BURIED FLEXIBLE STEEL STRUCTURES

MultiPlate MP200

MULTIPURPOSE TECHNOLOGY

ViaCon

MultiPlate MP200 structures are used for road and railways and industrial applications such as:

- culverts
- bridges
- overpasses
- tunnels
- underpasses
- ecological crossing
- hangars
- shelters
- warehouses
- belt conveyor housings
- protection of pipes and heat-pipes
- sewage and liquid tanks
- storage bins

Application

The corrugated steel structures are used in civil engineering for over 100 years. The first application of this type of construction has taken place in North America and Russia, where the idea of using them in road and rail construction was born.
Today, buried corrugated steel structures are widely used in construction around the world. Structures of this type due to the nature of their work, are often referred to flexible structures.

Soil-steel interaction means that corrugated steel structure acts with the surrounding soil to support the loads. They are cheap, easy and quick to build. The average installation time with a few people brigade takes a few days.
MultiPlate MP200 structures are used in Poland since mid 90-ties, and the company ViaCon Sp. z o.o. producing them since 2005.

Approvals and Certificates:

- MultiPlate MP200 has the CE Certificate of Factory Production Control No. 1023-CPD-0447 F according to PN-EN 1090-1:2012
- AT/2012-02-2868
- AT/2007-03-0247/1
- Technical opinion of the Central Mining Institute (GIG):

ITC

NOTIFIED BODY No. 1023
Institute for Testing and Certification, Inc., Zlin, Czech Republic

Certificate of Factory Production Control
No. 1023–CPD–0447 F/a

issued in the compliance with the Directive 89/106/EEC as subsequently amended, whose requirements are implemented by the Czech Government Order No. 190/2002 Coll., in the wording of subsequent amendments, certifies that the construction product

Steel structures and aluminium structures according to PN-EN 1090-1

introduced on the market by the company
ViaCon Sp. z o.o.
Ul. Przemysłowa 6, 64-130 Rydzyna, Poland
NIP: PL6971710977

and produced in the plant
Ul. Przemysłowa 6, 64-130 Rydzyna

is submitted by the manufacturer to initial type-testing and to the factory production control (FPC) and to the further testing of samples taken at the plant in accordance with a prescribed test plan and there are fulfilled all provisions concerning the management and attestation of FPC, as they are stated in the Annex ZA of the harmonized technical standard

PN-EN 1090-1+A1:2012 Execution of steel structures and aluminium structures – Part 1: Requirements for conformity assessment of structural components

The Notified Body No. 1023 has performed the initial inspection of the factory and of the factory production control and performs the continuous surveillance, assessment and approval of the FPC according to Article 13, paragraph 3, item b) of the Directive 89/106/EEC. The detailed product descriptions, assessment procedures and inspections results including their evaluation are presented in the ITC's Final report No. 753500860/2013.

This Certificate remains valid as long as the referred harmonized standard, manufacturing conditions or the FPC are not significantly modified. The validity of the Certificate is also contingent on the positive results of the surveillance inspections.

CE

Issued in Zlin, on July 16th 2012
Revision a.): March 22th 2013
(It supplies for the Certificate No. 1023-CPD-0447 F issued on July 16th 2012)

RNDr. Radomír Čevelík
Representative of the Notified Body No. 1023

Typical sequence for construction of MultiPlate MP200 structure consist of:

- foundations
- delivery
- assembly
- backfilling
- finishing work

MultiPlate MP200 structures have many advantages such as:

- simply design due to fewer details, drawings and calculations database for standard application
- easy and fast assembly
- possibility to assembly in temperature below zero
- possibility to assembly structures without traffic stop
- possibility to assembly in total or partial prefabrication of the structures
- due to lightweight, corrugated steel plates can be delivered easily and economically to remote locations
- reduction in total time and cost of building the structures

Production

The process of MultiPlate MP200 production consists of mechanical forming of steel flat plates to the shape of corrugated curved plates which are later hot-dip galvanized.
Corrugated plates can be epoxy painted on request.
Whole process is located indoor.

Steel used for production of MultiPlate MP200 conforms to PN-EN 10025 and PN-EN 10149
Steel grade: S235JR, S355J2 or S355MC
Yield strength for this steel is 235 MPa and 355 MPa.

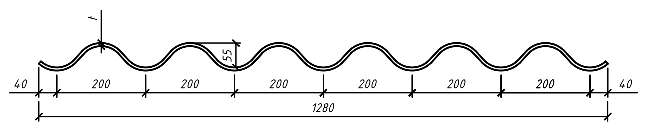


Fig.1. Cross section of MultiPlate MP200 plate

Standard length of plate is n × s + 130, where s=235 mm, and n= 4 ÷ 10. Standard width of plate is 1,2 m (m=6).
Other plate widths are available upon request (Fig. 2.).

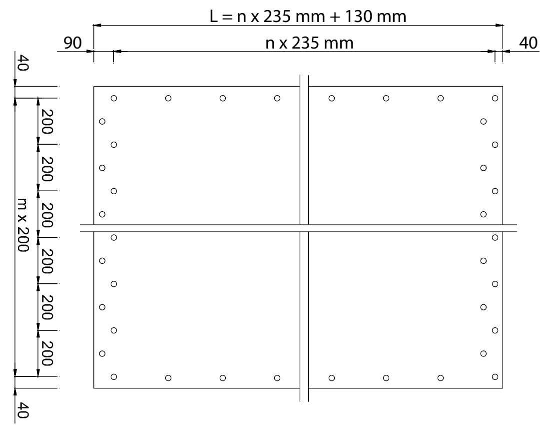


Fig. 2. Geometry plate

Tab. 1. Geometrical parameters of MultiPlate MP200 plate

Plate thickness [mm]	Yield strength [MPa]	Area [mm²/mm]	Moment of inertia [mm⁴/mm]	Section modulus [mm³/mm]
3,00	235 / 355	3,55	1 356,36	46,77
4,00	235 / 355	4,74	1 813,80	61,49
5,00	235 / 355	5,93	2 316,15	77,20
6,00	235 / 355	7,11	2 787,57	91,40
7,00	235 / 355	8,29	3 213,20	103,65
8,00	235	9,37	3 616,77	114,82

Other plate configurations are available upon request. Selection of plate thickness depends on structure shape, span, depth of cover and live load. Please take the opportunity to consult with our Technical Department for advice and assistance on your project.

Bolts, nuts, anchor bolts

Corrugated steel plates are joined by bolts M20 class 8.8. The lengths of the bolts are related to thickness of connected plates and type of connection.

There are two types of bolt heads (Fig. 3) – oval-shaped and cone-shaped at dimensions: 32 mm, 37 mm, 45 mm, 50 mm, 63 mm, 70 mm.

Bolts diameter of 20 mm and nuts correspond to the requirements norm of PN-EN ISO 898-1 and PN-EN 20898-2.

Anchor bolts with a diameter of 20 mm and length of 225 mm or 365 mm made of steel corresponding to the requirements of PN-EN 10025-2.

All above mentioned elements are delivered together with corrugated plates as a complete structure.

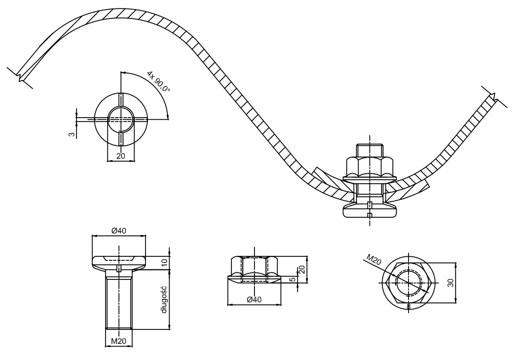


Fig. 3. Connection of the construction plates.

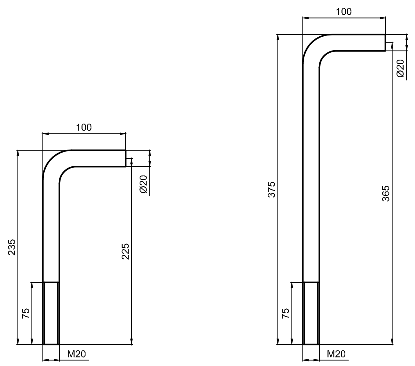


Fig. 4 Anchor bolts

Corrosion protection

Coatings applied by immersion, including hot-dip galvanizing are the most durable protection of steel surfaces, mainly due to produce a lasting connection of dip zinc coating with the steel surface. The protection of structures both by hot-dip galvanizing and epoxy paint creates ViaCoat system conformed to PN-EN ISO 12944-5. Standard use is epoxy paint, but surfaces exposed to UV rays should be painted with polyurethane paint as a top layer. It is recommended to use a coating thickness of 80÷200 µm. Coating thickness can be increased, if required by the assumed structures durability.

Tab. 2. Zinc layer

Characteristics	Requirements acc. PN-EN ISO 1461	
	Minimal local zinc coating thickness [µm]	Minimal average zinc coating thickness [µm]
Steel plate thickness: ≥6 mm ≥3 mm up to <6 mm ≥1,5 mm up to <3mm	 70 55 45	 85 70 55
Bolts, nuts, anchor bolts	40	50

Paint coat thickness is controlled by PN-EN ISO 2808. Minimum adhesion of the epoxy paint to the zinc base measured by pull - off method should not be less than 4 MPa, and control test is conducted according to the norm PN-EN ISO 4624. In order to obtain the right adhesion galvanized plates are sweep blast prior to application of paint. In order to obtain the proper protection effect, paint coatings are applied in special conditions.
Keeping a technological regime is crucial for successful performance of the protection system.

Design

Design process with using MultiPlate MP200 structure includes the following:

- design of MultiPlate MP200 structure (including assembly and backfilling procedure)
- design of engineered backfill
- design of foundation
- design of in and outlet fittings elements

MultiPlate MP200 structures are designed for all road and railway live load classes according to Eurocode EN 1991-2 or according to nationals standards. They also meet requirement of AASHTO and CHBDC and other national standards for corrugated steel structures in the world.

Dimensioning

MultiPlate MP200 structures are dimensioned using Swedish design method, developed by Prof. Sunquist and Prof. Pettersson. They can also be designed with the use of the other methods like e.g. CHBDC, AASHTO. In complex cases finite element method (FEM) can be used.

Selection of structure cross section

In order to select a typical shape of a structure, please use tables provided on catalogue. These tables include standard shapes. Other shapes are available upon request.

A profile of a structure should fit to clearance box. Allow for tolerances of structure dimensions. Acceptable tolerances are on request.

Cover depth

Definition of the cover depth for road structures

Vertical distance between top of a steel structure main barrel and top of the pavement including the pavement layer.

Tab. 3. Cover depth

Type of object	Min. cover depth
Structures under roads	Hmin = max { (Si/8)+0,2 [m]; Si/6 [m]; 0,6 [m] }
Structures under railway	Hmin = max { Si/4; 0,6 [m] }

Si – span of the structure [m]

In case of construction (technological) traffic is assumed over a structure the cover depth must be agreed with Technical Department of ViaCon.

Definition of the cover depth for rail structures

Vertical distance between top of a steel structure main barrel and bottom of railway sleeper.

Lover cover depth is acceptable when appropriate static calculations are conducted. Maximum depth of a cover is always designed individually.

For high cover depth load reduction techniques are available.

Geometry of a structure in longitudinal direction

Bottom length of MultiPlate MP200 structures should conform to the following formula:

$$L_d = 40 + n \times 1200 + 40 \text{ [mm]}$$

where n – number of full rings alongside length

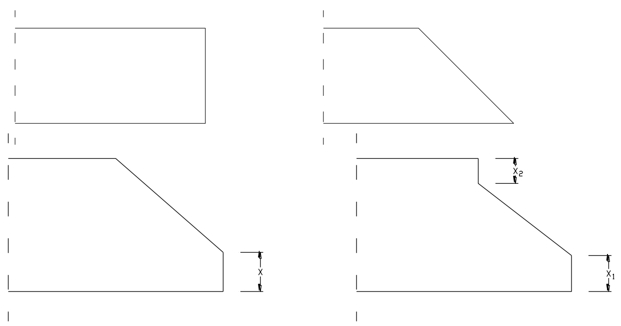


Fig. 5. End finishes for MultiPlate MP200 structures

Top length of a structure is determined individually (in and outlets).

Ends of MultiPlate MP200 structures can be squared or beveled to match the embankment slope (Fig.5). For structure curved in plane use bends to align to designed curvature.

Depending on whether the structure is completed straight or slanted in accordance with the inclination of the slope, it is different to finish inlet and outlet of the construction.

If the structure is ended straight it is necessary to build headwalls constantly connected with the structure.

For the construction beveled in accordance with the inclination of the slope, it is necessary to finish the slope by pavement, sowing grass, encased of gabions.

Skew angles

Minimum permissible angle for skewed ends is 55º. For skewed ends structures, steel mesh or geogrid connected with the structure in skewed area and placed horizontally into backfilling, could maintain the stability of the ends and avoid deformation.

Please contact Technical Department for advice.

