

SYSTEM OF SUPPORTS AND SUSPENSIONS FOR PIPELINES

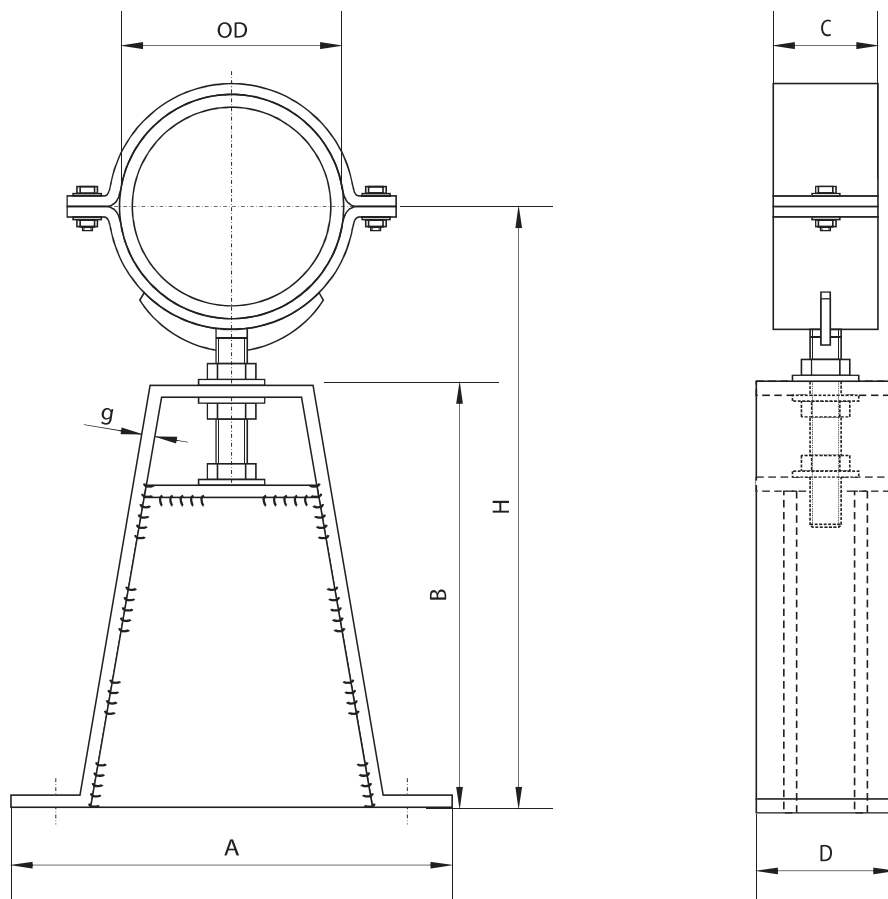
MODEL AR SUPPORTS WITH REGULATED HEIGHT

PATENTED

SUPPORTS
AND
SUSPENSIONS



Model AR supports are used to support all kinds of pipelines in a very large range of diameters and different materials. Simple box construction ensures high durability while limiting the weight of the support itself. Intervals between supports can go up to 9 meters, and in special uses even up to 12 meters. Weight of the support cannot be higher than 1.5 meters. Thanks to regulation of height there is also a possibility of finding desired slope of the pipe. Standard height regulation is +/- 75mm. Supports can be placed on all kinds of foundations or pedestals. Construction of the clip allows for thermal surround of the pipeline as thick as 60mm.

