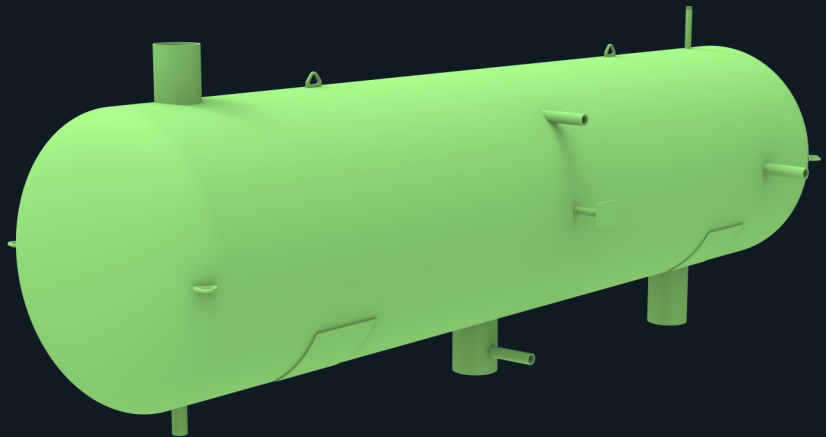
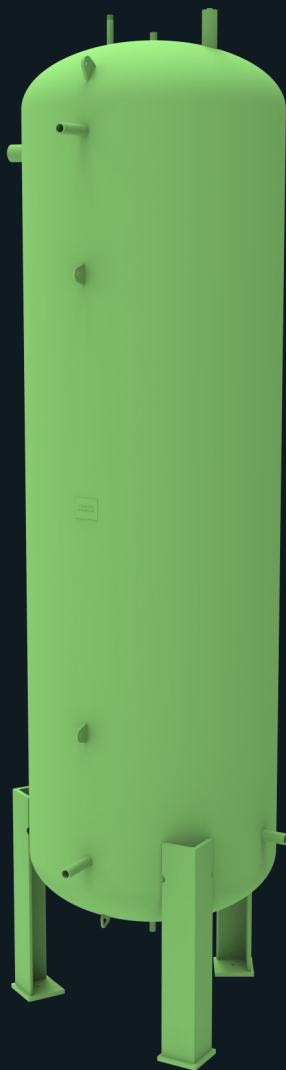




INDUSTRIAL REFRIGERATION

# PRESSURE VESSELS

DP-261-01 // ASME



INDUSTRIAL  
REFRIGERATION



PRESSURE  
VESSELS



NH<sub>3</sub>

### BITZER US Pressure Vessels

In addition to our industrial vessel platform, BITZER US also delivers high quality shell and tube heat exchangers, receivers, and oil separators to meet the wide demands of air-conditioning and refrigeration systems. These vessels are commonly used in supermarkets, chillers, marine, food processing, and many other applications including systems using CO<sub>2</sub> as a refrigerant.

BITZER US utilizes multiple welding stations that provide fast, consistent, and reliable welds which results in high quality vessels with short lead times. All vessels are manufactured in the USA and in accordance with the most recent edition of Section VIII, Division 1 of the ASME code or other certifications as required.

### Design Capabilities

- Max Diameter: 96"
- Max Length: 290"
- Max Pressure: 3000 PSI
- Min Temperature: -55°F

### Testing

- Ultrasonic
- Penetrant
- Decay Test

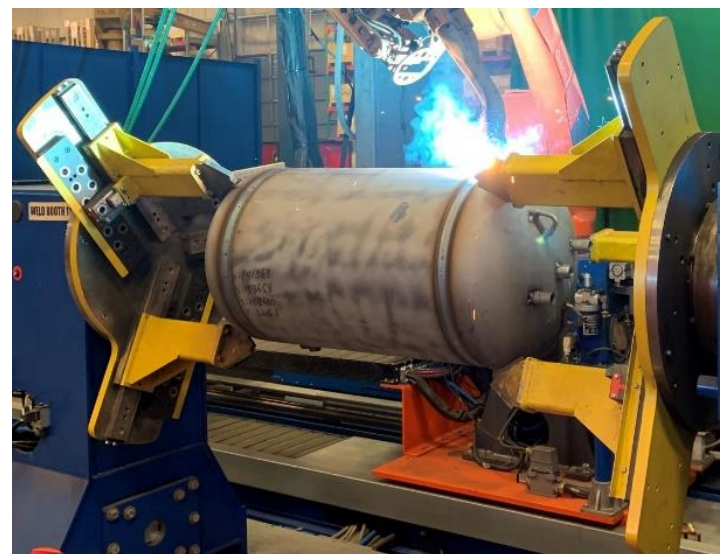
### Certifications

- ASME
- CRN
- DOSH

### Manufacturing

- CNC Machine Shop
- Robotic Welding
- Water Jet
- Pipe Cutter
- Plasma Table

### Vessel Factory (USA)





## BITZER US Industrial Vessels

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## NEW ASME Industrial Vessels

The world's leading compressor and pressure vessel manufacturer continues to expand and meet the demands of the North American market with our newest ASME certified vessel catalog for industrial refrigeration applications.

### The BITZER Advantage

- Each vessel is uniquely engineered to the highest degree with all components requiring detailed drawings, engineer oversight, and dedicated quality control department approval
- State of the art and dedicated manufacturing facility
- All welders are certified in accordance with Section IX (ASME)
- Carefully calculated liquid vapor separation sizing with performance presented in nominal capacity and mass flow

### Standard Design Features

- Suitable for use with Ammonia and halocarbons (HFCs)
- Safety/pressure relief connections on all models
- All vessels are built per customer specifications

### Accessories / Options

- Internal carbon steel coil for heat exchange
- Corrosion Allowance
- Radiography (X-ray)
- Post Weld Heat Treatment

### ASME Design Safety

Bitzer ASME vessels are manufactured in accordance with the latest edition of ASME Section VIII, Division 1, and are designed for use in air-conditioning and refrigeration applications. CRN is available on majority of models.



## Explanation of Model Number

**R C L H 4 8 1 4 8 - 2 5**

### Model designation

REC = High Pressure Receiver  
 TS = Thermosyphon  
 TSR = Thermosyphon Receiver  
 RCL = Recirculator  
 SDS = Surge Drum with **S**ingle Flow  
 SDD = Surge Drum with **D**ual (Split) Flow  
 SA = Suction Accumulator  
 IC = Intercooler  
 EC = Economizer  
 PR = Pilot Receiver  
 OP = Oil Pot  
 LT = Liquid Transfer\*  
 CPR = Controlled Pressure Receiver\*

**R C L H 4 8 1 4 8 - 2 5**

### Model orientation

V = Vertical  
 H = Horizontal

**R C L H 4 8 1 4 8 - 2 5**

### Diameter

XX = Diameter in.

**R C L H 4 8 1 4 8 - 2 5**

### Vessel Length (w/o Conn & Legs)

XXX = Length

**R C L H 4 8 1 4 8 - 2 5**

### Pressure Rating (psi x 10)

25 = 250 psi  
 30 = 300 psi  
 40 = 400 psi

**R C L H 4 8 1 4 8 - 2 5 C**

### Options

C = Internal Carbon Steel Coil  
 A = 1/16" Corrosion Allowance  
 Q = Minor Custom (Relocate / Size of Connections)  
 Z = Major Custom (new connections)

\*Specification table not included in this catalog (Reference drawing available on request)

## Standard Design Max Operating Pressure / Operating Temperature

- Recirculator, Surge Drum, Suction Accumulator, Liquid Transfer: -20°F @ 250 psi (-55°F also available)
- Intercooler and Economizer: -20°F @ 250 psi
- High Pressure Receiver, Thermosyphon, Oil Pot, Pilot Receiver: 0°F @ 300 psi

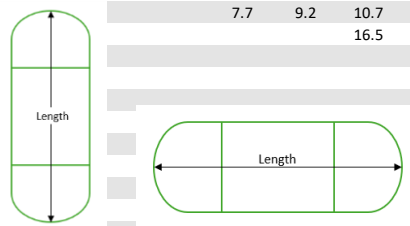


### Industrial Vessel Overview

Vessels in industrial applications may be used not only to collect and hold refrigerant, but also to provide separation of liquid from vapor refrigerants. To meet the variety in functions and wide array of size requirements, BITZER US has created a table matrix of *Available Vessels Sizes* to better represent the vessels available by internal volume (cubic feet and lbs of Ammonia). These tables provide the potential diameters and lengths that can be applied to nearly all vessels in this catalog (not all sizes are always available for each vessel type). The tables are based on a design working pressure of 250 psi. For other customized pressure / temperature ratings, please consult sales.

### Available Vessel Sizes by Internal Volume (ft<sup>3</sup>)

Nominal Diameter	Internal Vessel Volumes Cubic Feet (ft <sup>3</sup> )																	Vessel Thickness Based on 300 psi Rating	
	12	18	24	30	36	42	48	60	72	84	96	120	132	144	156	168	192	216	240
8	0.3	0.5	0.7	0.9	1.1	1.2	1.4	1.8											
12		1.1	1.5	1.9	2.3	2.7	3.1	3.9	4.7	5.6	6.4	8.0							
16			2.3	2.9	3.6	4.2	4.9	6.2	7.5	8.8	10.1	12.8	14.1	15.4					
20				4.4	5.4	6.4	7.4	9.4	11.5	13.5	15.5	19.5	21.6	23.6	25.6				
24					7.7	9.2	10.7	13.6	16.6	19.5	22.5	28.3	31.3	34.2	37.2	40.1			
30							16.5	21.1	25.8	30.5	35.1	44.5	49.1	53.8	58.5	63.1			
36								30.1	36.9	43.7	50.5	64.0	70.8	77.6	84.4	91.1			
42									49.8	59.1	68.3	86.9	96.2	105.5	114.8	124.0			
48									63.4	75.5	87.5	111.6	123.7	135.7	147.8	159.8			
54										94.7	110.0	140.7	156.0	171.3	186.6	201.9	232.6		
60											160.0	205.7	228.6	251.5	274.3	297.2	342.9	388.7	
66												243.3	270.6	297.9	325.2	352.5	407.1	461.7	516.4
72													361.2	398.3	435.4	472.5	546.8	621.0	695.3
84														514.5	563.2	611.9	709.3	806.7	904.1
96																			



### Available Vessel Sizes by 80% of Internal Volume (lbs of Ammonia)

Nominal Diameter	Lbs of Ammonia (80% of Vessel Volume at 95°F Liquid)																	Vessel Thickness Based on 300 psi Rating	
	12	18	24	30	36	42	48	60	72	84	96	120	132	144	156	168	192	216	240
8	9	15	20	26	31	37	42	53											
12		31	43	55	67	79	91	115	139	163	187	235							
16			67	86	105	125	144	182	221	259	298	375	413	452					
20				129	158	188	218	277	336	396	455	574	633	692	751				
24					226	269	313	399	486	572	659	832	918	1,005	1,091	1,178			
30							484	620	757	894	1,031	1,305	1,442	1,579	1,716	1,853			
36								885	1,083	1,282	1,481	1,879	2,078	2,277	2,476	2,674			
42									1,461	1,733	2,006	2,550	2,823	3,095	3,367	3,640			
48									1,861	2,215	2,568	3,275	3,629	3,982	4,336	4,690			
54										2,779	3,228	4,128	4,577	5,027	5,476	5,926	6,826		
60											3,954	5,069	5,626	6,183	6,740	7,297	8,411	9,526	
66												4,695	6,037	6,708	7,379	8,050	8,721	10,063	11,405
72													7,141	7,942	8,743	9,544	10,346	11,948	13,550
84														10,599	11,688	12,777	13,867	16,046	18,224
96															15,097	16,527	17,956	20,815	23,673

### Catalog Nominal Specifications

The following pages provide sample vessel specifications and designs. Each table presents nominal data with design pressure, connection sizes, weights, volumes, focused on typical Ammonia conditions and assumptions.

