

Vessels & Stirrers

V e s s e l s & S t i r r e r s



5. VESSELS & STIRRERS

Borosilicate glass 3.3 vessels include:

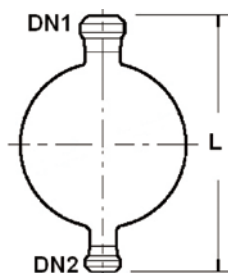
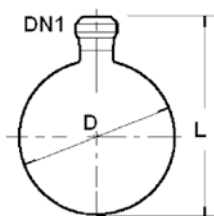
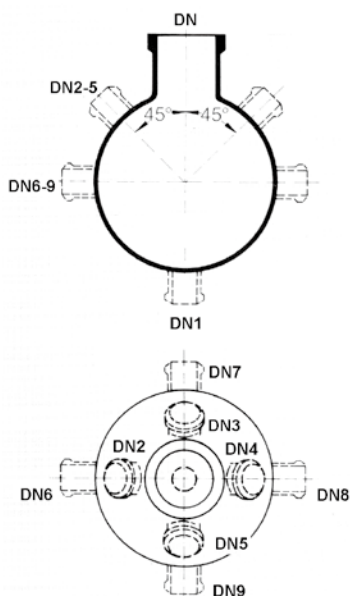
- 5-200 L Spherical vessels
- 2.5-200L Cylindrical vessels
- 5-50L Jacketed cylindrical reactors



- The vessels must be held steady by special supports.
- To ensure safety in dangerous operating spot, it is highly recommended that all borosilicate glass 3.3 vessels of large size be protected with collision resistant glass fiber protectors (GFP), to avoid outside damage.



- When ordering our products, please consult the diagram and specify the diameter and the location and also tell us if DN1 needs a bottom discharge valve.
- The vessels can be marked with scales, so please specify when ordering.



5.1 Vessels

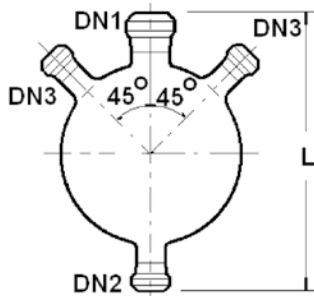
5.1.1 Single Neck Spherical Vessels

L	DN1	L mm	D mm	CAT.NO.
5	50	50	220	QRQ-JS1-5
10	50	365	280	QRQ-JS1-10
20	80	455	355	QRQ-JS1-20
30	150	580	428	QRQ-JS1-30
50	200	640	490	QRQ-JS1-50
100	200	735	610	QRQ-JS1-100
200	300	890	750	QRQ-JS1-200

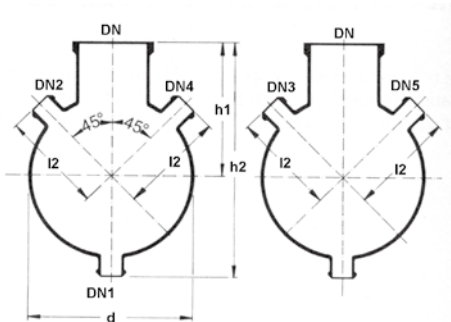
5.1.2 Double Neck Spherical Vessels

L	DN1	DN2	L mm	CAT.NO.
10	50	40	450	QRQ-JS2-10
20	80	50	540	QRQ-JS2-20
30	150	25	645	QRQ-JS2-30
50	200	25	705	QRQ-JS2-50
100	200	25	800	QRQ-JS2-100
200	300	25	960	QRQ-JS2-200

5.1.3 Four Neck Spherical Vessels



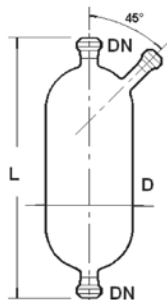
L	DN1	DN2	DN3	L mm	CAT.NO.
10	50	40	40	445	QRQ-JS4-10
20	80	50	50	540	QRQ-JS4-20
30	100	25	50	645	QRQ-JS4-30
50	200	25	50	705	QRQ-JS4-50
100	200	25	50	800	QRQ-JS4-100
200	300	25	50	960	QRQ-JS4-200



