

VILTER OIL RECOVERY SYSTEMS

The Standard Vilter Oil Recovery System contains the following features and controls mounted on a structural steel base:

- 1) NEMA 1, 12 control panel and controls
- 2) Direct connected ODP motor and oil pump assembly.
- 3) Oil Recovery from vessels in a one or two-stage system.
- 4) Level control switch
- 5) Thermostatically controlled heater.
- 6) Oil level bullseye sightglass
- 7) Pump with integral oil pressure regulating valve.
- 8) Relief valve.

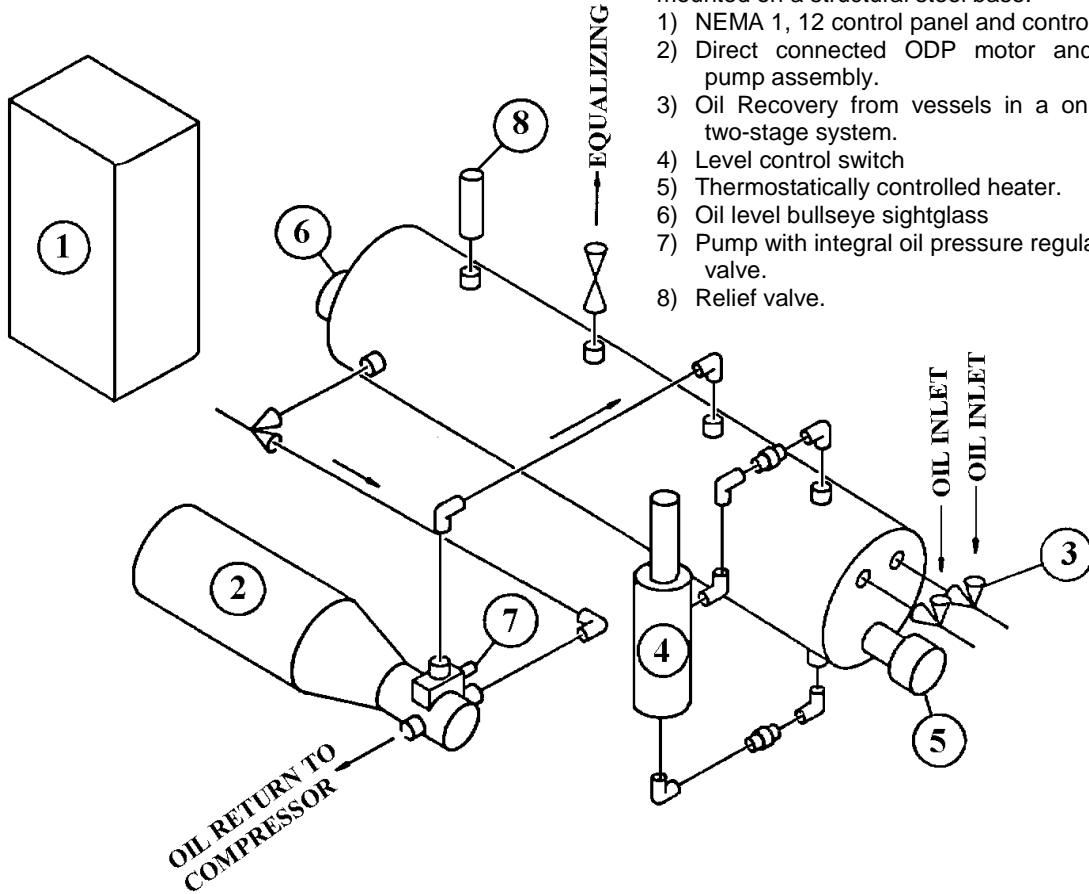
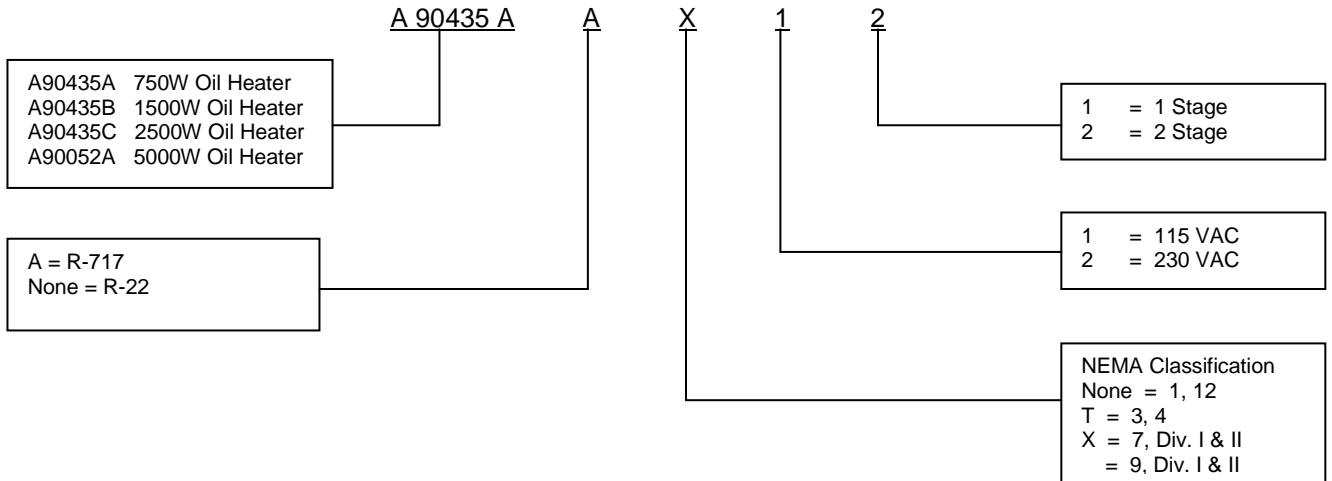


