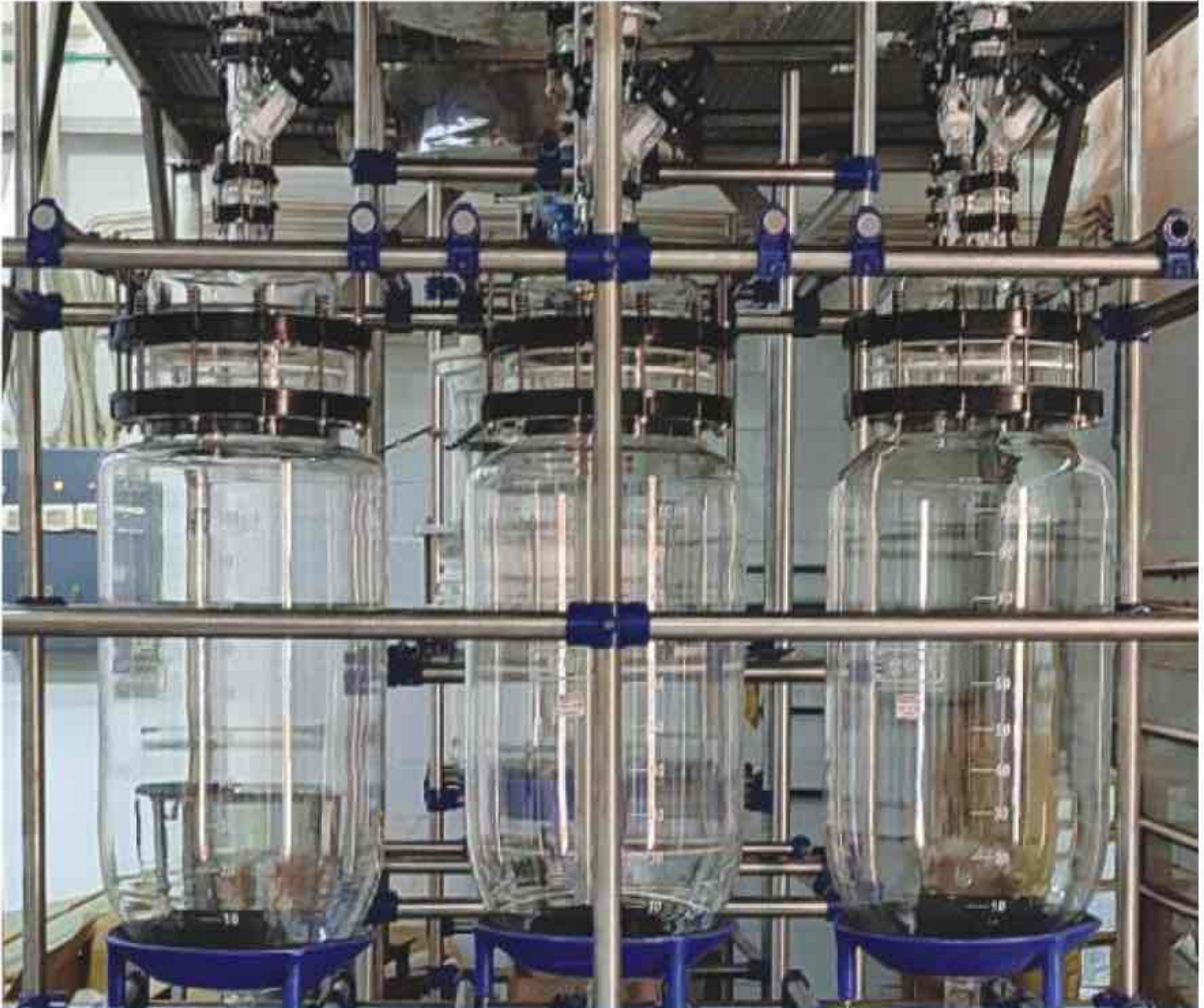


# VESSELS

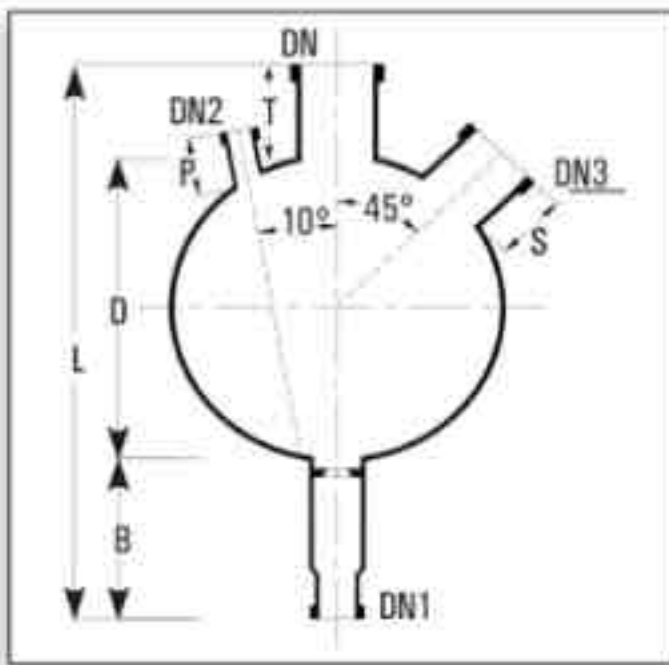
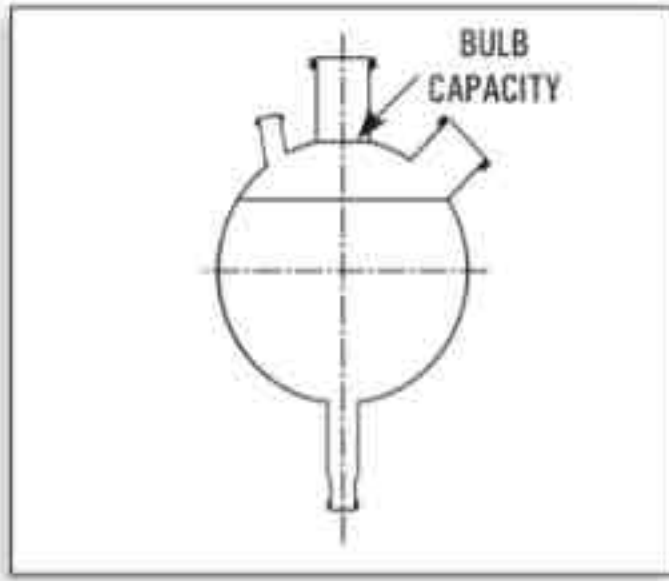


In most of the glass plants, vessels are used as reactors, receivers, separators, measuring or feed vessels.

Vessels are available in Spherical shape from 5Ltr to 500Ltr. & in cylindrical shape from 5Ltr to 800Ltr capacity. Cylindrical vessels can be supplied with glass jackets too.

All the vessels are provided with a bottom outlet for which a suitable valve can be chosen from our range of valves.

