
3	1"	16	74	147	30	15	41	M10	0,7	400
3 a	1 1/4"	16	76	151	30	15	43	M10	0,8	400
4	1 1/2"	25	89	189	60	25	50	M16	1,7	800
5	2"	25	105	211	60	25	56	M16	2	800
6	2 1/2"	32	126	265	60	25	75	M20	3,2	1250
7	3"	32	135	282	60	25	83	M20	3,5	1250
8	4"	32	146	305	60	25	95	M20	3,7	1250
8 a	5"	32	160	332	60	25	108	M20	4,2	1250
9	6"	32	195	406	80	25	135	M20	8,5	1750
10	8"	32	220	456	80	25	160	M20	9,5	1750
11	10"	38	265	546	100	30	205	M24	17	2500
12	12"	38	290	596	100	30	230	M24	19	2500
13	14"	38	330	676	100	30	270	M24	28	2850
14	16"	38	355	726	100	30	295	M24	30	2850
15	18"	38	380	776	100	30	320	M24	33	2850
16	20"	47	435	884	150	30	355	M30	56	3250
17	24"	47	485	984	150	30	405	M30	63	3250
18	26"	47	505	1024	150	30	425	M30	66	3250
19	28"	47	535	1084	150	30	455	M30	71	3250
20	30"	47	588	1192	150	30	510	M30	95	4250
21	32"	47	613	1242	150	30	535	M30	99	4250
21	34"	47	655	1294	150	30	545	M30	102	4250
21	36"	47	670	1324	150	30	560	M30	107	4250

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HEAVY SERIES

No.	D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	X (mm)	BOLT	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	3"	38	155	326	80	30	95	M24	7,3	2500
2	4"	38	168	352	80	30	108	M24	7,8	2500
2 a	5"	38	185	386	80	30	125	M24	8,5	2500
3	6"	47	233	482	100	30	155	M30	15	3500
4	8"	47	263	542	100	30	185	M30	17	3500
5	10"	47	313	642	100	42	235	M30	26	5000
6	12"	47	338	692	100	42	260	M30	28	5000
7	14"	56	370	762	150	42	280	M36	52	5700
8	16"	56	395	812	150	42	305	M36	56	5700
9	18"	56	450	922	150	42	360	M36	75	5700
10	20"	56	480	982	150	42	390	M36	80	6000
11	24"	56	530	1082	180	42	440	M36	105	6500
12	26"	56	550	1122	180	42	460	M36	108	6500
13	28"	56	580	1182	180	42	490	M36	115	6500
14	30"	67	635	1294	180	48	525	M42	149	8500
15	32"	67	660	1344	180	48	550	M42	155	8500
16	34"	67	685	1394	180	48	575	M42	158	8500
17	36"	67	710	1444	180	48	600	M42	163	8500

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PIPE INSULATION THICKNESS FOR THREE BOLT CLAMPS. LOADS CORRECTOR FACTOR

SECTION A
20

1.- MAXIMUM RECOMMENDED INSULATION THICKNESSES FOR THREE BOLT CLAMPS, ACCORDING TO "H" DIMENSION INDICATED IN PREVIOUS SHEETS.

INSULATION IN mm.

D.N.	FIG. 2229-L	FIG. 2229-N	FIG. 2229-H
1/2" - 3/4"	40	40	-
1" - 1 1/4"	45	45	-
1 1/2" - 2"	50	50	-
2 1/2"	55	65	-
3" - 4"	55	65	75
5"	55	65	80
6"	60	80	110
8"	70	80	110
10"	75	100	125
12"	80	100	125
14" - 16"	100	120	140
18" - 20"	100	120	170
24" - 28"	120	120	170
30" - 32"	150	150	170

FOR LARGER INSULATION THICKNESSES, "H" DIMENSION
MUST BE INCREASED IN THE SAME PROPORTION.

THE ORDER SHALL ADVISE SPECIAL "H" DIMENSION AS FOLLOWS:

EXAMPLE: FIG.2229, NORMAL SERIES, Ø6": H=220mm.
(FOR INSULATION UP TO 105mm.)

2.- LOAD CORRECTION FACTORS FOR CLAMPS, TEMPERATURE-DEPENDENT.

TEMP. MATERIAL	<300°C	350°C	390°C	450°C	500°C	540°C	575°C	600°C
CARBON STEEL	1	0,85	0,70	-	-	-	-	-
ALLOY STEEL (0.5Mo)	-	-	1	0,80	0,60	-	-	-
ALLOY STEEL (1Cr-0.5Mo)	-	-	1	0,90	0,80	0,60	-	-
ALLOY STEEL (2.25Cr-1Mo)	-	-	-	-	-	-	0,55	-
STAINLESS STEEL (TP-304)	1	1	1	0,90	0,85	0,80	0,70	0,55
STAINLESS STEEL (TP-316)	1	1	1	1	0,95	0,90	0,85	0,70

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APPLICATION: To support stretches of vertical piping, doing away with the use of lugs.

TYPES:

"TYPE 1".- Manufactured with four equal bolts, two external and two internal.

"TYPE 2".- Manufactured with six bolts, two external and four internal.

"TYPE 3".- The same manufacture as with Type 2, but reinforced with gussets.

SELECTION METHOD: According to the illustration on the following page.

1º.- Once the diameter of the piping and the distance between axes on the external bolts (dimension A) is known, determine its point of insertion, using the lower part of the illustration.

2º.- Having determined this point of intersection, trace a vertical line upwards until making it meet a horizontal line traced by required load. The point of intersection of both lines will give us the appropriate dimension of the bar. If this bar falls between two bar values, the higher of the two is chosen.