FIGURE 1

MODEL NUMBER DESIGNATION



VILTER OIL RECOVERY SYSTEMS

TABLE 3. SPECIFICATIONS – STANDARD UNITS

VILTER PART NUMBER	PUMP MOTOR * HP	CFM +	HEATER (KW)	CONNECTION SIZES				OVERALL DIMENSIONS		
				OIL RETURNS	(SUPPLY) OIL DISCHARGE	EQUALIZING SUCTION CONN.	LENGTH	WIDTH	HEIGHT	
A90435A	1/3 HP	310	.75	1/2"	1"	3/4"	1"	45"	30"	27"
A90435B	1/3 HP	620	1.5	1/2"	1"	3/4"	1"	45"	30"	27"
A90435C	1/3 HP	1240	2.5	1/2"	1"	3/4"	1"	45"	30"	27"
A90052A	1/3 HP	2480	5.0	1/2"	1"	3/4"	1"	88"	30"	27"

NOTES:

- *. The standard motor is an open drip-proof, 1725 RPM, single phase, 115/230 volt, 60 Hz.
- + Maximum CFM capacity for the Oil Recovery Unit.
- A. All dimensions are approximate and are not to be used for construction – for which certified prints will be furnished.
- B. The above units are available as standard, for R-717 or R-22 refrigerants only.

ACCESSORIES

CRANKCASE OIL LEVEL CONTROL KITS (for controlling oil return to Compressor from ORS)

These kits are intended for use on compressors at existing installations. Each crankcase oil level control arrangement consists of a float switch (mounted inside the crankcase), a solenoid valve, and the necessary valves and fittings for connection to the compressor. The kit price is for one compressor. Piping to interconnect components must be furnished by purchaser.

For ordering this arrangement on new compressors, see appropriate compressor section.

COMPRESSOR SERIES	2 COMPRESSOR OIL EQUALIZING	3 COMPRESSOR OIL EQUALIZING
All 300 Series	KT 528 *	KT 459 *
All 400 Series	KT 529 *	KT 460 *

* Suffix to denote control voltage; C = 110 VAC 50/60 Hz, D = 220 VAC 50/60 Hz.

OIL RETURN SOLENOID VALVES

The following Oil Return Solenoids are not included with the Oil Recovery System and must be purchased separately.

VOLTAGE FREQUENCY	VPN	
	STANDARD	EXPLOSION PROOF
1/60/115	2143DA	2143DAX
1/60/230	2143DB	2143DBX

VILTER OIL RECOVERY SYSTEMS

PRINCIPLE OF OPERATION

INTRODUCTION:

Due to the nature of Halocarbons, oil and refrigerant mix freely. It becomes necessary to provide a means of effectively separating the two and returning the oil to the compressor. For use on single or two-stage systems, Vilter offers an Oil Recovery System. The system, basically, collect oil and refrigerant mixtures into a receiver from evaporators, etc. A heater in the Oil Recovery receiver evaporates the refrigerant and a pump returns the refrigerant free oil to the compressor crankcase. The operation of the two types of units is described below. A two-stage unit should be chosen when oil is to be recovered from vessels operating at different suction pressure or from more than one vessel.