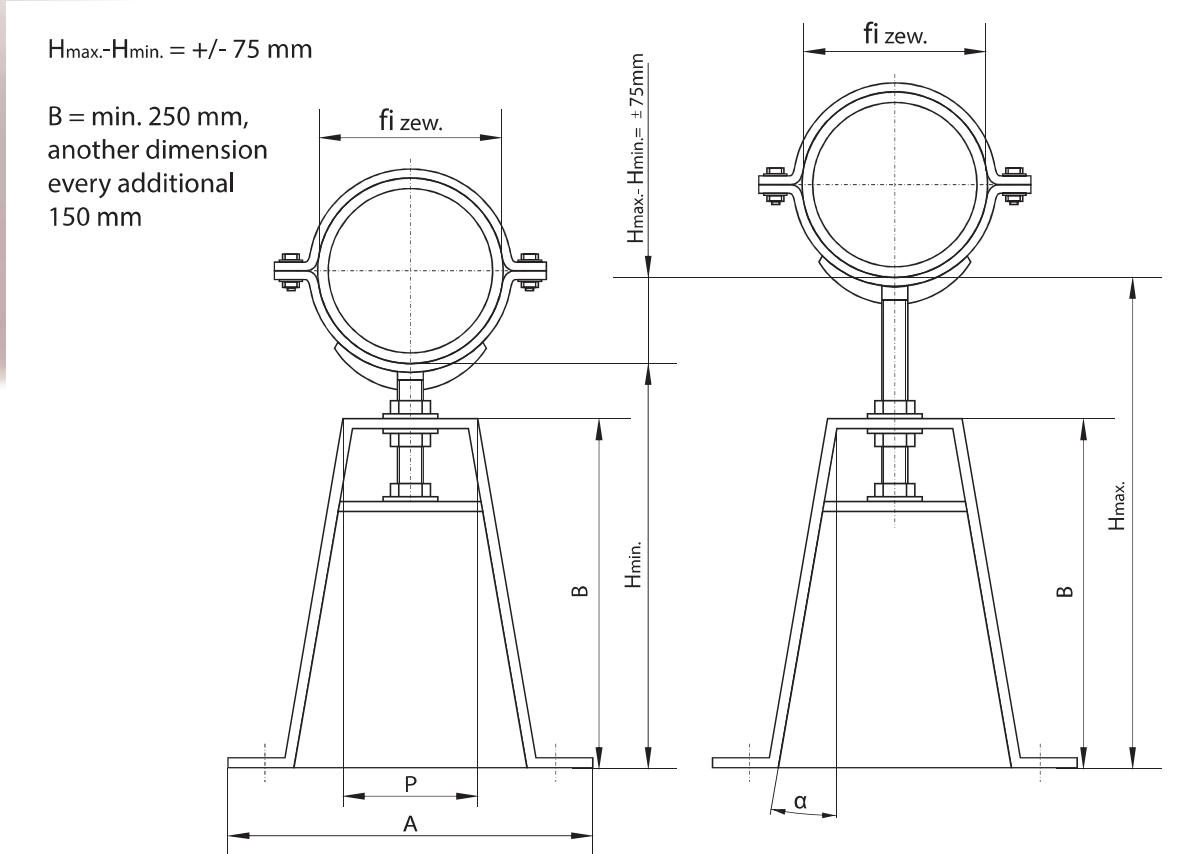


SYSTEM OF SUPPORTS AND SUSPENSIONS FOR PIPELINES

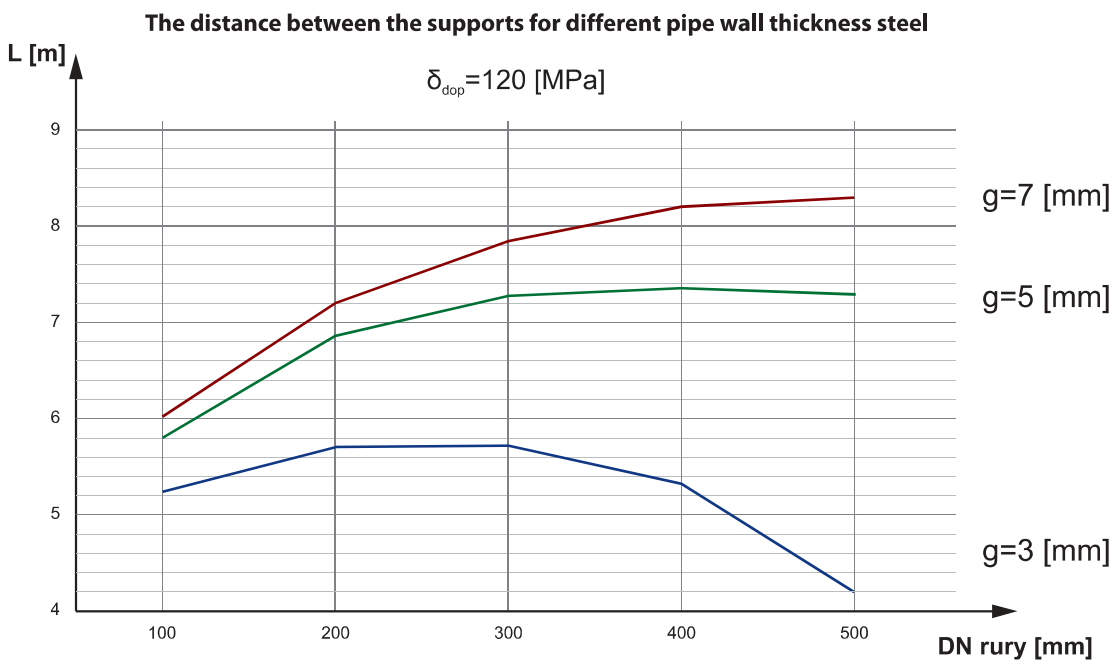


SUPPORTS
AND
SUSPENSIONS

System of supports allows for leading multiple pipelines as well. Special products allow leading the pipelines in a form of supports, suspensions or a combination of these two. Upper part of the clip can be laced with polyethylene, rubber or anything else such as thermal insulation for cryogenic installations. Suspensions are usually made of galvanized or stainless steel.



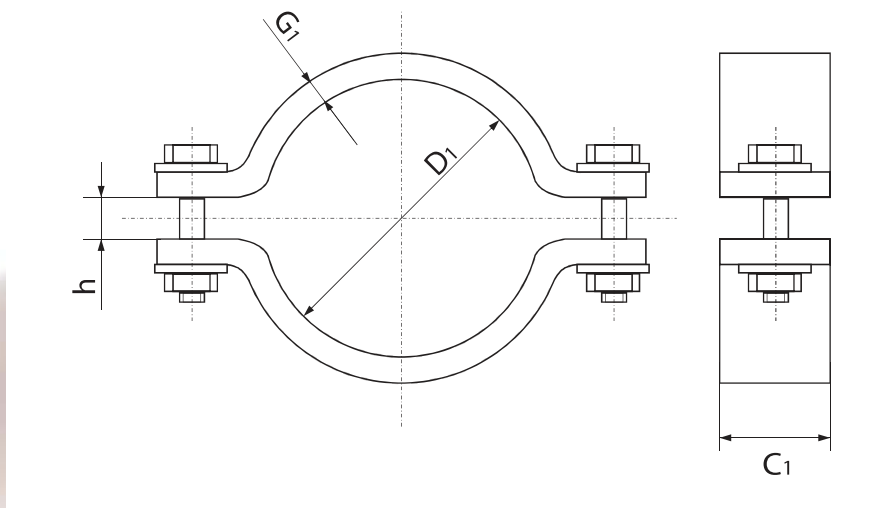
Supports for low parameter pipelines.



SYSTEM OF SUPPORTS AND SUSPENSIONS FOR PIPELINES



SUPPORTS AND SUSPENSIONS



Sizes of clips for steel pipes

D_1 = outer diameter of the pipe

$C_1 = D_1 \times 0.4$

$h = D_1 \times 0.1$

$G_1 = D_1 \times 0.01 \div 0.02$

Clip for a steel pipe (version 1)

Supports for pipelines made of plastic.

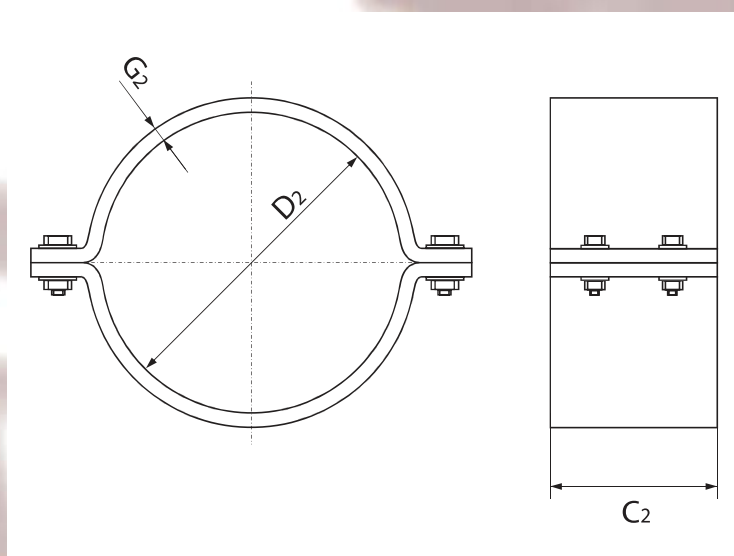
Due to large general volumetric thermal expansion coefficient of plastics:

$\alpha = 0.08 \text{ mm/m} \times ^\circ\text{C}$ - for PCV-U

$\alpha = 0.20 \text{ mm/m} \times ^\circ\text{C}$ - for PE-100

Pipelines should be constructed in a way that allows for a free thermal movement with properly placed supports. Internal diameter of the clip must be about 1% bigger than the outer diameter of the pipe. Edges of the clip must be rounded so the pipe doesn't damage itself while moving. Inside of the clip can be coated with PE or rubber on the whole circumference.

Example of the max. intervals between supports for pipes PE-100 (SDR 17,6) filled with water that is 20°C.



DN	OD	L [m]
100	110	1.5
150	160	1.7
200	225	2.0
250	250	2.5
300	315	3.0
400	400	3.5
500	500	4.0

Sizes of clips for plastic pipes.

D_2 = outer diameter of the pipe + 1%

$C_2 = D_2 \times 0,6$

$G_2 = D_2 \times 0,005 - 0,01$

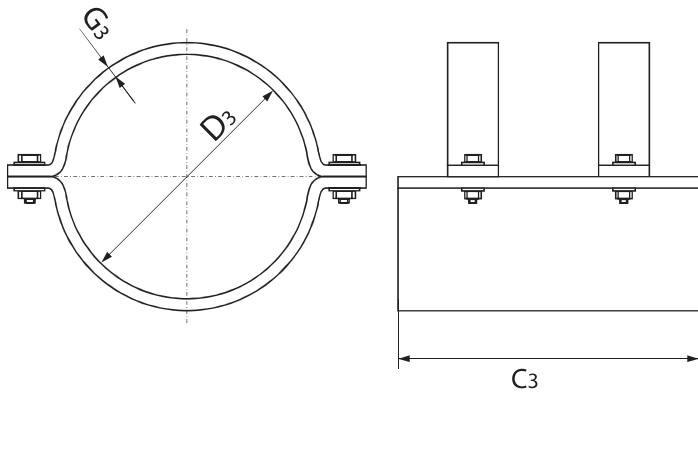
SYSTEM OF SUPPORTS AND SUSPENSIONS FOR PIPELINES



SUPPORTS AND SUSPENSIONS

Supports for pre-isolated pipes.

Due to pipelines operating under huge temperature differences (over 120 °C) and general volumetric thermal expansion coefficient of $\alpha = 0.12 \text{ mm/m} \times \text{°C}$ it is often necessary to use supports with roller elements to compensate for the expansion.



Dimensions of clips for pre-isolated pipes:

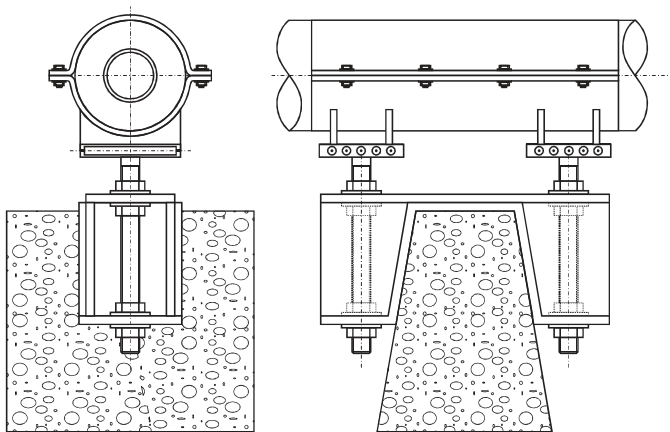
D_3 = outer diameter of the pipe

$$C_3 = D_2 \times 1.0 \div 1.5$$

$$G_3 = D_1 \times 0.01 \div 0.015$$

Maximum intervals between supports for pre-isolated pipes.

DN	OD	L [m]
25	100	3.0
32	100	3.2
40	100	3.5
50	125	4.0
80	160	5.0
100	200	5.5
125	250	6.0
150	250	6.5
200	315	7.0
250	400	7.5
300	450	8.0
400	560	9.0
500	630	9.5
600	800	10.0
700	900	10.5
800	1000	11.0
1000	1200	12.0



Support placed on a pedestal.

SYSTEM OF SUPPORTS AND SUSPENSIONS FOR PIPELINES

Special versions of supports

Upon order we make unusual supports based on your plans including roller supports.



Test rig.



To properly test the strength of the supports we have built a contraption that makes static examination. The test can be done on a support with max. diameter of DN 1500. The max. pressure of 50000 kG can be created on the site. The max. height of the support can be 1800 mm.

MODEL AR-L SUPPORT



AR-L SUPPORT



Support can be used for diameters between 100 and 350 mm. Height can be regulated with the help of one screw up to 75 mm. Support is suitable for small extensions of the pipeline. Installation with anchors screwed to base or to be flooded with concrete.

DN	Metal Thickness	Bolt 5.8	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
100	3	M16	2000	500	350
150	3	M16	2000	500	350
200	3	M16	2000	500	350
250	3	M20	2500	600	400
300	3	M20	2500	600	400
350	3	M20	2500	600	400

MODEL AR-LP SUPPORT



AR-LP SUPPORT



Support can be used for diameters from DN 100 to DN 350. Regulation of the height in the range of 75mm is done by a two screws. Support is suitable for cases where axis forces are great while sideways forces are slight. Installation with anchors screwed to base or to flood with concrete.

DN	Metal Thickness	Bolt 5.8	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
100	3	2xM16	2400	850	350
150	3	2xM16	2400	850	350
200	3	2xM16	2400	850	350
250	3	2xM20	2800	1000	400
300	3	2xM20	2800	1000	400
350	3	2xM20	2800	1000	400

MODEL AR-S SUPPORT



AR-S SUPPORT

Support can be used for diameters from DN 100 to DN 350. Regulation of the height in the range of 75mm is done by a two screws. Support is suitable when axis forces are slight while sideways forces are great. Installation with anchors screwed to base of to flood with concrete.