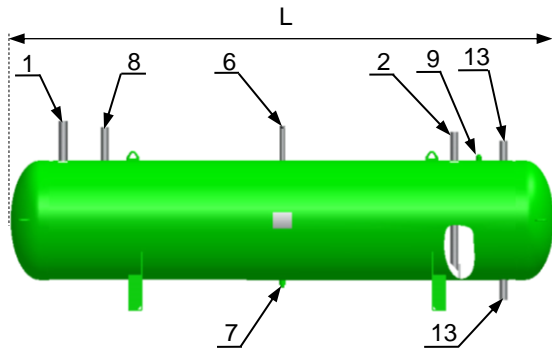
The specification tables give the actual diameters that are available for each vessel type. For each diameter, the max / min length is provided. Final design, engineering and specifications will require a customer signed submittal. All dimensions in inches unless noted otherwise.

### Connection Positions

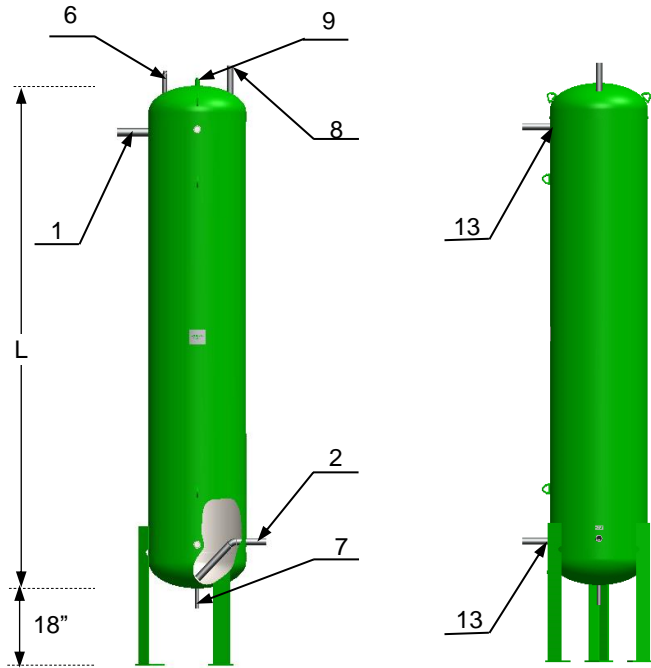
- 1 Liquid Inlet (Primary)
- 2 Liquid Outlet (Primary)
- 3 Gas Outlet
- 4 Wet Return
- 5 Liquid Make up
- 6 Pressure Relief
- 7 Drain / Oil Drain
- 8 Equalizer
- 9 Purge
- 10 Oil Pot Vent
- 11 Vent
- 12 Gas Inlet (Intercooler)
- 13 Liquid Column
- 14 Recirculator Pump Vent
- 15 Recirculator Liquid Bypass
- 16 Thermosyphon Outlet
- 17 Thermosyphon Inlet
- 18 Oil Pot Heater



### Horizontal Receiver (RECH)



### Vertical Receiver (RECV)



### RECH Nominal Specifications (300 psi)

Model	Dia	Vessel Length (L)	Liquid Inlet (1)	Liquid Out (2)	Equal-ization (8)	Liquid Level Column (13)	Purge (9)	Relief Valve (6)	Drain (7)	Vessel Weight (Empty)	Total Internal Volume	80% of Internal Volume	Mass of Ammonia <sup>1</sup>
	in	in	NPS	NPS	NPS	NPS	NPS	MPT	NPS	lb	ft <sup>3</sup>	ft <sup>3</sup>	lbm
RECH2096-30	20	96	1.5	1.25	1	1.25	0.75	0.75	0.75	600	15.5	12.4	455
RECH24120-30	24	120	1.5	1.25	1.25	1.25	0.75	0.75	0.75	1200	28.3	22.7	832
RECH30132-30	30	132	2	1.5	1.5	1.25	0.75	0.75	0.75	2300	49.1	39.3	1442
RECH36144-30	36	144	2	1.5	1.5	1.25	0.75	0.75	0.75	2050	77.6	62.1	2277
RECH42144-30	42	144	2.5	2	2	1.25	0.75	0.75	0.75	3400	105.5	84.4	3095
RECH48156-30	48	156	3	2	2.5	1.25	0.75	0.75	0.75	3600	147.8	118.2	4336
RECH54156-30	54	156	3	2	3	1.25	0.75	0.75	1	4100	186.6	149.3	5476
RECH60168-30	60	168	4	3	3	1.25	0.75	0.75	1	5800	246.2	197.0	7226
RECH66168-30	66	168	5	4	3	1.25	0.75	1	1	7400	297.2	237.8	8721
RECH72168-30	72	168	5	4	3	1.25	0.75	1	1	8500	352.5	282.0	10346
RECH84192-30	84	192	6	5	3	1.25	0.75	1.25	1	12000	546.8	437.4	16046
RECH96216-30	96	216	8	6	4	1.25	0.75	1.25	1	16000	806.7	645.4	23673

### RECV Nominal Specifications (300 psi)

Model	Dia	Vessel Length (L)	Liquid Inlet (1)	Liquid Out (2)	Equal-ization (8)	Liquid Level Column (13)	Purge (9)	Relief Valve (6)	Drain (7)	Overall Height	Vessel Weight (Empty)	Total Internal Volume	80% of Internal Volume	Mass of Ammonia <sup>1</sup>
	in	in	NPS	NPS	NPS	NPS	NPS	MPT	NPS	in	lb	ft <sup>3</sup>	ft <sup>3</sup>	lbm
RECV2096-30	20	96	1.5	1.25	1	1.25	0.75	0.75	0.75	114	620	15.5	12	455
RECV24120-30	24	120	1.5	1.25	1.25	1.25	0.75	0.75	0.75	138	1250	28.3	23	832
RECV30132-30	30	132	2	1.5	1.5	1.25	0.75	0.75	0.75	150	1500	49.1	39	1442
RECV36144-30	36	144	2	1.5	1.5	1.25	0.75	0.75	0.75	162	1900	77.6	62	2277
RECV42144-30	42	144	2.5	1.5	2	1.25	0.75	0.75	0.75	162	3500	105.5	84	3095
RECV48156-30	48	156	3	2	2.5	1.25	0.75	0.75	0.75	174	3700	147.8	118	4336
RECV54156-30	54	156	3	3	2.5	1.25	0.75	0.75	1	174	4300	186.6	149	5476
RECV60168-30	60	168	4	3	3	1.25	0.75	0.75	1	186	6300	246.2	197	7226
RECV66168-30	66	168	4	3	3	1.25	0.75	1	1	186	8000	297.2	238	8721
RECV72168-30	72	168	5	4	3	1.25	0.75	1	1	186	9000	352.5	282	10346
RECV84192-30	84	192	6	5	3	1.25	0.75	1.25	1.25	210	13000	546.8	437	16046
RECV96216-30	96	216	8	6	4	1.25	0.75	1.25	1.25	234	18000	806.7	645	23673

<sup>1</sup> Mass of Ammonia is based on 80% of Internal Volume and 95°F liquid temperature

### Vessels for Thermosyphon (TS) Oil Cooling

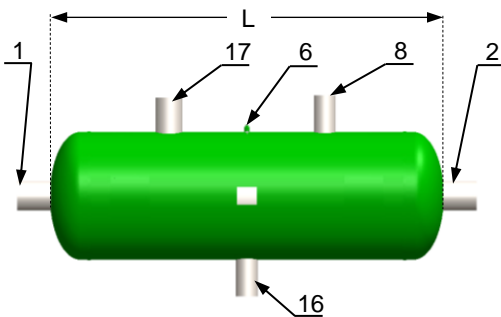
Compressors often require heat to be removed from oil that has been separated from the discharge stream to maintain operation within the compressor thermal limits. This *Oil Cooling Load* can be removed using a thermosyphon heat exchanger connected to dedicated vessel that supplies liquid refrigerant.

In the specification table below, a *Heat of Rejection* is provided which is based on the *Available Volume (Thermosyphon)* of refrigerant and its latent heat available (e.g. at a 95°F liquid temperature). The *Available Volume (TS)* is calculated from the bottom of the shell to the middle of the *Liquid Outlet (2)*. The *Heat of Rejection* can be divided by the compressor's *Oil Cooling Load* to calculate the static amount of time that the vessel can supply oil cooling (before needing more liquid). A minimum of 5 minute supply is a common industry rule-of-thumb.

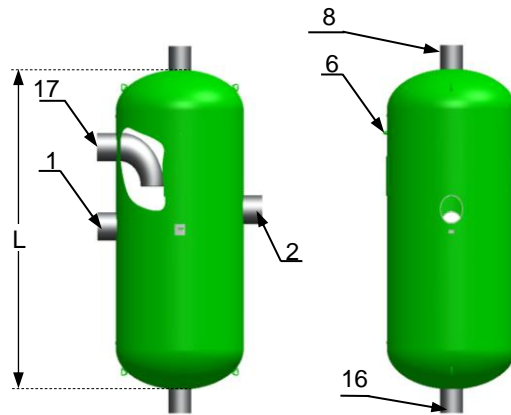
Example:

- *Oil Cooling load* = 500 kBTU/hr
- TSH1272-30 provides 42 kBTU *Heat of Rejection* at 95F liquid temperature.  
 →  $42 / 500 = 0.084$  hrs. (~5 minutes) of oil cooling supply at the given conditions.