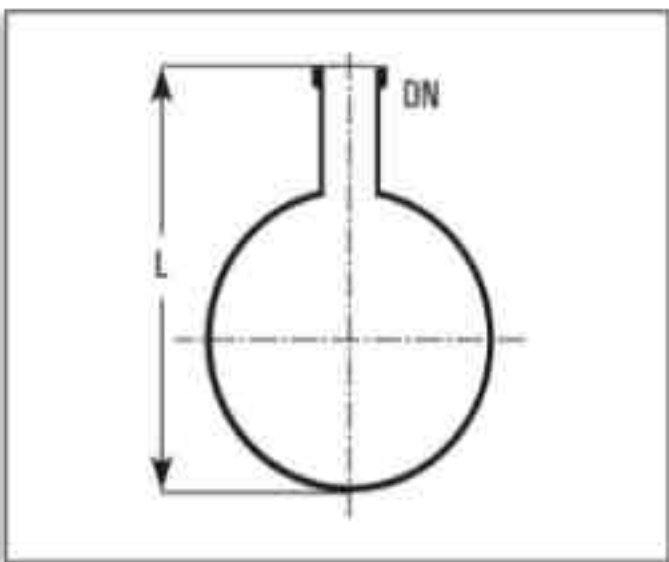
## SPHERICAL VESSEL - GENERAL DATA



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

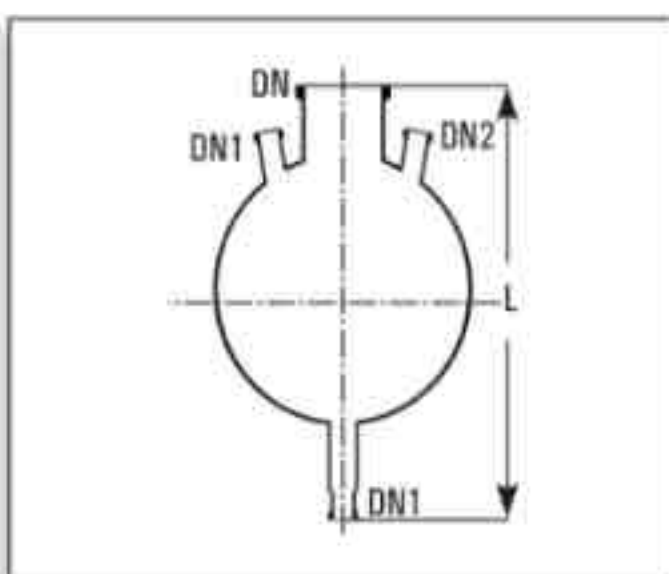
Nominal Capacity (Ltrs.)	L	D	DN	T	DN1	B	DN2	P	DN3	S
5	425	225	50	75	25	125	25	50	40	75
10	575	285	80	90	25	200	25	50	40	75
20	650	350	100	100	25	200	25	50	40	75
50	840	490	100	100	40	200	40	75	100	100
50A	840	490	150	150	40	200	40	75	100	100
100	950	600	150	150	40	200	40	75	100	100
100A	950	600	225	150	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

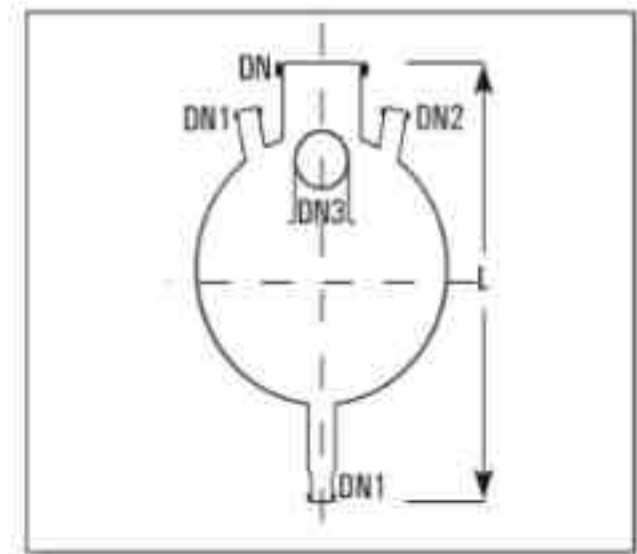


Cat. Ref.	Nominal Capacity	L	DN	DN1	DN2
VSM5	5 L	425	50	25	25
VSM10	10 L	575	80	25	25
VSM20*	20 L	650	100	25	25
VSM50*	50 L	840	100	40	40
VSM50A	50 L	840	150	40	40
VSM100	100 L	950	150	40	40
VSM100A	100 L	950	225	40	40
VSM200	200 L	1200	225	40	40
VSM200A	200 L	1200	300	50	50
VSM300	300 L	1310	300	50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

# VESSELS

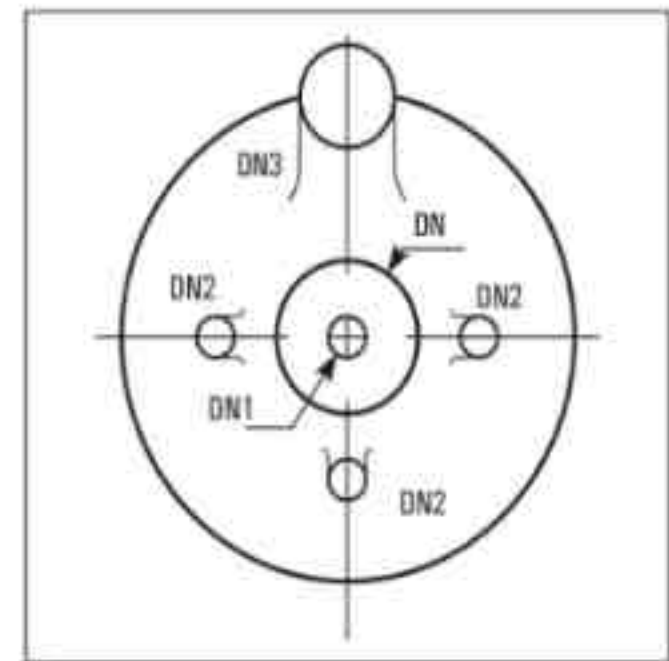
## FOUR NECK BOTTOM OUTLET SPHERICAL VESSELS

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



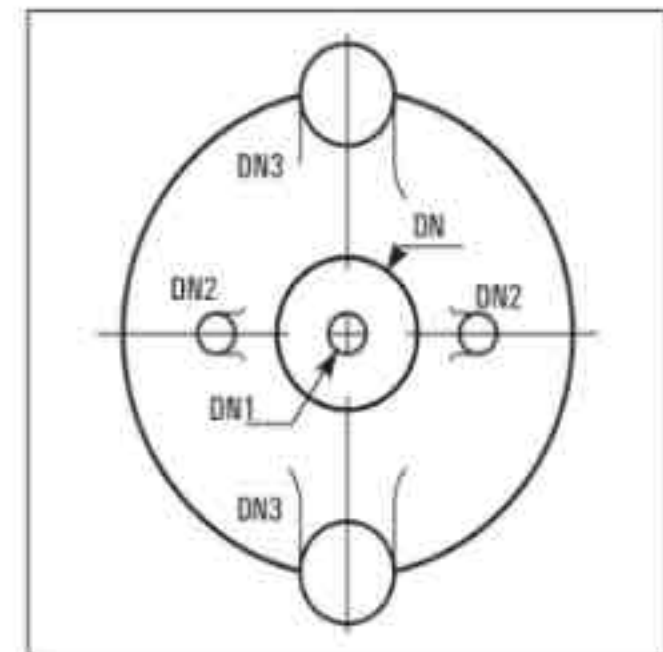
## FIVE NECK BOTTOM OUTLET SPHERICAL VESSEL

