

# Temprite® Conversion Guidelines

The benefits to replace existing oil separators with Temprite® 920 Series Coalescent Separators are enormous, removing gallons of dirty oil [sludge] and cleaning up the whole system. Nuisance service calls are minimized. There is an energy saving from not having to push that extra oil around the system which degrades the heat transfer ability of condensers and evaporator. If you remove two gallons of oil for the system how much of that area is now being refrigerated, doing its job. This is a major cost reduction/advantage to the end user, less oil to buy and an energy savings to boot.

The benefits for Refrigerant Conversions are the same as above, and include aiding in the removal of the system's old mineral oil. Installed first, the excess oil traveling around the system is confined to the refrigeration condensing unit. Being able to remove this extra oil you can expect to use less new POE oil to reach the desired delusion of mineral oil usually below 5%. Start out with our Clean-Up® filter, as the new oil starts to clean up the inside of the system, particulate matter is captured in the separator's filter. Since the filter holds dirt, we recommend it be replaced at every oil change. When the Refrigerant is replaced, addition cleaning of the inside of the systems occurs. Because of our cleaning ability down to 3 microns with our Clean-Up® filter, monitoring the pressure drop across the filter is essential. Once the system is clean, and the pressure remains below 13 PSID/1 bar PD, replace it with our standard filter, and further reduce the particulate matter down to 0.3 microns. Your system is now cleaner than with any other method in use...

## PHASE 1 INSTALLATION

- Consideration should be given if you want to remove or replace the Oil Reservoir and Oil Level Controls or if you want to go to Electronic Oil Level Controls.
- Replace the oil separator with a properly sized Temprite® 920/R Model (2) two weeks prior to changing the oil.<sup>1</sup>
- Install Pressure Differential Indicator. (PDI)
- Install other components I.E. Oil Level Controls, valves etc.
- Remove unwanted components I.E. oil reservoirs etc.
- Monitor the pressure drop across the separator with the PDI. Replace the filter when pressure difference is 13 PSID/1 bar PD.
- Remove excess oil.
- Start replacing known leak potentials, i.e. gaskets, valves.

1. This should be done first to remove as much of the excess oil in the system as possible. This reduces the amount of new oil needed. It may reduce the number of oil changes needed. It also removes unwanted particles in the systems which may clog up the TXVs and other valves. The "R" in the model number indicates the separator has an integral oil reservoir.

## PHASE 2 OIL

- Replace refrigerant oil.
- Replace the oil separator filter to a Temprite Clean-Up® filter.
- Continue to replace the Oil until it is in the proper range, usually 5% residual mineral oil; you are now ready to replace the refrigerant.
- The Clean-Up® filter should be replaced at each oil change.
- Continue replacement of leak potentials.
- Continue monitoring the pressure drop across the filter in the oil separator, replacing it as necessary until you maintain pressure below 13 PSID/1 bar PD.

## PHASE 3 REFRIGERANT

- Reclaim refrigerant.
- Replace drier cores, suction filters
- Replace the oil separator filter to a Temprite Clean-Up® filter.
- Evacuate
- Start up and charge system with new refrigerant.
- Adjust valves, TXVs and controls.
- Continue monitoring the pressure drop across the filter in the oil separator, replacing it as necessary until you maintain pressure below 13 PSID/1 bar PD.
- At this time replace the filter with a Temprite® standard filter.

Note: The oil separator Clean-Up® filter will capture most of the particulate matter coming back from the evaporators as it goes the system.

The only chance of particulate matter going around in the system is during hot gas defrost, which by-passes the liquid filter/drier and separator.

## PHASE 4 FOLLOW UP

- Monitor the oil level.
- Monitor the pressure difference of the oil separator filter for at least 6 months and replace filter as necessary.
- Adjust valves and controls as necessary.
- Monitor the system's pressures and temperatures.