DN	Metal Thickness	Bolt 5.8	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
350	3	2xM16	3500	1000	800
400	3	2xM16	3500	1000	800
500	4	2xM16	4000	1500	1200



MODEL AR-C SUPPORT



AR-C SUPPORT

Support can be used for diameters from DN 350 to DN 1200. Regulation of the height in the range of 75mm is done by a four screws. Support is suitable when weight of the pipeline, axis forces and sideways forces are great. Installation with anchors screwed to base of to flood with concrete.

DN	Metal Thickness	Bolt 5.8	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
350	3	4xM16	5000	1600	1400
400	3	4xM16	5000	1600	1400
500	4	4xM16	6000	2000	1600
600	4	4xM20	6000	2100	1700
800	4	4xM20	7500	2200	1800
1000	5	4xM24	8000	2600	2000
1200	5	4xM24	8000	2600	2000



MODEL AR-BL SUPPORT



AR-BL SUPPORT



It is a very economical support intended for light pipelines. Regulation of the height in the range of 75mm is done by a single screw.

Support is suitable for small axis expansions or bulks of the pipelines.

Installation with anchors screwed to base or to flood with concrete.

DN	Metal Thickness	Bolt 5.8	Lifting capacity [kg]
50	2	M10	100
80	2	M10	100
100	2	M10	100
125	2	M12	100
150	2	M12	150

MODEL AR-K SUPPORT



AR-K SUPPORT



Support can be used for diameters from DN 100 to DN 350. In this case instead of a clip we used a pipeline installation on a collar link.

Regulation of the height in the range of 75mm is done by a single screw.

There is however a possibility of using two bearing and regulating screws.

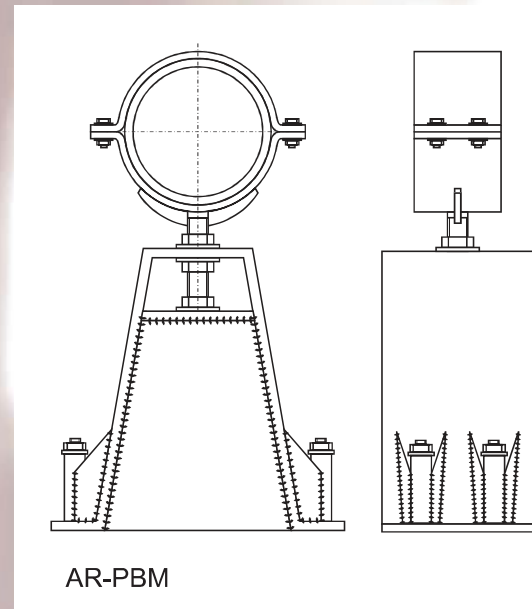
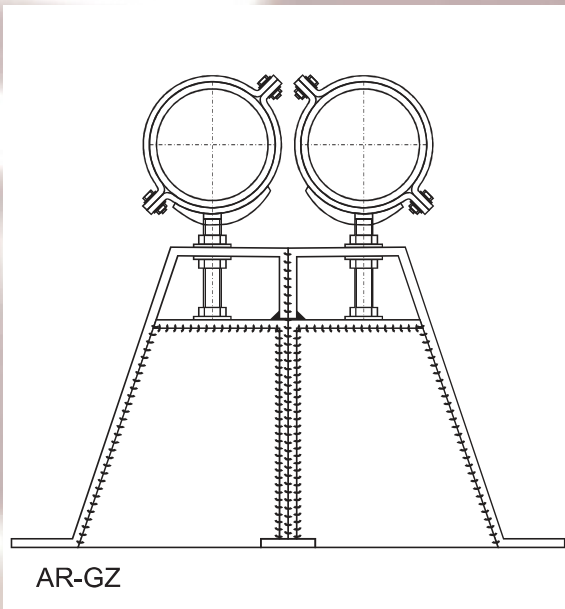
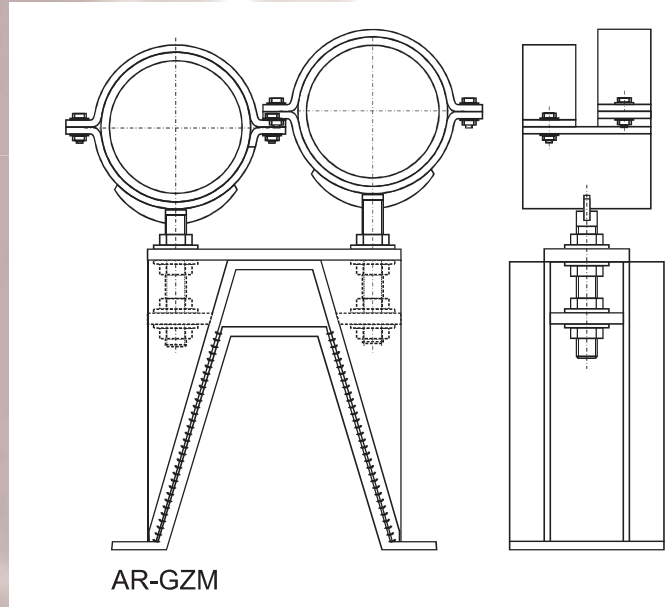
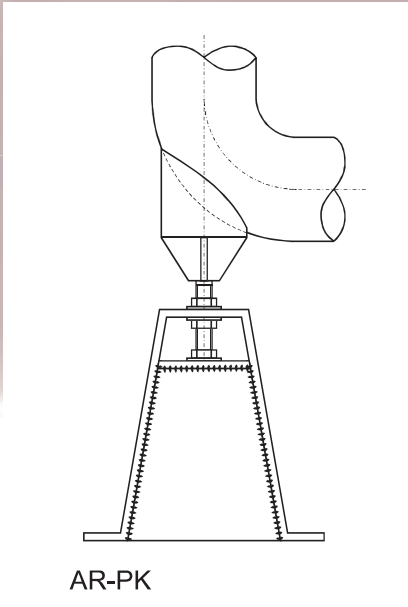
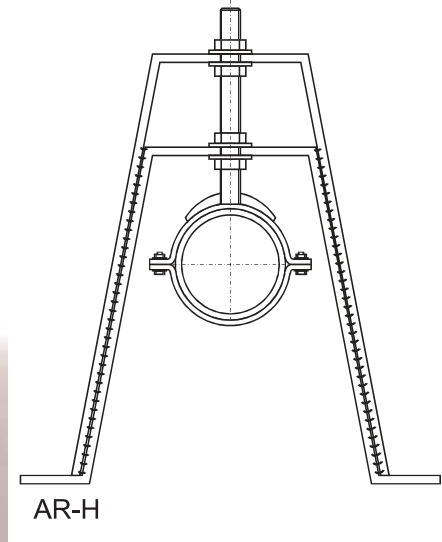
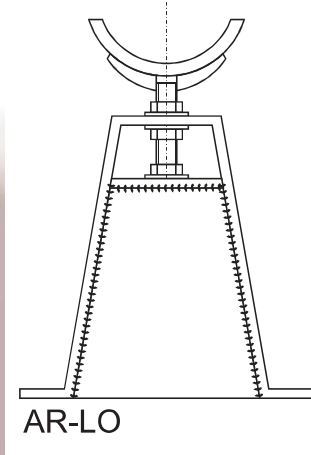
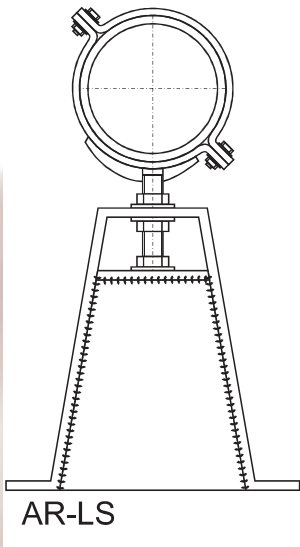
Installation with anchors screwed to base or to flood with concrete.