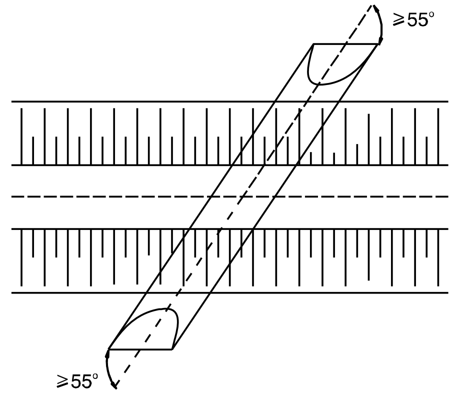


Fig. 6. Skewed structure

Concrete collar

Concrete collar is used:

- to stiffen the inlets and outlets of ViaPlate structure with beveled ends
- as a finishing element used as support of any end treatment

Concrete collar is applied mostly in following cases:

- structures which are skewed more than 35 degree
- structures exceed 6,0 m span

Multiple installation

For multiple structure installation, the smallest clear spacing between adjacent structures should be sufficient for the placement and compaction of soil. The minimum spacing requirement depends upon the shape and size of structures. When the required distance cannot be achieved, space between structures should be filled with C12/15 concrete or cement stabilized soil to the level where the distance between structures is not less than 10% of structure span. Exceptions to the above are possible after consultation with Technical Department of the company.

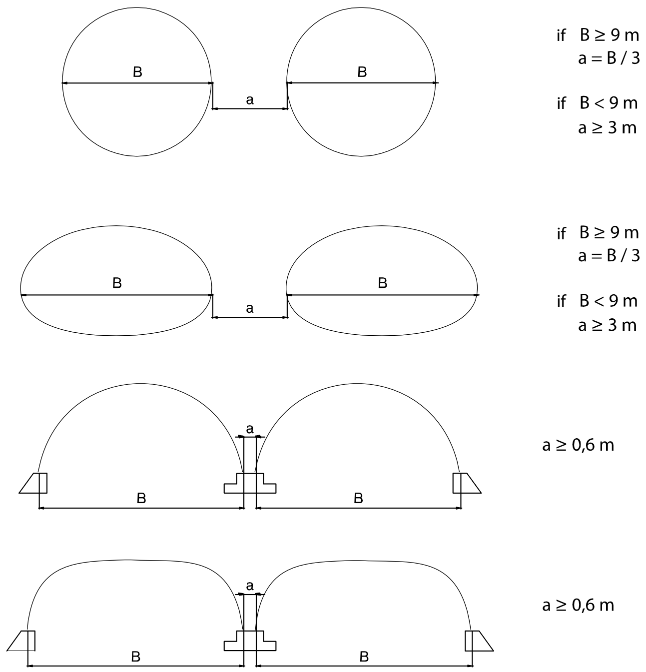


Fig. 7 Minimum clear spacing for multiple installations

Foundation

MultiPlate MP200 structures with closed shapes (round, elliptical, pipe-arch) are placed on soil bedding as follow:

- thickness of soil bedding - min. 30 cm
- top portion of the bedding should be shaped to fit to the bottom plates of a structure
- particular care should be exercised in compacting soil under haunches - about 5-15 cm layer of the bedding should be relatively loose material so that the corrugation can seat in it

MultiPlate MP200 structures with open shapes are placed on concrete (Fot. 2) or flexible (Fot. 3) footings.

Choice of the flexible footing foundations requires consulatation with Technical Department of our company.

Fot. 1. Flat steel mounting to the structure with an open cross-section

Fot. 2. Connection of MultiPlate MP200 structure with concrete footing

Fot. 3. Connection of MultiPlate MP200 structure with flexible footing

Material for bedding and backfill

- gravel, sand -gravel mix, all-in aggregates and crushed stone can be used as bedding and backfill material
- aggregate grain size depends on size of corrugation profile and for 200 x 55 corrugation should have max 42 mm size in the direct vicinity of the structure
- the use of cohesive soil, organic soil and soils included permafrost is not acceptable
- backfill material around the structure should be placed in layers of 30 cm thick and then compacted symmetrically on both sides of the structure
- un-uniformity coefficient $C_u \geq 4$
- curvature coefficient $1 \leq C_c \leq 3$
- permeability $k_{10} > 6$ m/day
- backfill material should be compacted to minimum 0,98 of normal Proctor density, but 0,95 of normal Proctor density is acceptable in the structure adjacent.

Deviation from these principles requires consultation with the Technical Department of our company.

End treatment (inlet/outlet)

End treatment depends on the way the ends of the structure are cut. For beveled ends, slopes can be finished by paving with stones blocks, etc. For bevel ends with gabion mattress, waterproof soulutions must be applied.
Please contact Technical Department for advice.

As an alternative to concrete headwall MSE walls for instance ViaWall (retaining wall with the face from a reinforced concrete panel) or ViaBlock system (a retaining wall with the face from concrete blocks) or gabions can be applied.

The ground around the MultiPlate MP200 construction can be reinforced with using steel or geosynthetic reinforcing meshes.

Construction protection against rainwater

In order to preserve structures against rain water that can infiltrate through backfilling it is necessary to make suitable protection. For that purpose for instance a layer of 1,0 mm HDPE geomembrane enclosed by two layers of 500 g/m2 non-woven could be placed over steel structures. As an alternative such "umbrella" could be made with the use of two layers of bentonite mat (geosynthetic clay layer).

Exceptions to the above are possible after consultation with Technical Department of our company. Placing the membrane directly on the structures is allowed with provisions for protection layers applied.

Durability

Following factors have an influence on structure's durability:

- aggressiveness of an environment
- abrasion
- corrosion protection
- plate thickness
- quality and frequency of maintenance

Procedure of calculating durability of MultiPlate MP 200 structures

- define the function of a structure
- define the required durability of a structure
- define the aggressiveness of the environment (water, backfill, air)
- select the type of a structure
- specify the plate thickness based on static calculations (acc. to Sundquist-Petterson method)
- specify the corrosion protection (thickness of zinc coating, paint coating, extend of painting, painting procedure)
- define annual loss of the protection layers in upper and lower part of a structure
- calculate the structure durability by considering corrosion progress over service lifetime

When the durability of MultiPlate MP200 structure is not enough, following measures can be taken:

- change the corrosion protection (thickness of zinc layer, paint coat)
- increase the plate thickness
- reduce the design effort (through, for example, a change of overburden)
- change the construction shape (example use oval shape)
- re-calculate the durability and compare with required

Durability of ViaCoat system is higher than sum of durability of the protection of each layers and can be calculated as:

$$S_D = \alpha (S_C + S_Z)$$

where:

- S_D – total durability of the protection layer
- S_C – durability of zinc coat
- S_Z – durability of the epoxy paint
- α – synergy factor (from 1,5 to 2,0) for 200 μm thick paint layer α =1,5, for 400 μm thick paint layer - α = 1,75

Relining

MultiPlate MP200 structures are also commonly used to repair old culverts or bridges with the method called relining. Corrugated steel structure is placed inside the existing structure (bridge/culvert/underpass) and space between that existing structure and a new structural plate is filled with concrete class of min. C16/20. This method allows to renovate and even strenghten the old structure without traffic stop.

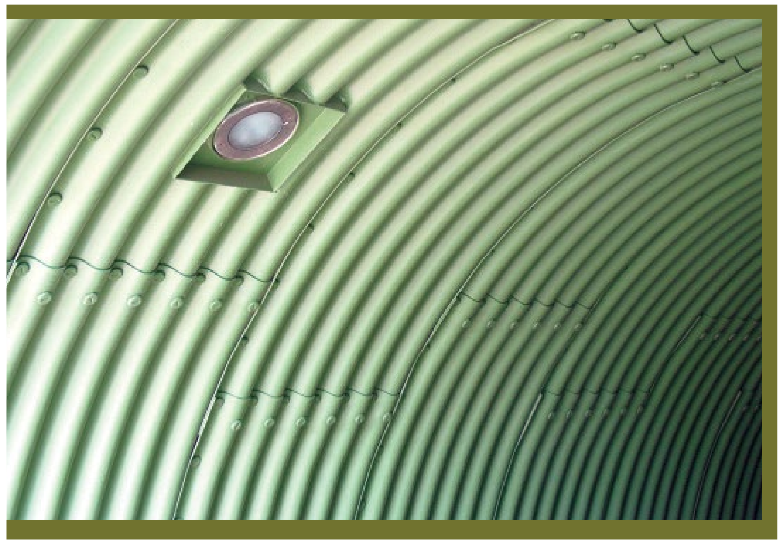
The control of pouring concrete between existing structure and new steel structure should be done by revision holes. While concrete is pouring it is necessary to control deformation of MultiPlate MP200.

In case of relining with open shaped structures, a concrete footing connected to existing foundation will generally be required. Existing foundation of the old structure can be used as a footing for new corrugated steel structure. It requires expertise of the condition of the old foundation.

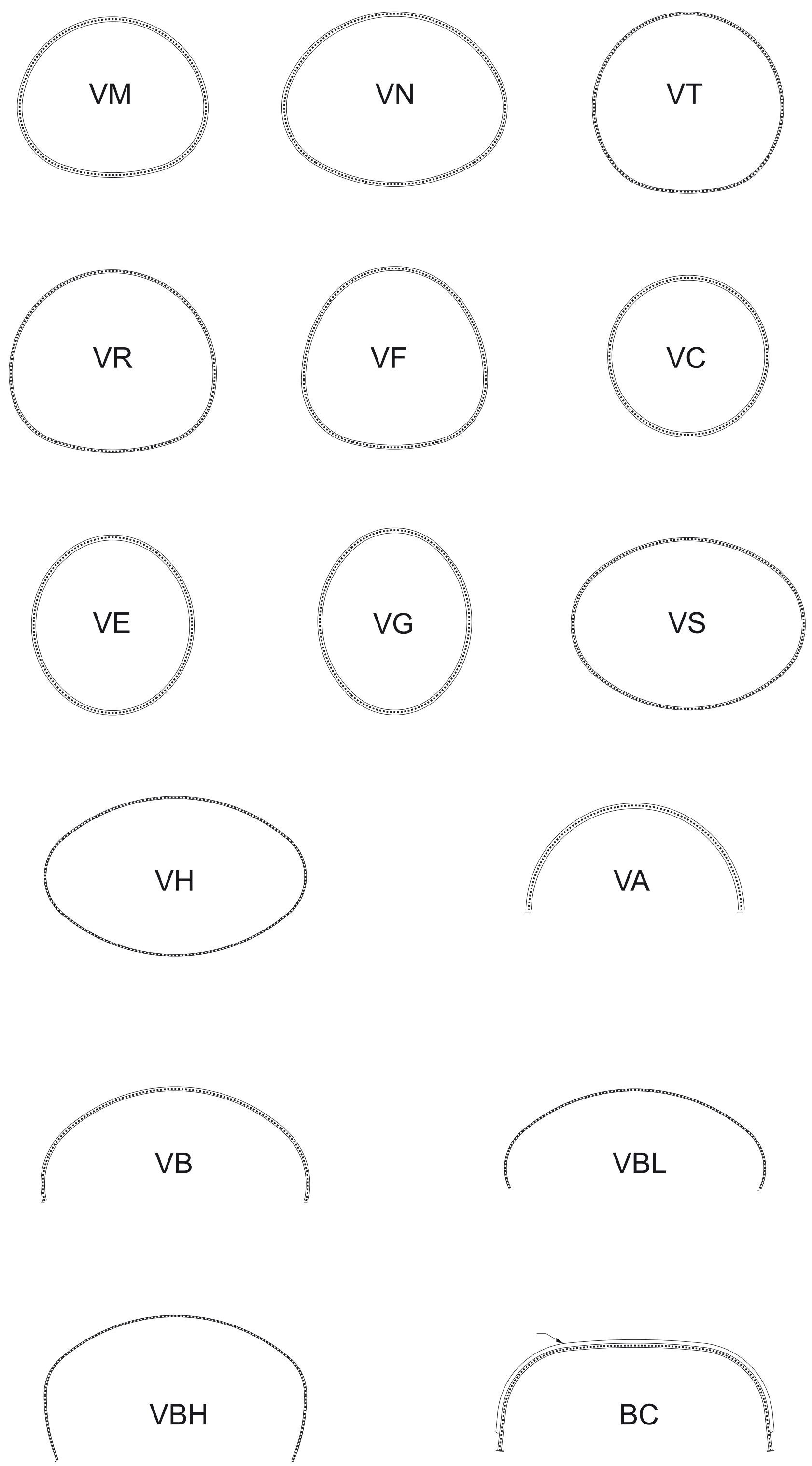
Fittings

MultiPlate MP200 structures can be equipped with additional elements depending on function of the structure e.g.:

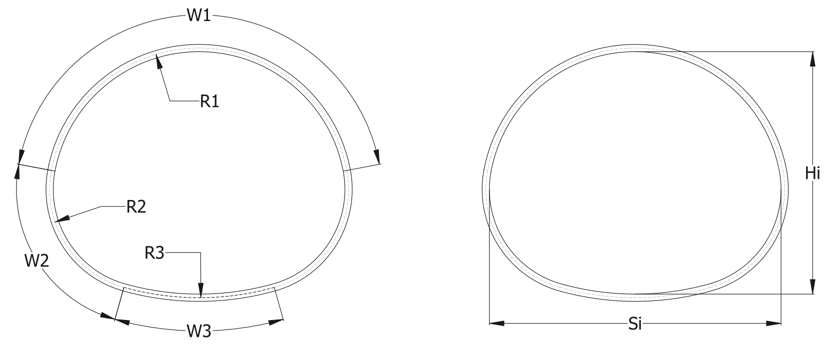
- lighting boxes
- ventilation
- niche
- skylight
- connector pipes
- shelves for animals
- technical hotels
- others



Profiles

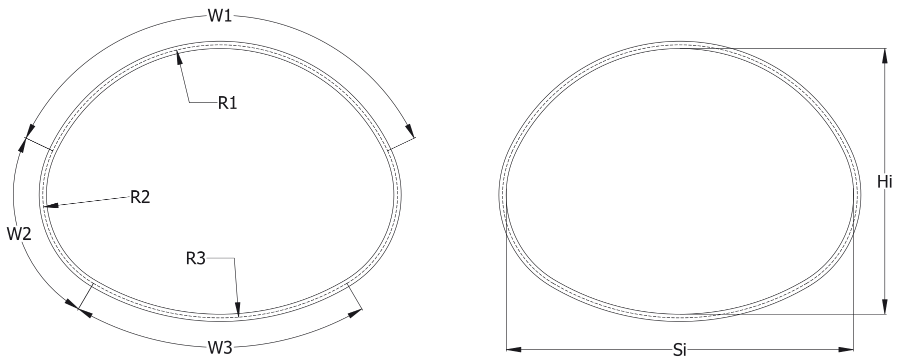


VM



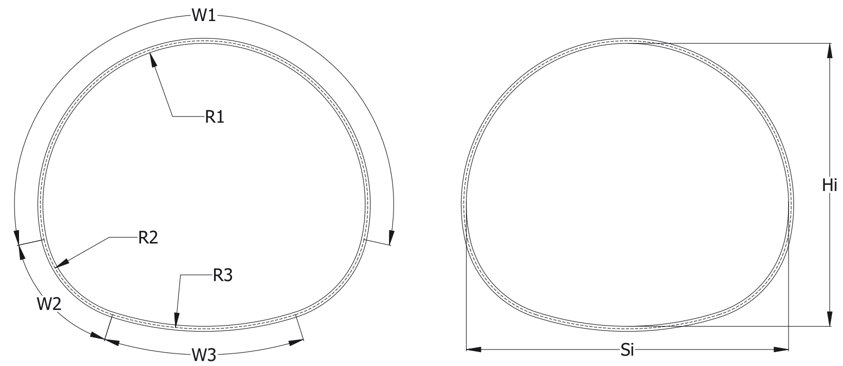
VM	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	R2-in axis [m]	R3-in axis [m]	W1[°]	W2[°]	W3[°]	A-inner [m²]
VM1	1,80	1,50	5,40	0,51	0,93	0,63	1,72	158,81	85,00	31,19	2,12
VM2	1,89	1,55	5,64	0,53	0,97	0,63	2,26	166,21	85,00	23,79	2,31
VM3	2,23	1,68	6,34	0,57	1,18	0,63	1,77	136,76	85,00	53,24	2,91
VM4	2,49	1,83	7,05	0,62	1,28	0,63	2,91	157,66	85,00	32,34	3,57
VM5	2,84	2,02	7,99	0,68	1,45	0,63	4,76	167,36	85,00	22,64	4,54
VM6	3,23	2,15	8,69	0,73	1,69	0,63	3,16	143,17	85,00	46,83	5,33
VM7	3,38	2,25	9,16	0,76	1,74	0,63	4,19	154,71	85,00	35,29	5,91
VM8	3,65	2,39	9,87	0,81	1,87	0,63	5,06	158,08	85,00	31,92	6,81
VM9	3,72	2,44	10,10	0,82	1,90	0,63	6,02	163,20	85,00	26,80	7,13
VM10	4,05	2,52	10,57	0,85	2,16	0,63	3,83	137,27	85,00	52,73	7,75
VM11	4,13	2,57	10,81	0,86	2,17	0,63	4,25	142,54	85,00	47,46	8,09
VM12	4,34	2,72	11,51	0,91	2,22	0,63	6,17	157,33	85,00	32,67	9,14
VM13	4,41	3,62	12,92	1,21	2,23	1,31	3,94	174,99	72,00	41,01	12,62
VM14	4,49	3,67	13,16	1,23	2,27	1,31	4,26	178,08	72,00	37,92	13,07
VM15	4,84	3,82	13,86	1,28	2,45	1,31	3,92	164,54	72,00	51,46	14,46
VM16	4,92	3,87	14,10	1,29	2,49	1,31	4,17	167,62	72,00	48,38	14,94
VM17	5,14	4,04	14,80	1,35	2,59	1,31	5,11	176,45	72,00	39,55	16,43
VM18	5,21	4,09	15,04	1,37	2,63	1,31	5,50	179,26	72,00	36,74	16,95
VM19	5,43	4,13	15,27	1,38	2,76	1,31	4,41	161,02	72,00	54,98	17,44
VM20	5,58	4,24	15,74	1,42	2,82	1,31	4,93	166,82	72,00	49,18	18,50
VM21	5,79	4,40	16,45	1,47	2,92	1,31	5,92	175,05	72,00	40,95	20,16
VM22	6,06	4,56	17,15	1,52	3,05	1,31	6,45	176,35	72,00	39,66	21,86
VM23	6,25	4,67	17,63	1,56	3,15	1,31	6,58	175,07	72,00	40,93	23,04
VM24	6,44	4,70	17,86	1,57	3,26	1,31	5,81	165,05	72,00	50,95	23,61
VM25	6,71	4,93	18,80	1,64	3,38	1,31	7,24	175,08	72,00	40,92	26,10
VM26	6,78	4,98	19,03	1,66	3,41	1,31	7,68	177,46	72,00	38,53	26,73
VM27	6,97	5,09	19,50	1,69	3,51	1,31	7,79	176,26	72,00	39,74	28,02
VM28	7,11	5,07	19,50	1,69	3,60	1,31	6,54	164,52	72,00	51,48	27,99
VM29	7,24	5,18	19,97	1,73	3,66	1,31	7,21	169,33	72,00	46,67	29,33
VM30	7,43	5,35	20,68	1,78	3,74	1,31	8,46	176,22	72,00	39,78	31,38
VM31	7,63	5,45	21,15	1,82	3,84	1,31	8,56	175,11	72,00	40,89	32,78
VM32	7,89	5,61	21,85	1,87	3,97	1,31	9,13	176,19	72,00	39,81	34,92
VM33	8,09	5,71	22,32	1,90	4,07	1,31	9,22	175,12	72,00	40,88	36,39
VM34	8,35	5,87	23,03	1,95	4,20	1,31	9,80	176,16	72,00	39,84	38,64
VM35	8,55	5,98	23,50	1,99	4,30	1,31	9,89	175,13	72,00	40,87	40,19
VM36	8,81	6,13	24,20	2,04	4,43	1,31	10,47	176,13	72,00	39,87	42,55
VM37	9,01	6,24	24,67	2,08	4,53	1,31	10,55	175,14	72,00	40,86	44,17
VM38	9,27	6,40	25,38	2,13	4,66	1,31	11,14	176,10	72,00	39,90	46,64
VM39	9,48	6,50	25,85	2,16	4,77	1,31	11,21	175,15	72,00	40,85	48,33
VM40	9,73	6,66	26,55	2,21	4,89	1,31	11,80	176,08	72,00	39,92	50,92
VM41	9,96	7,32	27,73	2,43	5,01	1,66	9,23	177,46	65,00	52,54	57,16
VM42	10,22	7,49	28,43	2,49	5,13	1,66	9,63	178,27	65,00	51,73	60,02
VM43	10,42	7,60	28,90	2,52	5,23	1,66	9,74	177,47	65,00	52,53	61,97
VM44	10,67	7,76	29,61	2,58	5,36	1,66	10,15	178,26	65,00	51,74	64,95
VM45	10,87	7,87	30,08	2,61	5,46	1,66	10,26	177,49	65,00	52,52	66,98
VM46	11,13	8,04	30,78	2,67	5,59	1,66	10,67	178,25	65,00	51,75	70,06
VM47	11,33	8,15	31,25	2,71	5,69	1,66	10,77	177,50	65,00	52,50	72,17
VM48	11,58	8,31	31,96	2,76	5,82	1,66	11,18	178,24	65,00	51,76	75,37
VM49	11,78	8,42	32,43	2,80	5,92	1,66	11,29	177,51	65,00	52,49	77,55
VM50	12,03	8,59	33,13	2,85	6,04	1,66	11,70	178,23	65,00	51,77	80,87

VN



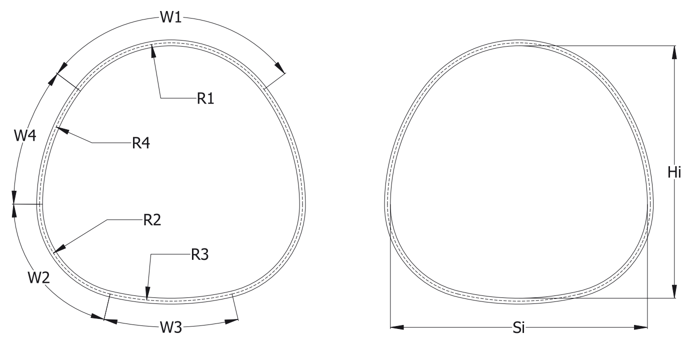
VN	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	R2-in axis [m]	R3-in axis [m]	W1[°]	W2[°]	W3[°]	A-inner [m^2]
VN1	2,14	1,64	6,11	0,56	1,15	0,63	1,55	129,15	85,00	60,85	2,70
VN2	2,24	1,68	6,34	0,57	1,18	0,63	1,77	136,76	85,00	53,24	2,91
VN3	2,35	1,73	6,58	0,59	1,27	0,63	1,73	127,73	85,00	62,27	3,12
VN4	2,97	2,00	7,99	0,68	1,63	0,63	2,25	124,11	85,00	65,89	4,53
VN5	3,35	2,19	8,93	0,74	1,79	0,63	2,97	135,61	85,00	54,39	5,61
VN6	3,67	2,61	10,10	0,88	1,98	0,98	3,24	122,23	96,00	45,78	7,44
VN7	3,76	2,65	10,34	0,89	2,01	0,98	3,63	127,15	96,00	40,86	7,78
VN8	3,97	2,73	10,81	0,92	2,14	0,98	3,86	126,14	96,00	41,87	8,45
VN9	4,14	2,82	11,28	0,95	2,19	0,98	4,96	135,41	96,00	32,59	9,15
VN10	4,60	2,98	12,22	1,00	2,51	0,98	4,53	123,37	96,00	44,63	10,62
VN11	5,24	3,23	13,63	1,08	2,89	0,98	5,15	120,95	96,00	47,05	13,02
VN12	5,41	3,32	14,10	1,11	2,92	0,98	6,25	129,22	96,00	38,79	13,87
VN13	5,62	3,40	14,57	1,14	3,04	0,98	6,45	128,33	96,00	39,67	14,73
VN14	5,84	3,48	15,04	1,17	3,17	0,98	6,64	127,47	96,00	40,53	15,63
VN15	5,99	3,57	15,51	1,20	3,19	0,98	8,19	135,11	96,00	32,89	16,56
VN16	6,18	3,60	15,74	1,21	3,42	0,98	6,45	122,05	96,00	45,95	17,01
VN17	6,34	3,69	16,21	1,23	3,43	0,98	7,71	129,59	96,00	38,41	17,98
VN18	6,55	3,77	16,68	1,26	3,56	0,98	7,89	128,77	96,00	39,23	18,96
VN19	6,63	3,82	16,92	1,28	3,56	0,98	8,69	132,37	96,00	35,63	19,47
VN20	6,90	3,89	17,39	1,30	3,81	0,98	7,59	123,65	96,00	44,35	20,46
VN21	7,18	4,19	18,33	1,40	3,90	1,12	8,38	127,84	96,00	40,16	23,09
VN22	7,39	4,27	18,80	1,43	4,02	1,12	8,57	127,14	96,00	40,86	24,20
VN23	7,60	4,35	19,27	1,45	4,15	1,12	8,75	126,46	96,00	41,54	25,34
VN24	7,89	4,48	19,97	1,50	4,28	1,12	9,65	128,92	96,00	39,08	27,08
VN25	8,11	4,56	20,44	1,52	4,41	1,12	9,82	128,24	96,00	39,76	28,28
VN26	8,32	4,65	20,91	1,55	4,54	1,12	9,99	127,58	96,00	40,42	29,51
VN27	8,54	4,73	21,38	1,58	4,67	1,12	10,17	126,58	96,00	41,05	30,75
VN28	8,83	4,86	22,09	1,62	4,79	1,12	11,11	129,23	96,00	38,77	32,66
VN29	9,04	4,94	22,56	1,65	4,92	1,12	11,28	128,59	96,00	39,41	33,96
VN30	9,25	5,02	23,03	1,67	5,05	1,12	11,44	127,97	96,00	40,03	35,30
VN31	9,47	5,10	23,50	1,70	5,18	1,12	11,60	127,37	96,00	40,63	36,66
VN32	9,68	5,19	23,97	1,73	5,31	1,12	11,76	126,78	96,00	41,22	38,03
VN33	9,97	5,31	24,67	1,77	5,43	1,12	12,74	128,90	96,00	39,10	40,15
VN34	10,18	5,40	25,14	1,80	5,56	1,12	12,89	128,32	96,00	39,68	41,58
VN35	10,40	5,48	25,61	1,82	5,69	1,12	13,04	127,75	96,00	40,26	43,06