SINGLE STAGE UNIT – OPERATION

For oil recovery from a vessel at one pressure (see Figure 2):

The oil and refrigerant mixtures are passed through oil bleeder lines from the low side equipment into the oil receiver. A thermostatically controlled heater in the receiver is adjusted to maintain the oil temperature at approximately 100°F or above ambient. This will evaporate the entrained refrigerant which will return to the compressor suction through the vent equalizing line. A relay in the control panel is wired so that when the level control switch senses a high level or the heater is turned on due to low oil temperature in the oil receiver, the oil bleeder line solenoid valve will close. This prevents further addition of oil and refrigerant mixtures from entering the oil receiver. The bleeder line solenoid valve (not included) will remain closed until the heater has warmed the oil up to the thermostat setting and the level control switch has sensed a drop in level.

After the proper oil temperature has been reached and there is a drop in the level, the bleeder line solenoid valves will open. This method of automatically controlling the flow of oil and refrigerant mixture from the point in the system where the oil and refrigerant is being bled off will eliminate the possibility of getting an excessive level in the Oil Recovery System. A further advantage of this type of automatic control is that the adjustment of any hand regulating valves in the oil bleeder lines is not a sensitive setting and the hand valves can be set a little more open than would normally be the case. This will provide a light overfeed which will minimize the problems of the valve becoming clogged.

Once the level switch senses a rise in level and the oil temperature is satisfied, the oil recovery unit is ready to transfer oil to the compressor crankcase on demand. A level switch in the crankcase will signal the oil pump to start and the oil supply solenoid to open (energize), supplying oil to the crankcase until the crankcase level switch

is satisfied or the level control switch on the receiver senses a drop in oil level. Once a drop in oil level occurs, the system will again begin recovering oil.

The oil pump will only start when the crankcase level switch is calling for oil but will remain on the for minimum run time. The pump incorporates a bypass relief valve to control the pressure of the oil supply to the crankcase and can be adjusted from a minimum setting of a few pounds to a maximum setting of 80 PSI above the oil receiver pressure. This is the limit of the pump motor horsepower. A nominal setting of 30 to 40 PSI above crankcase pressure should be adequate to provide sufficient oil pressure above crankcase pressure to force oil into the compressor crankcase upon demand.

The control panel is supplied with electrical controls to accomplish the following:

- 1) An on delay timer to prevent cycling of the oil return to crankcase solenoid valve.
- 2) A minimum run timer for the pump which can be set at 5 minutes or 2 minutes.
- 3) Terminals are provided to add on additional compressors for oil recovery.

If the compressors are equipped with mechanical float valves, the pump should be connected to run continuously, when a compressor is operating. This will assure that there will always be a supply of oil, under pressure, to add to the crankcase as the float opens.

TWO-STAGE UNIT – OPERATION

For oil recovery from more than 1 vessel or from 2 vessels which are two different pressures (see Figure 3).

NOTE: If an oil recover system must have the capability of draining oil from flooded vessels operating at more than two different pressure levels or the pressure difference between levels exceed 50 PSI, the Home Office should be consulted.

The two-stage unit includes all of the above mentioned controls used on the single stage unit the additional of an alternator relay. The purpose of the alternator relay is to alternately drain oil from the first and second stages by alternately cycling the oil bleeder line solenoid valves. The alternator relay is wired to the thermostatically controlled heater so each time the heater cycles on and off, the solenoid valves are reversed, draining oil from only one source at any particular time. However, the oil receiver pressure is continuously equalized to the stage with the lowest operating pressure that oil is to be recovered from. The operation described above will help to drain equal amounts of the oil and refrigerant mixture from the two sources.