DN	Metal Thickness	Bolt 5.8	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
100	3	M16	2000	500	350
150	3	M16	2000	500	350
200	3	M16	2000	500	350
250	3	M20	2500	600	400
300	3	M20	2500	600	400
350	3	M20	2500	600	400

SYSTEM OF SUPPORTS AND SUSPENSIONS FOR PIPELINES

Presented on these graphics examples of supports can be modified according to needs.

SUPPORTS
SUSPENSIONS



MOVING SUPPORTS

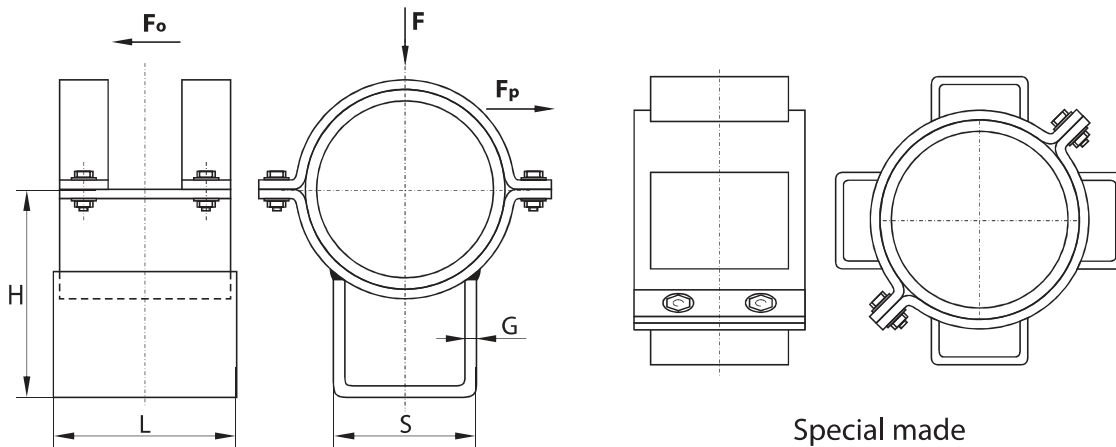


MOVING SUPPORTS



Moving supports are widely used in numerous branches of industry everywhere where in pipeline big axis forces appear. Most commonly used in cryogenic installations, pipelines for LNG, LPG, ice water etc. To insulate pipeline from support we use double coatings of insulation from hard polyurethane and sometimes even wooden claddings. Supports usually have one slay but there can be up to four of them.

By big forces slays can be supported by special ribs. Steel slay elements on the surface usually have insides from polyethylene or Teflon.



DN	L [mm]	S [mm]	G [mm]	F [kg]	F _o [kg]	F _p [kg]
50	120	40	2,5	500	350	250
80	120	60	2,5	680	400	300
100	160	70	3,0	880	600	400
125	160	80	3,0	1000	700	500
150	200	100	4,0	1200	800	600
200	200	140	4,0	1500	900	800
250	280	200	4,0	3500	1800	1500
300	300	250	4,0	4000	2000	1800
350	320	300	5,0	4200	2400	2200
400	340	350	5,0	4400	2700	2400
500	380	400	6,0	4800	3000	2500
600	400	500	6,0	5000	3300	2700

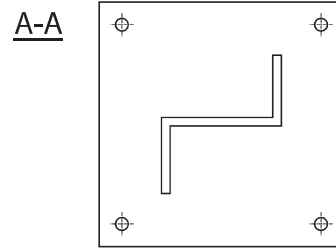
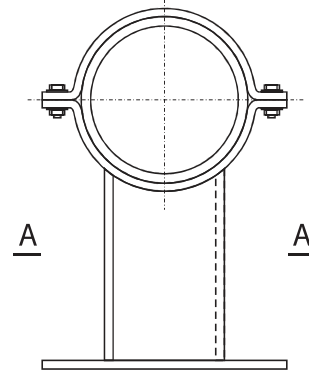
MODEL SP-Z SUPPORTS



SP-Z SUPPORTS



DN	Metal Thickness	Lifting capacity [kG]	Max. axial force [kG]	Max. lateral force [kG]
100	3	1500	500	350
150	3	1800	500	350
200	3	1800	500	350
250	4	2300	600	400
300	4	2500	600	400



Support can be used for diameters DN 100 ÷ DN 350.

Support is suitable for small axis expansions or bulks of the pipelines. Installation with anchors screwed to base or to flood with concrete.

