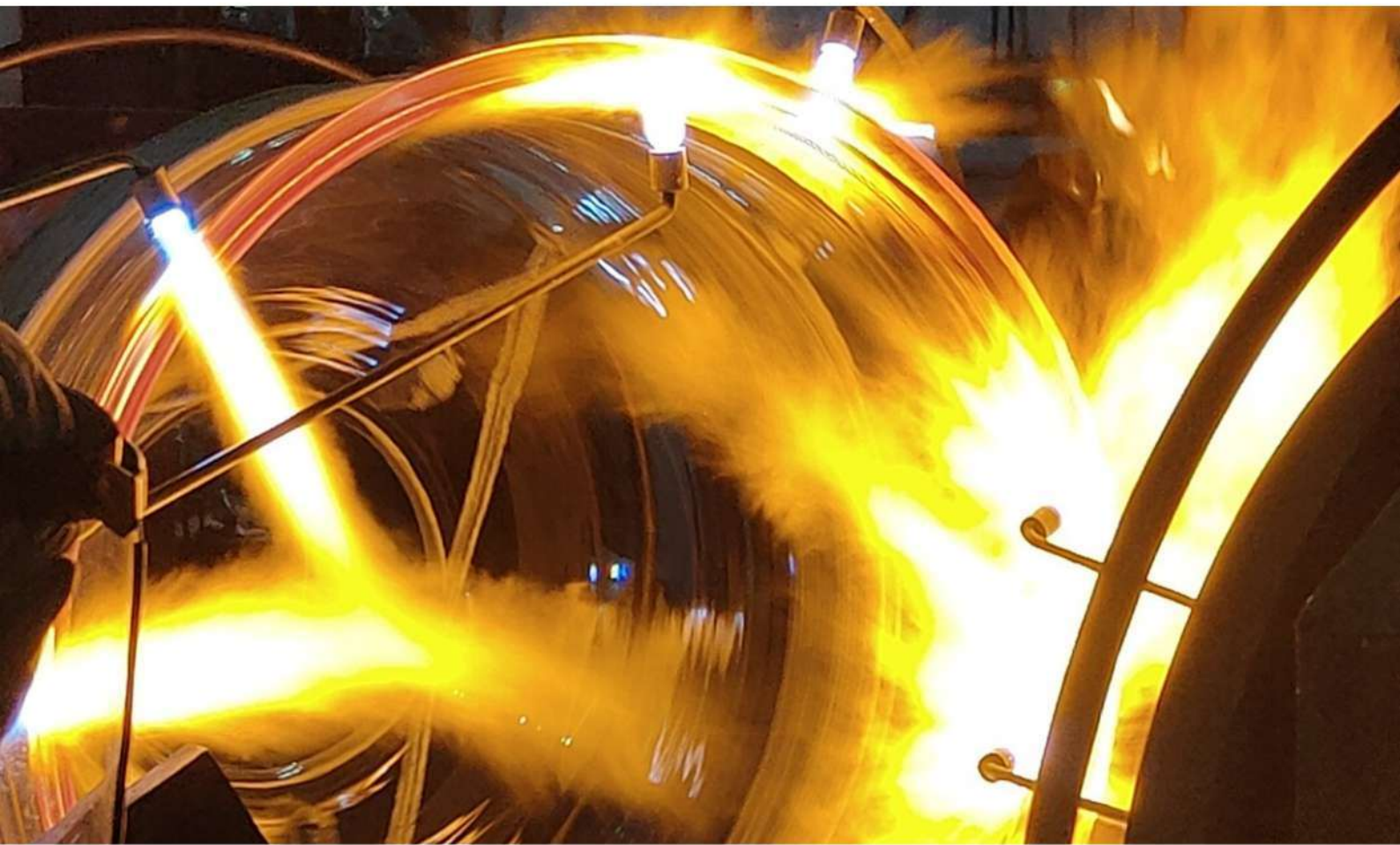


PRODUCT CATALOG



VESSELS AND BATH



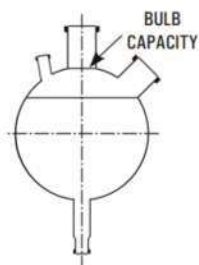
In the glass process plants, vessels serve multiple functions such as reaction vessel, receiving vessel, separators, and measuring or feed containers. These vessels are available in spherical designs ranging from 5 liters to 500 liters and in cylindrical designs ranging from 5 liters to 500 liters. Cylindrical vessels can also be equipped with optional glass jackets for utility circulation and vacuum sealed jackets. Each vessel is designed with a bottom outlet, allowing for the selection of an appropriate valve from a variety of available options.