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

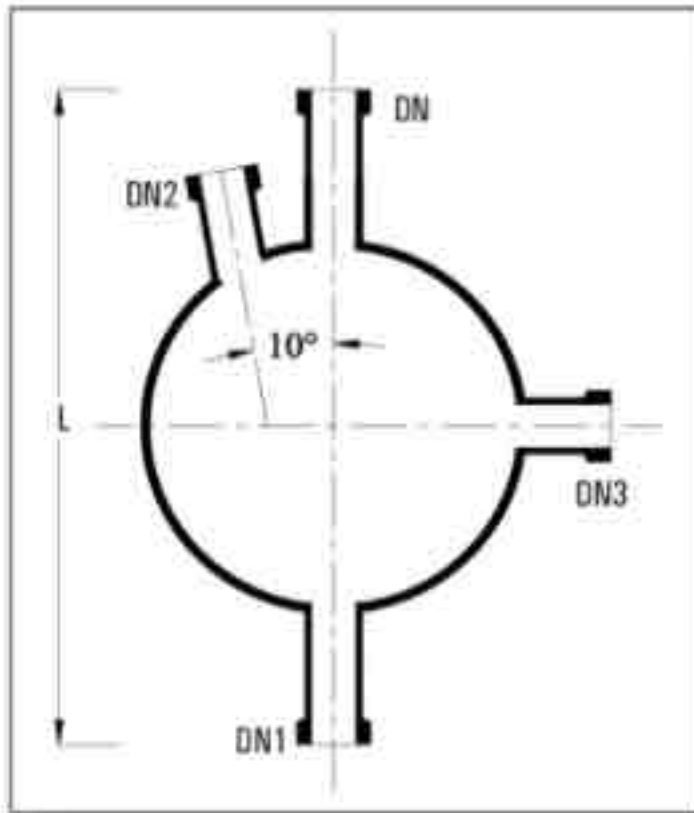


## FIVE NECK BOTTOM OUTLET SPHERICAL VESSEL

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



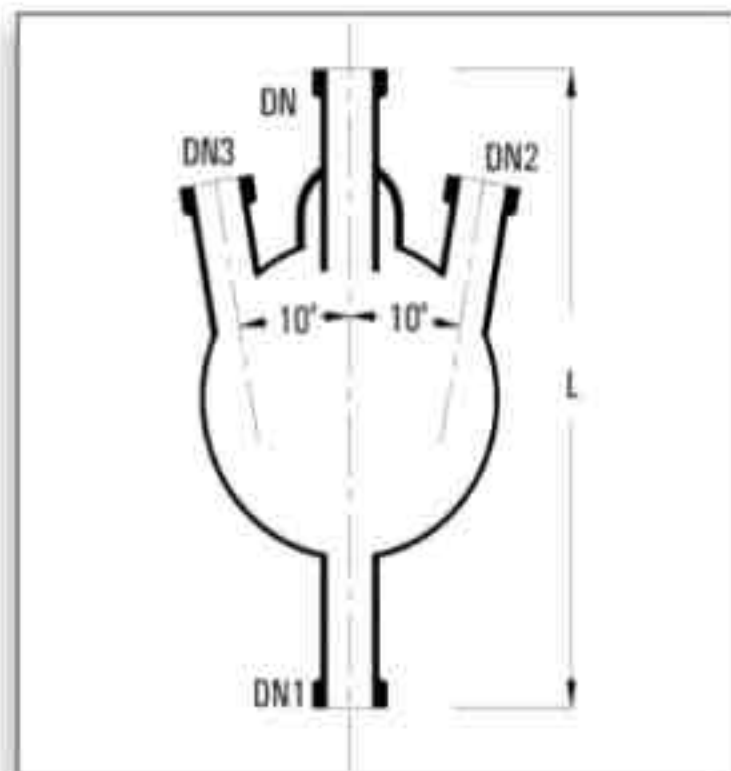
## SPHERICAL VESSELS WITH NOZZLE AT 90°



These vessels are used in Circulatory Boiler System and are to be supported on a vessel holder. More nozzles can be provided on the equator on request for special requirements.

Cat. Ref.	Nominal Capacity	L	DN	DN1	DN2	DN3
VSD5	5 L	425	50	25	25	40
VSD10	10 L	500	80	25	25	40
VSD20	20 L	575	100	25	25	40
VSD50	50 L	765	100	40	40	100
VSD50A	50 L	765	150	40	40	100
VSD100	100 L	875	150	40	40	100
VSD100A	100 L	875	225	40	40	100
VSD200	200 L	1125	225	40	40	100
VSD200A	200 L	1125	300	40	40	100
VSD300	300 L	1235	300	50	50	100
VSD300A	300 L	1235	400	50	50	100
VSD500	500 L	1375	450	50	50	150

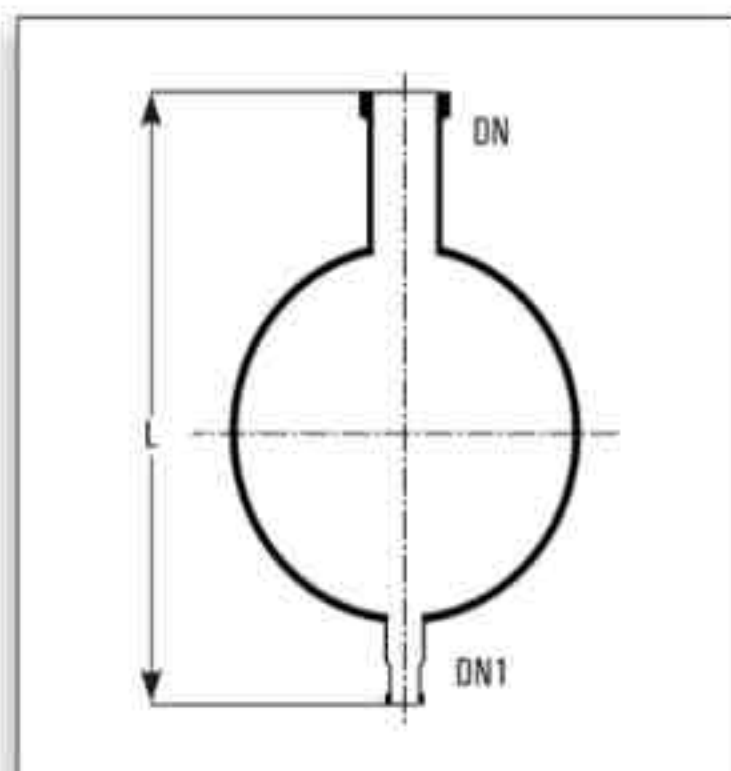
## SPHERICAL RECEIVERS



Receivers are provided with built-in Dip Pipe. These are to be supported on a vessel holding ring.

Cat. Ref.	Nominal Capacity	L	DN	DN1	(100) DN2	(100) DN3
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 on a vessel holder/holding ring.