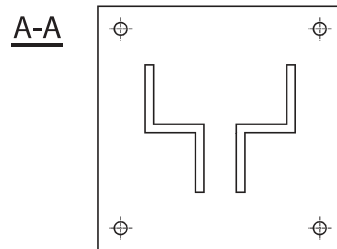
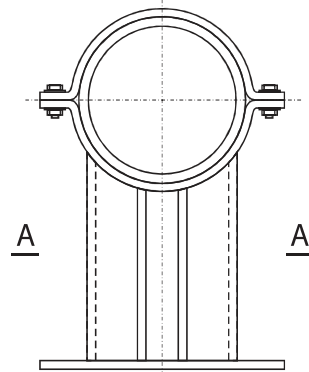
MODEL SP-Y SUPPORTS



SP-Y SUPPORTS



DN	Metal Thickness	Lifting capacity [kG]	Max. axial force [kG]	Max. lateral force [kG]
350	4	3000	1500	1000
400	4	3200	1500	1000
450	4	3500	1500	1200
500	5	4000	1800	1500
600	5	4400	2000	1600



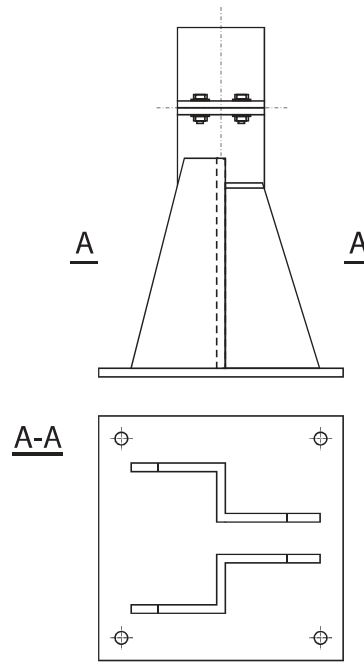
Support can be used for diameters DN 350 ÷ DN 600.

Support is suitable for medium axis weights or bulks of the pipelines. Installation with anchors screwed to base or to flood with concrete.

MODEL SP-V SUPPORTS



SP-V SUPPORTS



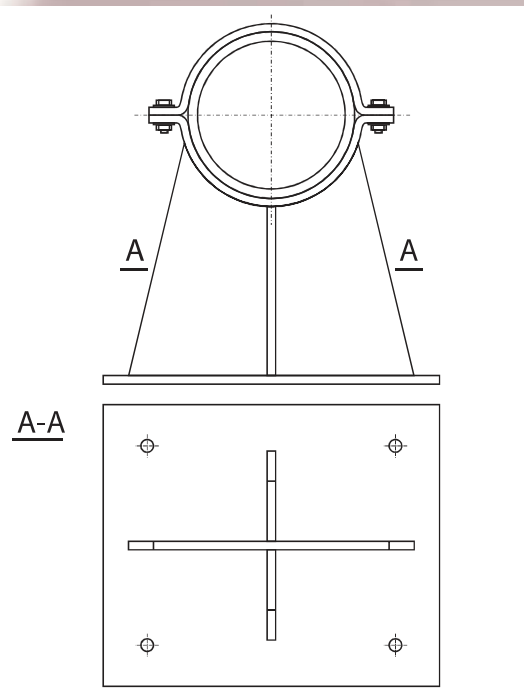
DN	Metal Thickness	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
350	4	3000	2600	2000
400	4	3200	2800	2200
450	4	3500	3200	2800
500	5	4000	3500	3000
600	5	4400	4000	3500

Support can be used for diameters DN 350 ÷ DN 600. Support is suitable for big axis forces of the pipelines. Installation with anchors screwed to base or to flood with concrete.

MODEL SP-X SUPPORTS



SP-X SUPPORTS



DN	Metal Thickness	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
50	2	1000	600	800
100	2	1500	900	1300
200	3	2500	1200	1800
300	3	2800	1600	2200
400	4	3500	2400	3100
500	5	4500	3200	4000
600	5	5000	3800	4500

Support can be used for diameters DN 50 ÷ DN 600. Support is suitable for big sideways forces of the pipelines. Support can be strengthened by adding proper ribs.

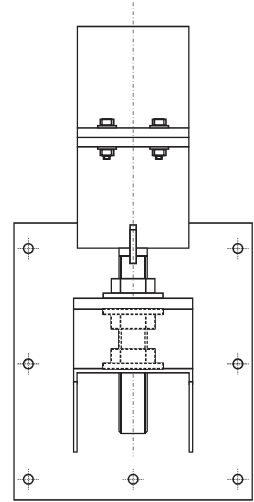
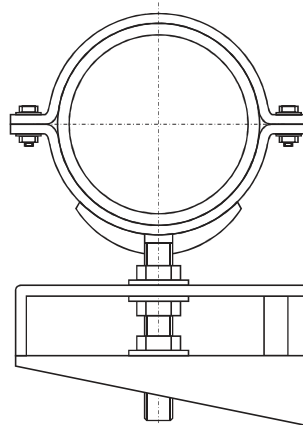