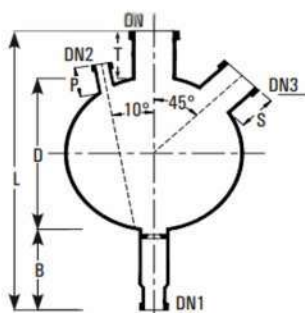


VESSELS

SPHERICAL VESSEL - GENERAL DATA

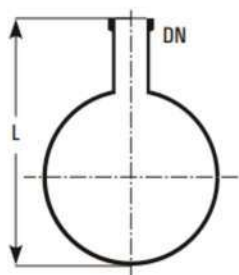


Nominal Capacity (Ltrs)	Maximum Pressure (bar)
5 L	1
10 L	0.8
20 L	0.7
50 L	0.5
100 L	0.4
200 L	0.3
300 L	0.2
500 L	0.1



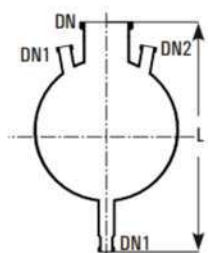
Nominal Capacity (Ltrs.)	L	D	DN	T	DN1	B	DN2	P	DN3	S
5	425	225	50	75	25	125	25	50	40	75
10	575	285	80	90	25	200	25	50	40	75
20	650	350	100	100	25	200	25	50	40	75
50	840	490	100	100	40	200	40	75	100	100
50A	840	490	150	150	40	200	40	75	100	100
100	950	600	150	150	40	200	40	75	100	100
100A	950	600	225	150	40	200	40	75	100	100
200	1200	750	225	225	40	200	40	75	100	100
200A	1200	750	300	250	40	200	40	75	100	100
300	1310	860	300	300	50	200	50	75	100	100
300A	1310	860	400	300	50	200	50	75	100	100
500	1450	1000	450	250	50	200	50	75	150	165

SINGLE NECK SPHERICAL VESSELS



Cat. Ref.	Nominal Capacity	L	DN
VSA5	5 L	300	50
VSA10	10 L	375	80
VSA20	20 L	450	100
VSA50	50 L	640	100
VSA50A	50 L	640	150
VSA100	100 L	750	150
VSA100A	100 L	750	225
VSA200	200 L	1000	225
VSA200A	200 L	1000	300
VSA300	300 L	1110	300
VSA300A	300 L	1110	400
VSA500	500 L	1250	450

THREE NECK BOTTOM OUTLET SPHERICAL VESSELS



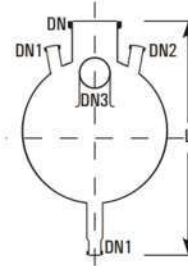
Cat. Ref.	Nominal Capacity	L	DN	DN1	DN2
VSM5	5 L	425	50	25	25
VSM10	10 L	575	80	25	25
VSM20	20 L	650	100	25	25
VSM50	50 L	840	100	40	40
VSM50A	50 L	840	150	40	40
VSM100	100 L	950	150	40	40
VSM100A	100 L	950	225	40	40
VSM200	200 L	1200	225	40	40
VSM200A	200 L	1200	300	50	50
VSM300	300 L	1310	300	50	50
VSM300A	300 L	1310	400	50	50
VSM500	500 L	1450	450	50	50

VESSELS



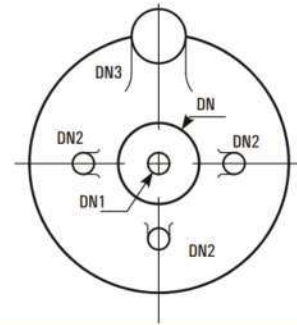
Cat. Ref.	Nominal Capacity	L	DN	DN1	DN2	DN3
VSPL5	5 L	425	50	25	25	40
VSPL10	10 L	575	80	25	25	40
VSPL20	20 L	650	100	25	25	40
VSPL50	50 L	840	100	40	40	100
VSPL50A	50 L	840	150	40	40	100
VSPL100	100 L	950	150	40	40	100
VSPL100A	100 L	950	225	40	40	100
VSPL200	200 L	1200	225	40	40	100
VSPL200A	200 L	1200	300	40	40	100
VSPL300	300 L	1310	300	50	50	100
VSPL300A	300 L	1310	400	50	50	100
VSPL500	500 L	1450	450	50	50	150