VR



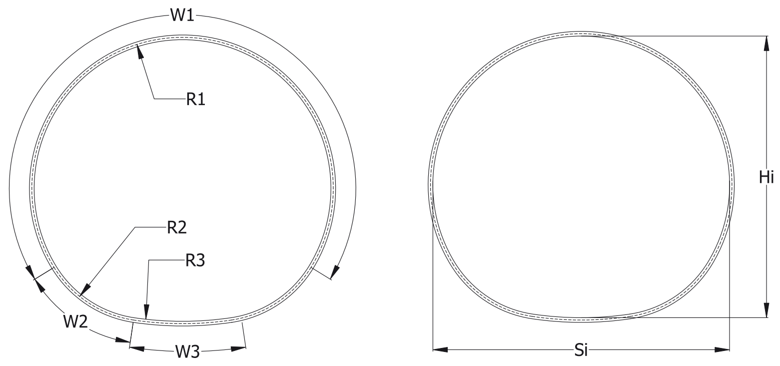
VR	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	R2-in axis [m]	R3-in axis [m]	W1[°]	W2[°]	W3[°]	A-inner [m^2]
VR1	2,84	2,50	8,69	0,84	1,45	0,90	2,67	204,66	60,00	35,34	5,68
VR2	3,17	2,73	9,64	0,92	1,61	0,90	3,49	209,09	60,00	30,91	6,96
VR3	3,24	2,79	9,87	0,94	1,65	0,90	3,94	212,63	60,00	27,38	7,3
VR4	3,64	3,01	10,81	1,01	1,84	0,90	3,46	197,21	60,00	42,79	8,74
VR5	3,78	3,13	11,28	1,05	1,91	0,90	4,12	204,01	60,00	35,99	9,51
VR6	4,03	3,30	11,98	1,11	2,04	0,90	4,57	204,67	60,00	35,33	10,72
VR7	4,17	3,43	12,46	1,15	2,11	0,90	5,52	210,72	60,00	29,28	11,58
VR8	4,58	3,64	13,39	1,22	2,31	0,90	4,79	197,80	60,00	42,20	13,35
VR9	4,78	3,83	14,10	1,28	2,42	0,90	6,00	206,32	60,00	33,68	14,79
VR10	4,91	3,95	14,57	1,32	2,48	0,90	7,11	211,59	60,00	28,41	15,78
VR11	5,27	4,10	15,27	1,37	2,66	0,90	5,70	197,47	60,00	42,53	17,3
VR12	5,52	4,27	15,98	1,43	2,79	0,90	6,13	198,23	60,00	41,77	18,91
VR13	5,77	4,45	16,68	1,48	2,91	0,90	6,56	198,94	60,00	41,06	20,59
VR14	5,96	4,64	17,39	1,55	3,01	0,90	7,94	206,06	60,00	33,94	22,37
VR15	6,17	5,16	18,33	1,72	3,11	1,57	5,91	199,01	60,00	40,99	25,56
VR16	6,39	5,34	19,03	1,78	3,22	1,57	6,92	204,96	60,00	35,04	27,54
VR17	6,64	5,52	19,74	1,84	3,34	1,57	7,38	205,32	60,00	34,68	29,58
VR18	6,89	5,69	20,45	1,89	3,47	1,57	7,84	205,67	60,00	34,33	31,69
VR19	7,17	5,94	21,38	1,98	3,61	1,57	9,84	212,64	60,00	27,36	34,64
VR20	7,32	5,98	21,62	1,99	3,69	1,57	8,36	204,59	60,00	35,42	35,37
VR21	7,57	6,15	22,33	2,05	3,81	1,57	8,83	204,93	60,00	35,07	37,67
VR22	7,85	6,40	23,27	2,13	3,95	1,57	10,86	211,47	60,00	28,53	40,87
VR23	8,07	6,50	23,74	2,16	4,06	1,57	9,78	205,56	60,00	34,44	42,48
VR24	8,26	6,61	24,21	2,20	4,15	1,57	9,80	204,28	60,00	35,72	44,13
VR25	8,51	6,79	24,91	2,26	4,28	1,57	10,27	204,60	60,00	35,40	46,69

VF



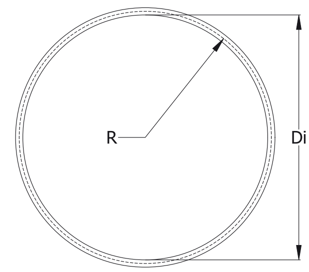
VF	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	R2-in axis [m]	R3-in axis [m]	R4-in axis [m]	W1[°]	W2[°]	W3[°]	W4[°]	A-inner [m^2]
VF1	1,96	1,92	6,34	0,66	0,89	0,70	2,02	1,47	106,27	76,94	26,71	36,57	2,97
VF2	2,62	2,26	7,99	0,76	1,25	0,70	3,17	1,87	118,75	76,94	29,77	28,80	4,71
VF3	2,85	2,49	8,69	0,84	1,16	0,70	3,61	1,98	80,99	76,94	29,88	47,62	5,56
VF4	3,39	3,18	10,57	1,07	1,47	1,22	3,19	2,10	73,44	77,26	29,59	51,23	8,49
VF5	3,54	3,07	10,81	1,03	1,48	0,70	4,93	2,83	99,92	76,94	30,02	38,09	8,56
VF6	3,77	3,24	11,51	1,08	1,69	0,70	5,35	3,35	119,68	76,94	30,22	28,11	9,72
VF7	4,32	3,81	13,16	1,27	1,97	1,22	4,97	2,94	102,42	77,26	29,80	36,63	13,08
VF8	4,55	4,04	13,86	1,35	1,86	1,22	5,42	3,08	79,52	77,26	29,81	48,08	14,48

VT



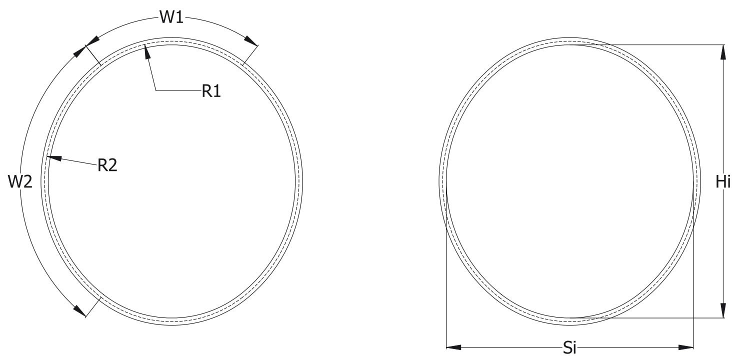
VT	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	R2-in axis [m]	R3-in axis [m]	W1[°]	W2[°]	W3[°]	A-inner [m^2]
VT1	2,83	2,68	8,93	0,90	1,44	1,08	3,18	243,05	50,00	16,95	6,05
VT2	3,25	2,98	10,11	1,00	1,65	1,08	3,01	228,63	50,00	31,37	7,76
VT3	3,32	3,05	10,34	1,02	1,69	1,08	3,31	231,51	50,00	28,49	8,13
VT4	3,40	3,11	10,57	1,04	1,72	1,08	3,66	234,28	50,00	25,73	8,51
VT5	3,56	3,23	11,05	1,08	1,81	1,08	3,70	230,92	50,00	29,08	9,27
VT6	3,71	3,36	11,52	1,13	1,88	1,08	4,51	236,11	50,00	23,90	10,09
VT7	3,86	3,49	11,99	1,17	1,96	1,08	5,65	240,94	50,00	19,06	10,93
VT8	4,22	3,72	12,93	1,25	2,14	1,08	4,50	227,07	50,00	32,93	12,7
VT9	4,29	3,79	13,16	1,27	2,17	1,08	4,85	229,46	50,00	30,54	13,16
VT10	4,44	3,92	13,63	1,31	2,24	1,08	5,70	234,03	50,00	25,97	14,13
VT11	4,53	3,97	13,86	1,33	2,29	1,08	5,22	229,06	50,00	30,94	14,61
VT12	4,75	4,17	14,57	1,39	2,40	1,08	6,61	235,55	50,00	24,45	16,13
VT13	5,04	4,75	15,75	1,59	2,55	1,89	4,92	238,12	50,00	21,88	19,17
VT14	5,19	4,88	16,22	1,63	2,62	1,89	5,81	241,47	50,00	18,53	30,22
VT15	5,45	5,06	16,92	1,69	2,75	1,89	4,91	229,85	50,00	30,15	22,13
VT16	5,68	5,25	17,63	1,75	2,87	1,89	5,89	234,84	50,00	25,16	24,01
VT17	5,92	5,43	18,33	1,81	2,99	1,89	6,31	234,38	50,00	25,62	25,96
VT18	6,22	5,69	19,27	1,90	3,14	1,89	8,24	240,38	50,00	19,62	28,69
VT19	6,42	5,80	19,74	1,93	3,24	1,89	6,46	228,72	50,00	31,29	30,07
VT20	6,50	5,86	19,98	1,95	3,28	1,89	6,79	230,23	50,00	29,77	30,8
VT21	6,72	6,06	20,68	2,02	3,39	1,89	7,95	234,61	50,00	25,39	33
VT22	7,02	6,32	21,62	2,10	3,53	1,89	10,13	240,06	50,00	19,94	36,04
VT23	7,15	6,36	21,86	2,11	3,60	1,89	7,58	228,02	50,00	31,98	36,81
VT24	7,40	6,54	22,56	2,17	3,72	1,89	7,95	227,81	50,00	32,19	39,19
VT25	7,52	6,68	23,03	2,22	3,79	1,89	9,62	234,80	50,00	25,20	40,84
VT26	7,64	6,72	23,26	2,24	3,85	1,89	8,32	227,62	50,00	32,38	41,65
VT27	7,76	6,87	23,74	2,28	3,91	1,89	10,01	234,43	50,00	25,57	43,37
VT28	8,07	7,12	24,68	2,36	4,06	1,89	10,91	235,31	50,00	24,69	46,83
VT29	8,27	7,23	25,14	2,40	4,16	1,89	9,80	229,79	50,00	30,21	48,59
VT30	8,44	7,35	25,62	2,44	4,25	1,89	9,78	228,33	50,00	31,67	50,41
VT31	8,56	7,49	26,08	2,49	4,30	1,89	11,67	234,61	50,00	25,39	52,29
VT32	8,66	7,54	26,32	2,51	4,35	1,89	11,05	231,96	50,00	28,04	53,2
VT33	8,87	7,74	27,02	2,57	4,46	1,89	12,60	235,42	50,00	24,58	56,08
VT34	9,00	7,95	27,50	2,64	4,52	2,15	11,91	235,12	50,00	24,88	58,3
VT35	9,24	8,14	28,20	2,70	4,65	2,15	12,29	234,81	50,00	25,19	61,28