3º.- Going off this last point and once having determined the bar, a horizontal line will be traced until finding the scale of dimensions for the bolts, the appropriate bolt diameter being the intersection with said scale. In the event of this point of intersection falling between two measurements, the higher of the two is chosen.

ORDER FORM:

- Name.
- Figure.
- Pipe diameter.
- Distance between axes on the external bolts (Level A).
- Load.
- Temperature or pipe quality.

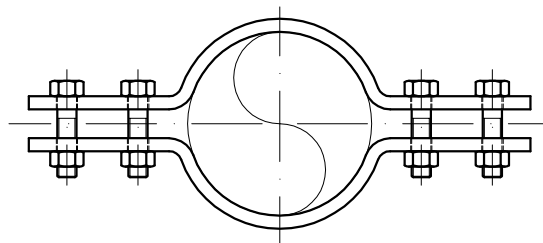
N.B.:

STANDARDIZATION:

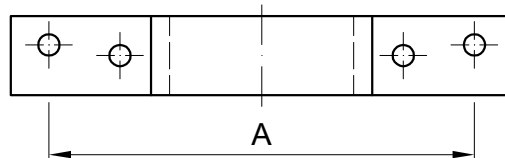
On sheets A-23 and A-24, we have included a standardization of these clamps for different diameters, loads and assembly distances. In the case of alloy steel clamps, the same load correction factors, indicated on sheet A-20, for high temperatures, are to be used.

LUGS TO BE WELDED TO THE PIPE FOR ASSEMBLY:

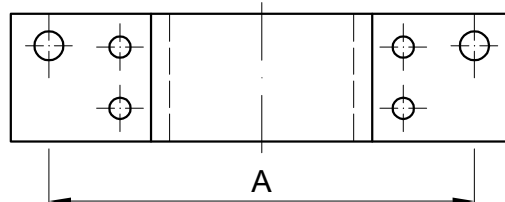
4 lugs will be welded to the pipe to support on the clamp and avoid the pipe hanging loose.