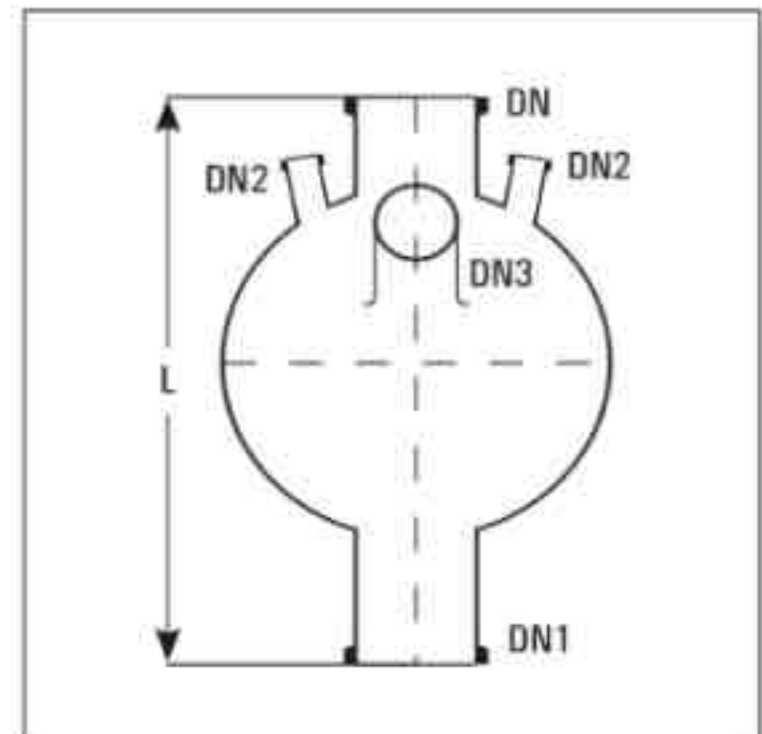
Cat. Ref.	Nominal Capacity	L	DN	DN1
VA5	5 L	375	50	25
VA10	10 L	450	80	25
VA20	20 L	525	100	25
VA50	50 L	715	100	40
VA50A	50 L	715	150	40
VA100	100 L	875	150	40
VA100A	100 L	875	225	40
VA200	200 L	1125	225	40
VA200A	200 L	1125	300	40
VA300	300 L	1235	300	50
VA300A	300 L	1235	400	50
VA500	500 L	1375	450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

# VESSELS

## SPHERICAL VESSELS WITH WIDE BOTTOM OUTLET

These vessels are generally used to fit immersion exchangers in the bottom. Special heating mantle or 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

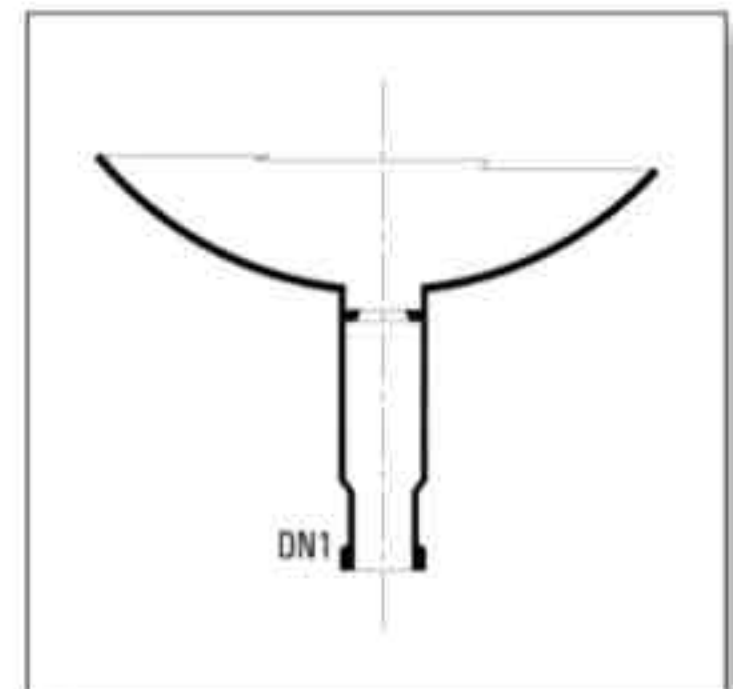


## VESSELS WITH BOTTOM OUTLET VALVE SEAT

To fit a bottom outlet valve (BAL type) all spherical and cylindrical vessels can be supplied with valve seat in bottom outlet. For this, Add a suffix "/B" to the catalogue reference of a vessel, for e.g. 'VSL50' should be mentioned as 'VSL50/B'.

### Notes on use of Spherical vessels.

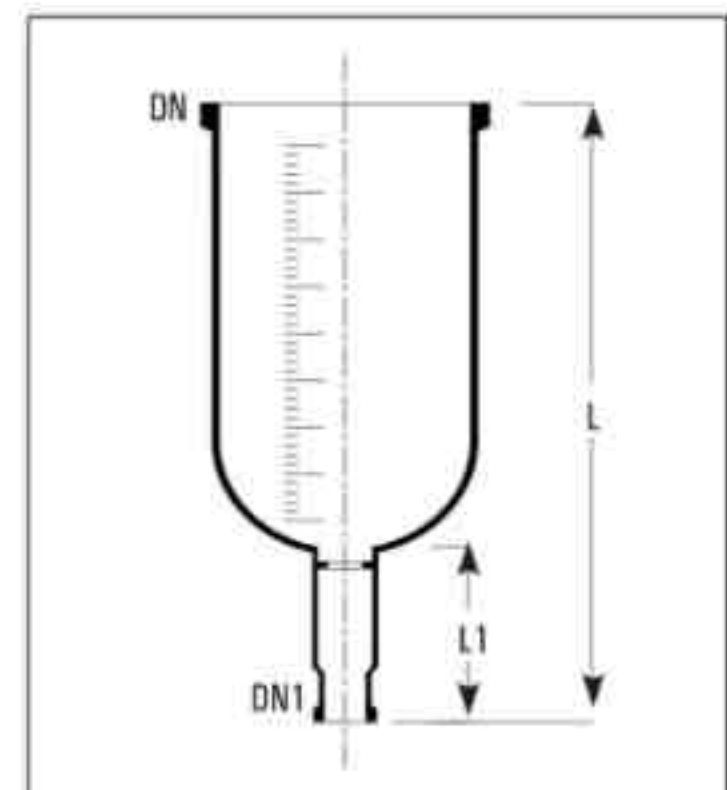
- Generally, the centre nozzle, referred as DN in all types of vessels, is used for either stirrer fixing or if stirrer is not fixed, for vapour outlet.
- The bottom outlet, referred as DN1 in all types is used for drain. However, in type VSR & VSE, it is also used for fixing immersion heat exchanger.
- The small side nozzles, referred as DN2 in all types, are used
  - to fix thermometer pocket or,
  - to fix dip pipe for liquid inlet or,
  - to fix sparger for gas purging or,
  - to fix vacuum control or vent valve or,
  - for solid addition.
- The bigger side nozzle, referred as DN3, is used for vapour outlet where stirrer is fixed on centre neck. It can also be used for cleaning in case centre neck is used for vapour outlet.
- Vessels having long bottom outlet, viz VSM, VSPL, VSL, VS etc, can be supported in a heating mantle or heating bath. However, vessels having short bottom outlet, viz VSD, VR, VA etc. are to be supported on a vessel holder only. In case of vessels upto 20L size, vessel holding rings can be used instead of vessel holder.



## CYLINDRICAL VESSELS

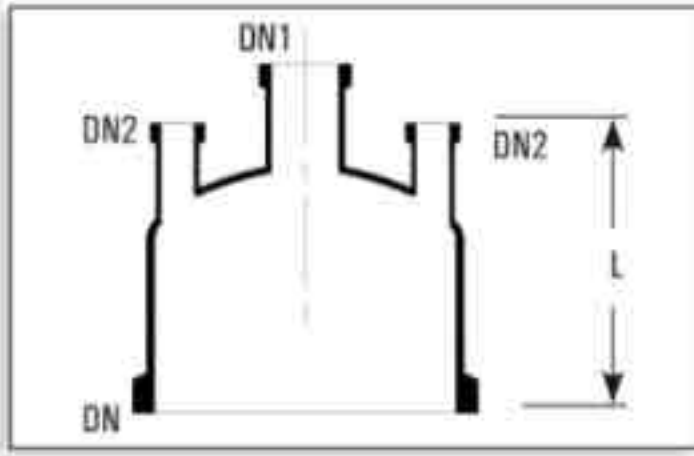
Cylindrical vessels of 50 Litres and above must be supported in a vessel holder.

