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SUCTION LINE ACCUMULATORS

The primary function of a Suction Line Accumulator is to prevent a sudden surge of liquid refrigerant, or oil, from returning down the suction line and into a compressor. The suction line accumulator is a temporary reservoir for liquid refrigerant and oil.

The accumulator is designed to meter both the liquid refrigerant and oil back to the compressor at a controlled rate. This prevents compressor damage. By metering the liquid refrigerant and oil back to the compressor, the accumulator also helps maintain system efficiency and proper crankcase oil levels. Heat Exchanger (HE) models are also available.



Applications

Suction line accumulators are installed in air conditioning and refrigeration systems where a sudden return of liquid down the suction line is possible. The product range is designed for use with HCFC, HFC and CO_2 refrigerants, along with their associated oils. S-70 series models up to and including S-7061 units are suitable for use with R290 and A2L refrigerants. S-773 also suitable for A2L. S-773 low temp range: 16.5 bar (-30ºC to < -10ºC)

How it works

Refrigerant vapour from the evaporator enters the suction line accumulator, along with any liquid refrigerant or oil. The outlet side of each accumulator is designed to allow refrigerant vapour to return to the compressor. Vapour return is achieved by a special U tube arrangement. On certain models, a tube within a tube arrangement is used as an alternative. Liquid is held at the bottom of the accumulator ready for metering back to the compressor.

Liquid is metered to the compressor via a screened orifice at the bottom of the tube. The vapour carries the metered liquid back to the compressor. Metering of liquid only occurs when the compressor is running.

Main features

- Prevents liquid slugging
- Controlled liquid return
- Large flow capacity
- Low pressure drop
- Screen protected orifice
- Heat exchanger option
- Non-HE models suitable for use in a Heat Pump system.

Technical Specification

S-704, S-705, S-706 & S-772 series:
MWP = 31 bar (-30°C to +50°C)

S-773 series:
MWP =31 bar (-10°C to +80°C), 16.5 bar (-30°C to < -10°C)

S-774 series:
MWP = 27.6 barg (-10°C to +80°C), 10 bar (-25°C to <-10°C)

Materials of Construction

The shell and end caps are made from carbon steel. Branch connections are made from steel or copper.

Part No		Conn Size (inch)	Dimensions (mm)					Mounting details	HE Coil Conn Size (inch)	Drawing Reference	Weight (kg)	CE/UKCA Cat
			Ø A	B	C	D	E (Ø)					
S-7043	-	5/8 ODS	102	167	63.5	N/A	N/A	M10 stud & nut	N/A	fig.1	2	SEP
S-7044	-	1/2 ODS	102	260	63.5	N/A	N/A	M10 stud & nut	N/A	fig.1	2.7	SEP
S-7045	-	5/8 ODS	102	264	63.5	N/A	N/A	M10 stud & nut	N/A	fig.1	2.8	Cat I
-	S-7045HE	5/8 ODS	102	264	63.5	63.5	N/A	M10 stud & nut	3/8 ODS	fig.1	3.5	Cat I
S-7046	-	3/4 ODS	102	273	63.5	N/A	N/A	M10 stud & nut	N/A	fig.1	2.8	Cat II
-	S-7046HE	3/4 ODS	102	273	63.5	63.5	N/A	M10 stud & nut	3/8 ODS	fig.1	3.2	Cat II
S-7057	S-7057HE	7/8 ODS	127	330	70	70	N/A	M10 stud & nut	1/2 ODS	fig.1	4.5, 5.1 (HE)	Cat II
S-7051	-	1 1/8 ODS	127	476	70	N/A	N/A	M10 stud & nut	N/A	fig.1	6.3	Cat II
S-7053	-	1 3/8 ODS	127	479	75	N/A	N/A	M10 stud & nut	N/A	fig.1	6.3	Cat II
S-7061	S-7061HE	1 1/8 ODS	152	381	75	73	N/A	M10 stud & nut	5/8 ODS	fig.1	7.8, 8,5 (HE)	Cat II
S-7063	S-7063HE	1 3/8 ODS	152	630	75	73	N/A	M10 stud & nut	5/8 ODS	fig.1	12.4, 12.9 (HE)	Cat II
S-7065	S-7065HE	1 5/8 ODS	152	630	75	73	N/A	M10 stud & nut	3/4 ODS	fig.1	12.2, 13.1 (HE)	Cat II
S-7721	-	2 1/8 ODS	219	588	89	N/A	283	3 Ø14mm x 22mm slots	N/A	fig.2	23	Cat II
-	S-7721HE	2 1/8 ODS	219	588	89	140	283	3 Ø14mm x 22mm slots	7/8 ODS	fig.3	27	Cat II
S-7725	-	2 5/8 ODS	273	578	118	N/A	338	3 Ø14mm x 22mm slots	N/A	fig.2	33.5	Cat II
-	S-7725HE	2 5/8 ODS	273	578	118	140	338	3 Ø14mm x 22mm slots	1 3/8 ODS	fig.3	39.5	Cat II
S-7731	-	3 1/8 ODS	324	635	140	N/A	388.4	3 Ø14mm x 22mm slots	N/A	fig.2	47	Cat IV
-	S-7731HE	3 1/8 ODS	324	635	140	149	388.4	3 Ø14mm x 22mm slots	1 3/8 ODS	fig.3	52	Cat IV
S-7741-CE	S-7741HE-CE	4 1/8 ODS	406	902	279	368	470	3 Ø14mm x 22mm slots	2 5/8 ODS	fig.4	102	Cat III
S-7742-CE*	-	4 1/8 ODS	508	1130	330	N/A	457	4 x Ø16.3mm holes on square base	N/A	fig.4*	130	Cat IV