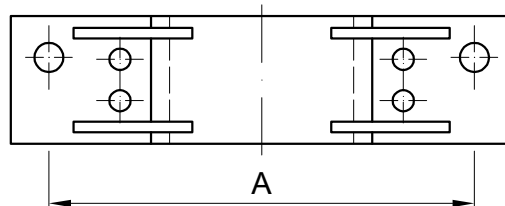
TYPE 1



TYPE 2

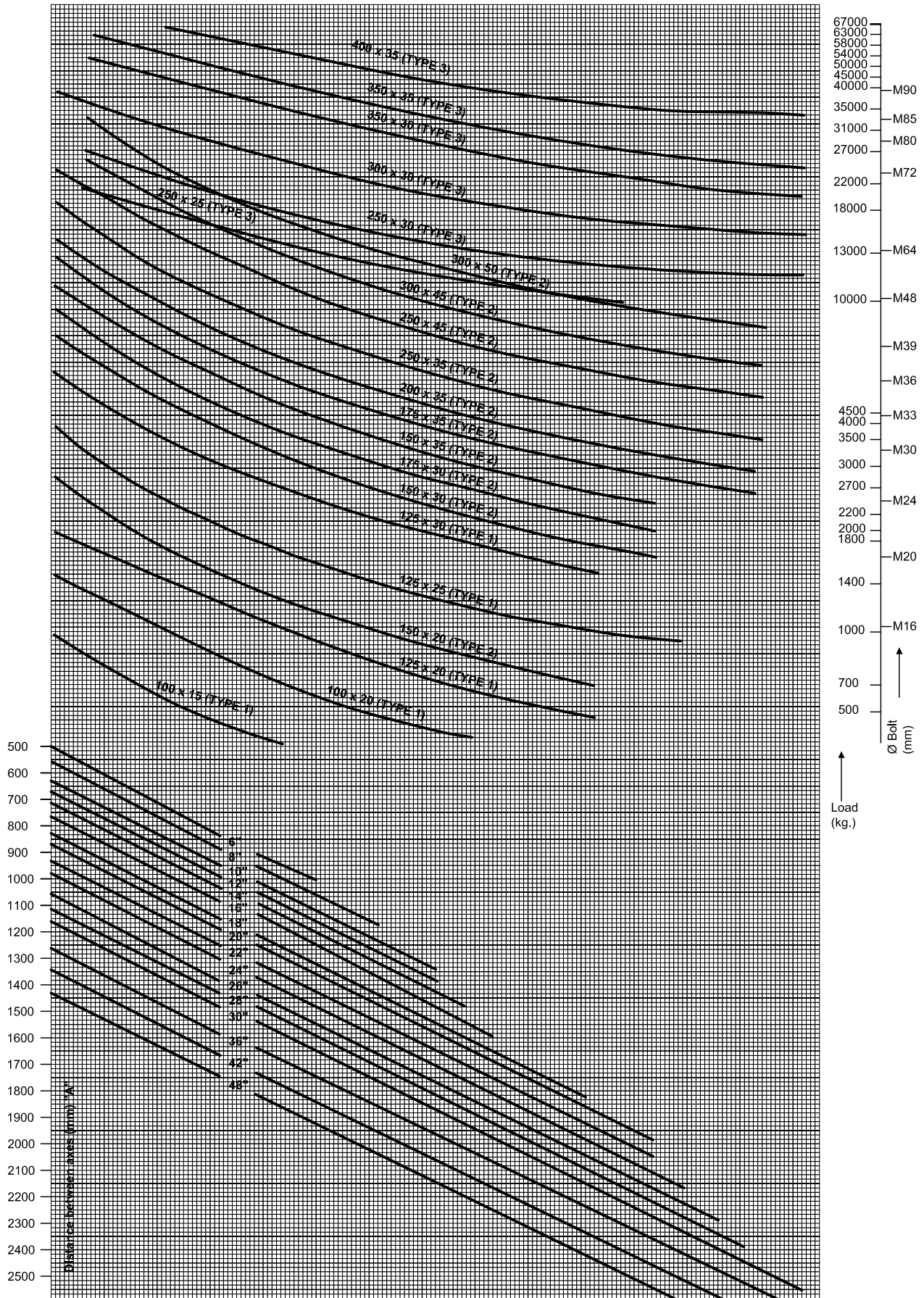


TYPE 3



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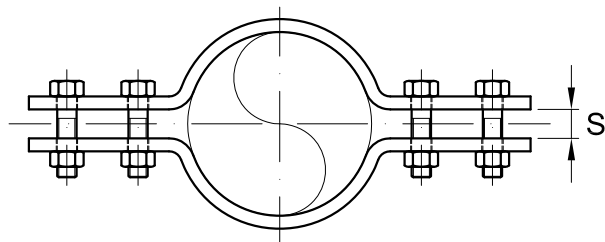
FIG. 2240 GRAPH I Rev.2



RISER CLAMP

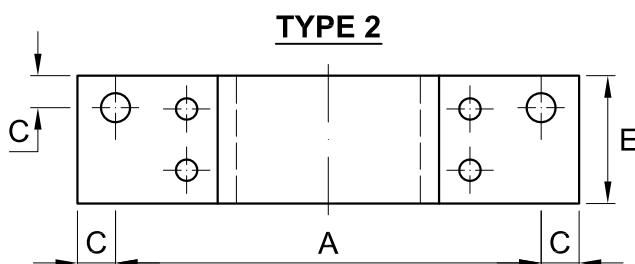
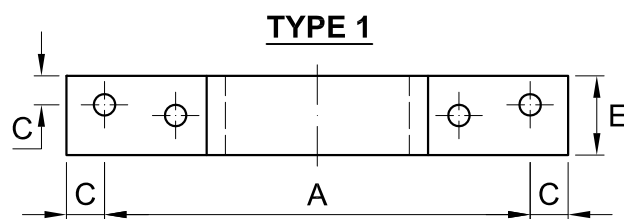
FIG.: 2240

SECTION A
23



MATERIAL:

- Carbon steel for temperatures up to 380°C.
- Alloy steels for temperatures up to 575°C-600°C.
- Can be manufactured in stainless steel.



SIZE	TYPE	C (mm)	E (mm)	S (mm)	BOLT	WEIGHT MIN. "A" (Kg)	MAX. REC. LOAD FOR "A" (Kg)				
							300	450	600	750	900
3" - 01	1	19	80	20	M12	5,1	550	400	300	225	-
3" - 02	1	25	100	25	M16	7,5	1050	775	525	350	-
3" - 03	1	32	100	25	M20	18,5	-	1450	1000	800	-
3" - 04	2	32	150	30	M20	27	-	2700	1775	1400	1150
4" - 05	1	19	80	20	M12	6,2	670	485	375	275	-
4" - 06	1	25	100	25	M16	13,5	-	1050	725	475	-
4" - 07	1	32	125	30	M20	23	-	2100	1550	1250	900
4" - 08	2	32	150	30	M20	27,5	-	2950	2000	1550	1200

SIZE	TYPE	C (mm)	E (mm)	S (mm)	BOLT	WEIGHT MIN. "A" (Kg)	MAX. REC. LOAD FOR "A" (Kg)				
							450	600	750	900	1050
6" - 09	1	19	100	20	M12	11	975	650	425	300	-
6" - 10	1	25	100	25	M16	14	1250	825	550	400	-
6" - 11	1	32	125	30	M20	30	-	1700	1300	1000	750
6" - 12	2	38	150	30	M24	45	-	3750	2950	2400	2025
8" - 13	1	25	100	25	M16	14,5	1400	900	650	425	-
8" - 14	1	32	100	30	M20	25	-	1400	1000	800	600
8" - 15	2	38	150	30	M24	38	-	2500	1750	1400	1100
8" - 16	2	38	150	30	M24	47	-	4550	3250	2550	2150

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RISER CLAMP

FIG.: 2240

SECTION A
24

SIZE	TYPE	C (mm)	E (mm)	S (mm)	BOLT	WEIGHT MIN. "A" (Kg)	MAX. REC. LOAD FOR "A" (Kg)				
							600	750	900	1050	1200
10" - 17	1	25	100	25	M16	19	1000	725	500	-	-
10" - 18	1	32	125	30	M20	32	2050	1550	1300	950	-
10" - 19	2	38	150	30	M24	49	5000	3250	2550	2100	-
10" - 20	2	47	200	40	M30	78	-	6100	5000	3750	3000
12" - 21	1	25	100	25	M16	20	1200	825	550	450	-
12" - 22	2	32	150	30	M20	47	-	2150	1700	1300	1000
12" - 23	2	38	150	30	M24	60	-	3750	3000	2500	2000
12" - 24	2	47	200	40	M30	81	-	7250	5300	3900	3200

SIZE	TYPE	C (mm)	E (mm)	S (mm)	BOLT	WEIGHT MIN. "A" (Kg)	MAX. REC. LOAD FOR "A" (Kg)				
							750	900	1050	1200	1350
14" - 25	1	32	100	30	M20	32	1300	1000	775	575	-
14" - 26	2	38	150	30	M24	61	4000	3300	2650	2150	1800
14" - 27	2	47	200	40	M30	113	-	6000	5100	4000	3300
16" - 28	1	32	125	30	M20	41	1900	1600	1250	925	-
16" - 29	2	38	150	30	M24	71	-	3900	3000	2300	2000
16" - 30	2	56	200	42	M36	133	-	10000	8100	6450	5000

