Vilter VSG Unit Maintenance Checklist

Daily

- Log key performance indicators and maintain records to help in trend identification, changes in operation, and troubleshooting
- Check oil level in Oil Separator Sight Glasses:
  - o Make sure oil level is at consistent levels across compressors on a common suction
- Listen to the compressor unit in operation; become familiar with how it sounds when operating properly, and detect abnormal sounds, should they develop
- Check for Gas or oil leaks
- Check for excessive vibration on piping and tubing
- Record Oil & Filter pressures, amps, temperatures on main screen

Weekly

- Check shaft seals for excessive oil leakage (small amounts are normal with mechanical seals)
- Check for gas leaks
- Check operation and general condition of the PLC and other electrical controls
- Inspect mounting bolts for tightness of compressor, motor (actuator & main), and unit

Quarterly/General Maintenance

- Adhere to Vilter's Maintenance Intervals as described in the O&M Manual
- Have Oil analyzed at least at the frequency prescribed and adjust as necessary based on experience at your location
- Grease motor bearings using Motor Manufacturer specified grease in accordance with the Motor Manufacturer's prescribed intervals
- Check calibration and operation of all controls (see General Tips)
- Oil cooler inspection, pressure check & oil sample taking for analysis
- Operate capacity and volume controls through their range (see General Tips)
- Auxiliary equipment inspection (Scrubbers, Blowers, Fans, Heat Exchangers)
- Check oil pump shaft seal for leaks

Yearly Maintenance

- Thorough, full system leak detection
- Rust removal & paint if needed
- Clean and grease valve stems & threads, then if possible exercise the valves
- Clean all oil strainers
- Clean suction strainer
- Clean all water strainers, and check drains for flow away from equipment
- Check motors and fans for shaft wear & end play
- Check operation and general condition of electrical systems
- Check fuses, wiring, setpoints
- Compressor Coupling Check & hot shaft alignment
- Check calibration of microprocessor pressure transducers & RTDs
- Check mounting bolts of the suction and discharge valves
- Check setup of soft starts and VFDs
- Check oil heater operation
- Gas Analysis – Provided by Customer
- Vibration Analysis is recommended

Group	Inspection/Maintenance	Service Interval (Hours) Based on WET SATURATED GAS														
		200	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,500	12,500	15,000	18,000	To 120,000
Oil Circuit	Oil Change	Replace oil based on oil analysis report or visual contamination.														
	Oil Analysis(1)	-	S	S	S	S	S	S	S	S	-	S	S	-	S	*
	Oil Filters	Prepare to replace when the pressure drop reaches the given limits.														
	Oil Strainer	I	I	-	I	-	-	I	-	-	I	-	-	I	-	*
Package(6)	Coalescing Elements	-	I	-	I	-	-	I	-	-	I	-	-	I	-	*
	Coalescing Drain Line	I	I	I	I	I	I	I	I	I	I	I	I	I	I	
	Suction Screen	I	I	-	I	-	-	I	-	-	I	-	-	I	-	
	Liquid Line Strainers	I	-	-	-	-	I	-	-	-	-	I	-	-	I	
	Hot Alignment after Initial Start Up	-	-	-	-	-	-	-	-	I	-	-	-	I	-	
Control Calibration	Transducers	I	-	I	-	I	-	I	-	I	-	I	-	I	-	*
	RTDs / TTs	I	-	I	-	I	-	I	-	I	-	I	-	I	-	
	Slide Valve Motors(3)***	I	-	I	-	I	-	I	-	I	-	I	-	I	-	
Compressor(2)(5)	Main Motors	See Motor Manual for proper lubrication procedures and service intervals.														
	Inspect for Back Spin(4)	I	I	I	I	I	I	I	I	I	I	I	I	I	I	*
	Inspect Compressor**	-	-	-	-	-	-	-	-	-	I	-	-	-	I	
	Inspect for Leaks	I	-	I	-	I	-	I	-	I	-	I	-	I	-	
	Bearings (Except for VSG 128-243)	-	-	-	-	-	-	-	-	-	I	-	-	-	I	
	Bearings (For VSG 128-243 Only)	-	-	-	-	-	-	-	-	-	I	-	-	-	I	

Group	Inspection/Maintenance	Service Interval (Hours) Based on DRY CLEAN GAS												
		200	5,000	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000	110,000	120,000
Oil Circuit	Oil Change	-	R	-	R	-	R	-	R	-	R	-	R	-	R
	Oil Analysis(1)	-	S	S	S	S	S	S	S	S	S	S	S	S	S
	Oil Filters	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	Oil Strainer	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Package(6)	Coalescing Elements	-	-	-	-	R	-	-	R	-	-	R	-	-	R
	Coalescing Drain Line	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Suction Screen	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Liquid Line Strainers	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Hot Alignment after Initial Start Up	-	I	I	I	I	I	I	I	I	I	I	I	I	I
Control Calibration	Transducers	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	RTDs / TTs	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Slide Valve Motors(3)***	Slide valve calibration should be inspected monthly. Inspections can be performed through the control panel. If a Non-Movement Alarm appears, calibrate immediately.													
Compressor(2)(5)	Main Motors	See Motor Manual for proper lubrication procedures and service intervals.													
	Inspect for Back Spin(4)	Inspect Every 5,000 Hours or As Needed													
	Inspect Compressor**	-	I	-	I	-	I	-	I	-	I	-	I	-	I
	Inspect for Leaks	Check Monthly													
	Bearings (Except for VSG 128-243)	-	I	-	I	-	I	-	I	-	I	-	I	-	I
	Bearings (For VSG 128-243 Only)	-	-	I	I	R	I	I	R	I	I	R	-	-	I