*S-7742-CE features a square mounting plate - not mounting brackets

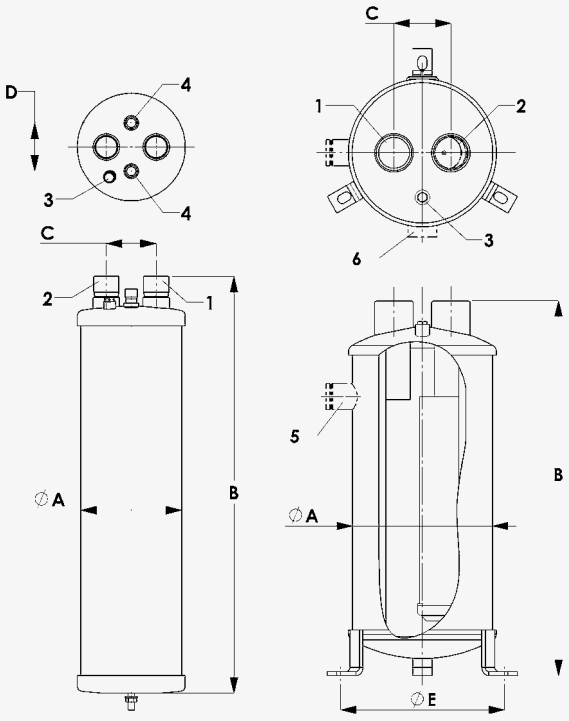


Fig.1

Fig.2

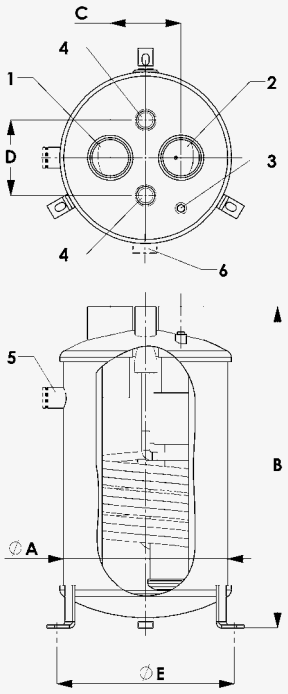


Fig.3

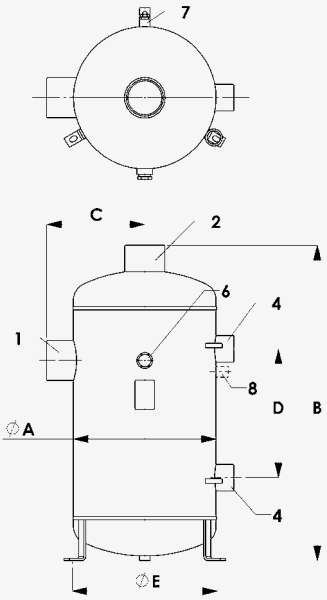


Fig.4

1. Inlet
2. Outlet
3. Relief connection, 1/4 FPT
4. Heat Exchanger coil connection (HE models only)
5. Liquid level switch connection (hermetic), 1 FPT. (Refer to note 1)
6. Liquid level switch connection, 1 FPT. (Refer to note 2)
7. Relief connection, 1/2 FPT (Refer to note 3)
8. Relief connection, 1/2 FPT (Refer to note 4)