### Separator Selection Guide Lines

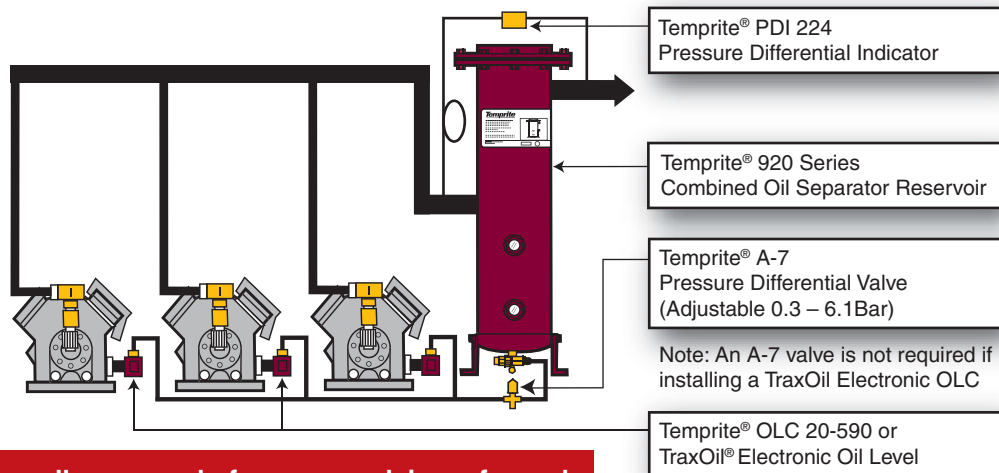
1. Never select a separator with smaller connections than the discharge line size.
2. Convert compressor BTU capacity to new refrigerant.
3. TONS = Capacity in evaporator (12,00 BTU/Hr/Ton), based on +100°F Condensing Temperature, -0°F Subcooling, +10°F Super heat.

# Sizing Chart

## 920 Series Capacities in Tons.

	Temp	Model 922-922R	Model 923-923R	Model 924-924R	Model 925-925R	Model 926-926R	Model 927-927R	Model 928-928R	Model 930-930R
Discharge Line Size		5/8"	7/8"	1 1/8"	1 3/8"	1 5/8"	2 1/8"	2 5/8"	3 1/8"
<b>R-134A R-12 MP-39</b>	+40°F	5.68	7.90	14.18	21.58	36.92	50.30	84.05	142.85
	+30°F	4.59	6.38	11.45	17.42	29.81	40.61	67.86	115.33
	+20°F	3.67	5.10	9.17	13.95	23.86	32.51	54.32	92.33
	+10°F	2.92	4.05	7.28	11.07	18.94	25.81	43.13	73.30
	0°F	2.29	3.18	5.71	8.69	14.87	20.26	33.85	57.54
	-10°F	1.78	2.47	4.43	6.74	11.54	15.72	26.27	44.64
<b>R-22</b>	+40°F	8.90	12.37	22.22	33.80	57.83	78.79	131.66	223.76
	+20°F	6.09	8.46	15.20	23.13	39.57	53.91	90.08	153.10
	+10°F	4.98	6.92	12.43	18.91	32.36	44.09	73.67	125.22
	0°F	4.09	5.68	10.21	15.53	26.56	36.19	60.47	102.78
	-10°F	3.24	4.50	8.09	12.31	21.06	28.68	47.94	81.48
	-20°F	2.64	3.67	6.60	10.03	17.17	23.39	39.08	66.43
	-30°F	2.08	2.89	5.18	7.89	13.49	18.38	30.71	52.20
-40°F	1.61	2.24	4.02	6.12	10.47	14.27	23.85	40.53	
<b>R-410A AZ-20</b>	+40°F	12.95	17.99	32.31	49.16	84.11	114.59	191.48	325.44
	+20°F	8.86	12.31	22.10	33.63	57.53	78.38	130.97	222.60
	+10°F	7.26	10.08	18.11	27.55	47.13	64.21	107.29	182.36
	0°F	5.90	8.20	14.73	22.41	38.34	52.23	87.28	148.33
	-10°F	4.76	6.62	11.89	18.08	30.94	42.15	70.43	119.71
	-20°F	3.81	5.30	9.51	14.47	24.77	33.74	56.38	95.82
	-30°F	3.02	4.20	7.55	11.48	19.64	26.76	44.72	76.00
-40°F	2.38	3.30	5.93	9.02	15.43	21.02	35.12	59.70	
<b>R-507 AZ-50</b>	+40°F	9.38	13.03	23.40	35.60	60.91	82.99	138.68	235.69
	+20°F	6.26	8.70	15.62	23.76	40.66	55.39	92.56	157.31
	+10°F	5.06	7.03	12.62	19.20	32.85	44.76	74.79	127.12
	0°F	4.05	5.62	10.10	15.36	26.28	35.80	59.82	101.67
	-10°F	3.21	4.45	8.00	12.17	20.82	28.37	47.41	80.57
	-20°F	2.51	3.49	6.27	9.54	16.32	22.23	37.15	63.13
	-30°F	1.94	2.70	4.85	7.38	12.62	17.20	28.74	48.85
-40°F	1.48	2.06	3.70	5.63	9.64	13.13	21.94	37.29	
<b>R-404A R-502 HP-62 HP-80</b>	+40°F	8.72	12.12	21.77	33.12	56.66	77.20	129.00	219.25
	+20°F	5.82	8.09	14.53	22.10	37.81	51.51	86.07	146.29
	+10°F	4.65	6.46	11.60	17.64	30.19	41.13	68.73	116.81
	0°F	3.73	5.19	9.32	14.17	24.25	33.04	55.21	93.83
	-10°F	2.95	4.10	7.36	11.20	19.16	26.11	43.63	74.15
	-20°F	2.31	3.20	5.75	8.75	14.97	20.40	34.09	57.94
	-30°F	1.78	2.47	4.44	6.76	11.56	15.75	26.32	44.73
-40°F	1.34	1.86	3.34	5.09	8.71	11.86	19.82	33.68	