I = Inspect /Calibrate S = Sampling R = Replace

Notes: *: Based on previous inspection findings extrapolate balance of service intervals or at least once a year.
**: Inspections include: gaterotor inspection (backlash measurement, shelf clearance and gaterotor float), end play measurement (main rotor & gaterotor), slide valve inspection (if applicable).
***: All the VSGC/VSSGC units will have the self-calibrated slide valve actuators. If that's the case, disregard this inspecting schedule.

(1) Oil Analysis/Sampling is based on the gas stream. It is at the customer´s discretion to increase the time period between oil sampling if oil contamination is unlikely, and to decrease the time period between oil sampling if oil contamination is likely or evident. An oil sample must be taken when there is reason to believe the oil is contaminated anytime during operation. In landfill, corrosive and wet gas conditions, oil sampling is recommended every 2 to 3 months the first year.

The life of the oil is directly affected by the quality of the gas. Proper separation of any liquids must be accomplished to prevent droplets of liquid at the compressor suction. The discharge temperature of the compressor must be kept a minimum of 30°F above the discharge gas dew point to prevent the condensing of liquids in the oil separator. The oil separator shell and legs must be insulated when the gas stream has a high probability of having condensables. The above Table for Oil changes is an approximate. The oil does not need to be changed unless the oil Sample Report recommends replacement, or if the customer feels it needs to be changed from visual contamination. Oil sampling should be done frequently the first years until a pattern is identified.

(2) The life of the compressor will be increased by purging the compressor unit with dry nitrogen or sweet, dry natural gas at shutdown

(3) Slide Valve Calibration should be inspected monthly. This can be done via Control Panel - if a non-movement alarm appears on the Control Panel, calibrate immediately (by pressing the cal/stop button on explosion proof actuator 25972XP, or for older models, using the controller, or calibration tool 75002).

(4) When shutting off the compressor, normally there is a back spin of the compressor motor shaft in the opposite direction. 4 or 5 revolutions are normal to fill the suction cavity with hight pressure gas from the Oil Separator. More than this will reflect a faulty Suction Check Valve or Open Bleed line around the Suction Check Valve, which should be closed during operation.

(5) Daily records should be kept on suction, discharge, oil pressures & temperatures, along with ensuring Temp Leaving Oil Separator is above Dew Point.

(6) Suction Header and drop leg should be checked and drained for moisture build up.

General Tips

Recalibrate Actuator Motors When:

- The compressor unit is being started up for the first time
- An actuator has been removed from the compressor and re- installed
- A new actuator motor has been installed
- There is an error code flashing on the actuator's circuit board - an attempt to recalibrate should be made (see actuator trouble shooting guide in your manual!)
- The range of travel is not correct and the command shaft travel is physically correct
- The compressor is pulling high amperage, check the calibration of the volume slide
- An actuator does not unload below 5%, or an actuator doesn't move
- Something is not working properly such as: actuators, RTD's, transducers, etc.

To ensure proper unit operation, the following shall be checked:

- Calibrate all transducer and RTD's
- Check capacity and volume actuator calibration
- Check fuses in the PLC panel
- Check for loose wiring connections in the PLC panel
- Check relay and contact operation for relays in the PLC panel
- Verify the operation of the suction and discharge check valves
- Check for correct rotation of all motors on the package (compressor, oil pump, and fan motors)
- Check that the piping to the oil cooler is correct
- Check setup of soft starts and VFDs
- Verify setpoints in the PLC
- Check oil heater operation
- Verify oil line check valve is installed for correct flow
- Check for loose bolts on the compressor unit. Tighten any loose bolts.

VILTER™

GENUINE VILTER™ Since 1867 PART

Vilter Parts
Phone: 800-862-2677
Email: Parts.Vilter@Emerson.com
For info or order online visit:
VPI.Emerson.com

Vilter Manufacturing LLC
Phone: 414-744-0111, Website: www.Vilter.com

Vilter Chiller Skid Maintenance Checklist

Procedure	Daily	Monthly	Yearly	Other
Check operating conditions	X			
Monitor noise levels	X			
Check oil level in compressor separator site glass	X			
Check refrigerant level in float or chiller	X			
Check operating parameter trends for indication of tube fouling or refrigerant loss		X		
Check voltage and current balance		X		
Check programmable operating setpoints and safety cut-outs. Make sure they are correct for the application. Calibrate sensors and transducers as needed		X		
Verify condenser and evaporator water flows		X		
Leak check with refrigerant leak detector and repair leaks as needed		X		
Check oil skimmer and return operation		X		
Check and tighten all electrical connections			X	
Clean or back flush heat exchanger (evaporator or oil cooler)			X	
Measure motor winding, insulation resistance and winding heaters			X	
Clean condenser and oil cooler tubes (if applicable)			X	
Test chiller flow switch			X	
Perform Eddy current testing and inspect tubes				2-5 Years

EMERSON™