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



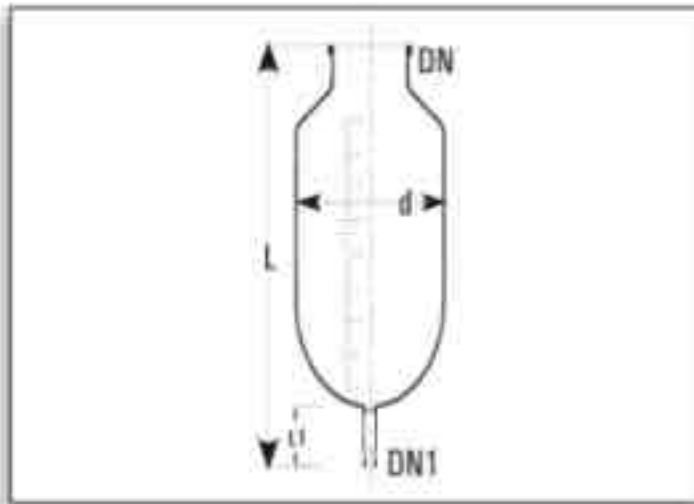
Note : For graduation required on vessel, additional charges will be applicable.

## 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

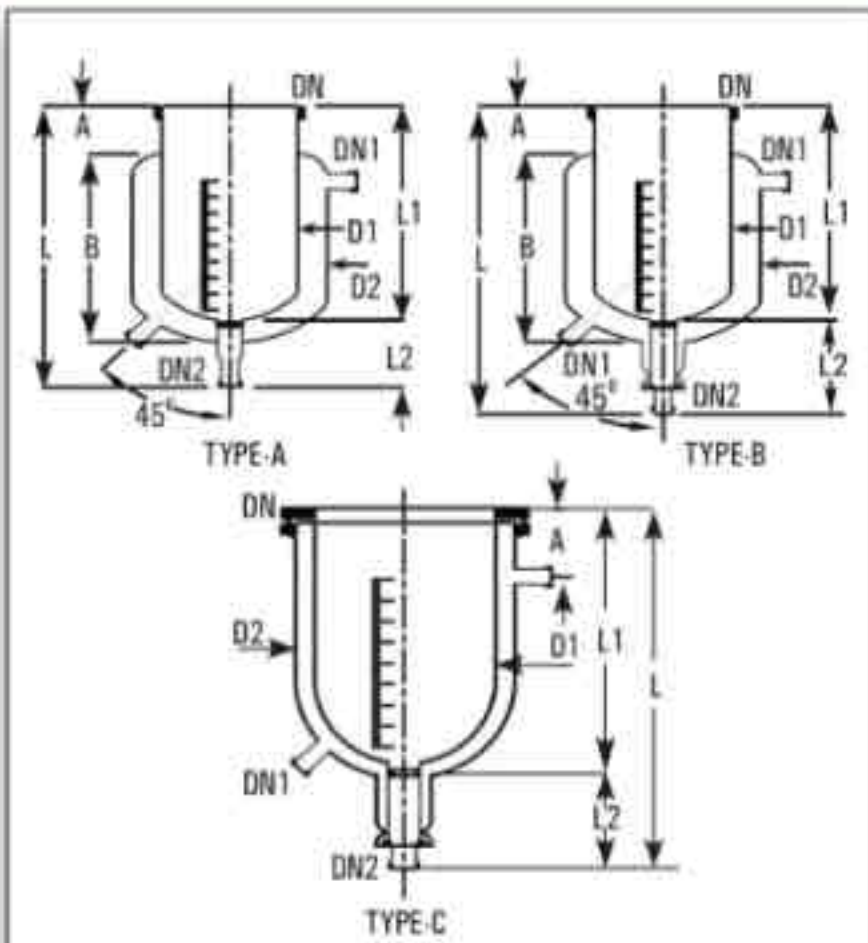


Kettles are similar to cylindrical vessels but having a reduced top neck.

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

Note : For graduation required on kettles, additional charges will be applicable.

## JACKETED VESSELS



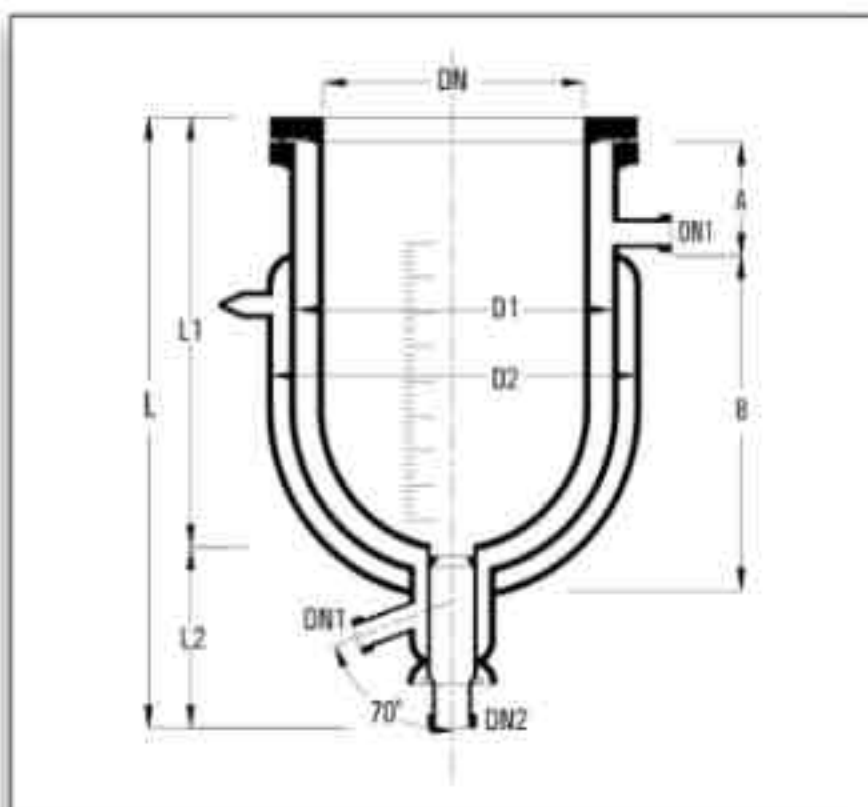
For special applications, cylindrical vessels can be supplied with a jacket for heating or cooling. Jacket is sealed to the vessel with Viton 'O' ring and other sealing compositions. The seal prevents high stresses between vessel and jacket by allowing the movement flexibility between two due to thermal expansion.

### Glass Jackets

Glass Jacket can be used for a maximum operating pressure of 0.5 bar and a maximum operating temperature of 130°C in jacket. The temperature difference between jacket & vessel should not be exceeded than 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
VZD50/12/14	1050	875	175	-	-	315	365	300	25	40	C
VZD50/16/20	825	650	175	-	-	415	500	400	25	40	C
VZD100/20/24	955	780	175	-	-	516	600	500	25	40	C
VZD200/24/28	1175	1000	175	-	-	615	700	600	25	40	C

## JACKETED VESSELS (TRIPLE WALL)



Goel is presenting Flexi (Detachable) "Transparent Double Jacketed Vessel" to maintain the leading position in industry by way of developing indigenously newer products with higher value towards their Mission and to cater the customer via innovation.