5.1.4 Six Neck Spherical Vessels

L	DN	DN1	DN2	l2 mm	DN3	DN4	DN5	d mm	h1 mm	h2 mm	CAT.NO.
50	200	25	100	320	100	25	50	490	400	700	QRQ-JS6-50/25/100/100/25/50
100	200	25	100	391	100	25	50	610	450	825	QRQ-JS6-100/25/100/100/25/50
200	300	25	150	508	150	25	50	750	550	1000	QRQ-JS6-200/25/150/150/25/50

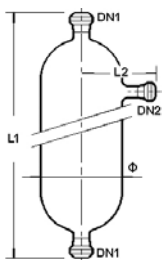
5.2 Cylindrical Vessels Ungraduated



5.2.1 Measuring Vessels

L	D mm	DN	L mm	CAT.NO.
30	230	40	~1340	QRQ-JL-230/30

It can be graduated; please specify when ordering.



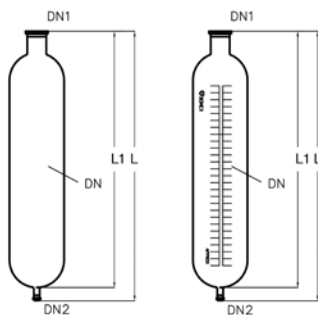
5.2.2 Kettles

5.2.2.1 Kettles Type A

L	φ mm	DN1	DN2 mm	L1 mm	L2	CAT.NO.
45	230	50	25	~1700	180	QRQ-GW-230/45A

It can be graduated; please specify when ordering.

5.2.2.2 Kettles Type B



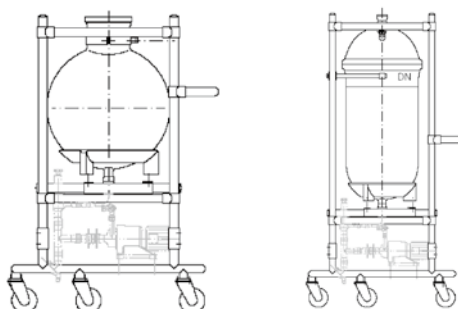
L	DN	DN1	DN2	L1 mm	L mm	CAT.NO.
20	300	100	25	590	650	QRQ-GW-20/300B
30	Φ230	100	25	1335	1400	QRQ-GW-30/230B
	300	100	25	735	800	QRQ-GW-30/300B
50	300	100	25	935	1000	QRQ-GW-50/300B
60	300	100	25	1335	1400	QRQ-GW-60/300B

It can be graduated; please specify when ordering.

Kettles L>60L must be ordered specially.

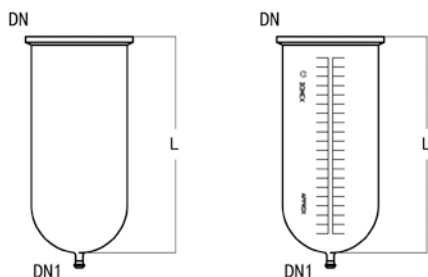


5.3 Mobile Vessels



5.4 Reactors

5.4.1 Cylindrical Vessels



L	DN	DN1	L mm	CAT.NO.
2.5	100	25	500	QRQ-FY-2.5/100
5	100	25	700	QRQ-FY-5/100
	150	25	500	QRQ-FY-5/150
10	100	25	700	QRQ-FY-10/150
	Φ180	25	650	QRQ-FY-10/180
	Φ230	25	500	QRQ-FY-10/230
20	Φ230	25	750	QRQ-FY-20/230
	300	25	550	QRQ-FY-20/300
25	300	25	600	QRQ-FY-25/300
30	300	25	650	QRQ-FY-30/300
50	300	25	900	QRQ-FY-50/300
	400	25	700	QRQ-FY-50/400
70	Φ230	50	2000	QRQ-FY-70/230
75	300	25	1250	QRQ-FY-75/300
100	400	25	1000	QRQ-FY-100/400
150	400	25	1400	QRQ-FY-150/400
	600	25	825	QRQ-FY-150/600
200	600	25	1000	QRQ-FY-200/600

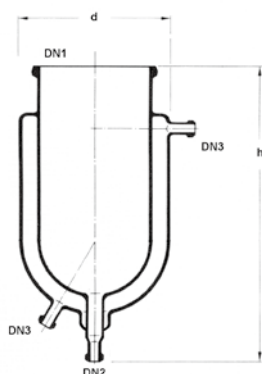
It can be graduated; please specify when ordering.