CONSOLES

CONSOLES FOR PIPELINES

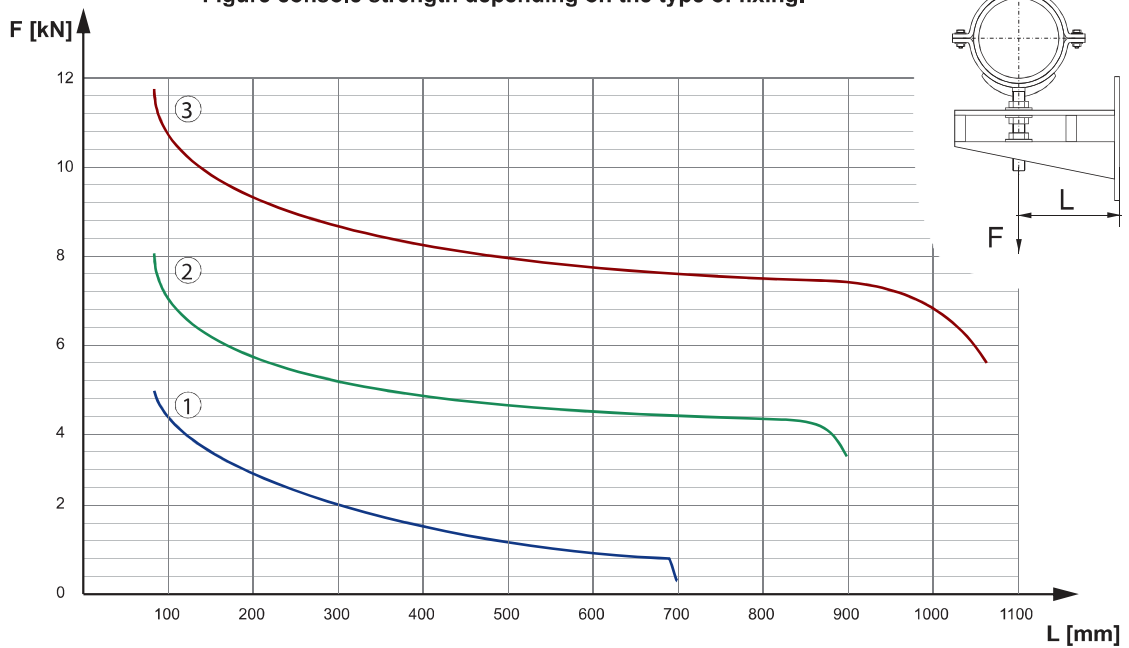
MODEL KR CONSOLES WITH REGULATED HEIGHT

PATENTED



Consoles are intended for leading pipelines along building partitions. They can be attached with the help of stretcher pins for concrete walls or with screws or welded to metal construction of the partition.

Figure console strength depending on the type of fixing.



- 1 - Console bolted to the concrete wall using dowels.
- 2 - Console bolted to the steel structure bolts.
- 3 - Console welded to the steel structure.

Offered consoles are suitable for leading horizontal and vertical pipelines. Screw regulation allows to set just the right slope of the pipe. Consoles can be connected in groups allowing to lead sets of pipes and power cables.

MODEL KR-L CONSOLE



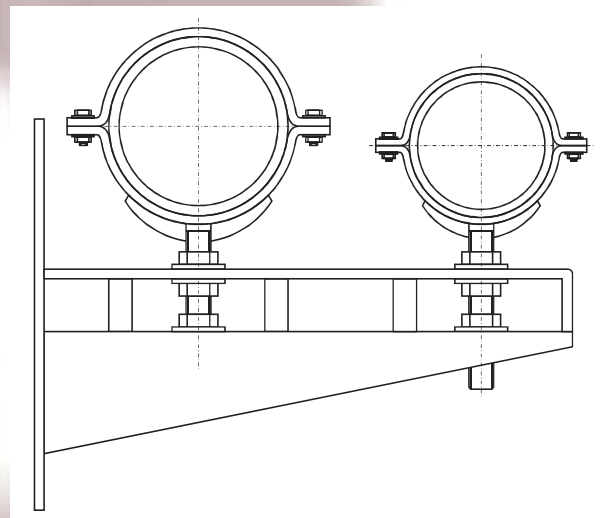
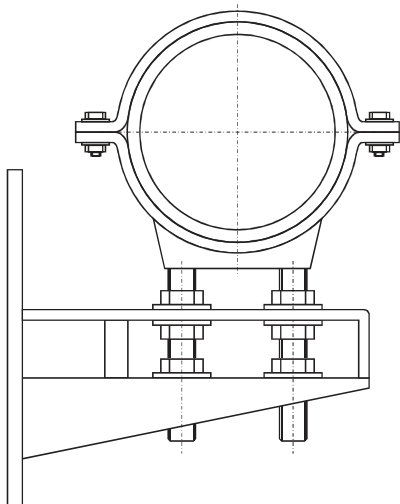
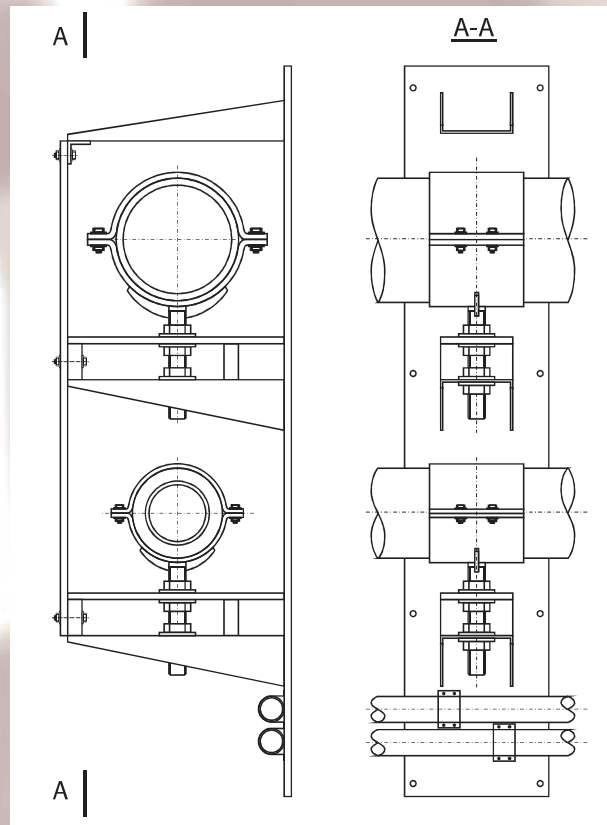
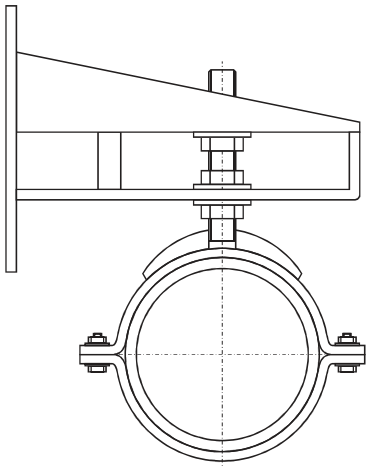
KR-L CONSOLE

Console KR-L is intended to lead single pipe along building partition in the range of diameters DN 50 to DN 250.



DN	Metal Thickness	Bolt 5.8	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
50	3	M12	500	100	70
80	3	M12	500	100	70
100	3	M16	800	150	90
150	3	M16	800	150	90
200	4	M20	1000	200	110
250	4	M20	1000	200	110

This console can be easily turned into a suspension system.