### Salient Features

- Made from SCHOTT DURAN
- Vacuum Jacket ensures
  - Transparent insulation.
  - Minimum heat loss
  - Process visibility.
  - Minimize frost formation for cryogenics operation.
- Vacuum Jacket & main vessels are detachable ensures
  - Ease of cleaning.
  - No breakages due to thermal expansion.
  - Partial Replacement of any part can be possible to reduce the maintenance cost.

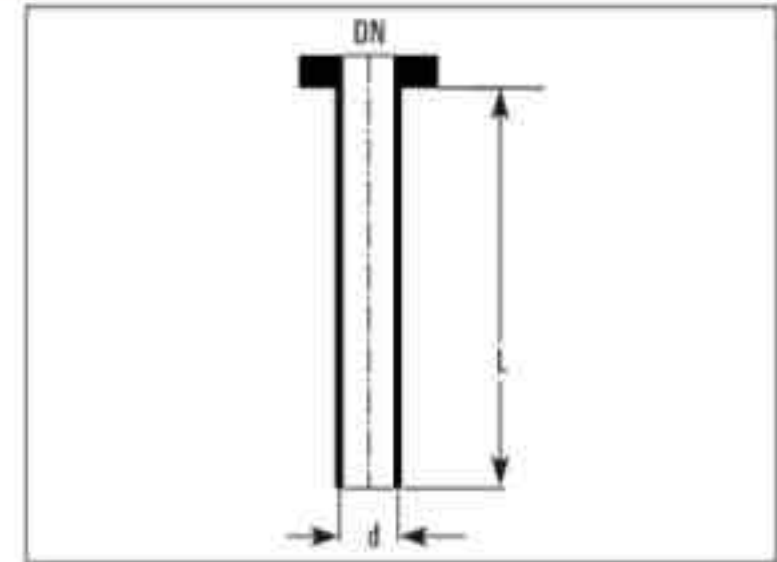
Cat. Ref.	L	L1	L2	A	B	D1	D2	DN	DN1	DN2
VZT5/6/8	620	350	175	75	310	215	275	150	25	25
VZT10/9/12	700	420	175	90	370	315	390	225	25	25
VZT20/12/14	675	500	175	125	368	365	423	300	25	40
VZT50/16/18	825	650	175	200	350	465	523	400	25	40

# VESSELS

## DIP PIPES

Dip pipes are used as liquid inlet for spherical vessels.

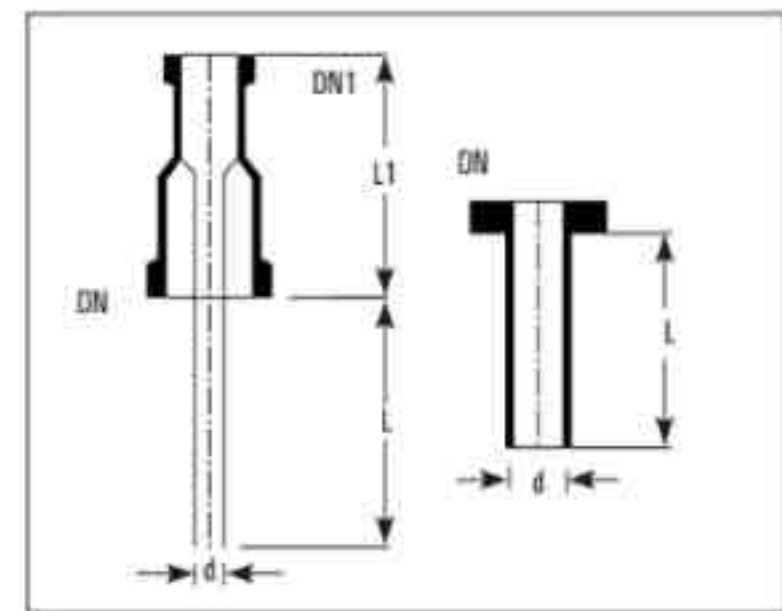
Cat. Ref.	For Vessel	DN	DN1	d	L
DP20/1*	20 L	25	25	12	300
DP50/1.5*	50 L	40	25	19	400
DP100/1.5*	100 L	40	25	19	500
DP200/1.5*	200 L	40	25	19	600



## SHORT DIP PIPES

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

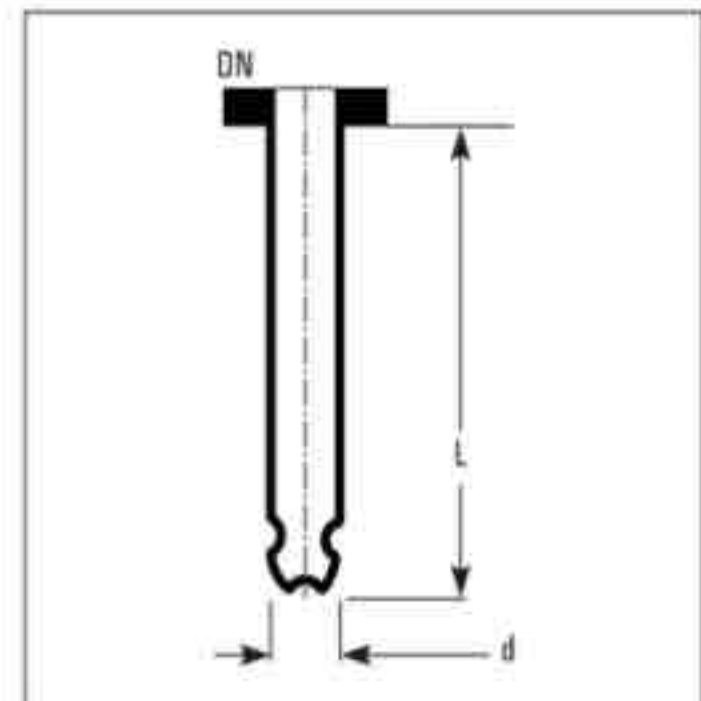
Cat. Ref.	DN	DN1	d	L	L1
DP1/1	25	25	12	100	100
DP1.5/1	40	25	19	100	100
DP1.5/1.5	40	40	19	100	100
DP2/1	50	25	25	100	100
DP2/1.5	50	40	25	100	100
DP3/1.5	80	40	37	100	125
DP4/1	100	25	25	100	150
DP4/2	100	50	50	100	150



## GAS SPARGERS

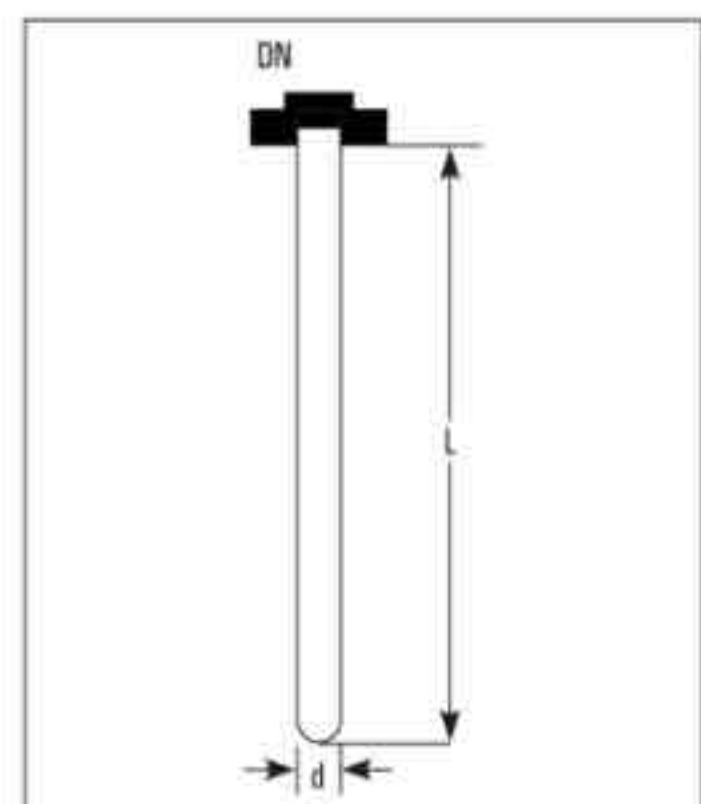
Gas spargers are used for gas feed/sparging in the vessels.