For liquid level switch and relief valve connection positions, see notes below for relevant models
Note 1. S-7721, S-7721HE, S-7725, S-7725HE, S-7731 & S-7731HE models
Note 2. S-7741, S-7741HE & S-7742 models
Note 3. S-7741HE-CE model
Note 4. S-7741 & S-7742 models

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Selection Guidelines
The accumulator should have adequate holding capacity. Normally, this should not be less than 50% of the total system charge.

The system designer should check that the minimum and maximum system refrigeration capacities are within the limits of the accumulator.

The maximum kW capacities are based on accumulator pressure loss and oil return. The pressure loss is equivalent to a maximum of 1/2°C. The minimum kW capacities are to ensure proper oil return.

Example: S Series

Refrigerant = R404A

System maximum refrigerant capacity = 12 kW
Evaporating temperature = -18°C
System charge = 8 kg

Recommended accumulator is model S-7051 with a refrigerant holding capacity of 5.4 kg and a maximum rating of 13.2 kW.

Additional Selection Information
Two accumulators can be piped in series to increase holding capacity. Oil will be metered from one accumulator to the next to ensure proper oil flow to the compressors. Adding a second identical accumulator will effectively double the holding capacity of a single accumulator.

Piping two identical accumulators in parallel will double the kW capacity. Two identical accumulators must be used.

On low temperature systems (-18°C and below) a heater band should be installed to help boil off the liquid refrigerant and aid oil flow. Do not add too much heat or there is a risk of overheating the compressors.

Installation - Main Issues

1. Install the accumulator after the suction line filter.

2. A pressure relief device connection is fitted at the top of the vessel. The user must ensure that the vessel is protected from over-pressure.

3. Heater bands should be installed at the bottom of the accumulator.

4. To utilise the 1"FPT Liquid Level Connection on the S-772 and S-773 models, remove cap from the hermetic connection using steel pipe cutters.