SIZE	TYPE	C (mm)	E (mm)	S (mm)	BOLT	WEIGHT MIN. "A" (Kg)	MAX. REC. LOAD FOR "A" (Kg)				
							900	1050	1200	1350	1500
18" - 31	2	38	150	30	M24	59	2200	1600	1300	1050	-
18" - 32	2	47	200	40	M30	98	7100	5150	3750	3000	2600
18" - 33	2	56	200	42	M36	138	-	8700	6650	5500	4450
20" - 34	2	38	150	30	M24	61	2400	1700	1350	1100	900
20" - 35	2	47	200	40	M30	113	-	6100	4600	3850	3300
20" - 36	2	56	250	42	M36	193	-	11000	8900	7350	6000
24" - 37	2	38	175	30	M24	82	-	2750	2150	1700	1350
24" - 38	2	47	200	40	M30	118	-	7350	5500	4300	3750
24" - 39	2	56	250	42	M36	222	-	-	10750	8400	6850

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THREADED RODS

**FIG.: 2321
2322 Y 2323**

**SECTION A
25**

FIG. 2321

Total right threaded

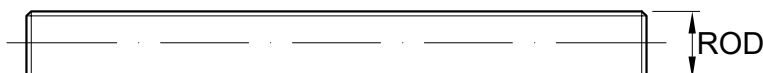


FIG. 2322

Right right threaded

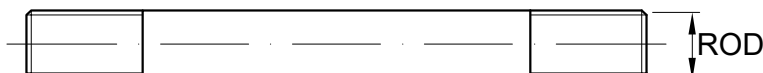
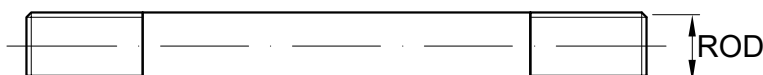


FIG. 2323

Right left threaded



No.	ROD	WEIGHT (Kg/m)	MAX. REC. LOAD (Kg)
1	M12	0,75	575
2	M16	1,35	1200
3	M20	2,1	1800
4	M24	3	2500
5	M30	4,75	4100
6	M36	8,15	6500
7	M42	11	8500
8	M48	14,4	11000
9	M56	19,7	15000
10	M64	25,75	20000
11	M72	34,5	26000
12	M80	40	30000
13	M90	51	35000
14	M100	62	45000

APPLICATION: To hang the piping, coupled to the forged eye nut, to a forged clevis, turnbuckles, couplings or alternatively against drilled plates. When the assembly height of the hanger requires the use of a rod longer than 2000 mm, this is normally replaced by two rods connected by a coupling or turnbuckle.

STANDARD SUPPLY:

- FOR FIG. 2321 y 2322:

We recommend rod lengths from 200 mm to 2000 mm, with 50 mm extensions.

- FOR FIG. 2323:

We recommend rod lengths from 250 mm to 2000 mm, with standard measurements of 250-500-1000-1500-2000 mm.

THREADED LENGTH (Fig. 2322 and 2323):

- ROD ≤ 500 mm:

The length of the thread will be 200 mm (or as long as possible) in each end.

- 500 mm < ROD ≤ 2000 mm:

Depending on the metric, there are two possibilities:

- * M12 to M48: threaded length of 250 mm in each end.
- * M56 to M100: threaded length of 300 mm in each end.

N.B.: For Fig. 2321 and with a metric the same as or larger than M42, the rod manufactured shall have a maximum length of 1000 mm. Note that several threaded rods can be connected directly with rod couplings until reaching the required length.

MANUFACTURE: On request, can be supplied with any rod length and threaded length (within the limitations of materials) and likewise with special threads and pitches.

ORDER FORM:

- Name.
- Figure.
- Metric.
- Length.

MATERIAL: Carbon steel. Can be manufactured in other qualities, on request.

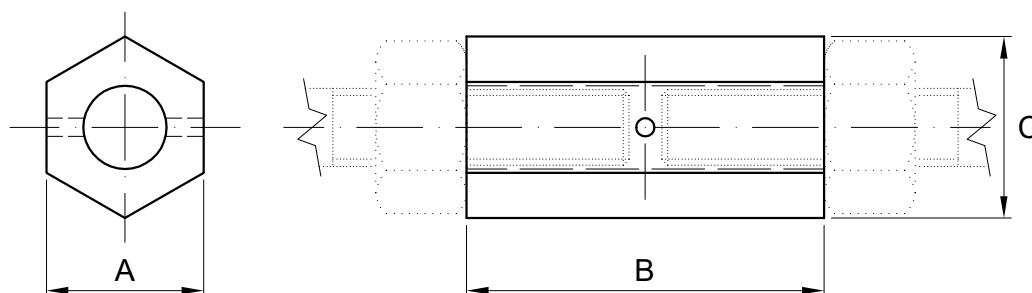
2	15/09/11	GENERAL REVISION	DDG	EAR
1	05/01/96	INFORMATION	JMD	EAR
0	21/09/81	INFORMATION	JRS	EAR
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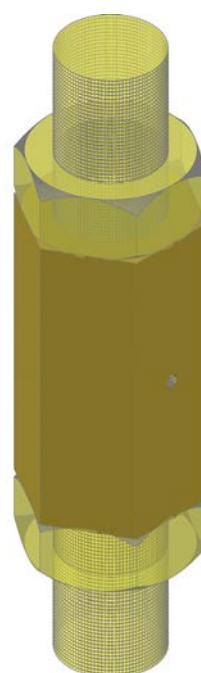
ROD COUPLING

FIG.: 2330

SECTION A
26



No.	Associated ROD	A (mm)	B (mm)	C (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	19	35	22	0,07	575
2	M16	24	45	28	0,15	1200
3	M20	30	60	35	0,3	1800
4	M24	36	75	42	0,5	2500
5	M30	46	90	53	1	4100
6	M36	55	110	61	1,7	6500
7	M42	65	120	75	2,5	8500
8	M48	75	125	87	3,5	11000
9	M56	85	150	98	6	15000
10	M64	95	170	110	8,5	20000



APPLICATION: To join and connect hanging rods. Used on long, rigid hangers not requiring adjustment. Always used on hangers with springs (if the installation length makes it necessary).