VC



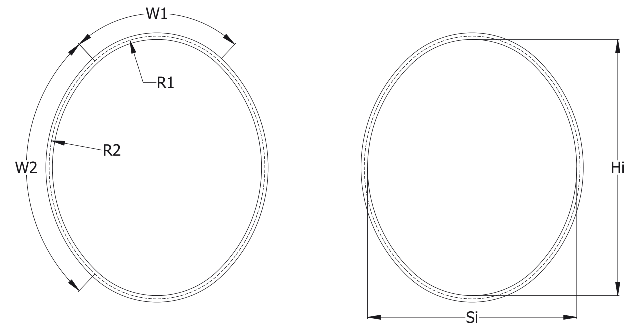
VC	D-inner [m]	Periphery-in axis [m]	x [m]	R-in axis [m]	A-inner [m]	VC	D-inner [m]	Periphery-in axis [m]	x [m]	R-in axis[m]	A-inner[m^2]
VC1	1,52	4,93	0,52	0,78	1,79	VC41	4,51	14,33	1,51	2,28	15,92
VC2	1,59	5,17	0,54	0,82	1,97	VC42	4,59	14,57	1,53	2,32	16,45
VC3	1,67	5,40	0,57	0,86	2,16	VC43	4,66	14,80	1,55	2,36	17,00
VC4	1,74	5,64	0,59	0,90	2,36	VC44	4,74	15,04	1,58	2,39	17,54
VC5	1,82	5,88	0,62	0,93	2,57	VC45	4,81	15,27	1,60	2,43	18,11
VC6	1,89	6,11	0,64	0,97	2,79	VC46	4,89	15,51	1,63	2,47	18,67
VC7	1,97	6,34	0,67	1,01	3,01	VC47	4,96	15,74	1,65	2,50	19,24
VC8	2,04	6,58	0,69	1,05	3,25	VC48	5,04	15,98	1,68	2,54	19,84
VC9	2,12	6,81	0,72	1,08	3,49	VC49	5,11	16,21	1,70	2,58	20,43
VC10	2,19	7,05	0,74	1,12	3,75	VC50	5,19	16,45	1,73	2,62	21,04
VC11	2,27	7,28	0,76	1,16	4,00	VC51	5,26	16,68	1,75	2,65	21,65
VC12	2,34	7,52	0,79	1,20	4,27	VC52	5,33	16,92	1,78	2,69	22,26
VC13	2,42	7,75	0,81	1,23	4,55	VC53	5,41	17,15	1,80	2,73	22,90
VC14	2,49	7,99	0,84	1,27	4,84	VC54	5,48	17,39	1,83	2,77	23,53
VC15	2,57	8,22	0,86	1,31	5,14	VC55	5,56	17,63	1,85	2,80	24,19
VC16	2,64	8,46	0,89	1,35	5,44	VC56	5,63	17,86	1,88	2,84	24,84
VC17	2,72	8,69	0,91	1,38	5,75	VC57	5,71	18,09	1,90	2,88	25,50
VC18	2,79	8,93	0,94	1,42	6,08	VC58	5,78	18,33	1,93	2,92	26,18
VC19	2,87	9,16	0,96	1,46	6,41	VC59	5,86	18,56	1,95	2,95	26,86
VC20	2,94	9,40	0,99	1,50	6,75	VC60	5,93	18,80	1,97	2,99	27,56
VC21	3,02	9,63	1,01	1,53	7,10	VC61	6,01	19,03	2,00	3,03	28,26
VC22	3,09	9,87	1,04	1,57	7,45	VC62	6,08	19,27	2,02	3,07	28,96
VC23	3,17	10,10	1,06	1,61	7,82	VC63	6,16	19,50	2,05	3,10	29,69
VC24	3,24	10,34	1,09	1,64	8,19	VC64	6,23	19,74	2,07	3,14	30,41
VC25	3,32	10,57	1,11	1,68	8,59	VC65	6,31	19,97	2,10	3,18	31,15
VC26	3,39	10,81	1,14	1,72	8,97	VC66	6,38	20,21	2,12	3,22	31,89
VC27	3,46	11,04	1,16	1,76	9,37	VC67	6,46	20,44	2,15	3,25	32,63
VC28	3,54	11,28	1,18	1,79	9,79	VC68	6,53	20,68	2,17	3,29	33,41
VC29	3,61	11,51	1,21	1,83	10,20	VC69	6,61	20,91	2,20	3,33	34,17
VC30	3,69	11,75	1,23	1,87	10,64	VC70	6,68	21,15	2,22	3,37	34,96
VC31	3,76	11,98	1,26	1,91	11,07	VC71	6,76	21,38	2,25	3,40	35,74
VC32	3,84	12,22	1,28	1,94	11,51	VC72	6,83	21,62	2,27	3,44	36,53
VC33	3,90	12,45	1,31	1,98	11,97	VC73	6,91	21,85	2,30	3,48	37,35
VC34	3,99	12,69	1,33	2,02	12,43	VC74	6,98	22,09	2,32	3,51	38,16
VC35	4,06	12,92	1,36	2,06	12,91	VC75	7,06	22,32	2,34	3,55	38,99
VC36	4,14	13,16	1,38	2,09	13,38	VC76	7,13	22,56	2,37	3,59	39,82
VC37	4,21	13,39	1,41	2,13	13,87	VC77	7,20	22,79	2,39	3,63	40,65
VC38	4,29	13,63	1,43	2,17	14,37	VC78	7,28	23,03	2,42	3,66	41,51
VC39	4,36	13,86	1,46	2,21	14,88	VC79	7,35	23,26	2,44	3,70	42,36
VC40	4,44	14,10	1,48	2,24	15,40	VC80	7,43	23,50	2,47	3,74	43,24

VE



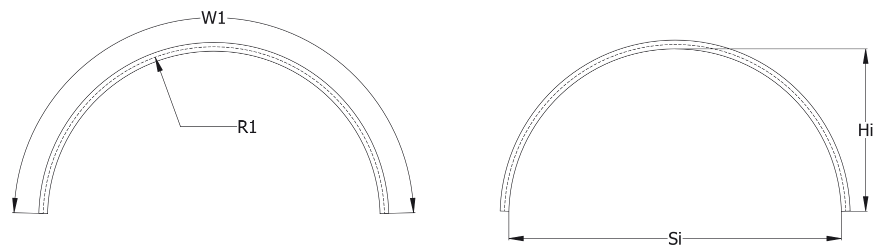
VE	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	R2-in axis [m]	W1[º]	W2[º]	A-inner [m²]
VE1	1,52	1,68	5,17	0,57	0,71	0,91	76,00	104,00	1,96
VE2	1,66	1,83	5,64	0,62	0,76	0,98	70,40	109,60	2,35
VE3	1,93	2,15	6,58	0,73	0,93	1,20	101,40	78,60	3,23
VE4	2,08	2,31	7,05	0,78	0,99	1,27	95,20	84,80	3,73
VE5	2,21	2,46	7,52	0,83	1,06	1,37	101,40	78,60	4,25
VE6	2,51	2,78	8,46	0,93	1,17	1,49	80,60	99,40	5,42
VE7	2,65	2,93	8,93	0,99	1,24	1,58	86,60	93,40	6,05
VE8	2,80	3,09	9,4	1,04	1,30	1,66	82,80	97,20	6,72
VE9	3,09	3,41	10,34	1,14	1,39	1,80	67,60	112,40	8,17
VE10	3,23	3,56	10,81	1,19	1,47	1,89	73,00	107,00	8,94
VE11	3,34	3,72	11,28	1,24	1,59	2,05	101,40	78,60	9,74
VE12	3,53	3,88	11,75	1,30	1,55	2,03	60,60	119,40	10,60
VE13	3,65	4,03	12,22	1,35	1,70	2,17	87,00	93,00	11,47
VE14	3,78	4,19	12,69	1,40	1,77	2,27	91,00	89,00	12,38
VE15	3,96	4,35	13,16	1,45	1,75	2,27	61,60	118,40	13,34
VE16	4,08	4,50	13,63	1,50	1,88	2,39	78,80	101,20	14,32
VE17	4,19	4,66	14,1	1,56	1,99	2,57	101,40	78,60	15,33
VE18	4,36	4,82	15,57	1,61	2,01	2,57	80,40	99,60	16,39
VE19	4,51	4,98	15,04	1,66	2,07	2,64	78,00	102,00	17,48
VE20	4,63	5,13	15,51	1,71	2,18	2,78	92,80	87,20	18,60
VE21	4,78	5,29	15,98	1,76	2,23	2,85	90,40	89,60	19,76
VE22	4,93	5,45	16,45	1,81	2,29	2,93	88,00	92,00	20,95
VE23	5,04	5,61	16,92	1,87	2,39	3,08	101,40	73,60	22,17
VE24	5,19	5,76	17,39	1,92	2,45	3,15	98,80	81,20	23,44
VE25	5,33	5,92	17,86	1,97	2,52	3,25	101,40	78,60	24,74
VE26	5,47	6,08	18,33	2,02	2,58	3,32	99,00	81,00	26,07
VE27	5,61	6,24	18,8	2,07	2,65	3,43	101,40	78,60	27,44
VE28	5,76	6,39	19,27	2,13	2,70	3,47	94,60	85,40	28,85
VE29	5,90	6,55	19,74	2,18	2,78	3,57	97,00	83,00	30,28
VE30	6,05	6,71	20,21	2,23	2,84	3,63	94,80	85,20	31,76
VE31	6,17	6,86	20,68	2,28	2,92	3,77	101,40	78,60	33,26
VE32	6,33	7,02	21,15	2,33	2,99	3,83	99,20	80,80	34,81
VE33	6,46	7,18	21,62	2,39	3,05	3,94	101,40	78,60	36,38
VE34	6,61	7,34	22,09	2,44	3,10	3,98	95,40	84,60	38,01
VE35	6,75	7,49	22,56	2,49	3,18	4,07	97,40	82,60	39,65

VG



VG	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	R2-in axis [m]	W1[º]	W2[º]	A-inner[m²]
VG1	1,43	1,76	5,17	0,60	0,62	1,01	87,00	93,00	1,94
VG2	1,57	1,92	5,64	0,65	0,66	1,09	81,20	98,80	2,32
VG3	1,80	2,25	6,58	0,76	0,83	1,42	113,60	66,40	3,18
VG4	1,94	2,42	7,05	0,81	0,88	1,47	107,00	73,00	3,67
VG5	2,07	2,58	7,52	0,87	0,95	1,62	113,60	66,40	4,19
VG6	2,37	2,91	8,46	0,98	1,02	1,68	92,00	88,00	5,35
VG7	2,49	3,08	8,93	1,03	1,10	1,81	98,20	81,80	5,97
VG8	2,63	3,24	9,40	1,09	1,14	1,88	94,00	86,00	6,63
VG9	2,93	3,57	10,34	1,20	1,20	1,99	78,40	101,60	8,07
VG10	3,06	3,73	10,81	1,25	1,28	2,10	84,00	96,00	8,83
VG11	3,12	3,90	11,28	1,30	1,42	2,43	113,60	66,40	9,60
VG12	3,35	4,07	11,75	1,36	1,32	2,23	71,20	108,80	10,47
VG13	3,43	4,23	12,22	1,41	1,50	2,48	98,60	81,40	11,31
VG14	3,55	4,39	12,69	1,47	1,57	2,61	102,60	77,40	12,21
VG15	3,76	4,56	13,16	1,52	1,49	2,50	72,20	107,80	13,19
VG16	3,85	4,72	13,63	1,57	1,64	2,69	90,00	90,00	14,14
VG17	3,92	4,89	14,10	1,63	1,78	3,04	113,60	66,40	15,10
VG18	4,12	5,05	14,57	1,68	1,76	2,89	91,60	88,40	16,18
VG19	4,26	5,22	15,04	1,74	1,81	2,96	89,20	90,80	17,26
VG20	4,35	5,38	15,51	1,79	1,93	3,21	104,60	75,40	18,34
VG21	4,49	5,54	15,98	1,85	1,98	3,28	102,00	78,00	19,49
VG22	4,64	5,71	16,45	1,90	2,03	3,35	99,60	80,40	20,67
VG23	4,71	5,88	16,92	1,96	2,13	3,65	113,60	66,40	21,85
VG24	4,86	6,04	17,39	2,01	2,19	3,70	110,80	69,20	23,11
VG25	4,98	6,21	17,86	2,06	2,25	3,85	113,60	66,40	24,37
VG26	5,12	6,37	18,33	2,12	2,30	3,90	111,00	69,00	25,70
VG27	5,24	6,54	18,80	2,17	2,37	4,05	113,60	66,40	27,04
VG28	5,40	6,70	19,27	2,23	2,40	4,02	106,40	73,60	28,45
VG29	5,53	6,86	19,74	2,28	2,47	4,16	108,80	71,20	29,86
VG30	5,67	7,03	20,21	2,34	2,52	4,23	106,80	73,20	31,31
VG31	5,77	7,19	20,68	2,39	2,61	4,46	113,60	66,40	32,78
VG32	5,91	7,36	21,15	2,44	2,66	4,51	111,40	68,60	34,31
VG33	6,03	7,52	21,62	2,50	2,73	4,66	113,60	66,40	35,85
VG34	6,20	7,68	22,09	2,55	2,76	4,62	107,20	72,80	37,48
VG35	6,32	7,85	22,56	2,61	2,83	4,77	109,40	70,60	39,09