# Retrofit Variable Pressure



**Warning! Remove all pressure before any work is performed.**

## Installation

Remove or isolate the oil separator. Remove Oil Reservoir, Check Valve and associated piping from the system. Install the Combined Oil Separator/Reservoir, Pressure Differential Indicator and A-7 valve as shown on diagram. It is not necessary to remove the filter when brazing, but added the required oil charge through the outlet connector before brazing.

## (Removal) Standard Filter Element

Every new Temprite® Coalescing Oil Separator comes with a Standard Filter. This filter removes all solid contaminates down to 0.3 microns. This is too fine for the level of dirt contained in systems which have been running for a number of years and would clog very quickly. Remove the Top Cap and replace Standard Filter with the recommend Temprite® Clean-Up® Filter.

## Clean-Up® Filter

### (Change Filter at 13 PSID/ 1 bar PD)

The Clean-Up® Filter removes all solid contaminates down to 3 microns (the chunks). It has 10 times the dirt loading capacity of the Standard Filters. Run the system with the Clean-Up® Filter in place until the oil shows signs of cleaning and until the pressure drop across the Filter has stabilized and is below 13 PSID/1 bar PD. More than one Filter change may be necessary. A spare Top Cap Gasket is supplied with every new Clean Up® Filter.

## WARNING.

**Pressure drop across the Filter must be monitored continuously from start-up. The high level of solid contaminants contained in old systems will cause the filter blockage very quickly. The Filter is fitted with an "O" Ring which is designed to "blow" at around 30 PSID/2 bar PD, but the Filter casing may rupture in extreme cases.**

**CAUTION. Large amounts of excess oil will be present in systems that have been in operation a long time. The oil level in the Reservoir must be monitored continuously on start-up and until the oil level stabilizes just below the Upper Sight Glass. Excess oil must be removed before level rises above the upper Sight Glass.**

## A7 Pressure Differential Valve

The A7 Valve is necessary if Mechanical Floats are limited by design to a maximum differential pressure of 30/90 - 2/6.1 bars depending on type. The A7 Valve maintains a constant differential pressure between the Oil supply and compressor crankcase. The A7 comes factory set at 40 PSID/2.7 bar PD. One turn on the Adjustment Screw equals 7 PSID/.47 bar PD. Turn the screw anti-clockwise to reduce pressure, clockwise to increase. The A7 Valve should normally be set to between 10-20 PSID/.7-1.4 bar PD depending on system operating conditions. Where the system incorporates Satellite Compressor or split suction a separate A7 Valve may be required. The A7 is not required if High Pressure Electronic Oil Level Controls are used. (TraxOil®)