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



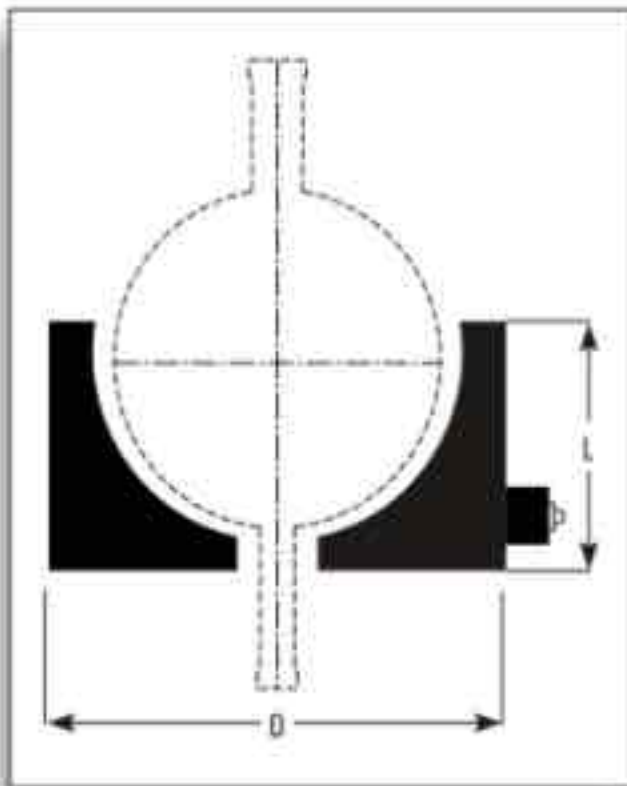
## THERMOMETER POCKETS

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



# VESSELS

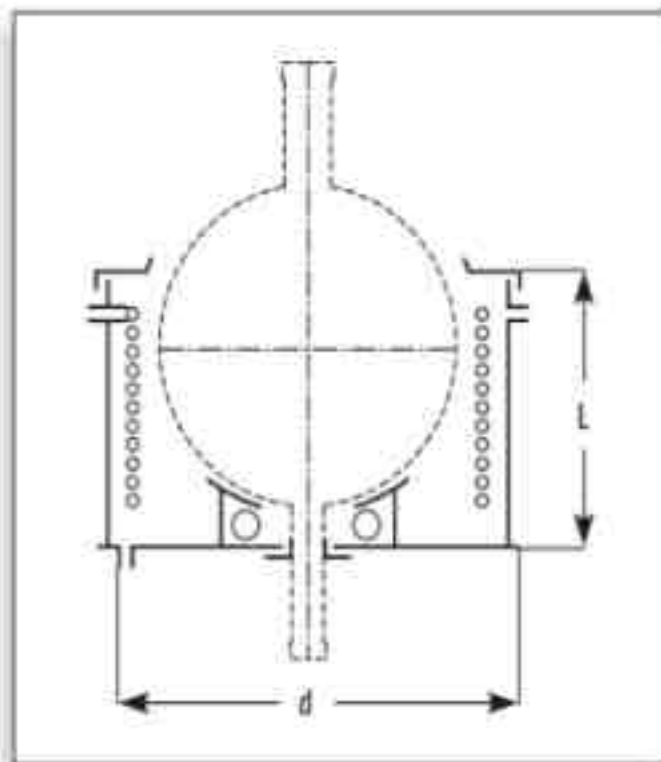
## HEATING MANTLES



Heating Mantle is used for electrical heating of cylindrical as well as spherical vessels.

Cat.Ref.	Vessel Size	D	L	Watts	Circuits	Supply Volts
JMD5	5 L	320	190	600	1	230
JMD10	10 L	380	220	1000	2	230
JMD20	20 L	485	285	1800	3	230
JMD50	50 L	600	345	3600	3	415
JMD100	100 L	790	470	5400	3	415
JMD200	200 L	920	530	8100	3	415

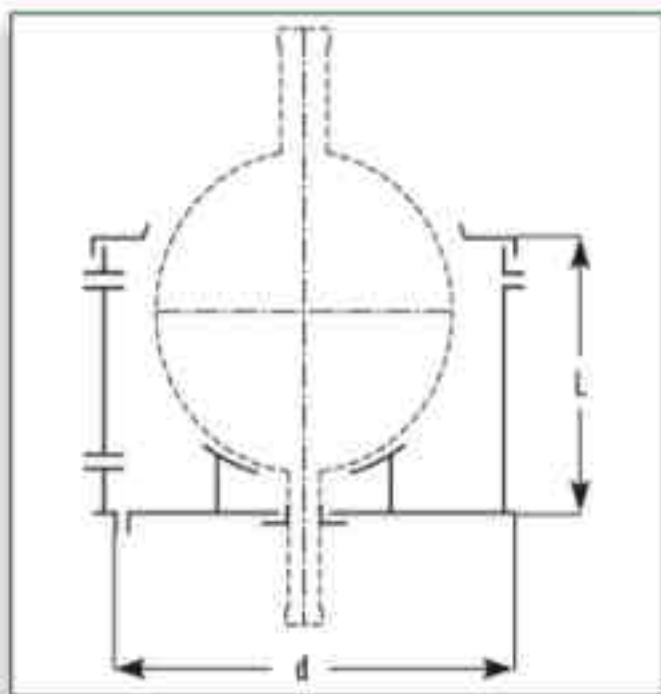
## HEATING BATHS



Heating baths are used for electrical or steam heating of glass vessels. Depending upon the temperature requirements, different types of thermic fluids or water can be used as heating media. Heating baths are provided with a pair of encased heaters with controller box, a coil for passing the steam or cooling water, a cushioned vessel holding ring, a bottom outlet sealing arrangement, a lid and threaded socket type 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

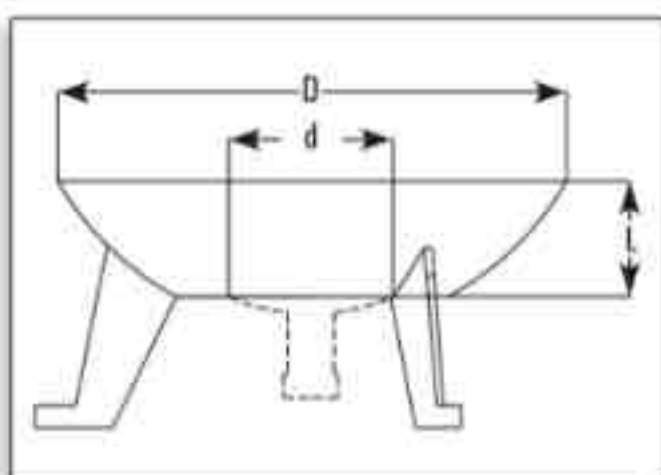
## COOLING BATHS



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.