VA

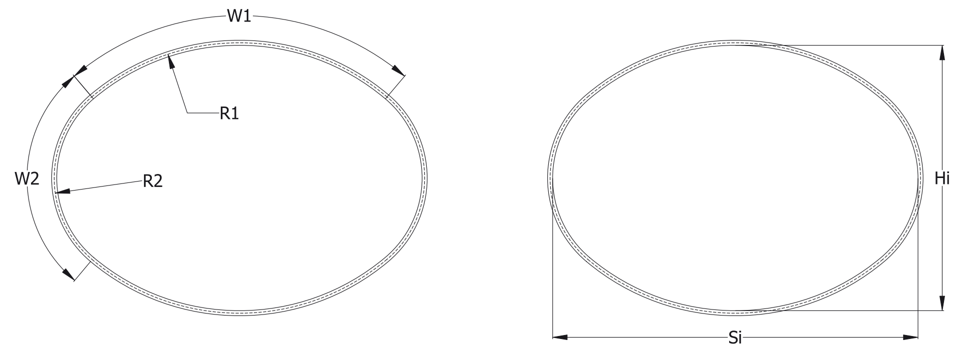


VA	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	W1[°]	A-inner [m²]
VA1	1,70	0,82	2,70	0,28	0,88	177,07	1,10
VA2	1,95	0,86	2,94	0,30	1,01	167,44	1,30
VA3	2,45	1,07	3,64	0,36	1,26	165,79	2,01
VA4	2,95	1,28	4,35	0,43	1,51	164,68	2,88
VA5	2,95	1,40	4,58	0,47	1,50	174,97	3,23
VA6	3,20	1,32	4,58	0,45	1,65	158,94	3,18
VA7	3,20	1,45	4,82	0,49	1,63	169,20	3,56
VA8	3,45	1,36	4,82	0,46	1,80	153,66	3,49
VA9	3,45	1,61	5,29	0,54	1,75	172,86	4,31
VA10	3,70	1,53	5,29	0,51	1,91	158,93	4,25
VA11	3,70	1,65	5,52	0,56	1,88	167,89	4,69
VA12	3,70	1,78	5,76	0,60	1,88	175,90	5,13
VA13	3,95	1,56	5,52	0,53	2,05	154,32	4,61
VA14	3,95	1,82	5,99	0,61	2,00	171,25	5,55
VA15	3,95	1,94	6,23	0,65	2,00	178,47	6,02
VA16	4,20	1,73	5,99	0,58	2,16	158,91	5,48
VA17	4,20	1,86	6,23	0,63	2,14	166,88	5,99
VA18	4,20	1,99	6,46	0,67	2,13	174,09	6,43
VA19	4,45	1,77	6,23	0,59	2,30	154,84	5,88
VA20	4,45	1,90	6,46	0,64	2,27	162,77	6,42
VA21	4,45	2,03	6,70	0,68	2,26	169,96	6,95
VA22	4,45	2,15	6,93	0,72	2,25	176,52	7,48
VA23	4,70	1,81	6,46	0,61	2,45	151,00	6,30
VA24	4,70	1,94	6,70	0,65	2,41	158,96	6,87
VA25	4,70	2,07	6,93	0,69	2,39	166,07	7,43
VA26	4,70	2,20	7,17	0,73	2,38	172,68	7,99
VA27	4,70	2,32	7,40	0,77	2,38	178,63	8,54
VA28	4,95	1,98	6,93	0,66	2,56	155,24	7,32
VA29	4,95	2,11	7,17	0,71	2,53	162,39	7,91
VA30	4,95	2,24	7,40	0,75	2,51	168,92	8,50
VA31	4,95	2,36	7,64	0,79	2,50	174,93	9,09
VA32	4,95	2,48	7,88	0,83	2,50	180,49	9,68
VA33	5,20	2,02	7,17	0,68	2,71	151,78	7,78
VA34	5,20	2,15	7,40	0,72	2,67	158,90	8,41
VA35	5,20	2,28	7,64	0,76	2,65	165,41	9,03
VA36	5,20	2,40	7,87	0,80	2,63	171,41	9,65
VA37	5,20	2,53	8,11	0,84	2,63	177,02	10,26
VA38	5,45	2,19	7,64	0,73	2,81	155,58	8,91
VA39	5,45	2,32	7,87	0,78	2,78	162,07	9,56
VA40	5,45	2,45	8,11	0,82	2,76	168,06	10,22
VA41	5,45	2,57	8,34	0,86	2,75	173,60	10,86
VA42	5,45	2,69	8,58	0,90	2,75	178,76	11,50
VA43	5,70	2,22	7,87	0,74	2,96	152,42	9,42
VA44	5,70	2,36	8,11	0,79	2,92	158,89	10,10
VA45	5,70	2,49	8,34	0,83	2,90	164,86	10,79
VA46	5,70	2,61	8,58	0,87	2,88	170,39	11,47
VA47	5,70	2,73	8,81	0,91	2,88	175,55	12,14
VA48	5,95	2,40	8,34	0,80	3,07	155,90	10,66
VA49	5,95	2,53	8,58	0,84	3,04	161,81	11,37
VA50	5,95	2,65	8,81	0,89	3,02	167,33	12,08

VA	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	W1[°]	A-inner [m²]
VA50	5,95	2,65	8,81	0,89	3,02	167,33	12,08
VA51	5,95	2,78	9,05	0,93	3,01	172,47	12,78
VA52	5,95	2,90	9,28	0,97	3,00	177,29	13,48
VA53	6,20	2,43	8,58	0,81	3,21	152,95	11,21
VA54	6,20	2,57	8,81	0,86	3,18	158,92	11,96
VA55	6,20	2,69	9,05	0,90	3,15	164,39	12,70
VA56	6,20	2,82	9,28	0,94	3,14	169,53	13,44
VA57	6,20	2,94	9,52	0,98	3,13	174,34	14,17
VA58	6,20	3,06	9,75	1,02	3,13	178,85	14,90
VA59	6,45	2,47	8,81	0,82	3,36	150,17	11,77
VA60	6,45	2,60	9,05	0,87	3,32	156,09	12,56
VA61	6,45	2,73	9,28	0,91	3,29	161,58	13,33
VA62	6,45	2,86	9,52	0,95	3,27	166,71	14,10
VA63	6,45	2,99	9,75	1,00	3,26	171,55	14,87
VA64	6,45	3,11	9,99	1,04	3,25	176,06	15,63
VA65	6,70	2,64	9,28	0,88	3,47	153,40	13,16
VA66	6,70	2,77	9,52	0,92	3,43	158,88	13,97
VA67	6,70	2,90	9,75	0,97	3,41	163,99	14,77
VA68	6,70	3,03	9,99	1,01	3,39	168,79	15,57
VA69	6,70	3,15	10,22	1,05	3,38	173,29	16,35
VA70	6,70	3,27	10,46	1,09	3,38	177,54	17,15
VA71	6,95	2,67	9,52	0,89	3,62	150,82	13,76
VA72	6,95	2,81	9,75	0,94	3,58	156,28	14,61
VA73	6,95	2,94	9,99	0,98	3,55	161,39	15,44
VA74	6,95	3,07	10,22	1,02	3,52	166,17	16,27
VA75	6,95	3,19	10,46	1,06	3,51	170,67	17,10
VA76	6,95	3,32	10,69	1,10	3,50	174,91	17,92
VA77	6,95	3,44	10,93	1,14	3,50	178,92	18,74
VA78	7,20	2,85	9,99	0,95	3,72	153,79	15,27
VA79	7,20	2,98	10,22	0,99	3,69	158,88	16,13
VA80	7,20	3,11	10,46	1,04	3,66	163,65	16,99
VA81	7,20	3,24	10,69	1,08	3,64	168,14	17,85
VA82	7,20	3,36	10,93	1,12	3,63	172,38	18,71
VA83	7,20	3,48	11,16	1,16	3,63	176,39	19,55
VA84	7,45	2,88	10,22	0,96	3,87	151,38	15,93
VA85	7,45	3,02	10,46	1,01	3,83	156,46	16,82
VA86	7,45	3,16	10,69	1,05	3,80	161,26	17,72
VA87	7,45	3,28	10,93	1,09	3,78	165,70	18,61
VA88	7,45	3,40	11,16	1,13	3,76	169,93	19,49
VA89	7,45	3,53	11,40	1,17	3,75	173,94	20,37
VA90	7,45	3,64	11,63	1,21	3,75	177,74	21,25
VA91	7,70	3,05	10,70	1,02	3,98	154,12	17,53
VA92	7,70	3,19	11,03	1,06	3,94	152,90	18,46
VA93	7,70	3,32	11,16	1,10	3,92	163,35	19,37
VA94	7,70	3,46	11,40	1,15	3,90	167,61	20,29
VA95	7,70	3,57	11,63	1,19	3,88	171,57	21,20
VA96	7,70	3,69	11,87	1,23	3,88	175,37	22,11
VA97	7,70	3,81	12,10	1,27	3,88	178,78	23,02
VA98	7,95	3,09	10,93	1,03	4,12	151,57	18,23
VA99	7,95	3,22	11,16	1,07	4,08	156,61	19,19
VA100	7,95	3,36	11,40	1,12	4,05	161,07	20,15
VA101	7,95	3,49	11,63	1,16	4,03	165,29	21,10
VA102	7,95	3,61	11,87	1,20	4,02	169,29	22,04
VA103	7,95	3,73	12,10	1,24	4,01	173,08	22,98
VA104	7,95	3,85	12,34	1,28	4,00	176,69	23,91
VA105	8,20	3,26	11,40	1,09	4,23	154,41	19,94
VA106	8,20	3,40	11,63	1,13	4,20	158,87	20,93
VA107	8,20	3,53	11,87	1,17	4,17	163,08	21,91
VA108	8,20	3,66	12,10	1,22	4,15	167,07	22,89
VA109	8,20	3,78	12,34	1,26	4,14	170,86	23,86
VA110	8,20	3,90	12,57	1,30	4,13	174,47	24,82

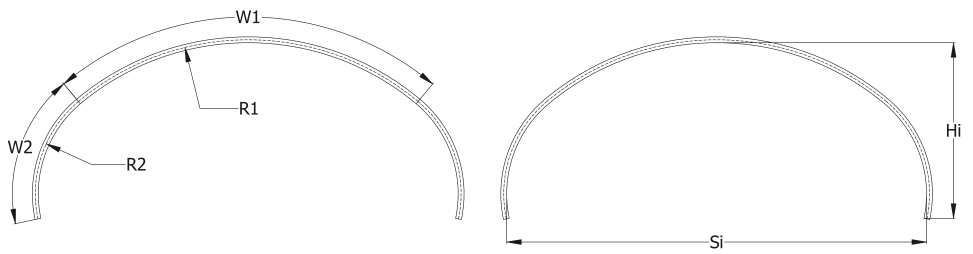
VA	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	W1[°]	A-inner [m^2]
VA111	8,20	4,02	12,81	1,34	4,13	177,90	25,78
VA112	8,45	3,30	11,63	1,10	4,38	152,29	20,69
VA113	8,45	3,43	11,87	1,14	4,34	156,74	21,72
VA114	8,45	3,56	12,10	1,19	4,31	160,94	22,73
VA115	8,45	3,69	12,34	1,23	4,29	164,92	23,74
VA116	8,45	3,82	12,57	1,27	4,27	168,71	24,74
VA117	8,45	3,94	12,81	1,31	4,26	172,31	25,74
VA118	8,45	4,06	13,04	1,35	4,25	175,78	26,74
VA119	8,45	4,18	13,28	1,39	4,25	179,03	27,74
VA120	8,70	3,33	11,87	1,11	4,53	150,24	21,45
VA121	8,70	3,47	11,90	1,15	4,48	154,67	22,52
VA122	8,70	3,60	12,34	1,20	4,45	158,87	23,50
VA123	8,70	3,67	12,57	1,24	4,42	162,84	24,60
VA124	8,70	3,86	12,81	1,28	4,40	166,62	25,64
VA125	8,70	3,99	13,05	1,33	4,39	170,22	26,67
VA126	8,70	4,11	13,28	1,37	4,38	173,65	27,69
VA127	8,70	4,23	13,51	1,41	4,38	176,94	28,72
VA128	8,95	3,51	12,34	1,17	4,63	152,67	23,32
VA129	8,95	3,64	12,57	1,21	4,59	156,86	24,40
VA130	8,95	3,77	12,81	1,25	4,56	160,83	25,47
VA131	8,95	3,90	13,05	1,30	4,54	164,60	26,55
VA132	8,95	4,03	13,28	1,34	4,52	168,19	27,61
VA133	8,95	4,16	13,51	1,38	4,51	171,62	28,66
VA134	8,95	4,27	13,75	1,42	4,50	174,90	29,72
VA135	8,95	4,39	13,98	1,46	4,50	178,04	30,77
VA136	9,20	3,54	12,57	1,18	4,78	150,73	24,13
VA137	9,20	3,68	12,81	1,22	4,74	154,90	25,25
VA138	9,20	3,81	13,04	1,27	4,70	158,89	26,35
VA139	9,20	3,94	13,28	1,31	4,68	162,63	27,45
VA140	9,20	4,07	13,51	1,35	4,66	166,22	28,54
VA141	9,20	4,19	13,75	1,39	4,64	169,65	29,63
VA142	9,20	4,32	13,98	1,43	4,63	172,95	30,73
VA143	9,20	4,44	14,22	1,47	4,63	176,06	31,80
VA144	9,20	4,56	14,45	1,51	4,63	179,07	32,89
VA145	9,45	3,71	13,04	1,24	4,88	153,01	26,09
VA146	9,45	3,85	13,28	1,28	4,85	156,96	27,23
VA147	9,45	3,98	13,51	1,32	4,82	160,72	28,37
VA148	9,45	4,11	13,75	1,37	4,79	164,30	29,50
VA149	9,45	4,23	13,98	1,41	4,78	167,73	30,62
VA150	9,45	4,36	14,22	1,45	4,76	171,00	31,73
VA151	9,45	4,48	14,45	1,49	4,76	174,14	32,86
VA152	9,45	4,60	14,69	1,53	4,75	177,14	33,96
VA153	9,45	4,72	14,93	1,57	4,75	180,03	35,08
VA154	9,70	3,75	13,28	1,25	5,03	151,16	26,95
VA155	9,70	3,88	13,51	1,29	4,99	155,11	28,13
VA156	9,70	4,02	13,75	1,34	4,96	158,86	29,29
VA157	9,70	4,15	13,98	1,38	4,93	162,44	30,45
VA158	9,70	4,28	14,22	1,42	4,91	165,86	31,61
VA159	9,70	4,40	14,46	1,46	4,90	169,13	32,76
VA160	9,70	4,52	14,69	1,50	4,89	172,26	33,91
VA161	9,70	4,65	14,93	1,54	4,88	175,27	35,06
VA162	9,70	4,77	15,16	1,58	4,88	178,16	36,19
VA163	9,95	3,92	13,75	1,30	5,14	153,31	29,02
VA164	9,95	4,06	13,98	1,35	5,10	157,05	30,23
VA165	9,95	4,19	14,22	1,39	5,07	160,63	31,42
VA166	9,95	4,32	14,45	1,43	5,05	164,07	32,61
VA167	9,95	4,44	14,69	1,48	5,03	167,31	33,79
VA168	9,95	4,57	14,92	1,52	5,02	170,44	34,97
VA169	9,95	4,69	15,16	1,56	5,01	173,44	36,14
VA170	9,95	4,81	15,39	1,60	5,00	176,33	37,32