MANUFACTURE: Right threaded on both ends. They can be manufactured on request with special threads or pitches.

ORDER FORM:

- Name.
- Figure.
- Metric.

MATERIAL: Carbon steel. Can be manufactured in other qualities, on request.

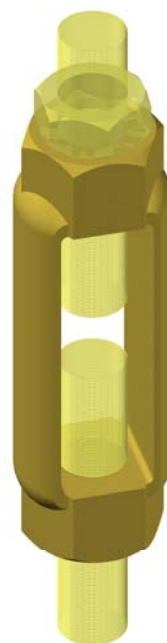
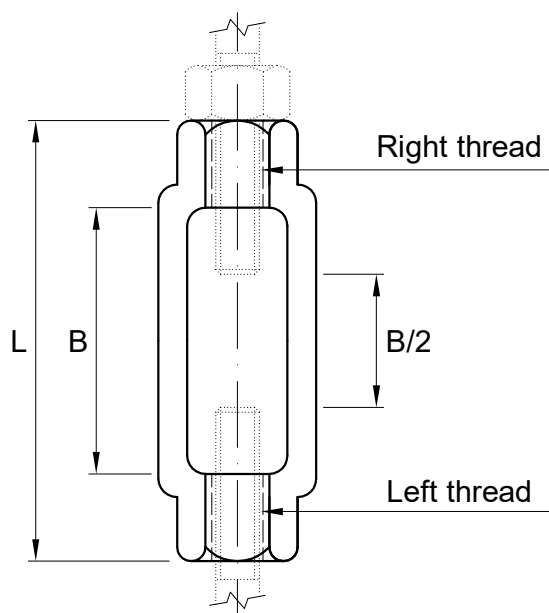
1	15/09/11	GENERAL REVISION	DDG	EAR
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FORGED TURNBUCKLE

FIG.: 2331

SECTION A
27



No.	Associated ROD	B (mm)	L (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	110	150	0,5	575
2	M16				1200
3	M20	110	170	1,5	1800
4	M24				2500
5	M30	150	230	3,5	4100
6	M36				6500
7	M42	150	250	7	8500
8	M48				11000
9	M56	150	280	11	15000
10	M64				20000
11	M72	165	360	30	26000
12	M80				30000
13	M90				35000
14	M100				45000

APPLICATION: To connect hanging rods and adjust the length of the assembly. Used on long, rigid hangers requiring adjustment. Two turnbuckles should not be assembled under any circumstance on the same rigid hanger, nor one turnbuckle on one spring hanger since the spring unit includes one (use coupling instead).

MANUFACTURE: Right threaded at one end and left threaded at the other. They can be manufactured on request with special threads or pitches.

ORDER FORM:

- Name.
- Figure.
- Metric.

MATERIAL: Carbon steel. In exceptional circumstances, it can be manufactured in other qualities, on request (subject to a minimum order quantity).

N.B.: The forged turnbuckle can withstand operating loads of up to 75% higher than indicated here, without taking into account the influence of the rod or any other hanging element.

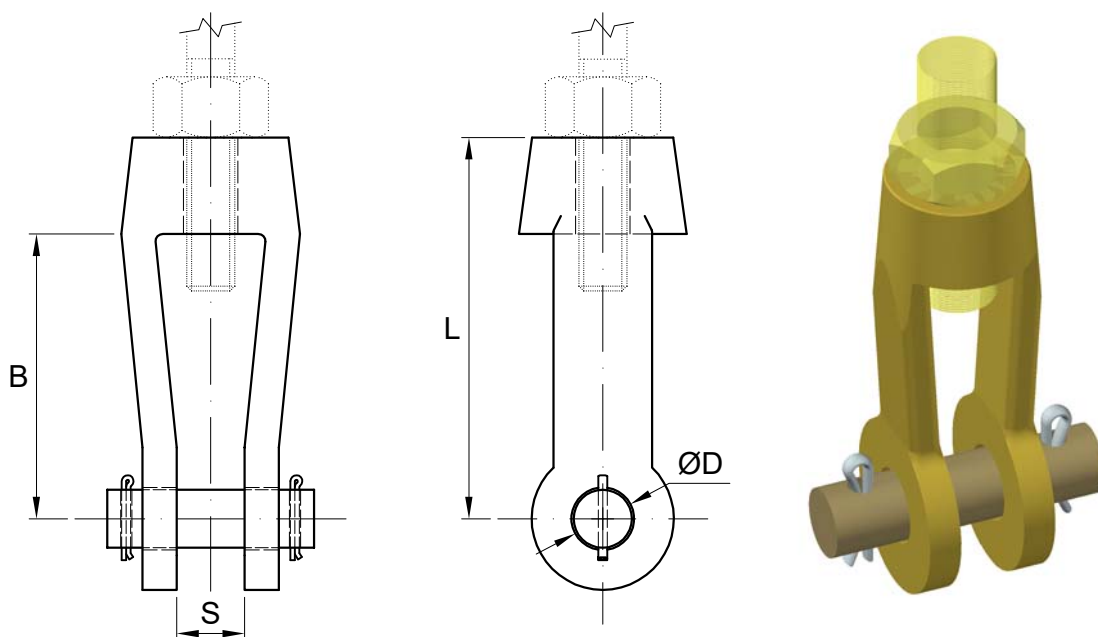
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FORGED CLEVIS

FIG.: 2332

SECTION A
28



No.	Associated ROD	B (mm)	L (mm)	S (mm)	ØD (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	93	113	15	12	0,8	575
2	M16				15		1200
3	M20	120	146	22	20	1,6	1800
4	M24				25		2500
5	M30	125	161	28	30	3,5	4100
6	M36	150	195	31	35	5	6500
7	M42	175	230	48	40	12	8500
8	M48				45		11000
9	M56	200	275	60	50	18	15000
10	M64				55		20000
11	M72				65		26000
12	M80	250	350	70	70	45	30000
13	M90				80		35000
14	M100				90		45000

APPLICATION: Connection between rod and lug.