Part No	Refrigerant Holding Capacity (kg at -18°C)				Recommended kW of refrigerant at Suction Evaporating Temp (°C)											
					R134a				R407F				R404A / R507			
	R134a	R407F	R404A		5°	-7°	-18°	-29°	5°	-7°	-18°	-29°	5°	-7°	-18°	-29°
S-7043	1	0.9	0.7	MAX	3.2	2.3	1.5	1	10.5	7.1	4.7	2.9	6.3	4.3	2.8	1.8
				MIN	0.7	0.6	0.5	0.4	2.4	1.6	1.1	0.7	0.9	0.7	0.6	0.5
S-7044	2	1.9	1.7	MAX	1.6	1.2	0.8	0.5	5.8	3.9	2.6	1.6	3.1	2.2	1.5	0.9
				MIN	0.3	0.2	0.2	0.2	1.7	1.1	0.7	0.5	0.5	0.3	0.3	0.2
S-7045	2	1.9	1.7	MAX	3.2	2.3	1.5	1	10.5	7.1	4.7	2.9	6.3	4.3	2.8	1.8
				MIN	0.7	0.6	0.5	0.4	2.4	1.6	1	0.7	0.9	0.7	0.6	0.5
S-7046	2	1.9	1.7	MAX	4.5	3.1	2.1	1.4	14.4	9.7	6.4	4	8.7	5.9	3.8	2.5
				MIN	0.9	0.7	0.6	0.5	3.2	2.2	1.4	0.9	1.3	1	0.8	0.6
S-7057	4.2	3.8	3.5	MAX	7.7	5.4	3.6	2.3	24.2	16.3	10.7	6.7	14.9	10.2	6.5	4.2
				MIN	1.3	1.1	0.9	0.7	4.9	3.3	2.2	1.4	1.8	1.5	1.2	1
S-7051	6,1	5,8	5,4	MAX	16.3	11.4	7.3	4.8	49.8	33.4	22.1	13.8	31.4	21.7	13.2	8.6
				MIN	2.1	1.3	1.5	1.2	7.5	5	3.3	2.1	2.9	2.4	2	1.6
S-7053	6.1	5.8	5.4	MAX	27.8	18.8	12	7.6	82.1	55.1	36.4	22.8	53.9	35.9	21.8	13.8
				MIN	4.4	3.7	3.1	2.5	15.8	10.6	7	22.8	6	4.9	4	3.2
S-7061	5.8	5.5	4.9	MAX	16.3	11.4	7.3	4.8	49.8	33.4	22.1	13.8	31.4	21.7	13.2	8.6
				MIN	2.1	1.8	1.5	1.2	7.5	5	3.3	2.1	2.9	2.4	2	1.6
S-7063	9.9	9	8.3	MAX	27.8	18.8	12	7.6	82.1	55.1	36.4	22.8	53.9	35.9	21.8	13.8
				MIN	4.4	3.7	3.1	2.5	15.8	10.6	7	4.4	6	4.9	4	3.2
S-7065	9.9	9	8.3	MAX	49.3	33.8	21.1	13.4	145	97.4	64.4	40.2	95	64.1	38	24.3
				MIN	7.6	6.3	5.3	4.4	28.7	19.3	12.7	8	10.3	8.4	7	5.7
S-7721	14.7	13.4	12.3	MAX	109	70.4	49.3	26.4	322	216	143	89.2	201	134	84.5	56.3
				MIN	14.1	12.3	10.6	8.8	57.4	38.5	25.5	15.9	21.1	17.6	14.1	12.3
S-7725	22	19.9	18.2	MAX	172	113	75.7	42.2	480	322	213	133	308	204	132	88
				MIN	21.1	19.4	15.8	12.3	95.9	64.4	42.6	26.6	31.7	28.2	22.9	21.1
S-7731	36.4	32.9	30	MAX	253	194	130	84.5	712	478	316	197	456	308	197	125
				MIN	35.2	31.7	24.6	22.9	143	96	63.4	39.6	52.8	44	37	29.9
S-7741-CE	62	58.8	55	MAX	401	259	156	107	1120	752	497	310	757	503	320	201
				MIN	109	89.4	75.7	59.8	362	243	160	100	174	113	73.9	45.8
S-7742-CE	127	121	114	MAX	401	259	156	107	1120	752	497	310	757	503	320	201
				MIN	109	89.4	75.7	59.8	362	243	160	100	174	113	73.9	45.8