FOUR NECK BOTTOM OUTLET SPHERICAL VESSELS



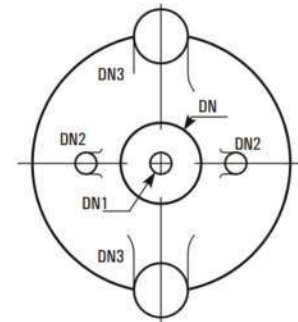
Cat. Ref.	Nominal Capacity	L	DN	DN1	DN2	DN3
VSL5	5 L	425	50	25	25	40
VSL10	10 L	575	80	25	25	40
VSL20	20 L	650	100	25	25	40
VSL50	50 L	840	100	40	40	100
VSL50A	50 L	840	150	40	40	100
VSL100	100 L	950	150	40	40	100
VSL100A	100 L	950	225	40	40	100
VSL200	200 L	1200	225	40	40	100
VSL200A	200 L	1200	300	50	50	100
VSL300	300 L	1310	300	50	50	100
VSL300A	300 L	1310	400	50	50	100
VSL500	500 L	1450	450	50	50	150

FIVE NECK BOTTOM OUTLET SPHERICAL VESSEL



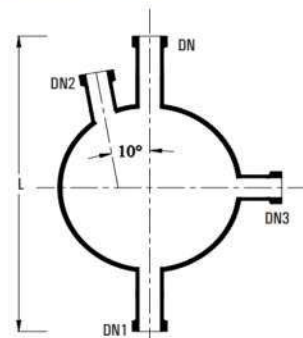
Cat. Ref.	Nominal Capacity	L	DN	DN1	DN2	DN3
VS 5	5 L	425	50	25	25	40
VS 10	10 L	575	80	25	25	40
VS 20	20 L	650	100	25	25	40
VS 50	50 L	840	100	40	40	100
VS 50A	50 L	840	150	40	40	100
VS 100	100 L	950	150	40	40	100
VS 100A	100 L	950	225	40	40	100
VS 200	200 L	1200	225	40	40	100
VS 200A	200 L	1200	300	40	40	100
VS 300	300 L	1310	300	50	50	100
VS 300A	300 L	1310	400	50	50	100
VS 500	500 L	1450	450	50	50	150

FIVE NECK BOTTOM OUTLET SPHERICAL VESSEL



Cat. Ref.	Nominal Capacity	L	DN	DN1	DN2	DN3
VSD 5	5 L	425	50	25	25	40
VSD 10	10 L	500	80	25	25	40
VSD 20	20 L	575	100	25	25	40
VSD 50	50 L	765	100	40	40	100
VSD 50A	50 L	765	150	40	40	100
VSD 100	100 L	875	150	40	40	100
VSD 100A	100 L	875	225	40	40	100
VSD 200	200 L	1125	225	40	40	100
VSD 200A	200 L	1125	300	40	40	100
VSD 300	300 L	1235	300	50	50	100
VSD 300A	300 L	1235	400	50	50	100
VSD 500	500 L	1375	450	50	50	150

SPHERICAL VESSELS WITH NOZZLE AT 90°



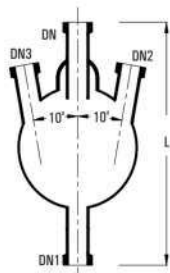
These vessels are used in circulatory boiler system and are to be supported on a vessel holder. Additional nozzles can be provided for special requirements on request.



VESSELS

SPHERICAL RECEIVERS

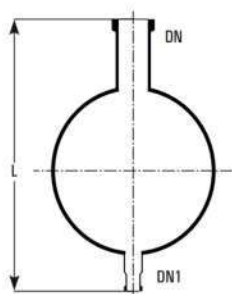
Receivers are provided with builtin dip pipe. These are to be supported on vessel holding ring.



Cat. Ref.	Nominal Capacity	L	DN	DN1	DN2 (10°)	DN3 (10°)
VR5	5 L	350	25	25	25	
VR10	10 L	425	25	25	25	
VR20	20 L	500	25	25	25	
VR50	50 L	675	40	25	25	
VRB5	5 L	350	25	25	25	25
VRB10	10 L	425	25	25	25	25
VRB20	20 L	500	25	25	25	25
VRB50	50 L	675	40	25	25	25

ADDITION VESSELS

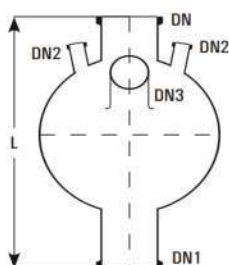
These vessels are provided with a short bottom outlet. These should be supported a vessel holder or vessel holding ring.