VILTER OIL RECOVERY SYSTEMS

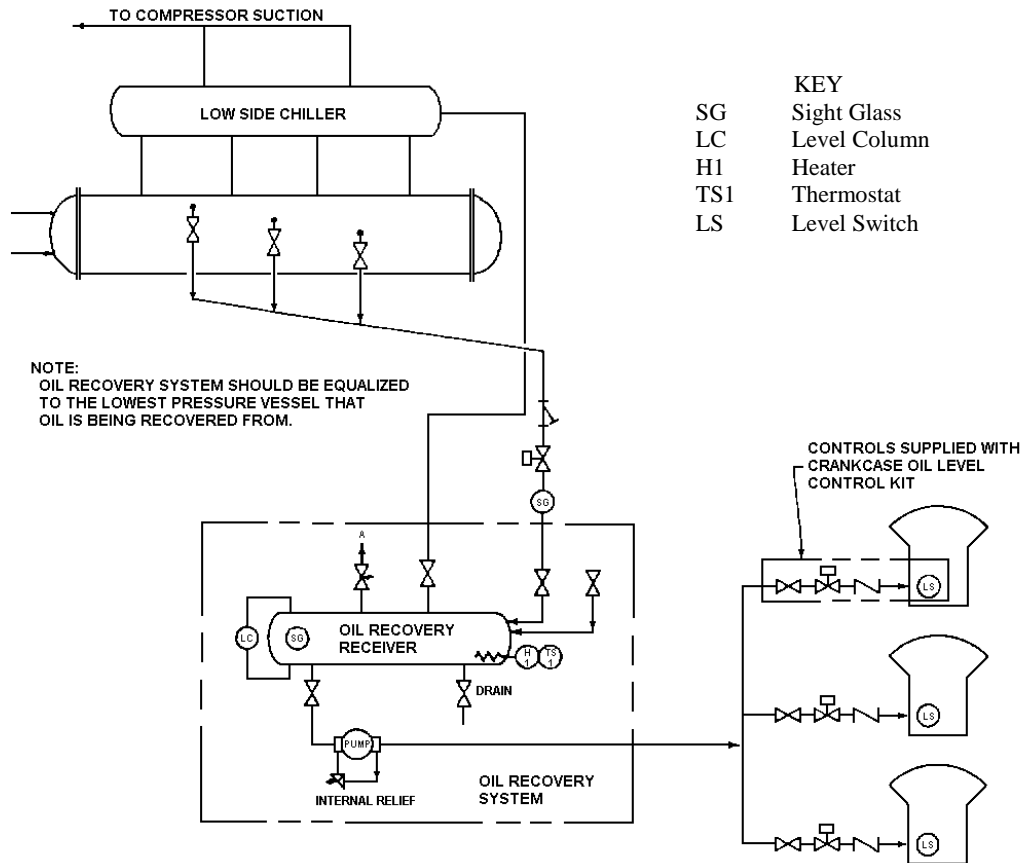


FIGURE 2. TYPICAL SINGLE STAGE OIL RECOVERY ARRANGEMENT

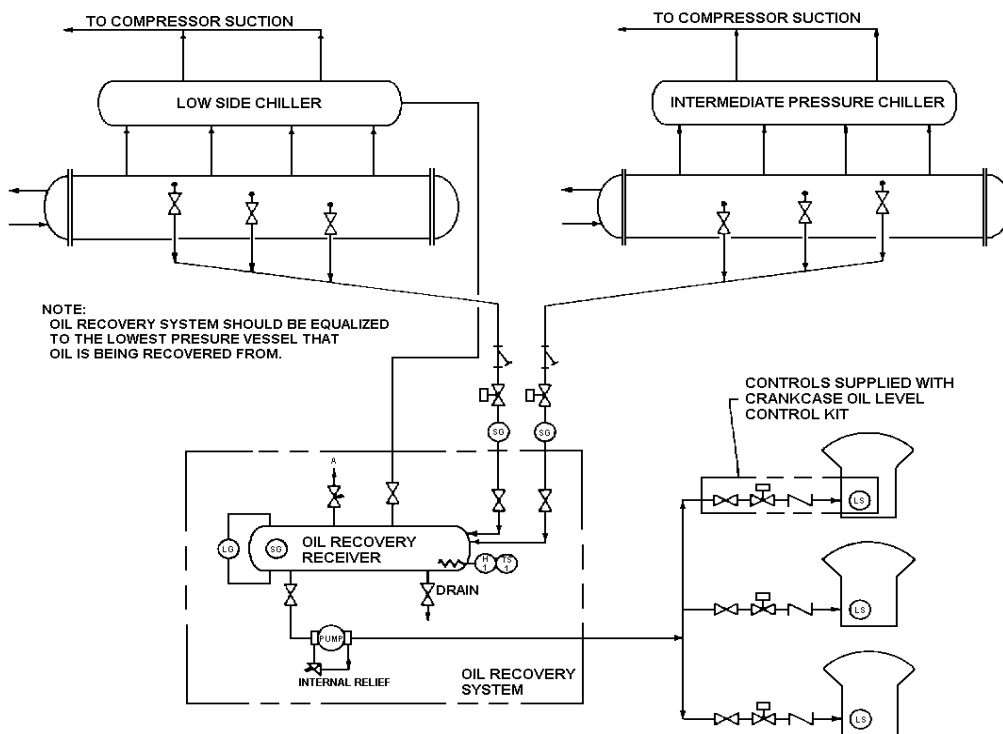


FIGURE 3. TYPICAL TWO-STAGE OIL RECOVERY ARRANGEMENT