

For Ammonia (R-717) and Halocarbon Refrigerants

Features

- **Phillips® thermosyphon receivers are engineered to safely, effectively and efficiently provide high-side liquid for oil cooling systems**
- **Phillips® thermosyphon receivers are sized to always provide a minimum 5-minute reserve of liquid to the oil cooler, independent of condenser flow conditions.**
- **Liquid connection locations are optimized to balance the volume requirements of the liquid reserve with the volume requirements for liquid-vapor separation.**
- **All vessels are rated at 300 PSI, ASME stamped and National Board Registered.**

Design Function

By locating the thermosyphon receiver at a higher elevation than the oil-cooling heat exchanger, density differences are exploited to generate fluid motion. Liquid refrigerant from the thermosyphon receiver is gravity fed into the heat exchanger inlet. The liquid level in this line provides a static head that raises the pressure at the heat exchanger inlet. The liquid enters the heat exchanger and absorbs heat from the oil through the heat transfer surface and begins to boil. The density of the resulting liquid-vapor refrigerant mixture, though lower than the liquid at the heat exchanger inlet, is higher than the thermosyphon receiver. The result is flow of the liquid-vapor mixture back up to the thermosyphon receiver via natural convection.

Optional Application – Feed to CPR or Low – Side Vessel

As an option, Phillips® thermosyphon receivers can feed liquid directly to a Controlled Pressure Receiver, Intercooler, or Low Pressure Accumulator with the addition of a model 700H high-side modulating valve with a model 275AP pilot float valve with chamber. Phillips can supply a fully assembled high-side control, including all components and service valves. Such an application requires alternate vessel connections. Contact Phillips sales engineers for details.

Application Tips

- **Maintain a minimum 72" elevation difference between the thermosyphon receiver and the oil cooler to ensure the necessary liquid head to drive liquid circulation.**
- **Never pipe the return from the heat exchanger directly to the condenser inlet – the vapor may carry a considerable amount of liquid which could degrade condenser performance. Use the supplied return connection and allow the vapor to return to the condenser inlet through the vent line.**

Engineering Data

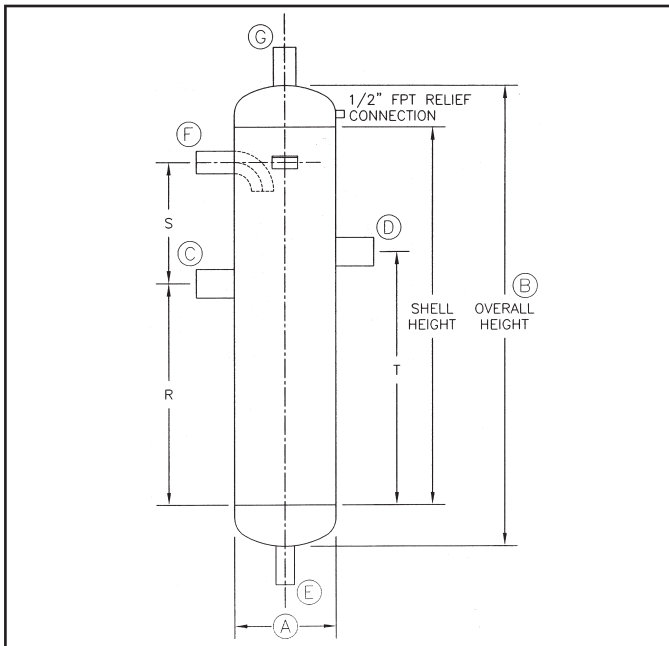
Model Number*	Heat of Rejection [Btu/min]**	A	B		C	D	E	F	G
		Diameter (Nominal Pipe Size)	Overall Length	Shell Length	Liq. from Condenser	Liq. to Receiver	Liq. to Oil Cooler	Gas/Liq. Return	Vent to Condenser
TSR0836	1500	8	36	28	1 1/2	1 1/2	1 1/4	1 1/2	1 1/2
TSR1048	3000	10	48	38	2	2	1 1/2	2	1 1/2
TSR1060	4500	10	60	50	2 1/2	2 1/2	2	2 1/2	2
TSR1272	9000	12	72	61	3	3	2	2 1/2	2 1/2
TSR1672	15000	16	72	59 1/2	4	4	2 1/2	3	3
TSR2072	22500	20	72	57 1/4	4	4	3	4	4
TSR2472	30000	24	72	55 1/2	5	5	4	5	4
TSR3072	45000	30	72	52 1/2	5	5	5	6	5
TSR3084	60000	30	84	64 1/2	6	6	5	6	5

*Specify vertical or horizontal vessel by indicating "V" or "H" suffix to model number

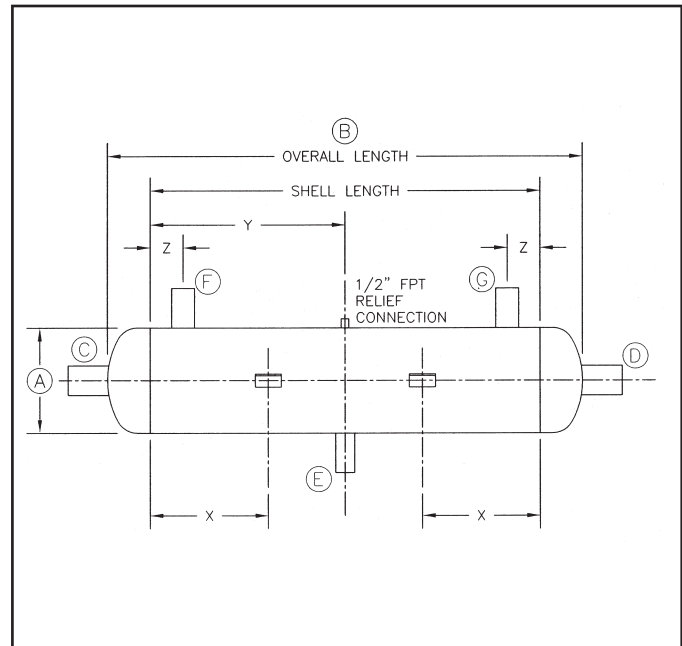
All dimensions in inches.

**Capacities listed are for R-717. For R-22 capacities, multiply Heat of Rejection by 0.3.

Vertical TSR Receiver



Horizontal TSR Receiver



Model Number	R	S	T	Weight [lbs]
TSR0836V	16	9	18	81
TSR1048V	21	14	24	132
TSR1060V	28	18	31	163
TSR1272V	34	23	38	227
TSR1672V	35	20	40	354
TSR2072V	40	11	45	368
TSR2472V	33	15	39	352
TSR3072V	32	11	38	831
TSR3084V	39	16	46	955

Model Number	X	Y	Z	Weight [lbs]
TSR0836H	6	14	3	80
TSR1048H	6	19	3	130
TSR1060H	8	25	4	160
TSR1272H	8	30 1/2	4	224
TSR1672H	10	29 3/4	5	249
TSR2072H	12	28 5/8	6	259
TSR2472H	16	27 3/4	8	636
TSR3072H	18	26 1/4	9	807
TSR3084H	18	32 1/4	9	930

The selection table is based on operating conditions of 95°F condensing and 5°F evaporating. Phillips sales engineers can evaluate your unique system and conditions and assist you in selecting the optimal vessel for your application.

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