### Horizontal Thermosyphon (TSH)



### Vertical Thermosyphon (TSV)



### TSH Nominal Specifications (300 psi)

Model	Dia	Vessel Length (L)	Liquid Inlet from Cond (1)	Liquid Out (2)	Equal-ization (8)	To Oil Cooler (16)	From Oil Cooler (17)	Relief Valve (6)	Vessel Weight (Empty)	Available Liquid Volume (Thermosyphon)	Mass of Ammonia <sup>1</sup>	Heat of Rejection (Static) <sup>1</sup>	Heat of Rejection Rate <sup>2</sup>
	in	in	NPS	NPS	NPS	NPS	NPS	MPT	lbm	ft <sup>3</sup>	lbm	kBTU	kBTU/hr
TSH1272-30	12.75	72	2.5	2.5	2.5	2	2.5	0.75	250	2.4	86.9	42	504
TSH1672-30	16	72	3	3	3	3	4	0.75	350	3.8	138.0	67	800
TSH2072-30	20	72	4	4	4	4	5	0.75	650	5.7	210.2	102	1218
TSH2472-30	24	72	5	5	4	4	5	0.75	800	8.3	303.6	147	1759
TSH3084-30	30	84	6	6	5	5	6	0.75	1050	15.2	559.0	270	3239
TSH3684-30	36	84	8	8	6	6	8	0.75	1400	21.8	801.5	387	4645
TSH4896-30	48	96	8	8	8	8	8	0.75	2400	43.8	1605.1	775	9302

### TSV Nominal Specifications (300 psi)

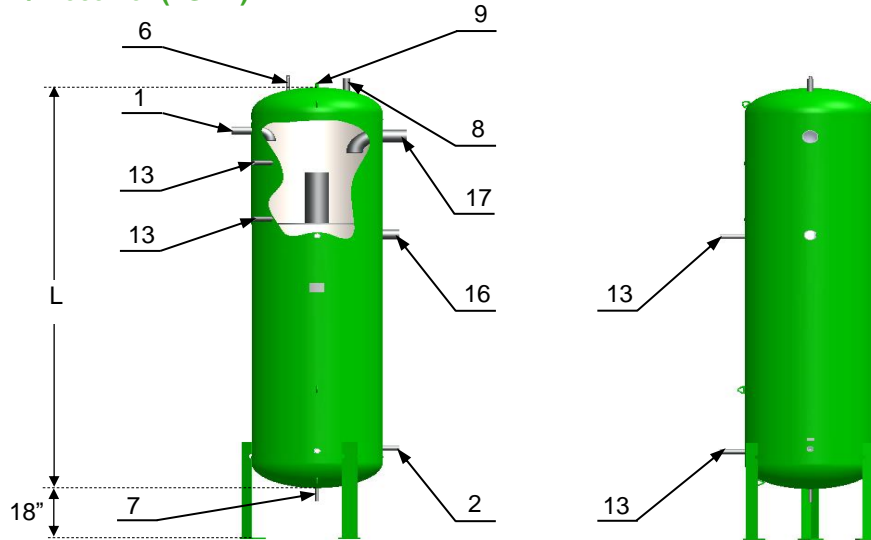
Model	Dia	Vessel Length (L)	Liquid Inlet from Cond (1)	Liquid Out (2)	Equal-ization (8)	To Oil Cooler (16)	From Oil Cooler (17)	Relief Valve (6)	Vessel Weight (Empty)	Available Liquid Volume (Thermosyphon)	Mass of Ammonia <sup>1</sup>	Heat of Rejection (Static) <sup>1</sup>	Heat of Rejection Rate <sup>2</sup>
	in	in	NPS	NPS	NPS	NPS	NPS	NPS	lbm	ft <sup>3</sup>	lbm	kBTU	kBTU/hr
TSV1272-30	12.75	72	2.5	2.5	2.5	2	2.5	0.75	250	3.3	121.9	59	707
TSV1672-30	16	72	3	3	3	3	4	0.75	350	5.1	185.6	90	1076
TSV2072-30	20	72	4	4	4	4	5	0.75	650	7.4	270.8	131	1569
TSV2472-30	24	72	5	5	4	4	5	0.75	800	10.8	394.9	191	2288
TSV3084-30	30	84	6	6	5	5	6	0.75	1050	17.5	640.1	309	3710
TSV3696-30	36	96	8	8	6	6	8	0.75	1400	30.8	1130.3	546	6551
TSV4896-30	48	96	8	8	8	8	8	0.75	2400	49.7	1821.5	880	10556

<sup>1</sup> Data is based on 95°F liquid temperature

<sup>2</sup> *Heat of Rejection Rate* is based on 5 min liquid reserve at 95°F liquid temperature



## Vertical Thermosyphon / Receiver (TSRV)



### TSRV<sup>1</sup> Nominal Specifications (300 psi)

Model	Dia	Vessel Length (L)	Liquid Inlet from Cond (1)	Liquid Out (2)	Equalization (8)	Liquid Level Column (13)	Purge (9)	Relief Valve (6)	Oil Drain (7)	To Oil Cooler (16)	From Oil Cooler (17)
	in	in	NPS	NPS	NPS	NPS	NPT	MPT	NPS	NPS	NPS
TSRV20120-30	20	120	1.5	1	2.5	1.25	0.75	0.75	0.75	2	2.5
TSRV24120-30	24	120	2	1.25	2.5	1.25	0.75	0.75	0.75	2	2.5
TSRV30132-30	30	132	2.5	1.5	3	1.25	0.75	0.75	0.75	2.5	3
TSRV36144-30	36	144	2.5	1.5	4	1.25	0.75	0.75	0.75	3	4
TSRV42156-30	42	156	2.5	1.5	4	1.25	0.75	0.75	0.75	3	4
TSRV48168-30	48	168	3	2	5	1.25	0.75	0.75	0.75	4	5
TSRV54192-30	54	192	3	2.5	6	1.25	0.75	1	1	5	6
TSRV60216-30	60	216	4	3	8	1.25	0.75	1	1	6	8
TSRV66216-30	66	216	4	3	8	1.25	0.75	1.25	1	6	8
TSRV72216-30	72	216	5	4	8	1.25	0.75	1.25	1	8	8
TSRV84216-30	84	216	6	5	8	1.25	0.75	1.25	1.25	8	8
TSRV96216-30	96	216	8	6	8	1.25	0.75	1.25	1.25	8	8

Model	Overall Height	Vessel Weight (Empty)	Stand-pipe Height <sup>2</sup>	Available Liquid Volume (Thermosyphon)	Mass of Ammonia (Thermosyphon) <sup>3</sup>	Heat of Rejection (Static) <sup>3</sup>	Heat of Rejection Rate <sup>4</sup>	Internal Volume of Receiver <sup>5</sup>	Mass of Ammonia <sup>6</sup>
	in	lb	in	ft <sup>3</sup>	lbm	kBTU	kBTU/hr	ft <sup>3</sup>	lbm
TSRV20120-30	138	1000	10	1.5	56.6	27	328	14.8	543
TSRV24120-30	138	1200	10	2.3	85.0	41	492	20.3	744
TSRV30132-30	150	1700	10	3.7	135.3	65	784	35.5	1301
TSRV36144-30	162	2000	10	5.4	199.8	97	1158	55.7	2042
TSRV42156-30	174	2800	10	7.5	276.4	133	1602	84.3	3094
TSRV48168-30	186	4500	10	9.8	361.0	174	2092	121.6	4462
TSRV54192-30	210	6000	10	12.6	461.0	223	2672	162.3	5952
TSRV60216-30	234	6900	10	15.5	568.1	274	3292	234.7	8609
TSRV66216-30	234	8500	10	18.9	691.7	334	4008	281.7	10335
TSRV72216-30	234	10000	10	22.6	827.2	399	4794	326.1	11964
TSRV84216-30	234	14000	10	30.7	1127.4	544	6534	437.0	16029
TSRV96216-30	234	18000	10	40.4	1481.6	715	8586	549.0	20137

<sup>1</sup> TSRH (Horizontal Thermosyphon Receivers) are also available; see Page 3 for vessel volumes. Consult sales for more information.

<sup>2</sup> Standpipe Height can be customized to adjust the charge size (Heat of rejection will change)

<sup>3</sup> Data is based on 95°F liquid temperature

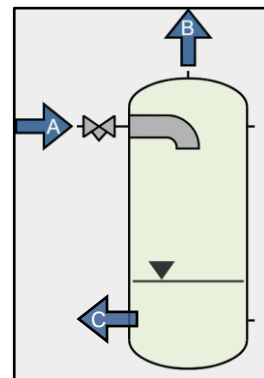
<sup>4</sup> Heat of Rejection Rate is based on 5 min liquid reserve at 95°F liquid temperature

<sup>5</sup> Internal Volume of Receiver does not include the volume of the thermosyphon section

<sup>6</sup> Mass of Ammonia is based on Internal Volume of Receiver and 95°F liquid temperature

### Vessels for Liquid / Vapor Separation

Vessels in this section have various roles in an industrial refrigeration system but all have one thing in common: liquid refrigerant exits the bottom of the vessel and dry vapor gas exits the top. To accomplish this, each vessel must be capable ensuring that the gas that exits at “B” is dry.



Because velocity is the principal factor to allow separation, mass flow is a more universal way to size (in comparison to *Tons of Refrigeration [TR]*) because the incoming liquid temperature is not needed. In addition to the *Maximum Mass Flow* table, a table of *Maximum Capacity* is also provided using liquid temperatures of 95°F and 20°F.

The values are applicable for wide range of vessels utilizing Ammonia and with thickness based on the design working pressure up to 300 psi. Multipliers for R507A and R134a are also provided.