MANUFACTURE: Right threaded on metric sizes as a standard. Can be manufactured on request with left thread or special pitches.

ORDER FORM:

- Name.
- Figure.
- Mtric.
- Thread Direction.

MATERIAL: Carbon steel. In exceptional circumstances, it can be manufactured in other qualities, on request (subject to minimum order quantities).

N.B.: The forged clevis can withstand operating loads of up to 50% higher than the load above-mentioned, without taking into account the influence of the rod or any other hanging element.

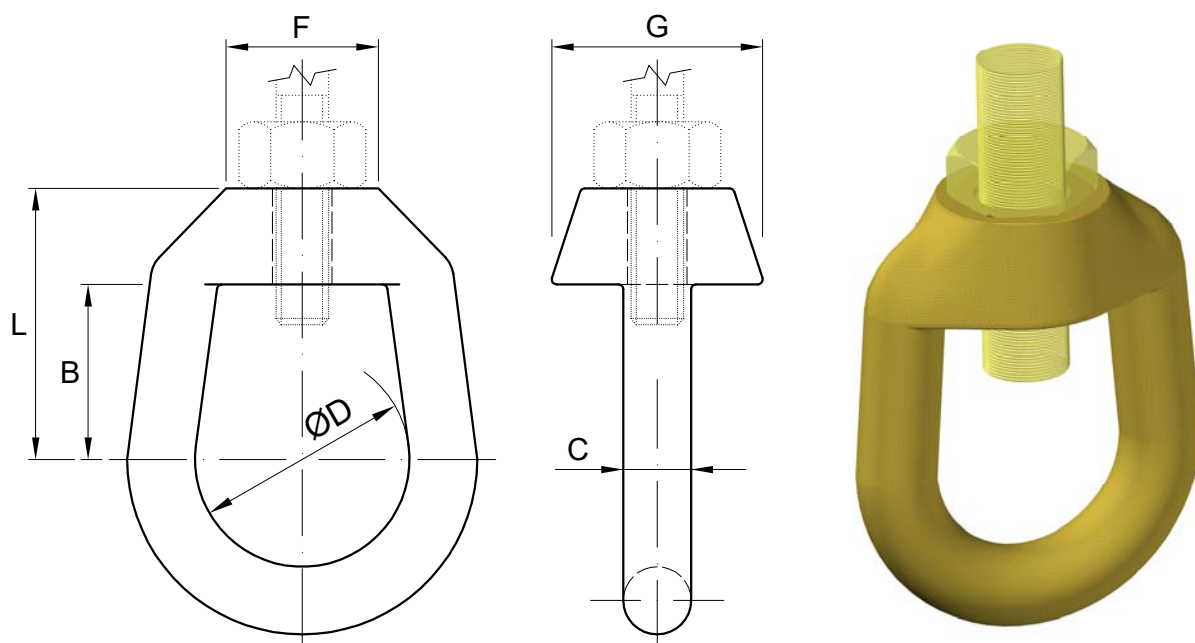
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FORGED EYE NUT

FIG.: 2333

SECTION A
29



No.	Associated ROD	B (mm)	C (mm)	ØD (mm)	F (mm)	G (mm)	L (mm)	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	M12	31	12	38	27	38	48	0,3	575
2	M16								1200
3	M20	41	20	50	45	50	66	1	1800
4	M24								2500
5	M30	54	25	62	55	62	85	2	4100
6	M36								6500
7	M42	95	32	80	75	80	140	5	8500
8	M48								11000
9	M56	108	38	100	95	100	165	8	15000
10	M64								20000

APPLICATION: Connection between rod and clamp or beam attachment.

MANUFACTURE: Right threaded on metric sizes as a standard supply. Left threaded as a common option for short rigid hangers where the eye nut connects to a right-left threaded rod in order to achieve adjustment. They can be manufactured on request with special pitches.

ORDER FORM:

- Name.
- Figure.
- Metric.
- (Left threaded if required as an option).

MATERIAL: Carbon steel. In exceptional circumstances, it can be manufactured in other qualities, on request (subject to minimum order quantities).