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 made of cast aluminum with a plaster lining 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

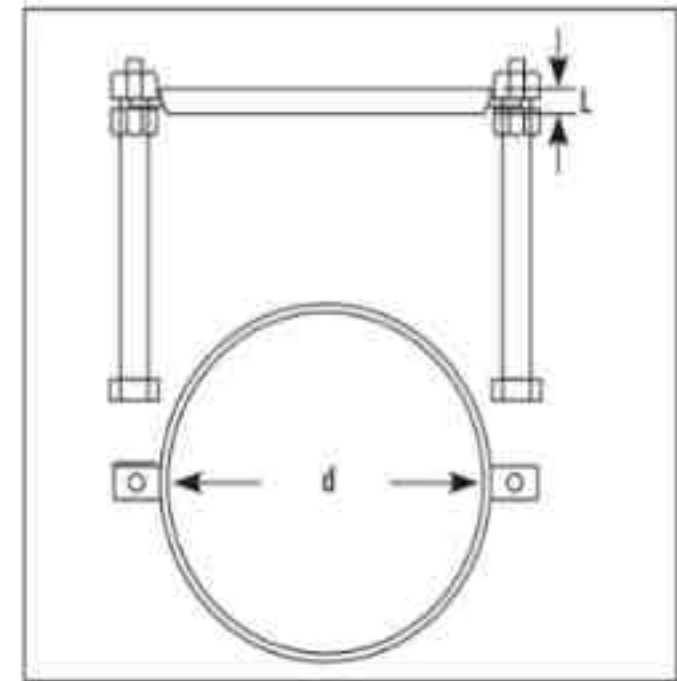
\* marked items are available fast.

# VESSELS

## VESSEL HOLDING RINGS

These metal rings are wrapped with asbestos rope and are to be supported on two 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



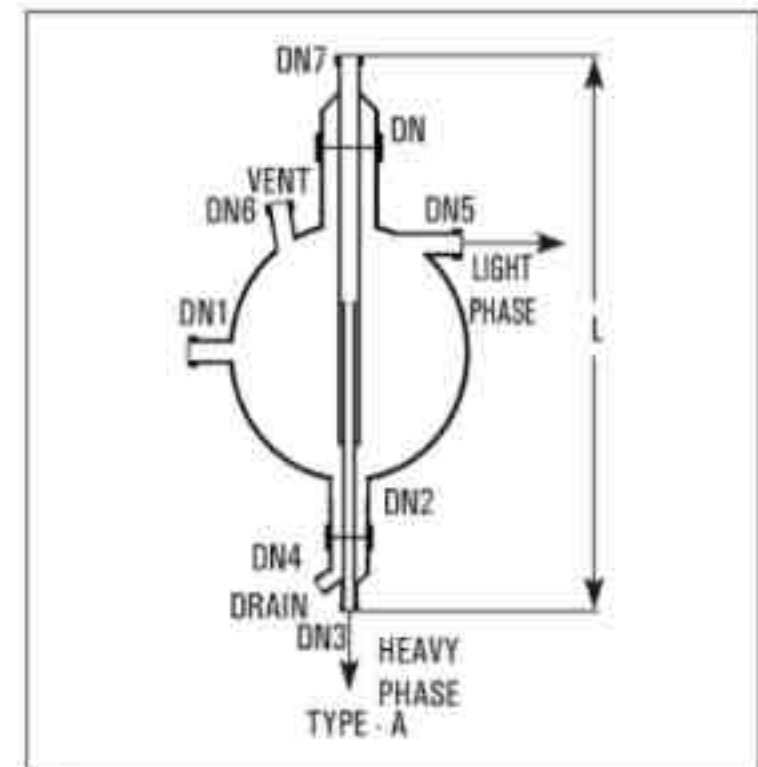
## DECANTORS

Decantation is a process of separation of two immiscible liquids having different densities. When these liquids are allowed to settle, they form two distinct layers, heavier at the bottom and lighter at the top. Goel has developed a Decantor which is suitable for continuous decantation.

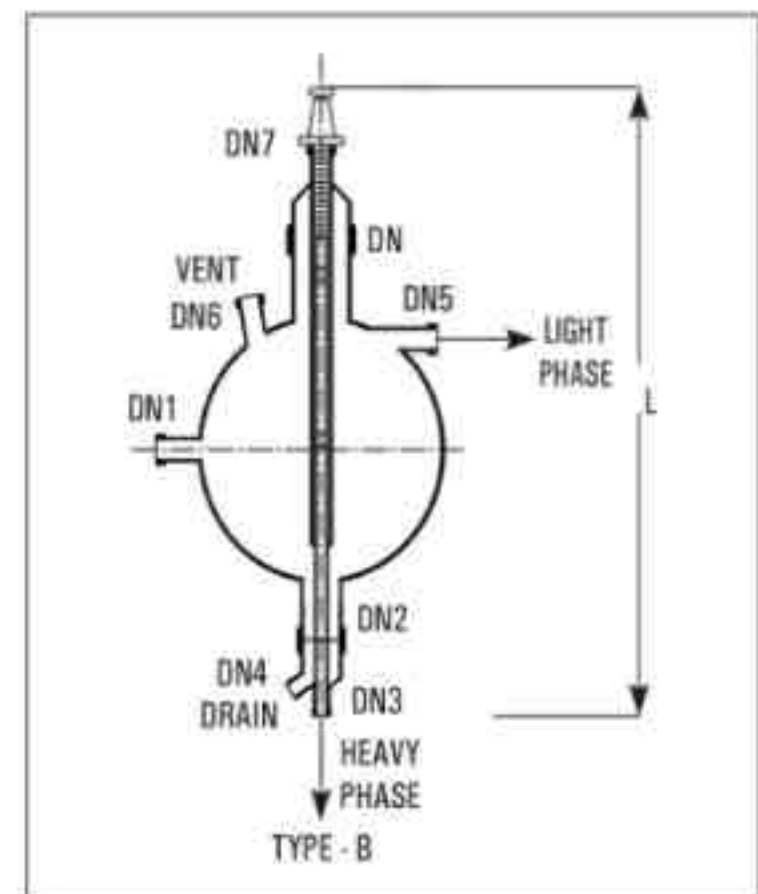
The mixture of liquids is continuously fed in the Decantor at low velocity. This allows sufficient residence time for the formation of separate layers. The light phase liquid is continuously removed from the light phase outlet at the top. The heavy phase liquid enters the dip pipe at the lower end and overflows in the discharge pipe and is removed from the bottom.

Goel's Decantor provides continuous separation, visual monitoring, and ensures separation even after feed is stopped.

Decantors can be provided with an adjustable overflow valve, (Type B) to adjust the position of interface for different operating situations.



Cat. Ref.	Nominal Capacity	L	DN	Inlet DN1	DN2	Heavy Phase Outlet DN3	Drain DN4	Light Phase Outlet DN5	Vent DN6	DN7	Type
SPS20	20 L	800	80	25	50	25	25	25	25	50	A
SPS50	50 L	1025	100	40	50	25	25	40	40	50	A
SPS100	100 L	1175	150	40	50	25	25	40	40	50	A
SPS200	200 L	1475	225	40	50	25	25	40	40	50	A
SPA20	20 L	1000	80	25	50	25	25	25	25	50	B
SPA50	50 L	1225	100	40	50	25	25	40	40	80	B
SPA100	100 L	1375	150	40	50	25	25	40	40	80	B
SPA200	200 L	1675	225	40	50	25	25	40	40	80	B



Decantors can also be constructed with horizontal cylindrical vessels (Cat.ref. HPS or HPA) to provide a larger separating surface.