VS



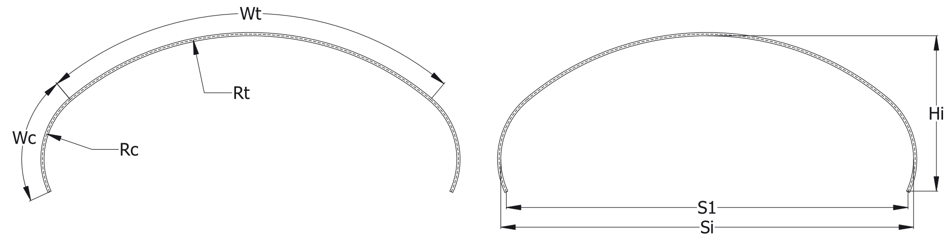
VS	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	R2-in axis [m]	W1[°]	W2[°]	A-inner [m^2]
VS1	3,22	2,34	8,93	0,79	2,02	0,94	80,00	100,00	5,83
VS2	3,87	2,57	10,34	0,87	2,52	0,94	80,00	100,00	7,67
VS3	4,61	3,02	12,22	1,01	3,03	1,08	80,00	100,00	10,72
VS4	4,83	3,10	12,69	1,04	3,20	1,08	80,00	100,00	11,49
VS5	5,05	3,17	13,16	1,06	3,37	1,08	80,00	100,00	12,29
VS6	5,55	3,87	15,04	1,29	3,53	1,48	80,00	100,00	16,67
VS7	5,77	3,95	15,51	1,32	3,70	1,48	80,00	100,00	17,64
VS8	5,98	4,03	15,98	1,35	3,87	1,48	80,00	100,00	18,65
VS9	6,20	4,11	16,45	1,37	4,04	1,48	80,00	100,00	19,67
VS10	6,42	4,19	16,92	1,40	4,21	1,48	80,00	100,00	20,72
VS11	6,73	4,47	17,86	1,49	4,38	1,61	80,00	100,00	23,25
VS12	6,94	4,55	18,32	1,52	5,54	1,61	80,00	100,00	24,39
VS13	7,16	4,63	18,80	1,54	4,71	1,61	80,00	100,00	25,55
VS14	7,38	4,71	19,32	1,57	4,98	1,61	80,00	100,00	26,74
VS15	7,88	5,41	21,15	1,80	5,05	2,02	80,00	100,00	33,04
VS16	8,10	5,48	21,62	1,83	5,22	2,02	80,00	100,00	34,40
VS17	8,31	5,56	22,07	1,85	5,38	2,02	80,00	100,00	35,79
VS18	8,53	5,64	22,56	1,88	5,55	2,02	80,00	100,00	37,21
VS19	8,75	5,72	23,03	1,90	5,72	2,02	80,00	100,00	38,64
VS20	8,96	5,80	23,50	1,93	5,89	2,02	80,00	100,00	40,10
VS21	9,18	5,88	23,97	1,96	6,06	2,02	80,00	100,00	41,58
VS22	9,69	6,58	25,86	2,19	6,23	2,42	80,00	100,00	49,37
VS23	9,90	6,65	26,32	2,21	6,39	2,42	80,00	100,00	51,03
VS24	10,12	6,73	26,79	2,24	6,56	2,42	80,00	100,00	52,72
VS25	10,33	6,81	27,26	2,26	6,73	2,42	80,00	100,00	54,43
VS26	10,65	7,10	28,20	2,36	6,90	2,56	80,00	100,00	58,49
VS27	10,86	7,18	28,67	2,38	7,07	2,56	80,00	100,00	60,29
VS28	11,08	7,25	29,14	2,41	7,24	2,56	80,00	100,00	62,12
VS29	11,39	7,54	30,08	2,50	7,40	2,69	80,00	100,00	66,44
VS30	11,61	7,62	30,55	2,53	7,57	2,69	80,00	100,00	68,36

VB



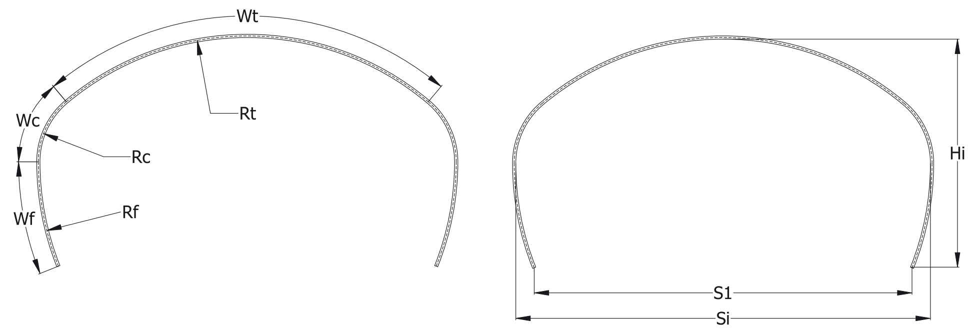
VB	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	R1-in axis [m]	R2-in axis [m]	W1[°]	W2[°]	A-inner [m²]
VB1	3,20	1,34	4,82	0,45	2,02	0,92	80,00	62,00	3,48
VB2	3,85	1,46	5,52	0,49	2,52	0,92	80,00	62,00	4,52
VB3	4,50	1,58	6,23	0,53	3,03	0,92	80,00	62,00	5,66
VB4	4,72	1,62	6,46	0,54	3,20	0,92	80,00	62,00	6,06
VB5	5,40	2,29	8,11	0,77	3,37	1,57	80,00	62,00	10,03
VB6	5,62	2,33	8,34	0,78	3,53	1,57	80,00	62,00	10,59
VB7	5,83	2,37	8,58	0,79	3,70	1,57	80,00	62,00	11,17
VB8	6,05	2,41	8,81	0,80	3,87	1,57	80,00	62,00	11,76
VB9	6,27	2,45	9,05	0,82	4,04	1,57	80,00	62,00	12,36
VB10	6,48	2,49	9,28	0,83	4,21	1,57	80,00	62,00	12,97
VB11	6,70	2,53	9,52	0,84	4,38	1,57	80,00	62,00	13,59
VB12	7,07	2,78	10,22	0,93	4,54	1,79	80,00	62,00	15,83
VB13	7,29	2,82	10,46	0,94	4,71	1,79	80,00	62,00	16,52
VB14	7,50	2,86	10,69	0,95	4,88	1,79	80,00	62,00	17,22
VB15	7,72	2,90	10,93	0,97	5,05	1,79	80,00	62,00	17,94
VB16	7,94	2,94	11,16	0,98	5,22	1,79	80,00	62,00	18,66
VB17	8,15	2,97	11,40	0,99	5,38	1,79	80,00	62,00	19,40
VB18	8,37	3,01	11,63	1,00	5,55	1,79	80,00	62,00	20,15
VB19	9,05	3,69	13,28	1,23	5,72	2,44	80,00	62,00	26,99
VB20	9,27	3,73	13,51	1,24	5,89	2,44	80,00	62,00	27,90
VB21	9,48	3,77	13,75	1,25	6,06	2,44	80,00	62,00	28,82
VB22	9,70	3,81	13,98	1,27	6,23	2,44	80,00	62,00	29,76
VB23	9,92	3,85	14,22	1,28	6,39	2,44	80,00	62,00	30,70
VB24	10,13	3,88	14,45	1,29	6,56	2,44	80,00	62,00	31,66
VB25	10,35	3,92	14,69	1,31	6,73	2,44	80,00	62,00	32,63
VB26	10,72	4,18	15,39	1,39	6,90	2,66	80,00	62,00	36,05
VB27	10,94	4,21	15,63	1,40	7,07	2,66	80,00	62,00	37,09
VB28	11,15	4,25	15,86	1,41	7,24	2,66	80,00	62,00	38,14
VB29	11,37	4,29	16,10	1,43	7,40	2,66	80,00	62,00	39,20
VB30	11,59	4,33	16,33	1,44	7,57	2,66	80,00	62,00	40,57

VBL



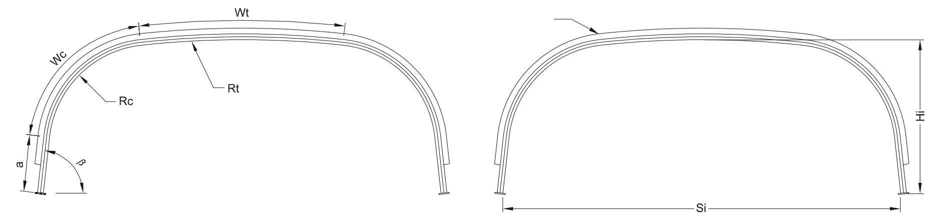
VBL	S1-in axis [m]	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	Rt-in axis [m]	Rc-in axis [m]	Wt[°]	Wc[°]	A-inner [m²]
VBL1	5,67	5,70	2,00	7,87	0,91	3,87	1,08	80,00	65,70	9,30
VBL2	5,70	5,77	2,38	8,58	0,87	3,70	1,48	80,00	66,11	11,41
VBL3	5,92	5,99	2,42	8,81	0,91	3,87	1,48	80,00	66,12	12,00
VBL4	6,08	6,08	2,41	8,81	0,91	3,87	1,62	80,00	60,44	12,03
VBL5	6,30	6,30	2,45	9,05	0,95	4,04	1,62	80,00	60,45	12,63
VBL6	6,52	6,52	2,49	9,29	0,98	4,21	1,62	80,00	60,45	13,25
VBL7	6,57	6,61	2,70	9,76	0,99	4,21	1,75	80,00	63,36	14,77
VBL8	6,78	6,83	2,74	9,99	1,02	4,38	1,75	80,00	63,37	15,45
VBL9	7,00	7,04	2,78	10,22	1,06	4,54	1,75	80,00	63,46	16,13
VBL10	7,20	7,23	2,99	10,69	1,06	4,54	2,02	80,00	61,81	17,81
VBL11	7,39	7,40	2,48	9,99	1,18	5,05	1,35	80,00	62,59	14,80
VBL12	7,63	7,67	3,07	11,17	1,14	4,88	2,02	80,00	61,74	19,31
VBL13	7,65	7,72	2,73	10,69	1,22	5,22	1,48	80,00	65,88	17,19
VBL14	7,85	7,88	3,11	11,40	1,18	5,05	2,02	80,00	61,74	20,08
VBL15	8,07	8,10	3,15	11,63	1,22	5,22	2,02	80,00	61,75	20,85
VBL16	8,21	8,20	3,11	11,59	1,22	5,22	2,15	80,00	57,26	22,73
VBL17	9,26	8,21	3,41	12,67	1,26	5,39	2,15	80,00	43,54	23,58
VBL18	8,46	8,46	2,84	11,40	1,34	5,72	1,62	80,00	60,34	19,32
VBL19	8,55	8,63	3,44	12,57	1,30	5,55	2,15	80,00	64,12	24,42
VBL20	8,89	8,89	2,92	11,87	1,42	6,06	1,62	80,00	60,36	20,80
VBL21	8,94	8,99	3,14	12,34	1,42	6,06	1,75	80,00	63,61	22,84
VBL22	9,16	9,21	3,18	12,57	1,46	6,23	1,75	80,00	63,61	23,65
VBL23	9,19	9,26	3,73	13,52	1,38	5,89	2,42	80,00	62,61	28,31
VBL24	9,41	9,47	3,77	13,75	1,42	6,06	2,42	80,00	62,61	29,23
VBL25	9,62	9,69	3,81	13,98	1,46	6,23	2,42	80,00	62,62	30,17
VBL26	9,67	9,78	4,03	14,45	1,46	6,23	2,56	80,00	64,51	32,42
VBL27	9,89	10,00	4,07	14,69	1,50	6,40	2,56	80,00	64,51	33,42
VBL28	10,07	10,17	3,55	13,99	1,62	6,90	1,89	80,00	65,90	29,28
VBL29	10,10	10,22	4,11	14,92	1,54	6,56	2,56	80,00	64,57	34,43
VBL30	10,26	10,31	4,10	14,92	1,54	6,56	2,69	80,00	61,46	34,47
VBL31	10,45	10,48	3,58	14,22	1,65	7,07	2,02	80,00	61,66	30,19
VBL32	10,48	10,53	4,13	15,15	1,58	6,73	2,69	80,00	61,25	35,48
VBL33	10,53	10,63	4,35	15,63	1,58	6,73	2,83	80,00	63,02	37,93
VBL34	10,69	10,75	4,17	15,57	1,62	6,90	2,69	80,00	61,26	36,52
VBL35	10,88	10,91	3,66	14,70	1,73	7,41	2,02	80,00	61,68	32,04
VBL36	10,91	10,96	4,21	15,63	1,65	7,07	2,69	80,00	61,26	37,56
VBL37	11,01	11,15	4,65	16,57	1,65	7,07	2,96	80,00	64,85	42,66
VBL38	11,18	11,27	4,47	16,33	1,69	7,24	2,83	80,00	63,03	41,20
VBL39	11,39	11,49	4,51	16,57	1,73	7,41	2,83	80,00	63,04	42,32
VBL40	11,66	11,80	4,77	17,28	1,77	7,57	2,96	80,00	64,91	46,15
VBL41	11,82	11,90	4,76	17,28	1,77	7,57	3,10	80,00	61,99	46,20
VBL42	12,02	12,09	4,96	17,74	1,77	7,57	3,37	80,00	60,90	49,00