For big sideways forces two regulating screws can be used.

Example sets of console for leading different types of pipes and power cords and even ventilations tubes.

MODEL KR-P CONSOLE



Special console intended for the range of diameters DN 50 ÷ DN 250.

Regulation of the placement of the pipe with the help of regulation two screws in the range of ± 75 mm.

Console used for cases where weight of the pipeline, axis and sideways forces have big values.

Installation of anchors screwed to building partition. There is a possibility of welding or screwing to metal bearing construction.

DN	Metal Thickness	Bolt 5.8	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
50	3	2xM12	800	400	300
80	3	2xM12	800	400	300
100	3	2xM16	1000	600	400
150	3	2xM16	1000	600	400
200	4	2xM20	1200	800	500
250	4	2xM20	1200	800	500

MODEL KR-N CONSOLE



Corner console intended for the range of diameters DN 50 ÷ DN 250.

Regulation of the placement of the pipe with the help of regulation screw in the range of ± 75 mm.

Installation of anchors screwed to building partition. There is a possibility of welding or screwing to metal bearing construction.

DN	Metal Thickness	Bolt 5.8	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
50	3	M12	500	100	70
80	3	M12	500	100	70
100	3	M16	800	150	90
150	3	M16	800	150	90
200	4	M20	1000	200	110
250	4	M20	1000	200	110



KR-P
CONSOLE



KR-N
CONSOLE

MODEL KR-D CONSOLE



KR-D CONSOLE



Simple and economical console for pipelines with diameter of DN 200.

Regulation of the placement of the pipe with the help of regulation screw in the range of $\pm 75\text{mm}$.

Installation of anchors screwed to building partition.

There is a possibility of welding or screwing to metal bearing construction.

DN	METAL THICKNESS	Bolt 5.8	Lifting capacity [kG]	Max. axial force [kG]	Max. lateral force [kG]
50	2	M10	200	150	150
65	2	M10	200	150	150
80	2	M10	300	200	200

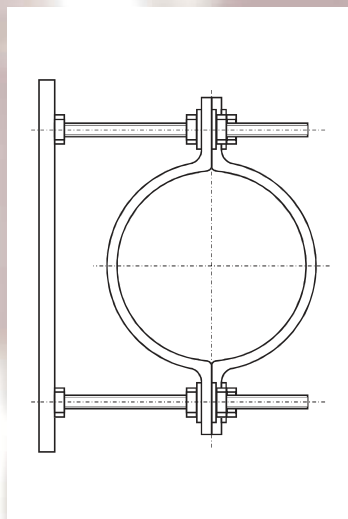
DN	Metal Thickness	Bolt 5.8	Lifting capacity [kG]	Max. axial force [kG]	Max. lateral force [kG]
100	2,5	M12	300	200	200
150	2,5	M12	400	300	300
200	2,5	M12	400	300	300

MODEL KR-W CONSOLE



KR-W CONSOLE

Consoles for vertical pipelines.



Console with regulation of distance from bearing wall intended for the range of diameters DN 50 ÷ DN 250. Regulation is done with the help of 4 or 6 bearing and regulating screws in the range of $\pm 50\text{mm}$.

Installation of anchors screwed to building partition. There is a possibility of welding or screwing to metal bearing construction.



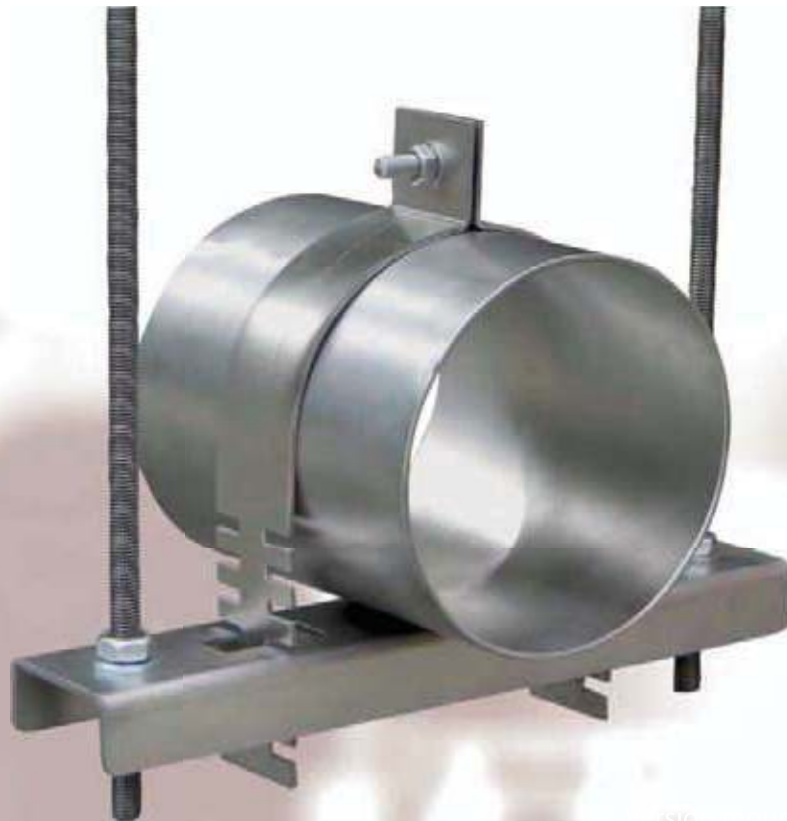
Console unregulated.

DN	Metal Thickness	Bolt 5.8	Lifting capacity [kg]	Max. axial force [kg]	Max. lateral force [kg]
50	3	4xM12	400	400	200
80	3	4xM12	400	400	200
100	3	4xM16	600	600	300
150	3	4xM16	600	600	300
200	4	6xM20	800	800	600
250	4	6xM20	800	800	600

PIPE SUSPENSIONS BRACKET



SUSPENSIONS BRACKET



Universal system of attaching pipelines on suspensions in the range of diameters from DN 25 to DN 200. Advantage of the system is a very fast montage and easy application for unusual sizes and shapes of pipes. There is a possibility of expansion of the system to lead many pipelines on one grip. Suspension usually is made out of stainless or galvanized steel.