Cat. Ref.	Nominal Capacity	L	DN	DN1
VA5	5 L	375	50	25
VA10	10 L	450	80	25
VA20	20 L	525	100	25
VA50	50 L	715	100	40
VA50A	50 L	715	150	40
VA100	100 L	875	150	40
VA100A	100 L	875	225	40
VA200	200 L	1125	225	40
VA200A	200 L	1125	300	40
VA300	300 L	1235	300	50
VA300A	300 L	1235	400	50
VA500	500 L	1375	450	50

SPHERICAL VESSELS WITH WIDE BOTTOM OUTLET

These vessels are usually used to fit immersion exchangers in the bottom. Special heating mantle or heating bath should be used if used with.



Cat. Ref.	Nominal Capacity	L	DN	DN1	DN2	DN3
VSR50	50 L	790	100	150	40	100
VSR50A	50 L	790	150	150	40	100
VSR100	100 L	900	150	150	40	100
VSR100A	100 L	900	225	150	40	100
VSR200	200 L	1150	225	150	40	100
VSR200A	200 L	1150	300	150	40	100
VSE50	50 L	840	100	100	40	100
VSE50A	50 L	840	150	150	40	100
VSE100	100 L	950	150	150	40	100
VSE100A	100 L	950	225	225	40	100
VSE200	200 L	1200	225	225	40	100
VSE200A	200 L	1200	300	300	40	100

SPHERICAL CYCLONE

Cyclone can be used for separation of droplets and solids from gases and vapors. Cyclone to be supported on a vessel holder. A dip pipe should be used on the top neck.

Cat. Ref.	Nominal Capacity	L	DN	DN1	DN2	DN3
VSCY 5	5 L	375	40	25	25	40
VSCY 10	10 L	450	40	25	25	40
VSCY 20	20 L	575	80	25	25	50
VSCY 50	50 L	725	100	40	40	50

VESSELS

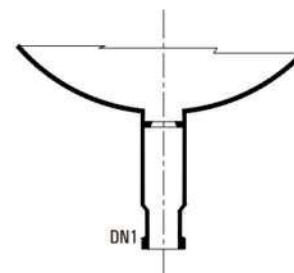


VESSELS WITH BOTTOM OUTLET VALVE SEAT

To fit a bottom outlet valve (Flush Bottom type) on spherical or cylindrical vessels, a valve seat can be installed at the bottom outlet. To indicate this modification, append the suffix "/B" to the catalogue reference of the vessel. For instance, change 'VSL50' to 'VSL50/B'.

Usage Guidelines for Spherical Vessels:

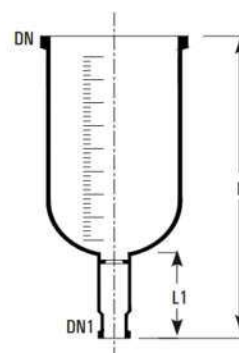
- The central nozzle, designated as DN across all vessel types, is generally used for either fixing a stirrer or, if no stirrer is present, for a vapor outlet.
- The bottom outlet, labeled as DN1, is primarily used for drain. In VSR and VSE types, it can also be used for fixing immersion heat exchanger.
- The smaller side nozzles, known as DN2, serve various purposes:
 - (a) Installation of a thermometer pocket.
 - (b) Attachment of a dip pipe for liquid inlet.
 - (c) Installation of a sparger for gas purging.
 - (d) Fitting of a vacuum control or vent valve.
 - (e) Addition of solids.
- The larger side nozzle, referred to as DN3, is used for vapor outlet when a stirrer is mounted on the central neck. It can also be employed for cleaning if the central neck is used for vapor outlet.
- Vessels with a long bottom outlet, such as VSM, VSPL, VSL, and VS, can be supported by a heating mantle or bath. Vessels with a short bottom outlet, such as VSD, VR, and VA, should be supported by a vessel holder. For vessels up to 20 liters in size, vessel holding rings can be used in place of a vessel holder.