## Standard Filter Element

### (Change Filter at 13 psid/ 1 bar)

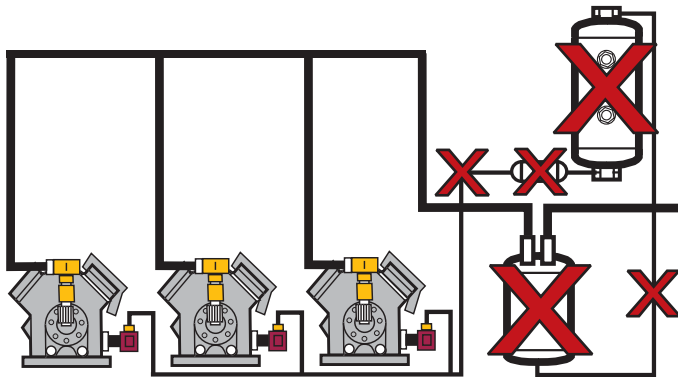
There is a very small pressure drop across a new filter. The standard Filter should only be installed when the Clean-Up conditions have been satisfied. The filter must be changed at 13 PSID/1 bar PD. More than one Filter may be required. The lower the PSID/PD the higher the system efficiency.

## Pressure Differential Indicator / Switch

Gives a clear indication of the condition of the Filter. It can be wired up to give a signal to an external device. The indicator will show a high reading initially due to surge but will quickly stabilize and display the actual pressure drop across the Filter

# Retrofit Variable Pressure

## Retrofit information Sheet Variable Pressure System Upgrade

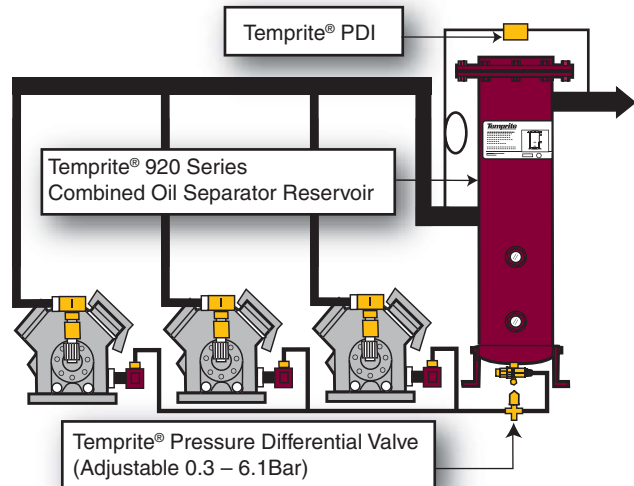


### Conventional Low Pressure System using Remote Reservoir

#### Remove or Isolate Components [Marker X]

- X Remote Oil Reservoir**
- X Oil Separator**
- X Check Valve**
- X Oil Strainer [Filter]**

**Warning! Remove all pressure before any work is performed.**



1. Remove Top Cap and remove Standard Filter.
2. Fit Clean-up® Filter and re-fit Top Cap. This Filter removes all solid contaminants down to 3 microns
3. Add oil and connect Combined Oil Separator / Reservoir to Compressor Discharge and Condenser Lines.
4. Connect Pressure Differential Indicator / Switch [224] across Separator Inlet / Outlet Connections [Filter Element].
5. Connect Pressure Valve [A7] in oil return line between the Reservoir section and the Oil Return Line to the Oil Level Regulators [Floats]. The Valve is factory set to 40 PSID/2.7 bars PD.
6. Run up the system until the oil shows signs of transparency. FILTER MUST BE CHANGED AT 13 PSID/1 bar PD to prevent damage.
7. When oil shows signs of cleaning up arrange to remove the Clean-up® Filter and re-fit the Standard Filter supplied with the Separator. This Filter removes all solid contaminants down to 0.3 microns. Repeat Standard Filter change until Pressure Differential Indicator shows 12 PSID/0.2 bar PD or less. [There is little to no Pressure drop across a new Filter]
8. CAUTION - EFFICIENCY OF COALESCING OIL SEPARATORS GUARANTEES THE REMOVAL OF LARGE AMOUNTS OF OIL. CARE MUST BE TAKEN TO MONITOR OIL LEVELS IN THE RESERVOIR SIGHT GLASS TO PREVENT DAMAGE TO THE FILTER OR OIL CARRY OVER.

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