### Max Capacity of Horizontal Vessels for Liquid / Vapor Separation

- Recirculator (RCLH), Suction Accumulator (SAH), Surge Drum Double Flow (SDDH)
- Note: For Surge Drum Single Flow (SDSH), see vertical vessels (and multiply x 0.5)

Horizontal	Maximum Mass Flow of Vessel by Diameter											
	lbs/hr											Ammonia
Nominal Diameter	Evaporating Temperature (°F)											
	-50	-40	-30	-20	-10	0	10	20	30	40	50	60
12	344	398	458	523	593	669	750	836	929	1,027	1,131	1,241
16	546	633	729	832	944	1,064	1,192	1,330	1,477	1,633	1,798	1,973
20	835	968	1,114	1,272	1,442	1,626	1,823	2,033	2,257	2,496	2,748	3,017
24	1,203	1,394	1,604	1,831	2,077	2,342	2,625	2,928	3,251	3,594	3,958	4,344
30	1,977	2,292	2,636	3,009	3,413	3,848	4,314	4,812	5,342	5,906	6,504	7,139
36	2,902	3,365	3,870	4,419	5,012	5,650	6,334	7,065	7,844	8,672	9,550	10,482
42	3,961	4,592	5,282	6,031	6,840	7,711	8,645	9,642	10,705	11,835	13,034	14,306
48	5,113	5,929	6,819	7,786	8,831	9,955	11,160	12,448	13,820	15,279	16,827	18,469
54	6,587	7,637	8,784	10,030	11,376	12,824	14,377	16,036	17,804	19,683	21,677	23,792
60	8,010	9,287	10,682	12,197	13,834	15,595	17,483	19,500	21,650	23,935	26,360	28,932
66	9,758	11,314	13,013	14,858	16,852	18,998	21,298	23,755	26,374	29,158	32,112	35,245
72	11,755	13,629	15,676	17,899	20,301	22,886	25,656	28,617	31,771	35,125	38,684	42,458
84	15,983	18,531	21,314	24,336	27,603	31,117	34,884	38,909	43,199	47,759	52,598	57,728
96	20,976	24,319	27,971	31,938	36,225	40,836	45,780	51,062	56,691	62,675	69,026	75,759
Refrigerant	Multiplier for Other Refrigerants											
R507A	4.98	4.87	4.77	4.69	4.61	4.54	4.48	4.42	4.38	4.34	4.32	4.30
R134a	3.00	2.99	2.98	2.97	2.97	2.96	2.96	2.95	2.95	2.94	2.94	2.94

Horizontal	Maximum Capacity of Vessel by Diameter with Liquid						Maximum Capacity of Vessel by Diameter with Liquid							
	Temp of 20°F						Temp of 95°F							
Nominal Diameter	TR (Tons of Refrigeration)													
	Evaporating Temperature (°F)													
	-50	-40	-30	-20	-10	0	-10	0	10	20	30	40	50	60
12	15	18	20	24	27	30	23	26	29	33	36	41	45	49
16	24	28	33	37	43	48	36	41	46	52	58	64	71	79
20	37	43	50	57	65	74	55	63	71	79	89	98	109	120
24	53	62	72	82	94	107	79	90	102	114	128	142	157	173
30	87	102	118	135	155	175	131	148	167	188	210	233	258	284
36	128	149	173	199	227	257	192	218	246	276	308	342	379	417
42	175	204	236	271	310	351	262	297	335	376	420	467	517	570
48	225	263	305	350	400	454	338	383	433	486	542	603	667	735
54	290	339	393	451	515	584	435	494	558	626	699	777	859	947
60	353	412	478	549	627	711	529	601	678	761	850	944	1,045	1,152
66	430	502	582	669	763	866	645	732	826	927	1,035	1,150	1,273	1,403
72	518	605	701	806	920	1,043	777	882	995	1,117	1,247	1,386	1,534	1,691
84	705	823	953	1,096	1,250	1,418	1,056	1,199	1,353	1,518	1,695	1,884	2,085	2,299
96	925	1,080	1,251	1,438	1,641	1,861	1,386	1,573	1,775	1,992	2,225	2,473	2,737	3,017
Refrigerant	Multiplier for Other Refrigerants													
R507A	0.59	0.59	0.58	0.58	0.58	0.58	0.42	0.42	0.43	0.43	0.44	0.44	0.45	0.45
R134a	0.44	0.44	0.45	0.45	0.45	0.46	0.38	0.38	0.39	0.40	0.40	0.41	0.41	0.42





### Max Capacity of Vertical Vessels for Liquid / Vapor Separation

- Recirculator (RCLV), Suction Accumulator (SAV), Surge Drum Single Flow (SDSV), Economizer (ECV), Intercoolers (ICV), and Controller Pressure Receivers\* (CPRV)
- Exceptions:
  - o Intercoolers → Multiply by 0.95
  - o Horizontal Surge Drum Single Flow (SDSH) → Multiply 0.5

\*Note: CPRV Nominal Specifications not included in this catalog

Vertical	Maximum Mass Flow of Vessel by Diameter											
	lbs/hr											
Nominal Diameter	Evaporating Temperature (°F)											
	-50	-40	-30	-20	-10	0	10	20	30	40	50	60
12	369	427	492	561	637	718	805	897	996	1,101	1,213	1,331
16	590	684	787	899	1,019	1,149	1,288	1,437	1,595	1,763	1,942	2,132
20	910	1,055	1,214	1,386	1,572	1,772	1,987	2,216	2,460	2,720	2,995	3,288
24	1,328	1,540	1,771	2,022	2,293	2,585	2,898	3,232	3,589	3,968	4,370	4,796
30	2,102	2,437	2,803	3,200	3,629	4,092	4,587	5,116	5,680	6,280	6,916	7,591
36	3,052	3,539	4,070	4,647	5,271	5,942	6,662	7,430	8,249	9,120	10,044	11,024
42	4,180	4,846	5,574	6,364	7,218	8,137	9,122	10,175	11,297	12,489	13,755	15,096
48	5,426	6,291	7,236	8,262	9,371	10,564	11,843	13,209	14,666	16,214	17,857	19,598
54	6,900	8,000	9,201	10,506	11,916	13,433	15,060	16,797	18,649	20,618	22,707	24,922
60	8,551	9,914	11,403	13,020	14,767	16,647	18,662	20,816	23,110	25,550	28,139	30,884
66	10,299	11,940	13,734	15,681	17,786	20,050	22,477	25,071	27,834	30,773	33,891	37,197
72	12,296	14,256	16,397	18,722	21,235	23,938	26,836	29,932	33,232	36,740	40,463	44,409
84	16,719	19,384	22,295	25,456	28,873	32,549	36,490	40,700	45,187	49,957	55,019	60,385
96	21,937	25,433	29,253	33,401	37,884	42,707	47,877	53,401	59,288	65,546	72,188	79,229
Refrigerant	Multiplier for Other Refrigerants											
R507A	4.98	4.87	4.77	4.69	4.61	4.54	4.48	4.42	4.38	4.34	4.32	4.30
R134a	3.00	2.99	2.98	2.97	2.97	2.96	2.96	2.95	2.95	2.94	2.94	2.94

Vertical	Maximum Capacity of Vessel by Diameter with Liquid						Maximum Capacity of Vessel by Diameter with Liquid							
	Temp of 20°F						Temp of 95°F							
Nominal Diameter	TR (Tons of Refrigeration)						TR (Tons of Refrigeration)							
	-50	-40	-30	-20	-10	0	-10	0	10	20	30	40	50	60
12	16	19	22	25	29	33	24	28	31	35	39	43	48	53
16	26	30	35	40	46	52	39	44	50	56	63	70	77	85
20	40	47	54	62	71	81	60	68	77	86	97	107	119	131
24	59	68	79	91	104	118	88	100	112	126	141	157	173	191
30	93	108	125	144	164	186	139	158	178	200	223	248	274	302
36	135	157	182	209	239	271	202	229	258	290	324	360	398	439
42	184	215	249	286	327	371	276	313	354	397	443	493	545	601
48	239	279	324	372	424	481	358	407	459	515	576	640	708	780
54	304	355	411	473	540	612	456	517	584	655	732	813	900	992
60	377	440	510	586	669	759	565	641	724	812	907	1,008	1,116	1,230
66	454	530	614	706	806	914	680	772	872	978	1,092	1,214	1,344	1,481
72	542	633	733	843	962	1,091	812	922	1,041	1,168	1,304	1,450	1,604	1,768
84	737	861	997	1,146	1,308	1,483	1,104	1,254	1,415	1,588	1,773	1,971	2,181	2,404
96	967	1,130	1,308	1,504	1,716	1,946	1,449	1,645	1,857	2,084	2,327	2,586	2,862	3,155
Refrigerant	Multiplier for Other Refrigerants													
R507A	0.59	0.59	0.58	0.58	0.58	0.58	0.42	0.42	0.43	0.43	0.44	0.44	0.45	0.45
R134a	0.44	0.44	0.45	0.45	0.45	0.46	0.38	0.38	0.39	0.40	0.40	0.41	0.41	0.42

### Vessel Nominal Specifications Definitions and Notes

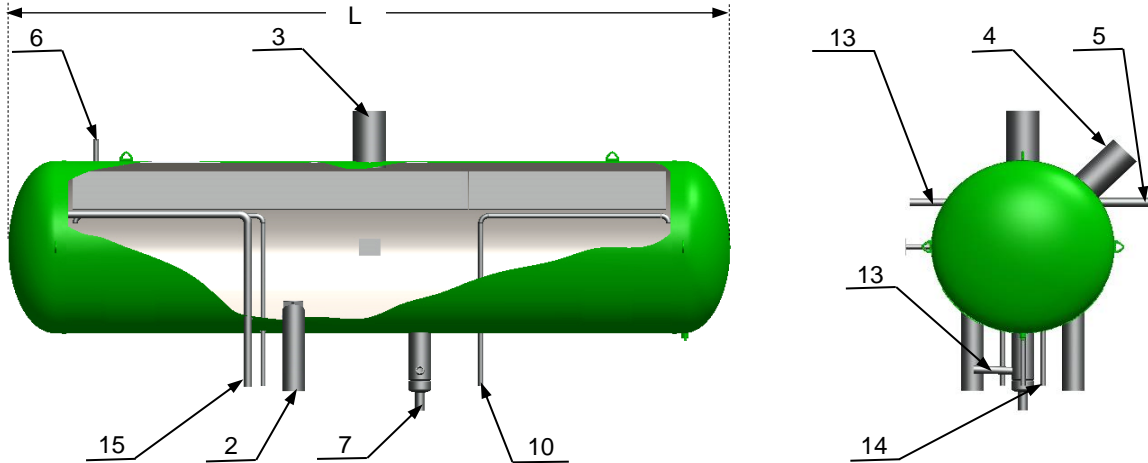
Available Liquid Volume is based on the assumed max and min liquid levels for each vessel. The max level is determined to ensure proper liquid / vapor separation and corresponds with the Max Capacity Tables. Horizontal vessel max level is 50% of the diameter. Using a lower max level would increase capacity (and vice versa).