CYLINDRICAL VESSELS

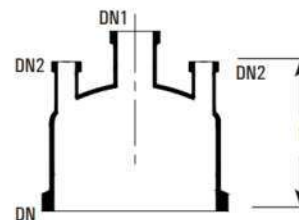
Cylindrical vessels of 50 Liters and above must be supported in a vessel holder.

Cat. Ref.	Nominal Capacity	DN	DN1	L	L1
VZ5/4	5 L	100	25	850	175
VZ10/6	10 L	150	25	775	175
VZ20/9	20 L	225	25	750	175
VZ20/12	20 L	300	40	575	175
VZ50/12	50 L	300	40	1000	175
VZ50/16	50 L	400	40	710	175
VZ100/16	50 L	400	40	1050	175
VZ100/18	100 L	450	40	900	175
VZ150/16	150 L	400	40	1450	175
VZ150/18	150 L	450	40	1225	175
VZ200/18	200 L	450	40	1500	175
VZ300/24	300 L	600	50	1340	175



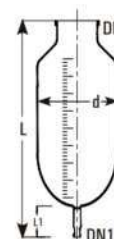
CYLINDRICAL VESSEL COVERS

Cat. Ref.	DN	DN1	DN2	L
VZA4	100	40	2x25	200
VZA6	150	40	2x40	200
VZA9	225	50	3x25	250
VZA12	300	80	3x40	250
VZA16	400	100	3x40	275
VZA18	450	100	4x40	275
VZA24	600	100	4x40	300



KETTLES

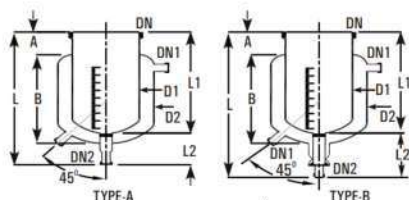
Cat. Ref.	Nominal Capacity	DN	DN1	L	L1	d
KZ200	200 L	300	40	1400	175	540
KZ350	350 L	400	50	1500	175	620





VESSELS

JACKETED VESSELS



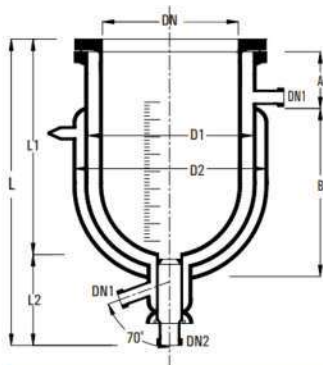
For specialized uses, cylindrical vessels can be equipped with a jacket for heating or cooling purposes. This jacket is attached to the vessel using a Viton O-ring and other sealing materials. The seal helps to reduce stress between the vessel and jacket by accommodating thermal expansion and allowing for movement.

Glass Jackets

Glass jackets are suitable for use with a maximum operating pressure of 0.5 bar and can withstand temperatures up to 130°C. It is important that the temperature difference between the jacket and the vessel does not exceed 120°C.

Cat. Ref.	L	L1	L2	A	B	D1	D2	DN	DN1	DN2	TYPE
VZD5/6	500	325	125	75	275	165	215	150	25	25	A
VZD10/9	575	400	125	90	340	230	280	225	25	25	B
VZD20/12	625	450	125	100	385	315	370	300	25	40	B
VZD30/12	750	575	175	100	510	315	370	300	25	40	B
VZD50/12	1050	875	175	-	-	315	365	300	25	40	B
VZD50/16	825	650	175	-	-	415	500	400	25	40	B
VZD100/20	955	780	175	-	-	516	600	500	25	40	B
VZD200/24	1175	1000	175	-	-	615	700	600	25	40	B

JACKETED VESSELS (Double Jacketed)



Double Jacketed / Triple Wall jacketed reactors come with vacuum jacket.

Vacuum Jacket ensures:

- Transparent Insulation
- Minimum heat loss
- Process visibility
- Minimize frost formation during cryogenic reaction.