Part No	Refrigerant Holding Capacity (kg at -18°C)					Recommended kW of refrigerant at Suction Evaporating Temp (°C)													
	R448A/ R449A	R450A	R407C	R407A		R448A/R449A				R450A				R407C				R407A			
						5°	-7°	-18°	-29°	5°	-7°	-18°	-29°	5°	-7°	-18°	-29°	5°	-7°	-18°	-29°
S-7043	0.9	0.9	0.9	0.9	MAX	10.5	7.1	4.7	3	6.1	4	2.6	1.6	9.5	6.4	4.2	2.6	10.2	6.9	4.5	2.8
					MIN	2.4	1.6	1.1	0.7	1.4	0.9	0.6	0.4	2.1	1.4	0.9	0.6	2.3	1.5	1	0.6
S-7044	1.8	1.9	1.9	1.8	MAX	5.8	3.9	2.6	1.6	3.3	2.2	1.4	0.9	5.2	3.5	2.3	1.4	5.6	3.8	2.5	1.6
					MIN	1.7	1.1	0.7	0.5	1	0.6	0.4	0.2	1.5	1	0..7	0.4	1.6	1.1	0.7	0.4
S-7045	1.8	1.9	1.9	1.8	MAX	10.5	7.1	4.7	3	6.1	4	2.6	1.6	9.5	6.4	4.2	2.6	10.2	6.9	4.5	2.8
					MIN	2.4	1.6	1.1	0.7	1.4	0.9	0.6	0.4	2.1	1.4	0.9	0.6	2.3	1.5	1	0.6
S-7046	1.8	1.9	1.9	1.8	MAX	14.4	9.8	6.4	4.1	8.3	5.5	3.5	2.2	13	8.8	5.7	3.6	13.9	9.4	6.1	3.9
					MIN	3.2	2.2	1.4	0.9	1.9	1.2	0.8	0.5	2.9	2	1.3	0.8	3.1	2.1	1.4	0.9
S-7057	3.7	3.9	3.9	3.8	MAX	24.2	16.4	10.8	6.8	14	9.3	6	3.7	21.9	14.7	9.6	6	23.5	15.8	10.3	6.5
					MIN	4.9	3.3	2.2	1.4	2.8	1.9	1.2	0.7	4.4	3	1.9	1.2	4.7	3.2	2.1	1.3
S-7051	5.7	5.9	5.9	5.8	MAX	49.8	33.8	22.2	14.1	28.9	19.2	12.3	7.5	45	30.3	19.7	12.3	48.3	32.5	21.1	13.4
					MIN	7.5	5.1	3.3	2.1	4.3	2.9	1.8	1.1	6.8	4.6	3	1.9	7.3	4.9	3.2	2
S-7053	5.7	5.9	5.9	5.8	MAX	82.1	55.7	36.6	23.2	47.6	31.6	20.2	12.4	74.2	50	32.5	20.3	79.6	53.6	34.8	22
					MIN	15.8	10.7	7.1	4.5	9.2	6.1	3.9	2.4	14.3	9.6	6.3	3.9	15.3	10.3	6.7	4.2
S-7061	5.2	5.4	5.4	5.3	MAX	49.8	33.8	22.2	14.1	28.9	19.2	12.3	7.5	45	30.3	19.7	12.3	48.3	32.5	21.1	13.4
					MIN	7.5	5.1	3.3	2.1	4.3	2.9	1.8	1.1	6.8	4.6	3	1.9	7.3	4.9	3.2	2
S-7063	8.8	9.2	9.1	9	MAX	82.1	55.7	36.6	23.2	47.6	31.6	20.2	12.4	74.2	50	32.5	20.3	79.6	53.6	34.8	22
					MIN	15.8	10.7	7.1	4.5	9.2	6.1	3.9	2.4	14.3	9.6	6.3	3.9	15.3	10.3	6.7	4.2
S-7065	8.8	9.2	9.1	9	MAX	145	98.4	64.7	41	84	55.8	35.7	21.9	131	88.2	57.4	35.9	141	94.7	61.5	39
					MIN	28.7	19.5	12.8	8.1	16.6	11	7.1	4.3	25.9	17.5	11.4	7.1	27.8	18.7	12.2	7.7
S-7721	13.1	13.7	13.6	13.3	MAX	322	218	144	90.9	186	124	79.2	48.5	291	196	127	79.6	312	210	136	86.3
					MIN	57.4	38.9	25.6	16.2	33.3	22.1	14.1	8.7	51.9	34.9	22.7	14.2	55.6	37.5	24.3	15.4
S-7725	19.4	20.3	20.1	19.8	MAX	480	325	214	136	278	184	118	72.4	434	292	190	119	465	313	203	129
					MIN	95.9	65.1	42.8	27.1	55.6	36.9	23.6	14.5	86.7	58.4	38	23.8	93	62.6	40.7	25.7
S-7731	32.1	33.6	33.3	32.7	MAX	712	483	318	201	413	274	175	107	643	433	282	176	690	465	302	191
					MIN	143	96.9	63.8	40.4	82.8	55	35.2	21.6	129	87	56.6	35.4	139	93.3	60.6	38.4
S-7741-CE	57.5	60.2	59.6	58.6	MAX	1120	759	499	316	649	430	276	169	1012	681	443	277	1085	731	475	300
					MIN	362	245	161	102	210	139	89	54.5	327	220	143	89.5	350	236	153	97
S-7742-CE	119	124	123	121	MAX	1120	759	499	316	649	430	276	169	1012	681	443	277	1085	731	475	300
					MIN	362	245	161	102	210	139	89	54.5	327	220	143	89.5	350	236	153	97