For each given diameter, additional lengths are available to select as standard available vessels that BITZER US is offering in conjunction with tables on page 3. Please note that data provided in the *Nominal Specification* table (for example connection size) may not be accurate for these additional lengths.

## Recirculator Available Liquid Volume

In addition to providing liquid / vapor separation, recirculator vessels also require additional liquid storage. The required volume of the vessel should accommodate normal operating level and also dynamic situations such as sudden drop, surge, and/or foaming in the liquid. Select a vessel so that the *Available Liquid Volume* is greater than the required volume.

### Horizontal Recirculator (RCLH)



### RCLH Nominal Specification (250 psi)

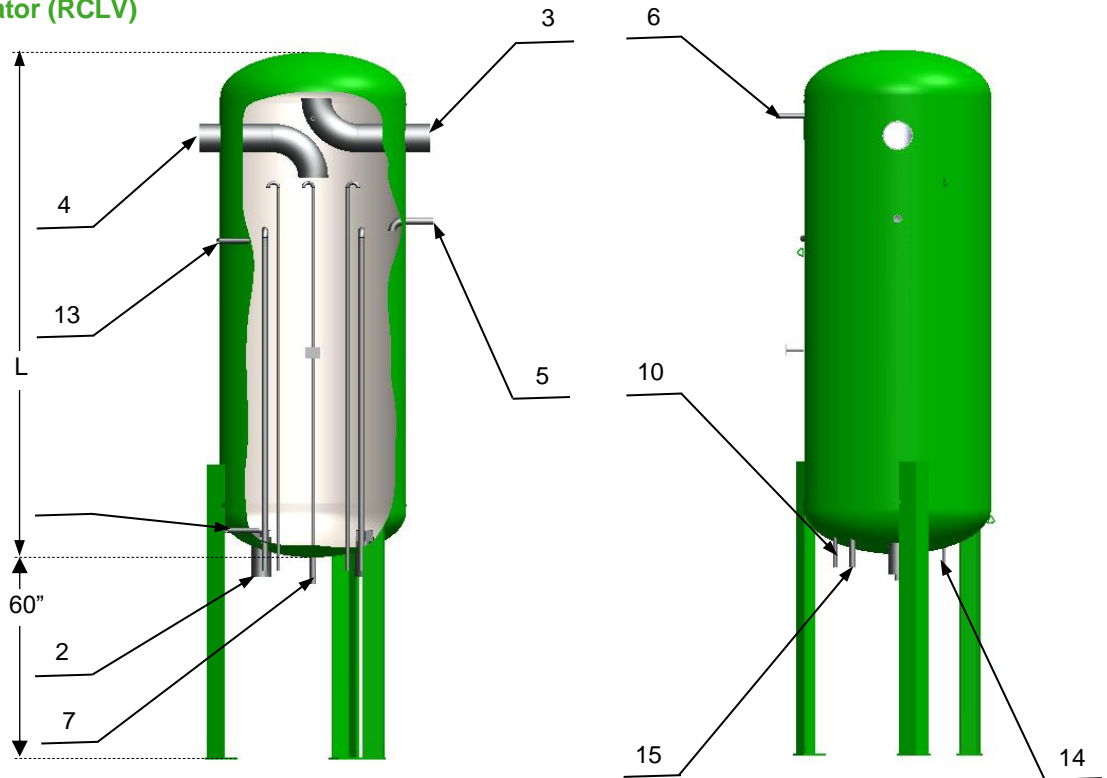
Model	Dia	Vessel Length (L)	Liquid Out / Pump Suction x2 (2)	Wet Return (4)	Gas Outlet (3)	Make Up (5)	Liquid Level Column (13)	Relief Valve (6)	Oil Pot Drain (7)	Oil Pot Vent (10)	Pump Vents x2 (14)	Pump Liquid Bypass x2 (15)	Vessel Weight (Empty)	Available Liquid Volume
	in	in	NPS	NPS	NPS	NPS	NPS	MPT	NPS	NPS	NPS	NPS	lbm	ft <sup>3</sup>
RCLH24120-25	24	120	4	5	4	1	1.25	0.75	1.5	0.75	0.75	1.25	1300	12.5
RCLH30132-25	30	132	4	5	5	1.25	1.25	0.75	1.5	0.75	0.75	1.25	1700	22.5
RCLH36144-25	36	144	4	6	6	1.5	1.25	0.75	1.5	0.75	0.75	1.25	2500	33.7
RCLH42144-25	42	144	4	8	6	1.5	1.25	0.75	1.5	0.75	0.75	1.25	3000	47.3
RCLH48156-25	48	156	4	8	8	2	1.25	0.75	1.5	0.75	0.75	1.5	3600	68.5
RCLH54156-25	54	156	5	8	8	2	1.25	0.75	1.5	0.75	0.75	1.5	4100	86.7
RCLH60156-25	60	156	6	10	10	2.5	1.25	0.75	1.5	0.75	0.75	1.5	4700	108.0
RCLH66168-25	66	168	6	10	10	2.5	1.25	1	1.5	0.75	0.75	1.5	6500	138.0
RCLH72168-25	72	168	6	12	10	2.5	1.25	1	2	1	0.75	1.5	8000	118.6
RCLH84192-25	84	192	8	12	10	3	1.25	1.25	2	1	0.75	1.5	11000	202.1
RCLH96216-25	96	216	8	14	12	3	1.25	1.25	2	1	0.75	1.5	15000	317.5

### RCLH Available Lengths

Model	Dia	Available Vessels Min Length	Available Vessels Max Length
	in	in	in
RCLH24XXX-25	24	120	168
RCLH30XXX-25	30	132	168
RCLH36XXX-25	36	144	168
RCLH42XXX-25	42	144	168
RCLH48XXX-25	48	156	168
RCLH54XXX-25	54	156	192
RCLH60XXX-25	60	156	216
RCLH66XXX-25	66	168	216
RCLH72XXX-25	72	168	240
RCLH84XXX-25	84	192	240
RCLH96XXX-25	96	216	240



## Vertical Recirculator (RCLV)



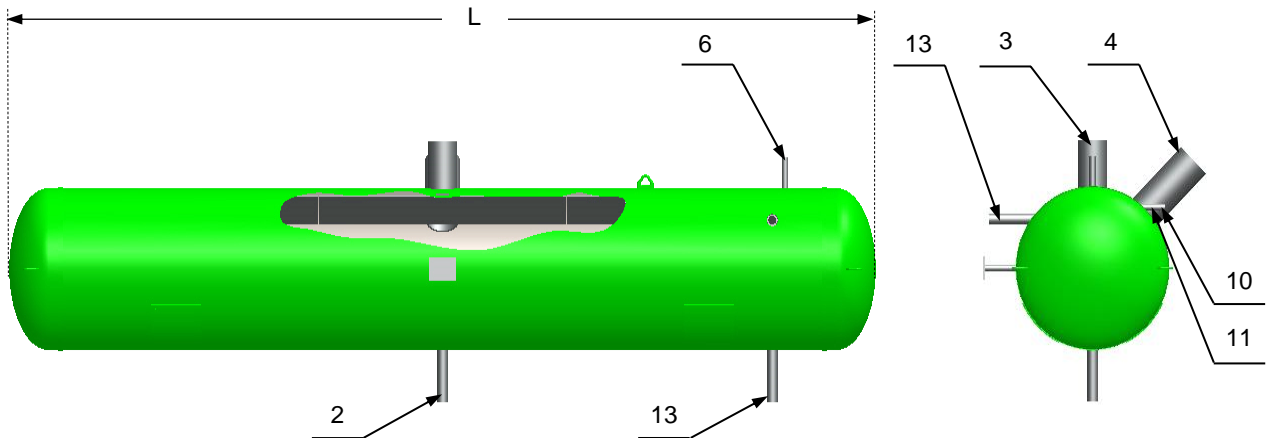
### RCLV Nominal Specification (250 psi)

Model	Dia	Vessel Length (L)	Liquid Out / Pump Suction x2 (2)	Wet Return (4)	Gas Outlet (3)	Make Up (5)	Liquid Level Column (13)	Relief Valve (6)	Oil Pot Drain (7)	Oil Pot Vent (10)	Pump Vents x2 (14)	Pump Liquid Bypass x2 (15)	Overall Height	Vessel Weight (Empty)	Available Liquid Volume
	in	in	NPS	NPS	NPS	NPS	NPS	NPS	NPS	NPS	NPS	NPS	in	lbm	ft <sup>3</sup>
RCLV24120-25	24	120	4	5	4	1	1.25	0.75	1.5	0.75	0.75	1.25	180	1500	17.0
RCLV30132-25	30	132	4	5	5	1.25	1.25	0.75	1.5	0.75	0.75	1.25	192	1800	29.2
RCLV36144-25	36	144	4	6	6	1.5	1.25	0.75	1.5	0.75	0.75	1.25	204	2300	46.5
RCLV42144-25	42	144	4	6	6	1.5	1.25	0.75	1.5	0.75	0.75	1.25	204	3000	61.8
RCLV48156-25	48	156	5	8	8	2	1.25	0.75	1.5	0.75	0.75	1.5	216	4300	87.0
RCLV54156-25	54	156	5	8	8	2	1.25	0.75	1.5	0.75	0.75	1.5	216	4900	104.7
RCLV60156-25	60	156	6	10	10	2.5	1.25	0.75	1.5	0.75	0.75	1.5	216	5500	127.9
RCLV66168-25	66	168	6	12	10	2.5	1.25	1	1.5	0.75	0.75	1.5	228	5501	171.5
RCLV72168-25	72	168	6	12	10	2.5	1.25	1	2	1	0.75	2	228	8800	193.4
RCLV84192-25	84	192	8	12	10	3	1.25	1.25	2	1	0.75	2	252	12000	309.4
RCLV96216-25	96	216	8	12	12	3	1.25	1.25	2	1	0.75	2	276	15000	462.7

### RCLV Available Lengths

Model	Dia	Available Vessels Min Length	Available Vessels Max Length
	in	in	in
RCLV24XXX-25	24	72	168
RCLV30XXX-25	30	72	168
RCLV36XXX-25	36	84	168
RCLV42XXX-25	42	84	168
RCLV48XXX-25	48	96	168
RCLV54XXX-25	54	96	192
RCLV60XXX-25	60	96	216
RCLV66XXX-25	66	120	216
RCLV72XXX-25	72	120	240
RCLV84XXX-25	84	120	240
RCLV96XXX-25	96	120	240