Cat. Ref.	L	L1	L2	A	B	D1	D2	DN	DN1	DN2
VZT5/6/8	620	350	175	75	310	215	275	150	25	25
VZT10/9/12	700	420	175	90	370	315	390	225	25	25
VZT20/12/14	675	500	175	125	368	365	423	300	25	40
VZT50/16/18	825	650	175	200	350	465	523	400	25	40

DECANTERS

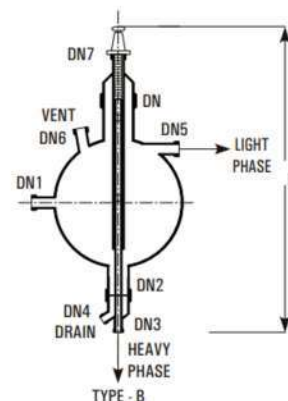
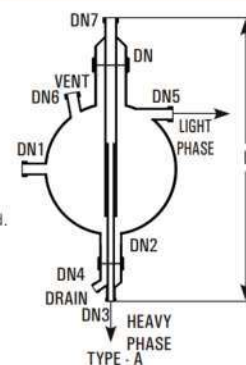
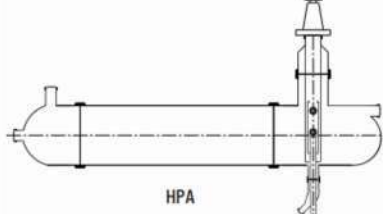
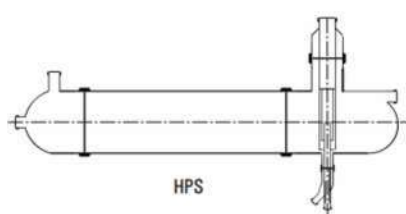
Decantation is a process used to separate two immiscible liquids with different densities. When these liquids are allowed to settle, they form two distinct layers, with the heavier liquid at the bottom and the lighter one on top. We have designed a Decanter specifically for continuous decantation.

The liquid mixture is continuously introduced into the Decanter at a low velocity, allowing ample residence time for the layers to separate. The lighter liquid is continuously removed from the light phase outlet at the top, while the heavier liquid flows into a dip pipe at the bottom, overflows into the discharge pipe, and is removed from the lower outlet.

Our Decanter enables continuous separation with visual monitoring and maintains separation even after the feed has stopped.

Cat. Ref.	L	L1	L2	A	B	D1	D2	DN	DN1	DN2	TYPE
VZD5/6	500	325	125	75	275	165	215	150	25	25	A
VZD10/9	575	400	125	90	340	230	280	225	25	25	B
VZD20/12	625	450	125	100	385	315	370	300	25	40	B
VZD30/12	750	575	175	100	510	315	370	300	25	40	B
VZD50/12	1050	875	175	-	-	315	365	300	25	40	B
VZD50/16	825	650	175	-	-	415	500	400	25	40	B
VZD100/20	955	780	175	-	-	516	600	500	25	40	B
VZD200/24	1175	1000	175	-	-	615	700	600	25	40	B

Decanters can also be fabricated with horizontal cylindrical vessels to provide larger separating surface.



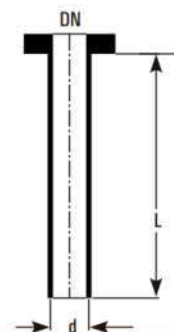
VESSELS



DIP PIPES

Dip pipes are used as liquid inlet for the vessels

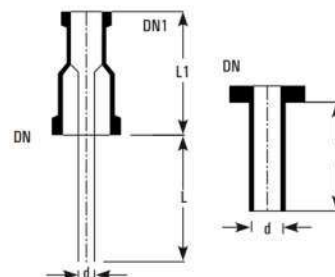
Cat. Ref.	For Vessel	DN	DN1	d	L
DP20/1	20 L	25	25	12	300
DP50/1.5	50 L	40	25	19	400
DP100/1.5	100 L	40	25	19	500
DP200/1.5	200 L	40	25	19	600



SHORT DIP PIPES

Short dip pipes are used as re-entry tubes for vessels, heat exchangers etc.

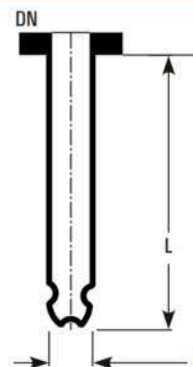
Cat. Ref.	DN	DN1	d	L	L1
DP1/1	25	25	12	100	100
DP1.5/1	40	25	19	100	100
DP1.5/1.5	40	40	19	100	100
DP2/1	50	25	25	100	100
DP2/1.5	50	40	25	100	100
DP3/1.5	80	40	37	100	125
DP4/1	100	25	25	100	150
DP4/2	100	50	50	100	150



GAS SPARGERS

Gas Spargers are used for gas feed/Sparging in the vessels.