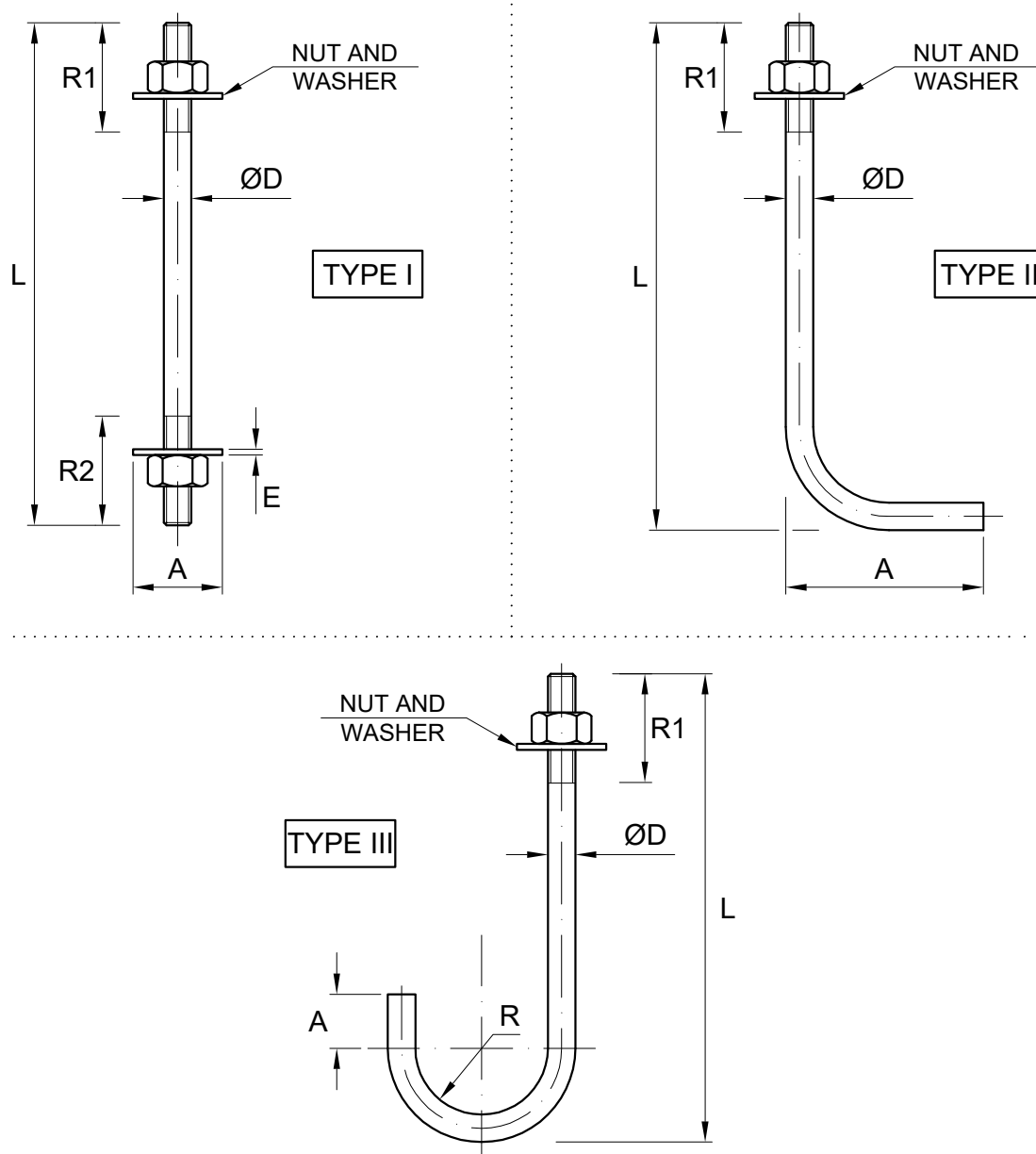
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ANCHOR BOLTS

FIG.: 2340

SECTION A
30



APPLICATION: To anchor plates or equipment to concrete (wall, floor or ceiling).

MANUFACTURE: Can be manufactured in any size and type of threaded, according to client drawings. Any other variation or type of anchor bolt can be manufactured on request.

ORDER FORM:

- Name.
- Figure.
- Type.
- Dimensions as per drawings.
- Quality of the material.

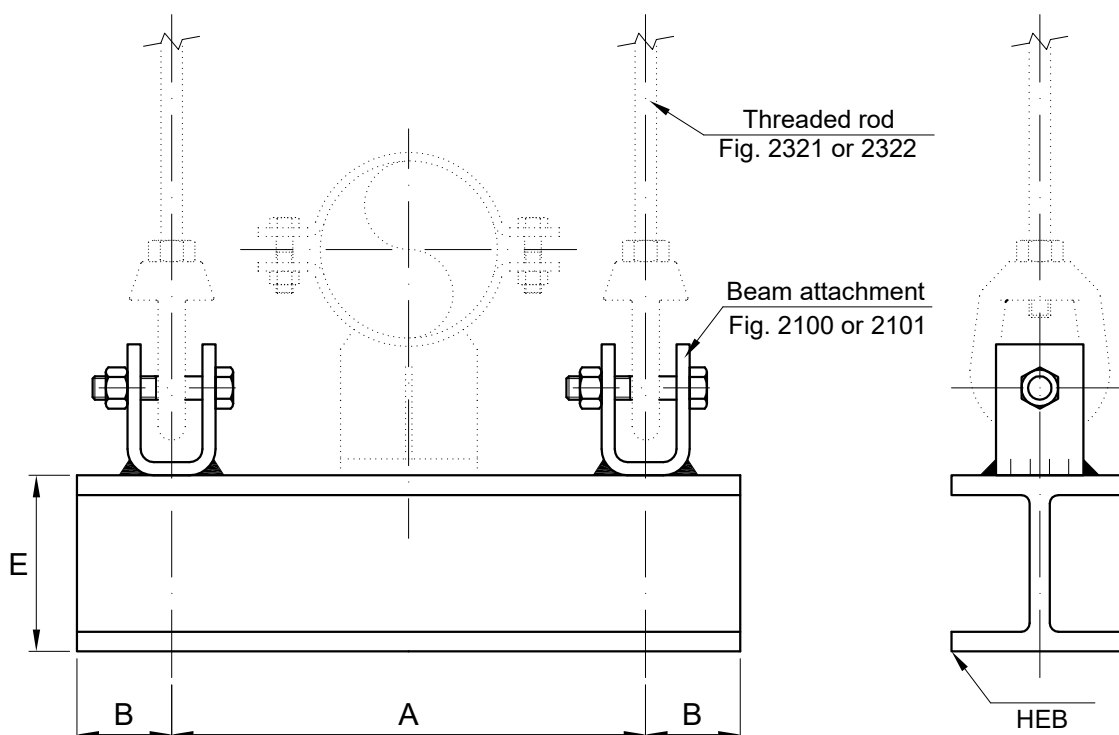
MATERIAL: Carbon steel. Can be manufactured in other qualities, on request.