## Horizontal Suction Accumulator (SAH)



### SAH Nominal Specification (250 psi)

Model	Dia	Vessel Length (L)	Inlet (4)	Gas Outlet (3)	Liquid Level Column (13)	Liquid Out (2)	Relief Valve (6)	Oil Pot Vent (10)	3-Way Vent (11)	Vessel Weight (Empty)	Available Liquid Volume
	in	in	NPS	NPS	NPS	NPS	MPT	NPS	NPS	lbm	ft <sup>3</sup>
SAH2096-25	20	96	4	4	1.25	1.5	0.75	0.75	0.75	750	8.0
SAH24120-25	24	120	5	5	1.25	1.5	0.75	0.75	0.75	1100	14.2
SAH30132-25	30	132	5	5	1.25	1.5	0.75	0.75	0.75	1500	24.6
SAH36144-25	36	144	6	6	1.25	1.5	0.75	0.75	1.25	1900	38.8
SAH42144-25	42	144	6	6	1.25	2	0.75	0.75	1.25	2400	52.7
SAH48156-25	48	156	8	8	1.25	2	0.75	0.75	1.25	2900	74.8
SAH54156-25	54	156	8	8	1.25	2.5	0.75	0.75	1.25	4400	93.3
SAH60156-25	60	156	10	10	1.25	3	0.75	0.75	1.25	5100	114.8
SAH66168-25	66	168	12	12	1.25	3	1	0.75	1.25	5100	148.6
SAH72168-25	72	168	12	14	1.25	4	1	0.75	1.25	8000	176.3
SAH84192-25	84	192	14	16	1.25	4	1.25	0.75	1.25	11000	273.4
SAH96216-25	96	216	16	16	1.25	4	1.25	0.75	1.25	15000	403.4

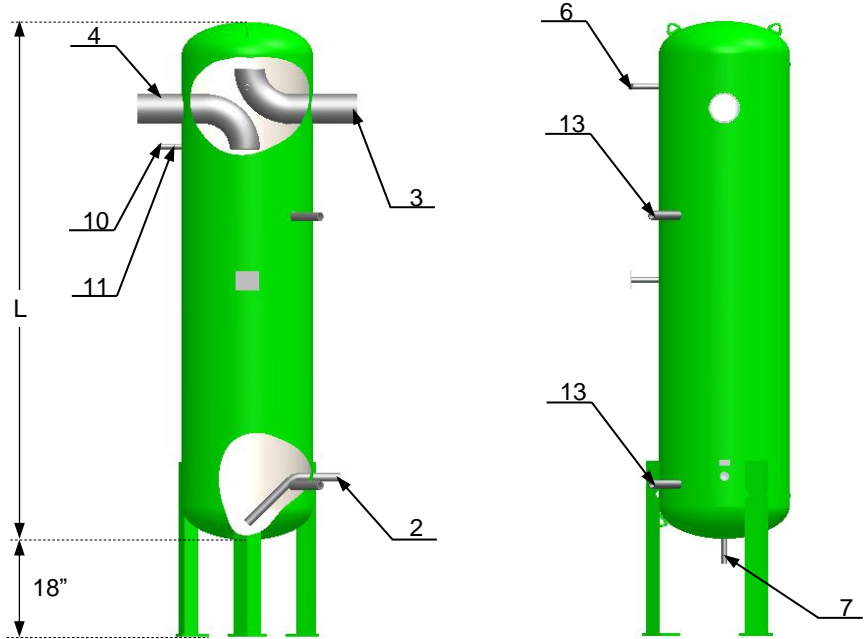
### SAH Available Lengths

Model	Dia	Available Vessels Min Length	Available Vessels Max Length
	in	in	in
SAH20XXX-25	20	96	156
SAH24XXX-25	24	120	168
SAH30XXX-25	30	132	168
SAH36XXX-25	36	144	168
SAH42XXX-25	42	144	168
SAH48XXX-25	48	156	168
SAH54XXX-25	54	156	192
SAH60XXX-25	60	156	216
SAH66XXX-25	66	168	216
SAH72XXX-25	72	168	240
SAH84XXX-25	84	192	240
SAH96XXX-25	96	216	240

Suction accumulators can also be ordered with internal “boil out” coils as an option. Please specify heat exchange area required when ordering.



## Vertical Suction Accumulator (SAV)



### SAV Nominal Specification (250 psi)

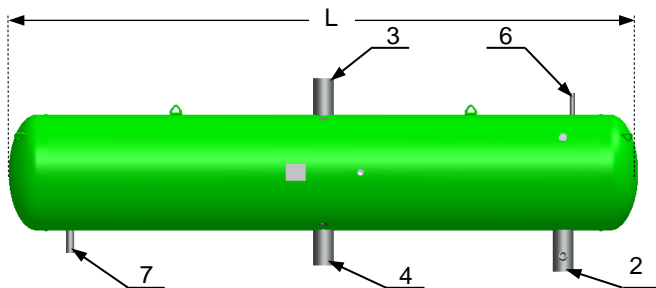
Model	Dia	Vessel Length (L)	Inlet (4)	Gas Outlet (3)	Liquid Out (2)	Relief Valve (6)	Drain (7)	Oil Pot Vent (10)	3-Way Vent (11)	Liquid Level Column (13)	Overall Height	Vessel Weight (Empty)	Available Liquid Volume
	in	in	NPS	NPS	NPS	NPS	NPS	NPS	NPS	NPS	in	lbm	ft <sup>3</sup>
SAV1272-25	12.75	72	2.5	2.5	1.25	0.75	0.75	0.75	0.75	1.25	90	270	2.8
SAV1684-25	16	84	3	3	1.25	0.75	0.75	0.75	0.75	1.25	102	380	5.1
SAV2096-25	20	96	4	4	1.25	0.75	0.75	0.75	0.75	1.25	114	577	7.9
SAV2496-25	24	96	5	5	1.25	0.75	0.75	0.75	0.75	1.25	114	970	11.4
SAV30120-25	30	120	5	5	1.5	0.75	0.75	0.75	0.75	1.25	138	1400	25.7
SAV36132-25	36	132	6	6	1.5	0.75	0.75	0.75	1.25	1.25	150	1700	40.1
SAV42144-25	42	144	6	6	2	0.75	0.75	0.75	1.25	1.25	162	2600	62.5
SAV48144-25	48	144	8	8	2	0.75	0.75	0.75	1.25	1.25	162	3200	75.7
SAV54156-25	54	156	8	8	2.5	0.75	1	0.75	1.25	1.25	174	4500	106.7
SAV60156-25	60	156	10	12	3	0.75	1	0.75	1.25	1.25	174	5100	127.8
SAV66168-25	66	168	10	12	3	1	1	0.75	1.25	1.25	186	6500	172.7
SAV72168-25	72	168	12	14	4	1	1	0.75	1.25	1.25	186	8000	198.2
SAV84192-25	84	192	14	16	4	1.25	1	0.75	1.25	1.25	210	11000	319.0
SAV96216-25	96	216	16	16	4	1.25	1	0.75	1.25	1.25	234	15000	479.5

### SAV Available Lengths

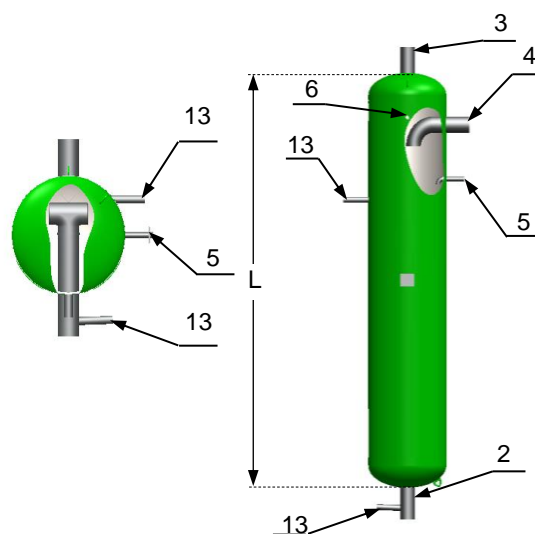
Model	Dia	Available Vessels Min Length	Available Vessels Max Length
	in	in	in
SAV12XXX-25	12.75	48	120
SAV16XXX-25	16	60	156
SAV20XXX-25	20	72	156
SAV24XXX-25	24	72	168
SAV30XXX-25	30	72	168
SAV36XXX-25	36	84	168
SAV42XXX-25	42	84	168
SAV48XXX-25	48	96	168
SAV54XXX-25	54	96	192
SAV60XXX-25	60	96	216
SAV66XXX-25	66	120	216
SAV72XXX-25	72	120	240
SAV84XXX-25	84	120	240
SAV96XXX-25	96	120	240

Suction accumulators can also be ordered with internal "boil out" coils as an option. Please specify heat exchange area required when ordering.