Cat. Ref.	For Vessel	DN	DN1	d	L	No. of Holes
SPG20/1	20 L	25	25	12	300	5x1mm
SPG50/1.5	50 L	40	25	19	400	5x1mm
SPG100/1.5	100 L	40	25	19	500	5x1mm
SPG200/1.5	200 L	40	25	19	600	5x1mm



THERMOMETER POCKETS

Thermometer pockets are used as branch to accommodate temperature sensors to measure and monitor the temperature inside the vessel.

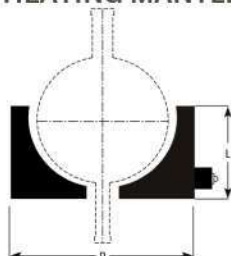
Cat. Ref.	For Vessel	DN	d	L
TP20/1	20 L	25	12	300
TP50/1.5	50 L	40	19	400
TP100/1.5	100 L	40	19	500
TP200/1.5	200 L	40	19	600





BATHS

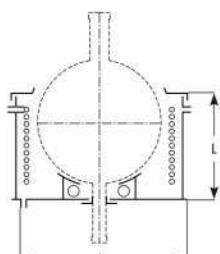
HEATING MANTLES



Heating mantles are used for electrical heating of the vessels.

Cat. Ref.	L	L1	L2	A	B	D1	D2	DN	DN1	DN2	TYPE
VZD5/6	500	325	125	75	275	165	215	150	25	25	A
VZD10/9	575	400	125	90	340	230	280	225	25	25	B
VZD20/12	625	450	125	100	385	315	370	300	25	40	B
VZD30/12	750	575	175	100	510	315	370	300	25	40	B
VZD50/12	1050	875	175	-	-	315	365	300	25	40	B
VZD50/16	825	650	175	-	-	415	500	400	25	40	B
VZD100/20	955	780	175	-	-	516	600	500	25	40	B
VZD200/24	1175	1000	175	-	-	615	700	600	25	40	B

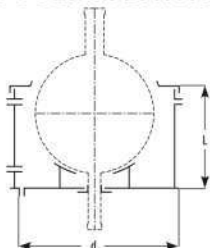
HEATING BATHS



Heating baths are utilized for heating glass vessels through electrical or steam methods. The choice of heating media, such as various thermic fluids or water, depends on the desired temperature range. These baths are equipped with enclosed heaters and a control unit, a coil for steam or cooling water circulation, a cushioned ring to hold the vessel, a sealing system at the bottom outlet, and a lid with threaded inlets and outlets.

Cat.Ref.	Vessel Size	d	L	Watts	HTA Vessel	HTA Coils
SBH20	20 L	480	340	2x2000	0.25	0.4
SBH50	50 L	615	415	2x3000	0.5	0.6
SBH100	100 L	720	535	2x4500	0.7	1
SBH200	200 L	900	620	2x6000	1	1.5
SBH300	300 L	1150	735	3x6000	1.85	2.5
SBH500	500 L	1385	880	4x6000	2.5	4.0

COOLING BATHS

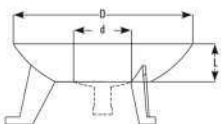


Cooling baths are used for cooling the glass vessel with ice crystals. Cooling baths are provided with a vessel holding ring, bottom outlet sealing arrangement and a lid.

** BHC300, BHC500 can be supplied on request

Cat.Ref.	Vessel Size	d	L
BHC20	20 L	480	340
BHC50	50 L	615	415
BHC100	100 L	720	535
BHC200	200 L	900	620

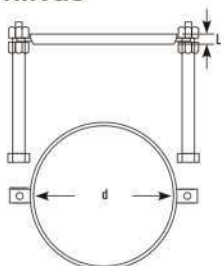
VESSEL HOLDERS



Vessel holders are available in SS-304, MS and shaped to fit the vessel. These are to be supported on 3 jacking bolts.

Cat.Ref.	Vessel Size	D	d	L
VSS10	10 L	265	160	90
VSS20	20 L	325	230	100
VSS50	50 L	390	230	100
VSS100	100 L	410	250	100
VSS200	200 L	700	400	215

VESSEL HOLDING RINGS



These metal rings are wrapped with rope and are to be supported on 2 jacking bolts

Cat.Ref.	Vessel Size	d	L
VRS2	2 L	100	15
VRS5	5 L	150	15
VRS10	10 L	215	15
VRS20	20 L	310	15