5.4.2 Jacketed Cylindrical Vessels

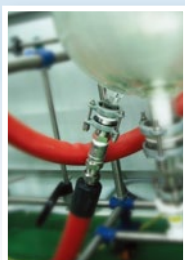
Heat exchange is done through hot water, vapor and heating oil or cooling salt water in the jacketed tubes.



- Maximum operating temperature is 150°C.
- Maximum operating pressure A1158is 0.05Mpa.



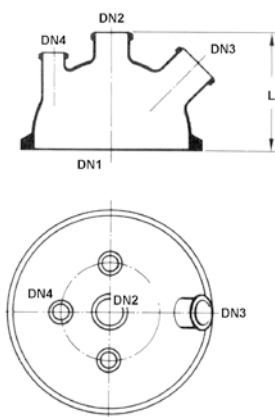
L	DN1	d mm	DN2	DN3	h mm	CAT. NO.
5	150	Φ215	50	25	625	QRQ-JTFY-5
10	Φ230	Φ270	50	25	650	QRQ-JTFY-10
20	300	Φ370	50	25	550	QRQ-JTFY-20
30	300	Φ370	50	25	700	QRQ-JTFY-30
50	300	Φ370	50	25	1025	QRQ-JTFY-50



BOMEX supplies specially designed joints to connect heating oil inlet or outlet (DN3) with thermostatic device (constant temperature device of Huber and Jumbo of Germany).

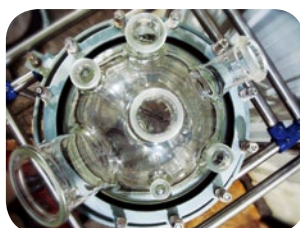


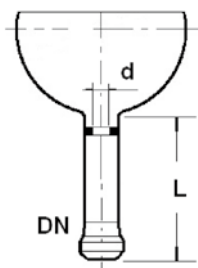
5.4.3 Cover



DN1	DN2	DN3	DN4	L mm	CAT. NO.
Φ180	50	50	25	200	QRQ-FYM-180
Φ230	50	80	25	250	QRQ-FYM-230
300	50	100	25	285	QRQ-FYM-300
400	100	150	25	275	QRQ-FYM-400
600	100	150	25	350	QRQ-FYM-600

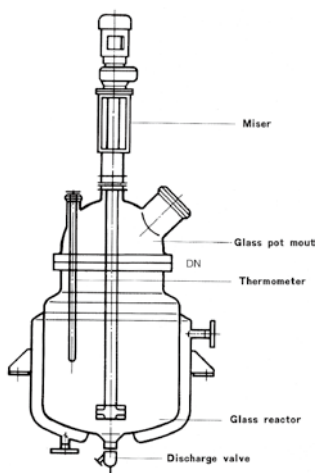
Cover neck numbers can be added upon request.





5.5 Vessels With Bottom Outlet Valve seat

L	DN	L mm	CAT. NO.
5-200	50	~140	QRQ-DF-40



5.6 Glass-lined Reactors

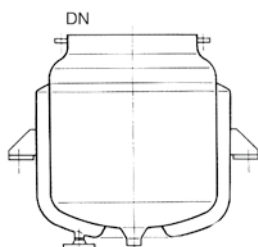
Glass-lined reactors are applicable for reactors that need to be heated or cooled. The glass-lined reactor is fitted with a glass lid, which allows the whole process to be monitored directly.

Application Range:

Reactor working pressure: 0.05-0.1Mpa (Gauge pressure)

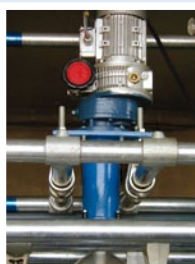
Jacket vessel working pressure: 0.6Mpa (Gauge pressure)

Operation temperature: -60°C~200°C



L	DN	CAT. NO.
50	400	QRQ-GLR-50
100	600	QRQ-GLR-100





5.7 Stirrers

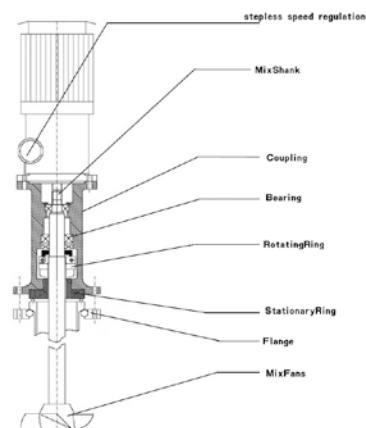
A complete set of stirring device includes:

- Stirrer drive
- Stirrer
- Stirrer bearings
- Mechanic seal

Stirrer Drive

You can choose as your needs:

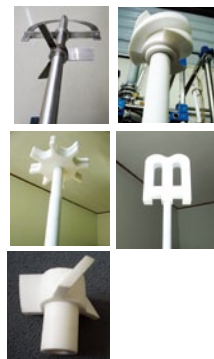
- Non-explosion-proof or explosion-proof gear motor in single –speed, adjust the speed by inverter if need.
- Non-explosion-proof or explosion-proof gear motor in variable speed
- Pneumatic motor, adjust the speed by inverter if need.



Stirrers

You can choose as your needs:

- Borosilicate glass stirrers, paddle or anchor.
- PTFE shielded with stainless steel turbine stirrers, used in large vessels and sticky substance.
- Stainless steel paddle stirrer or anchor stirrer
- Stainless steel paddle stirrer or anchor stirrer coated with PTFE.



Bearings

According to different length of stirrers, single or double bearings are used.

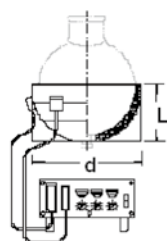
Mechanical Seal

Mechanic seal is normally used and the materials can be ceramic/PTFE, or ceramic/graphite.

The stirrers can used in negative pressures as in normal pressures.

5.8 Constant Temperature Devices (Heating Jacket/ Cooling jacket)

5.8.1 Electric Heating Jacket



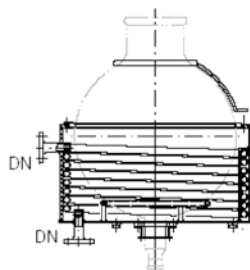
FLASK	d*d mm	L mm	Kw	CAT. NO.
10L	410*480	240	1.2	QRQ-DJR-10
20L	500*550	245	2.4	QRQ-DJR-20
50L	800*600	330	4.5	QRQ-DJR-50
100L	1050*750	420	6	QRQ-DJR-100
200L	1300*1000	540	9	QRQ-DJR-200

Temperature self-control meter is available, so please specify when ordering.

If a discharge valve is needed at the bottom, please specify when ordering.

5.8.2 Water Bath /Oil Bath

Direct heating by electric heater or indirect vapor/oil heating, or cooling.



FLASK	d mm	L mm	H mm	CAT. NO.
50L	600	600	350	QRQ-SCJR-50
100L	750	750	450	QRQ-SCJR-100
200L	1000	1000	600	QRQ-SCJR-200



On demand can be equipped with lifting mechanism

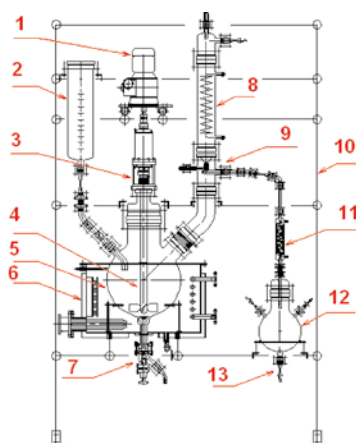
5.9 Small Trial Production Apparatus

Borosilicate glass 3.3 vessels with corrosion-resistant stirrers constitute the basic device of complete reaction apparatus. If added heating, cooling, distilling and rectifying devices, and with measuring and controlling meters, they will become advanced reaction apparatus, used in industrial production as well as in experiment plants. Since the apparatus allows great flexibility, a small one can be easily expanded to a larger apparatus.



For example:

The apparatus can be used as a 50L/100L/200L non-continuous multi-purpose reaction apparatus for processing highly corrosive substances.



- 1 stirrer motor
- 2 upper kettle
- 3 stirrer seal
- 4 stirring paddle
- 5 glass reactor
- 6 constant temperature device
- 7 bottom discharge valve
- 8 cooler
- 9 backflow separator
- 10 supporting structure
- 11 product condenser
- 12 product receiver
- 13 product discharge valve



This non-continuous glass reaction apparatus has a rectifying column with packing material, and a backflow separator. It can rectify after reaction; and it can sort out separated liquid mixtures. All the units with direct contact with the reaction are made of borosilicate glass 3.3 or PTFE material.

Please refer to Chapter 12 for further information.