VBH



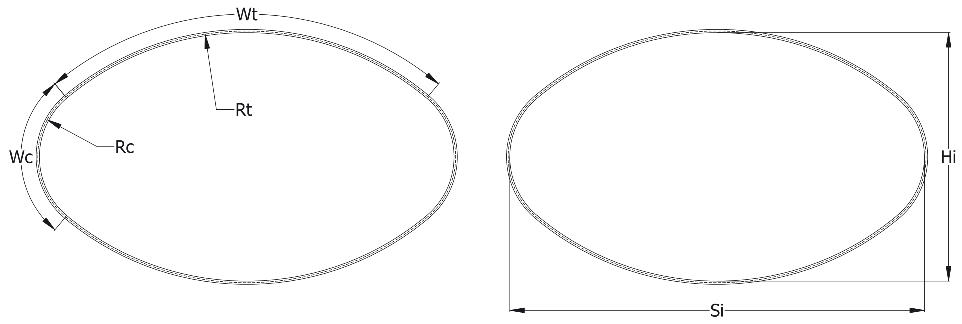
VBH	S1-in axis [m]	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	Rt-in axis [m]	Rc-in axis [m]	Rf-in axis [m]	Wt[°]	Wc[°]	Wf[°]	A-inner [m²]
VBH1	5,19	5,70	3,14	10,23	0,91	3,87	1,08	3,87	80,00	50,00	21,76	15,61
VBH2	5,58	6,08	3,55	11,17	0,91	3,87	1,62	3,87	80,00	50,00	21,76	18,77
VBH3	5,82	6,30	3,59	11,40	0,95	4,04	1,62	4,04	80,00	50,00	21,76	19,65
VBH4	6,06	6,51	3,63	11,64	0,98	4,21	1,62	4,21	80,00	50,00	21,76	20,55
VBH5	6,72	7,40	4,08	13,28	1,18	5,05	1,35	4,97	80,00	50,00	21,76	26,27
VBH6	7,53	8,20	4,74	14,93	1,22	5,22	2,15	5,28	80,00	50,00	21,76	33,62
VBH7	7,77	8,41	4,78	15,16	1,26	5,39	2,15	5,33	80,00	50,00	21,76	34,79
VBH8	7,69	8,46	4,67	15,16	1,34	5,72	1,62	5,72	80,00	50,00	21,76	34,33
VBH9	7,84	8,63	5,04	15,87	1,30	5,55	2,15	5,69	80,00	50,00	21,76	37,70
VBH10	8,17	8,89	4,75	15,63	1,42	6,06	1,62	5,94	80,00	50,00	21,76	36,69
VBH11	8,51	9,26	5,33	16,81	1,38	5,89	2,42	6,04	80,00	50,00	21,76	42,66
VBH12	8,75	9,47	5,37	17,04	1,42	6,06	2,42	6,06	80,00	50,00	21,76	43,98
VBH13	8,87	9,69	5,63	17,75	1,46	6,23	2,42	6,56	80,00	50,00	21,76	47,25
VBH14	9,22	10,17	5,61	18,22	1,62	6,90	1,89	6,90	80,00	50,00	21,76	49,48
VBH15	9,49	10,31	5,93	18,69	1,54	6,56	2,69	6,62	80,00	50,00	21,76	52,77
VBH16	9,73	10,53	5,97	18,92	1,58	6,73	2,69	6,83	80,00	50,00	21,76	54,23
VBH17	9,79	10,75	6,23	19,63	1,61	6,90	2,69	7,01	80,00	50,00	21,76	57,87
VBH18	10,03	10,96	6,27	19,86	1,65	7,07	2,69	6,96	80,00	50,00	21,76	59,41
VBH19	10,23	11,15	6,48	20,33	1,65	7,07	2,96	7,02	80,00	50,00	21,76	62,35
VBH20	10,77	11,80	6,82	21,51	1,77	7,57	2,96	7,63	80,00	50,00	21,76	69,55

BC



BC	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	Rt [m]	Rc [m]	Wt[°]	Wc[°]	ß[°]	a[m]	A-inner [m²]
BC1	3,14	1,20	4,59	8,82	1,02	7,35	72,33	76,00	0,44	3,13
BC2	3,49	1,39	5,29	8,82	1,02	9,97	75,02	80,00	0,55	4,17
BC3	3,79	1,47	5,76	8,82	1,02	12,59	77,72	84,00	0,54	4,89
BC4	3,81	1,22	5,29	8,82	1,02	9,97	72,36	77,34	0,37	4,00
BC5	4,04	1,81	6,47	8,82	1,02	12,59	72,37	78,65	0,99	6,27
BC6	4,16	1,30	5,76	8,82	1,02	15,22	72,35	79,96	0,40	4,69
BC7	4,51	1,38	6,23	8,82	1,02	17,83	72,35	81,27	0,44	5,44
BC8	4,69	1,97	7,41	8,82	1,02	17,83	72,35	81,27	1,06	8,13
BC9	4,84	1,60	6,94	8,82	1,02	20,45	75,02	85,24	0,57	6,82
BC10	5,17	1,69	7,41	8,82	1,02	23,07	75,01	86,55	0,61	7,73
BC11	5,27	1,42	6,94	8,82	1,02	23,57	69,69	81,47	0,42	6,45
BC12	5,30	2,04	8,11	8,82	1,02	23,07	72,35	83,89	1,01	9,59
BC13	5,61	1,52	7,41	8,82	1,02	26,19	69,69	82,78	0,45	7,34
BC14	6,07	1,42	7,64	8,82	1,02	30,28	72,36	87,50	0,21	7,33
BC15	6,11	1,89	8,58	8,82	1,02	30,28	72,36	87,50	0,68	10,20
BC16	6,26	1,60	8,11	8,82	1,02	31,43	69,69	85,40	0,40	8,58
BC17	6,43	2,00	9,05	8,82	1,02	32,90	72,36	88,81	0,71	11,33
BC18	6,44	2,35	9,76	8,82	1,02	32,90	72,36	88,81	1,06	13,60
BC19	6,59	1,71	8,58	8,82	1,02	34,05	69,69	86,71	0,43	9,64
BC20	6,92	1,82	9,05	8,82	1,02	36,67	69,69	88,02	0,47	10,76
BC21	6,95	2,17	9,76	8,82	1,02	36,67	69,69	88,02	0,82	13,20

VH



VH	Si-inner [m]	Hi-inner [m]	Periphery-in axis [m]	x [m]	Rt-in axis [m]	Rc-in axis [m]	Wt[°]	Wc[°]	A-inner [m²]
VH1	5,70	3,41	14,57	0,91	3,87	1,08	80,00	100,00	15,26
VH2	5,77	3,95	15,51	0,87	3,70	1,48	80,00	100,00	18,11
VH3	5,98	4,03	15,97	0,91	3,87	1,48	80,00	100,00	19,13
VH4	6,08	4,24	16,45	0,91	3,87	1,62	80,00	100,00	20,47
VH5	6,30	4,32	16,93	0,95	4,04	1,62	80,00	100,00	21,55
VH6	6,51	4,39	17,38	0,98	4,21	1,62	80,00	100,00	22,66
VH7	6,61	4,60	18,01	0,98	4,20	1,80	80,00	100,00	24,40
VH8	6,83	4,68	18,34	1,00	4,27	1,90	80,00	100,00	25,79
VH9	7,04	4,76	18,79	1,01	4,35	1,99	80,00	100,00	27,18
VH10	7,23	5,17	19,73	1,03	4,43	2,08	80,00	100,00	28,57
VH11	7,40	4,38	18,81	1,05	4,50	2,17	80,00	100,00	29,96
VH12	7,67	5,33	20,68	1,06	4,58	2,27	80,00	100,00	31,35
VH13	7,72	4,66	19,75	1,08	4,66	2,36	80,00	100,00	32,74
VH14	7,88	5,41	21,15	1,10	4,74	2,45	80,00	100,00	34,13
VH15	8,10	5,49	21,63	1,12	4,81	2,54	80,00	100,00	35,52
VH16	8,20	5,69	22,09	1,13	4,89	2,64	80,00	100,00	36,91
VH17	8,91	5,77	22,56	1,15	4,97	2,73	80,00	100,00	38,30
VH18	8,46	5,10	21,61	1,17	5,04	2,82	80,00	100,00	39,69
VH19	8,63	5,85	23,03	1,18	5,12	2,91	80,00	100,00	41,08
VH20	8,89	5,26	22,55	1,20	5,20	3,01	80,00	100,00	42,47
VH21	8,89	5,47	23,04	1,22	5,27	3,10	80,00	100,00	43,86
VH22	9,21	5,55	23,51	1,23	5,35	3,19	80,00	100,00	45,25
VH23	9,25	6,42	24,91	1,25	5,43	3,28	80,00	100,00	46,64
VH24	9,47	6,50	25,38	1,27	5,50	3,38	80,00	100,00	48,03
VH25	9,69	6,58	25,86	1,28	5,58	3,47	80,00	100,00	49,42
VH26	9,78	6,78	26,31	1,30	5,66	3,56	80,00	100,00	50,81
VH27	10,00	6,86	26,79	1,32	5,74	3,65	80,00	100,00	52,20
VH28	10,17	6,07	25,86	1,33	5,81	3,75	80,00	100,00	53,59
VH29	10,22	6,94	27,26	1,35	5,89	3,84	80,00	100,00	54,98
VH30	10,31	7,15	27,73	1,37	5,97	3,93	80,00	100,00	56,37
VH31	10,48	6,35	26,79	1,39	6,04	4,02	80,00	100,00	57,76
VH32	10,53	7,23	28,21	1,40	6,12	4,12	80,00	100,00	59,15
VH33	10,62	7,43	28,66	1,42	6,20	4,21	80,00	100,00	60,54
VH34	10,75	7,30	28,67	1,44	6,27	4,30	80,00	100,00	61,93
VH35	10,91	6,51	27,73	1,45	6,35	4,39	80,00	100,00	63,32
VH36	10,96	7,38	29,13	1,47	6,43	4,49	80,00	100,00	64,71
VH37	11,15	7,80	30,08	1,49	6,50	4,58	80,00	100,00	66,10
VH38	11,27	7,67	30,08	1,50	6,58	4,67	80,00	100,00	67,49
VH39	11,49	7,75	30,56	1,52	6,66	4,76	80,00	100,00	68,89
VH40	11,80	8,03	31,48	1,54	6,74	4,85	80,00	100,00	70,28
VH41	11,90	8,24	31,96	1,55	6,81	4,95	80,00	100,00	71,67
VH42	12,09	8,65	32,89	1,57	6,89	5,04	80,00	100,00	73,06

Note:

MultiPlate MP200 Box structures need to be individually designed due to necessity of using additional reinforcing rib plates. Extent and location of ribs depend on parameters of the structure and live load and are determined based on static calculations.
Special sizes are available.

While shape of box structure and rib extent are designed please contact our Technical Department.

DIVERSE MARKETS

ROADS

RAILWAY

FORESTS

MELIORATIONS

MININGS

ARMY

OTHERS

INNOVATIVE INFRASTRUCTURE

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HelCor

HelCor PA

PECOR OPTIMA

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