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TRAPEZE

**FIG.: 2350
OPTION 1**

**SECTION A
31**



No.	E (mm)	MAX. REC. LOAD (Kg) DEPENDING ON "A"							
		300	500	750	1000	1250	1500	1750	2000
1	100	3500	3150	2300	1725	1450	1200	-	-
2	120	-	4500	3000	2450	2150	1850	1550	-
3	140	-	-	3500	3050	2400	2000	1650	-
4	160	-	-	4525	3900	3100	2650	2200	1850
5	200	-	-	-	7500	6600	5250	4500	4000
6	240	-	-	-	11750	10200	8750	7200	6550
7	300	-	-	-	21500	19500	16900	15250	14500

ASSOCIATED ROD	B
M12 / M16	40
M20 / M24	50
M30 / M36	60
M42 / M48	80
M56	100

APPLICATION: For double hangers. In general, they are used when it is not possible to hang above the pipe either due to the lack of space or due to interference.

MANUFACTURE: The size of the beam attachment will depend on the operating load and/or on the size of the spring, where this is the upper element.

ASSEMBLY: Connection to the rod by means of a forged eye nut.

ORDER FORM:

- Name.
- Figure.
- Size.
- "A" dimension.
- Hanging rod.

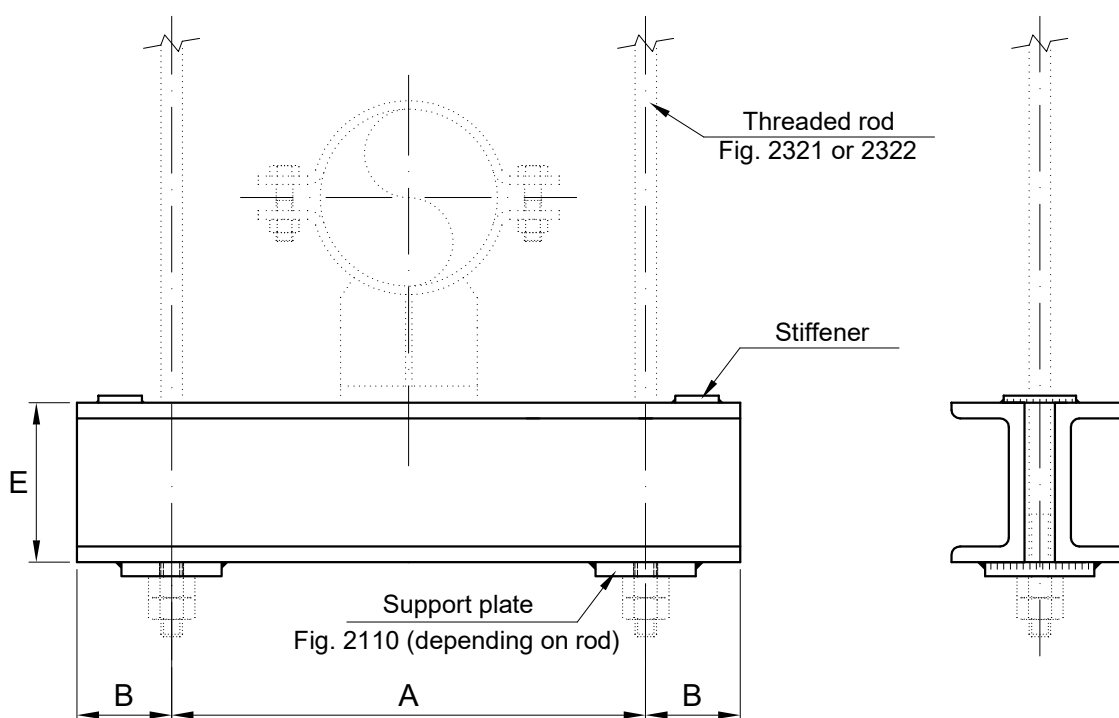
MATERIAL: Carbon steel.

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TRAPEZE

**FIG.: 2350
OPTION 2**

**SECTION A
32**



No.	E (mm)	MAX. REC. LOAD (Kg) DEPENDING ON "A"								WEIGHT FOR "A"=1000mm (Kg)	INCREASE IN WEIGHT FOR EACH "A"+100mm (Kg)
		300	500	750	1000	1250	1500	1750	2000		
1	80	2750	1950	1375	950	875	-	-	-	20	1,8
2	100	3750	3150	2150	1600	1350	1100	-	-	24,5	2,2
3	120	-	4250	2650	2275	2000	1750	-	-	31	2,7
4	160	-	-	3950	3400	2650	2250	1900	1600	45	3,8
5	200	-	-	-	5950	5150	4100	3500	3150	62	5,1
6	240	-	-	-	10500	9200	7850	6600	5900	84	6,7
7	300	-	-	-	16500	15250	12800	11500	10900	120	9,3

APPLICATION: For double hangers. In general, they are used when it is not possible to hang above the pipe, either due to the lack of space or due to interference. Can also be used as an intermediate beam on hangers.

ASSEMBLY: Connects with rod, support plate and nuts. The gap between the two UPN will be determined by the diameter of the rod.

ORDER FORM:

- Name.
- Figure.
- Size.
- "A" dimension.
- Hanging rod.

MATERIAL: Carbon steel.

ASSOCIATED ROD	B
M12 / M16	40
M20 / M24	50
M30 / M36	60
M42 / M48	80
M56	100

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