SPINNER II®

TECHNICAL BULLETIN

Oil Cleaning Centrifuge

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How to Select and Install a Spinner II Centrifuge

FACTORY SELECTION ADVICE

In many cases for engines used by truck fleet, construction & mining, transit and marine applications, Spinner II Products has already identified the proper centrifuge(s) and has produced an installation bulletin with the details on optimum supply and return points. A list of engines for each of the application markets cited above is available, cross-referencing engines by make and model with the proper centrifuge and Installation Bulletin noted. Please contact Inside Sales for copies of any of these bulletins. *When your customer's engine is not in a bulletin, note...*

ENGINE SIZE

Usually the size of the engine affects the amount of generated contaminants. It is therefore necessary to select a centrifuge (or a number of centrifuges) with an adequate dirt-holding capacity to accommodate the volume of dirt likely to be generated during an oil change period. For this reason, when seeking factory assistance on an installation, first be prepared to provide the swept displacement of the engine, *then identify the...*

OIL PUMP OUTPUT (Primary Selection Factor)

As a bypass centrifuge of this type is taking oil from the pressure lubrication system, it is necessary to estimate the quantity of oil that is surplus to the requirements of the lubricating system and which flows back to the sump via the pressure relief valve. This would usually be approximately 30% of the total pump output under normal running conditions and the objective would be to use about one third of this, i.e. approximately 10% of the total pump output to drive the centrifuge. By relating this 10% to the appropriate oil flow charts of each centrifuge, it will be possible to select the optimum centrifuge relative to the flow available. There are some engines with relatively large size, yet having main lube pumps with little excess flow capacity. In these cases, a separate pump and motor to supply the centrifuge from the engine sump is the best approach.

> NOTE: For engine-driven centrifuge applications that exceed the 10% recommended above, obtain approval from the engine manufacturer.

If oil pump output is unknown, then apply the "fallback" method based on...

OIL SYSTEM CAPACITY (Secondary Selection Factor)

The volume of oil in the system may be used to determine the type or number of centrifuges to be fitted. Ideally a centrifuge should be specified to ensure that the total crankcase capacity passes through the centrifuge(s), no less than five times in an hour, preferably 10 times per hour for optimum performance.

OTHER CONSIDERATIONS

The optimum inlet pressure for a centrifuge ranges from 60 to 80 psi, but units can be operated at a maximum of 100 psi or a minimum of 40 psi. Lower pressures reduce centrifugal separation efficiency, but increase dwell time.

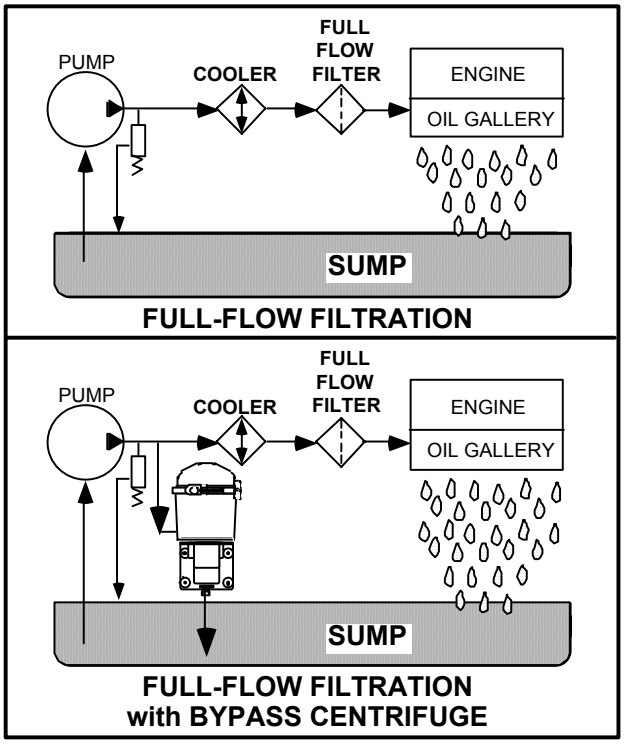
The dirt holding capacity of the rotor bowl in a centrifuge is approximately 5 times the dirt capacity of a conventional bypass element filter. Spinner II capacity is 10 times the model number in cubic centimeters. (SpII/60 SE = 600 cc, SpII/200 = 2000 cc, SpII/600 = 6000 cc). The Model 36 SE is an exception to this naming rule (it is a 600cc version like the Model 60 SE).

If an engine user experiences large dirt build-ups in the centrifuge(s) applied due to special fuel conditions or unusual airborne contaminants, or has a limited full-flow filter element time-to-ΔP service interval, an increase in the size or numbers of centrifuges should be considered. In this case, consult with the factory for assistance.

Centrifuge Installation

CENTRIFUGE MOUNTING

The schematic diagram at right shows a basic engine lubricating system incorporating the use of an LCB-equipped bypass centrifuge in conjunction with an existing full-flow filter. The centrifuge can be mounted on any convenient point on the engine itself or within the engine compartment. The two main considerations must be:
— the oil feed from the engine to the centrifuge and
— the oil drain from the centrifuge back into the engine oil sump.
The centrifuge should be mounted vertically (±10°) but can accommodate any temporary tilt, say up to 45°, such as can be experienced on earth-moving equipment. This would result in a temporary flooding condition within the centrifuge body due to its restriction to drain.



OIL FEED

An oil feed should be taken from a point on the engine where the pressure, flow and temperature are highest; this is usually upstream of the oil cooler (one typical exception: on Detroit Diesel engines, the oil is first filtered, then cooled; take the oil supply for the centrifuge from a point upstream of the filter). To minimize oil pressure drop, long hose runs should be avoided. If, however, a long oil pipe run is necessary, the hose diameter should be oversized.

OIL DRAIN — LEVEL CONTROL BASE

It is recommended that the centrifuge oil outlet from the Level Control Base (LCB) be connected to the engine sump above oil level, although this is not mandatory. To prevent return line oil from draining back into the LCB when the engine is shut down, which can actuate the air control system, maintain short return line lengths (less than 8') and position lines so that the backward-draining line length is minimized.

If oil return is below sump level *and* the LCB is similarly placed, it is necessary to install a low pressure-drop swing check valve at the sump inlet to prevent draining of the sump when the Spinner II unit is opened for servicing.

WARNING: Do not install a block valve in the drain line to the sump to avoid the possibility of over pressuring the Spinner II outer cover.

CONTROL AIR SUPPLY — LEVEL CONTROL BASE

For truck applications, air supply to the LCB should be continuous and dry, exceeding 35 psi. For industrial installations where the air pressure regulator is supplied, inlet air can range from 25 to 300 psig. Consumption is almost nil. In some cases, the LCB can be modified with special parts to permit use of low pressure turbocharger discharge air for LCB supply. Consult Bulletin 86.020 for details on this air supply method.

OIL DRAIN — GRAVITY

The centrifuge must be mounted to ensure that the oil outlet and return port into the sump are *always* above free oil level. Any restriction, sharp bend or trap in this drain pipe will result in a flooding condition within the centrifuge body which will drastically reduce the speed of the turbine assembly and the centrifuge will not work. NOTE: For gravity-drain installation, do not reduce size of oil outlet size specified on the selected Spinner II model. Gravity drain arrangements must be designed with careful attention to good “plumbing” practice to ensure effective centrifuge housing drainage. Gravity-drain mounting elbows are available which will provide adequate flow areas: refer to Bulletin 91.023. Gravity-drain installations are *not* recommended for on-road truck applications.