### Horizontal Surge Drums – Dual Flow (SDDH)



### Vertical Surge Drums (SDSV)



### SDDH Nominal Specification (250 psi)

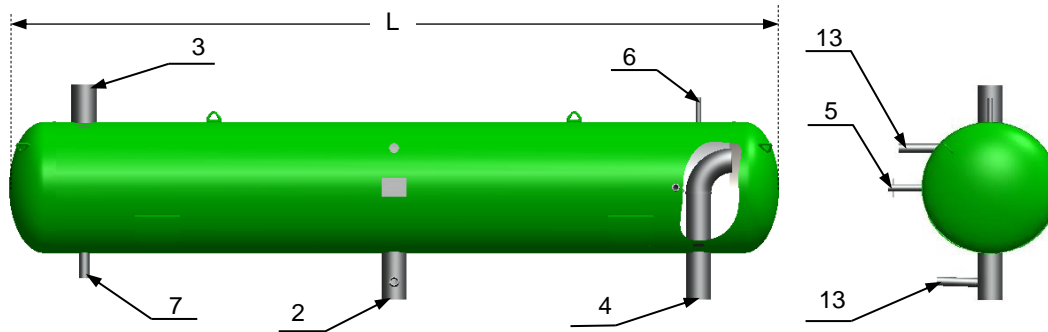
Model	Dia	Vessel Length (L)	Wet Return (4)	Gas Outlet (3)	Make Up (5)	Liquid Level Column (13)	Liquid Out (2)	Relief Valve (6)	Oil Drain (7)	Oil Pot Vent (10)	Vessel Weight (Empty)	Available Liquid Volume	Available Vessels Min Length	Available Vessels Max Length
	in	in	NPS	NPS	NPS	NPS	NPS	MPT	NPS	NPS	lbm	ft <sup>3</sup>	in	in
SDDH1272-25	12.75	72	3	2.5	0.75	1.25	2.5	0.75	1.5	0.75	220	2.5	72	120
SDDH1684-25	16	84	3	3	0.75	1.25	3	0.75	1.5	0.75	500	4.1	84	156
SDDH2096-25	20	96	4	4	1	1.25	4	0.75	1.5	0.75	750	7.4	96	156
SDDH24120-25	24	120	4	5	1.25	1.25	4	0.75	1.5	0.75	1100	12.5	120	168
SDDH30132-25	30	132	5	5	1.5	1.25	5	0.75	1.5	0.75	1500	22.5	132	168
SDDH36144-25	36	144	6	6	2	1.25	6	0.75	1.5	0.75	1900	37.1	144	168
SDDH42144-25	42	144	8	8	2	1.25	8	0.75	1.5	0.75	2400	51.0	144	168
SDDH48156-25	48	156	10	10	2.5	1.25	8	0.75	1.5	0.75	2900	72.7	156	168
SDDH54156-25	54	156	12	10	2.5	1.25	8	0.75	1.5	0.75	4400	91.2	156	192
SDDH60156-25	60	156	14	12	3	1.25	10	0.75	1.5	0.75	5100	110.8	156	216
SDDH66168-25	66	168	14	12	3	1.25	10	1	1.5	0.75	6500	144.1	168	216
SDDH72168-25	72	168	14	12	3	1.25	10	1	2	0.75	8000	163.0	168	240
SDDH84192-25	84	192	16	14	3	1.25	12	1.25	2	1	11000	252.8	192	240
SDDH96216-25	96	216	16	16	4	1.25	12	1.25	2	1	15000	378.6	216	240

### SDSV Nominal Specification (250 psi)

Model	Dia	Vessel Length (L)	Wet Return (4)	Gas Outlet (3)	Make Up (5)	Liquid Level Column (13)	Liquid Out (2)	Relief Valve (6)	Oil Pot Vent (10)	Vessel Weight (Empty)	Available Liquid Volume	Available Vessels Min Length	Available Vessels Max Length
	in	in	NPS	NPS	NPS	NPS	NPS	NPS	NPS	lbm	ft <sup>3</sup>	in	in
SDSV1272-25	12.75	72	2.5	2	0.75	1.25	2.5	0.75	0.75	200	2.8	48	120
SDSV1684-25	16	84	3	2.5	0.75	1.25	3	0.75	0.75	300	5.1	60	156
SDSV2096-25	20	96	4	3	1	1.25	4	0.75	0.75	640	8.0	72	156
SDSV24120-25	24	120	4	4	1	1.25	4	0.75	0.75	1000	17.2	72	168
SDSV30120-25	30	120	5	4	1.25	1.25	5	0.75	0.75	1500	25.5	72	168
SDSV36132-25	36	132	6	5	1.5	1.25	6	0.75	0.75	1900	39.9	84	168
SDSV42144-25	42	144	8	6	1.5	1.25	8	0.75	0.75	2300	62.2	84	168



## Horizontal Surge Drums – Single Flow (SDSH)



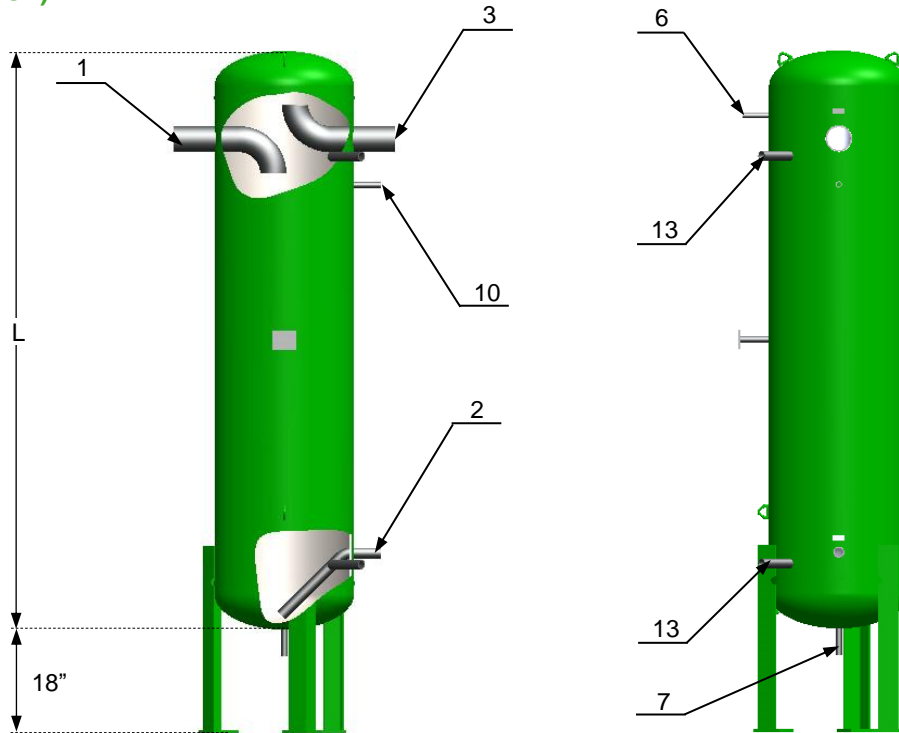
### SDSH Nominal Specification (250 psi)

Model	Dia	Vessel Length (L)	Wet Return (4)	Gas Outlet (3)	Make Up (5)	Liquid Level Column (13)	Liquid Out (2)	Relief Valve (6)	Oil Drain (7)	Oil Pot Vent (10)	Vessel Weight (Empty)	Available Liquid Volume
	in	in	NPS	NPS	NPS	NPS	NPS	MPT	NPS	NPS	lbm	ft <sup>3</sup>
SDSH1260-25	12.75	60	2.5	2	0.75	1.25	2.5	0.75	1.5	0.75	210	1.8
SDSH1672-25	16	72	3	2.5	0.75	1.25	3	0.75	1.5	0.75	500	3.5
SDSH2084-25	20	84	4	3	1	1.25	4	0.75	1.5	0.75	750	6.3
SDSH2496-25	24	96	4	4	1	1.25	4	0.75	1.5	0.75	950	9.9
SDSH30120-25	30	120	5	4	1.25	1.25	5	0.75	1.5	0.75	1600	20.3
SDSH36132-25	36	132	6	5	1.5	1.25	6	0.75	1.5	0.75	1900	33.9
SDSH42132-25	42	132	8	6	1.5	1.25	8	0.75	1.5	0.75	2300	46.5
SDSH48144-25	48	144	8	8	2	1.25	8	0.75	1.5	0.75	2700	66.8
SDSH54144-25	54	144	8	8	2	1.25	8	0.75	1.5	0.75	4100	83.7
SDSH60144-25	60	144	10	10	2.5	1.25	10	0.75	1.5	0.75	4800	101.7
SDSH66156-25	66	156	10	10	2.5	1.25	10	0.75	1.5	0.75	6300	133.0
SDSH72156-25	72	156	10	10	2.5	1.25	10	1	2	0.75	8000	150.4
SDSH84168-25	84	168	12	10	2.5	1.25	12	1.25	2	1	11000	222.4
SDSH96192-25	96	192	12	12	3	1.25	12	1.25	2	1	15000	337.7

### SDSH Available Lengths

Model	Dia	Available Vessels Min Length	Available Vessels Max Length
	in	in	in
SDSH12XXX-25	12.75	60	120
SDSH16XXX-25	16	72	156
SDSH20XXX-25	20	84	156
SDSH24XXX-25	24	96	168
SDSH30XXX-25	30	120	168
SDSH36XXX-25	36	132	168
SDSH42XXX-25	42	132	168
SDSH48XXX-25	48	144	168
SDSH54XXX-25	54	144	192
SDSH60XXX-25	60	144	216
SDSH66XXX-25	66	156	216
SDSH72XXX-25	72	156	240
SDSH84XXX-25	84	168	240
SDSH96XXX-25	96	192	240

## Economizer (ECV)



## ECV Nominal Specification (250 psi)

Model	Dia	Vessel Length (L)	Inlet (1)	Liquid Out (2)	Gas Outlet (3)	Liquid Level Column (13)	Relief Valve (6)	Drain (7)	Oil Pot Vent (10)	Overall Height	Vessel Weight (Empty)	Available Liquid Volume
	in	in	NPS	NPS	NPS	NPS	NPS	NPS	NPS	in	lbm	ft <sup>3</sup>
ECV1684-25	16	84	2.5	1.5	3	1.25	0.75	0.75	0.75	102	450	4.6
ECV2096-25	20	96	3	1.5	4	1.25	0.75	0.75	0.75	114	577	7.0
ECV2496-25	24	96	4	1.5	4	1.25	0.75	0.75	0.75	114	970	9.9
ECV30120-25	30	120	4	2	5	1.25	0.75	0.75	0.75	138	1400	22.7
ECV36120-25	36	120	5	2	6	1.25	0.75	0.75	0.75	138	1700	28.1
ECV42132-25	42	132	6	2.5	8	1.25	0.75	0.75	0.75	150	2600	45.0
ECV48144-25	48	144	8	2.5	8	1.25	0.75	1	0.75	162	3900	63.3
ECV54144-25	54	144	8	3	8	1.25	0.75	1	0.75	162	4400	73.8

## ECV Available Lengths

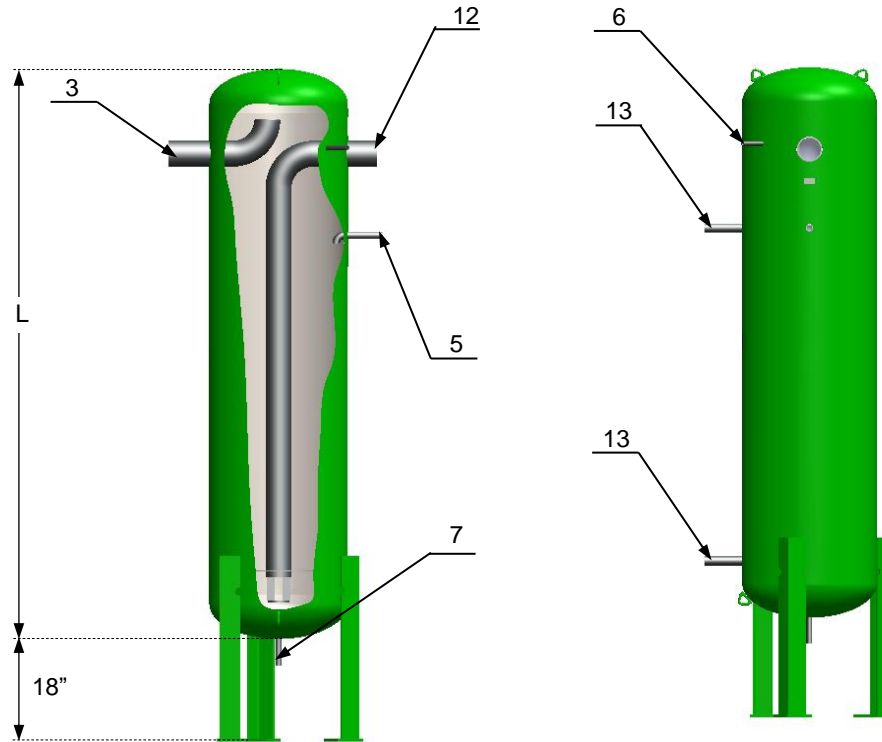
Model	Dia	Available Vessels Min Length	Available Vessels Max Length
	in	in	in
ECV16XXX-25	16	60	156
ECV20XXX-25	20	72	156
ECV24XXX-25	24	72	168
ECV30XXX-25	30	72	168
ECV36XXX-25	36	84	168
ECV42XXX-25	42	84	168
ECV48XXX-25	48	96	168
ECV54XXX-25	54	96	192

Economizers can also be ordered with an internal coil for heat exchange as an option. Please specify heat exchange area required when ordering.





## Intercooler (ICV)



### ICV Nominal Specification (250 psi)

Model	Dia	Vessel Length (L)	Gas Inlet (12)	Gas Outlet (3)	Make Up (5)	Liquid Level Column (13)	Relief Valve (6)	Drain (7)	Overall Height	Vessel Weight (Empty)	Available Liquid Volume
	in	in	NPS	NPS	NPS	NPS	NPS	NPS	in	lbm	ft <sup>3</sup>
ICV2496-25	24	96	4	4	1	1.25	0.75	0.75	114	1500	8
ICV30120-25	30	120	5	5	1	1.25	0.75	0.75	138	1800	19
ICV36132-25	36	132	6	6	2	1.25	0.75	0.75	150	2300	31
ICV42144-25	42	144	6	6	2	1.25	0.75	0.75	162	3000	48
ICV48144-25	48	144	8	8	2	1.25	0.75	0.75	162	4300	63
ICV54156-25	54	156	8	8	2	1.25	0.75	1	174	4800	88
ICV60156-25	60	156	10	10	3	1.25	0.75	1	174	5400	109

### ICV Available Lengths

Model	Dia	Available Vessels Min Length	Available Vessels Max Length
	in	in	in
ICV24XXX-25	24	72	168
ICV30XXX-25	30	72	168
ICV36XXX-25	36	84	168
ICV42XXX-25	42	84	168
ICV48XXX-25	48	96	168
ICV54XXX-25	54	96	192
ICV60XXX-25	60	96	216

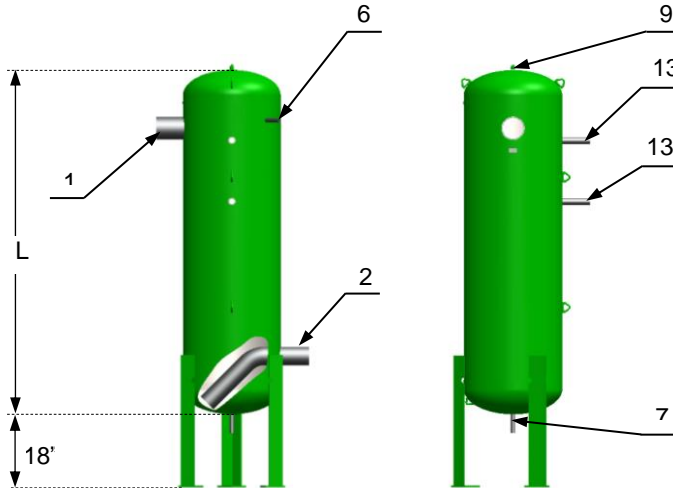
Intercoolers can also be ordered with an internal coil for heat exchange as an option. Please specify heat exchange area required when ordering.

### Additional Vessels for Industrial Refrigeration

Many other vessels are often needed in industrial refrigeration systems such as pilot receivers, oil pots, \*liquid trap ("dump trap"). Furthermore, liquid level columns are needed to accommodate nearly all of the vessels in this catalog. For any other custom IR vessel need, please consult our sales team.

\*Liquid Trap Nominal specification not provided in catalog but can be provided. See page 3 for vessel volumes.

#### Pilot Receiver

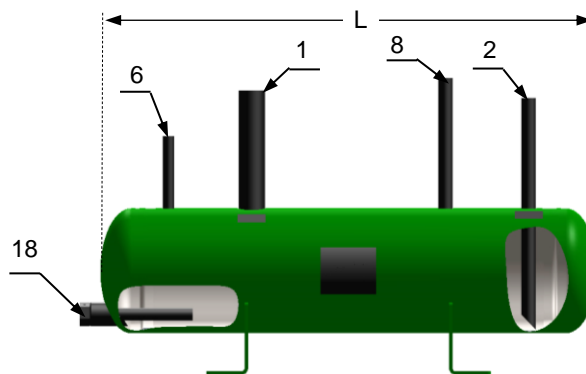


#### PLV Nominal Specification (300 psi)

Model	Dia	Vessel Length (L)	Liquid Inlet From Cond (1)	Liquid Out (2)	EQ Line (13)	Purge (9)	Relief Valve (6)	Oil Drain (7)	Vessel Weight (Empty)	Internal Volume
	in	in	NPS	NPS	NPS	NPS	NPS	NPS	lbm	ft <sup>3</sup>
PLV1248-30	12	48	2.5	2	1.25	0.75	0.75	0.75	225	1.0
PLV1660-30	16	60	3	2.5	1.25	0.75	0.75	0.75	320	2.3
PLV2072-30	20	72	4	3	1.25	0.75	0.75	0.75	600	4.2
PLV2484-30	24	84	5	4	1.25	0.75	0.75	0.75	830	7.3

#### Horizontal Oil Pot

BITZER US manufactures two sizes of oil pots. In order to have these vessels readily available, custom versions of these vessels are generally not offered.



#### OPH Specification (400 psi)

Model	Dia	Vessel Length (L)	Liquid Inlet (1)	Liquid Out (2)	Equal-ization (8)	Heater <sup>1</sup> (18)	Relief Valve (6)	Vessel Weight (Empty)	Internal Volume	Internal Volume (Oil)
	in	in	NPS	NPS	NPS	UNEF	NPS	lbm	ft <sup>3</sup>	Gallons
OPH0836-40	8.625	36	1.5	0.75	0.75	1-1/8"	0.5	70	1.1	8.4
OPH1236-40	12.75	36	1.5	0.75	0.75	1-1/8"	0.5	130	2.3	17.1

<sup>1</sup>200 Watt Heater Part Numbers:

110V: 343213-08

230V: 343213-07



## Liquid Level Column

Level Columns can be provided for all vessels as needed. To make ordering as simple as possible, the item number will match the vessel item number with “-LC” added as a suffix.

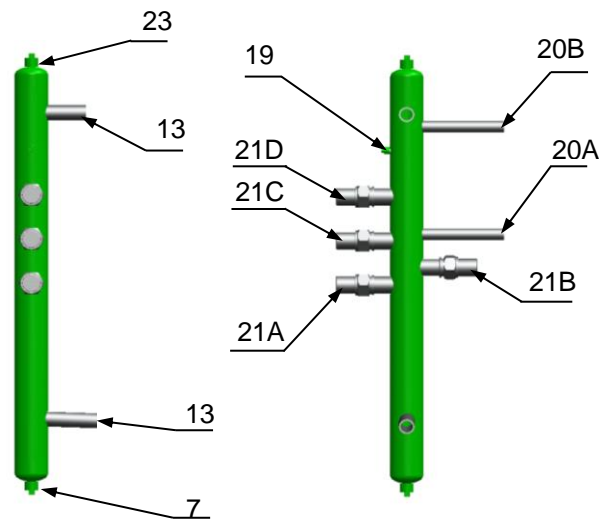
For example:

Vessel: RCLV24120-25AZ1

Matching Level Column: RCLV24120-25AZ1-**LC**

### LC Connection Sizes / Locations (Nominal)

7	Drain	½" NPT
13	Connection to Main Vessel	1.25 NPS
19	Pressure Transducer	½" NPT
20	Liquid Level Switch	1 NPS
21A	Sightglass at Min Level	
21B	Sightglass at Operating Level	20% of Max
21C	Sightglass at High Level	50% of Max
21D	Sightglass at Max Level	
23	Liquid Level Probe	¾" NPT



### Custom Vessel Requests

For all custom vessel requests, please be sure to include as much information as possible such as a drawing, sketch and at least the following information:

- Vessel type / function
- Fluid
- Pressure rating
- Temperature rating
- Dimensions (Diameter / Length)
- List of connections with pipe sizes and/or threads
- Location of connections
- Legs / Feet (with height)

Requests should be sent to [pvcustom@bitzerus.com](mailto:pvcustom@bitzerus.com).

### Connection Positions (Full List)

- 1 Liquid Inlet (Primary)
- 2 Liquid Outlet (Primary)
- 3 Gas Outlet
- 4 Wet Return
- 5 Liquid Make up
- 6 Pressure Relief
- 7 Drain / Oil Drain
- 8 Equalizer
- 9 Purge
- 10 Oil Pot Vent
- 11 Vent
- 12 Gas Inlet (Intercooler)
- 13 Liquid Column
- 14 Recirculator Pump Vent
- 15 Recirculator Liquid Bypass
- 16 Thermosyphon Outlet
- 17 Thermosyphon Inlet
- 18 Oil Pot Heater
- 19 Sensor / Transducer Port
- 20A Low Level Switch
- 20B High Level Switch
- 21A Sightglass – Min Liquid Level
- 21B Sightglass – Operating Liquid Level
- 21C Sightglass – High Liquid Level
- 21D Sightglass – Max Liquid Level
- 21A Min Liquid Level
- 21B Operating Liquid Level (default 20%)
- 23 Vertical Liquid Level Probe
- 24 Internal HX Coil Inlet
- 25 Internal HX Coil Outlet

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