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# OIL CONDITIONING SYSTEMS SPARE PARTS LIST

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**FM090 LCB**

# MANN+HUMMEL FM090-LCB Oil Cleaning Centrifuge Maintenance Procedure

The MANN+HUMMEL FM090-LCB Oil Cleaning Centrifuge should be cleaned at regular intervals ensuring that the thickness of the dirt deposit inside the rotor does not exceed approximately 25mm. This operation is normally carried out after a specified period of operational use and may be combined with other maintenance procedures.

## Maintenance Procedure

1. Stop the flow of oil to the centrifuge by either stopping the engine or isolating the centrifuge from the lubricating system by means of a valve. Ensure the centrifuge has come to a complete stop before proceeding.
2. Loosen the band clamp and remove the centrifuge cover. Examine the centrifuge cover O ring and replace if damaged (Kit No. 6899717701).
3. Allow the oil to drain out of the rotor assembly. This may be assisted by raising the rotor on the spindle. Withdraw the rotor assembly vertically upwards from the spindle. The rotor should be removed and replaced on the spindle with care in order to ensure that the rotor bearings are not damaged.
4. Unscrew the rotor cover nut and separate the rotor cover from the rotor body.
5. Remove the standtube.
6. Remove sludge deposits from the inside of the rotor cover using a spatula. Clean the rotor components using a suitable cleaning fluid. Ensure that all rotor components (including the two nozzles located in the rotor body), are thoroughly cleaned and free from debris before re-assembly.
7. Examine the rotor assembly O ring for damage and renew if necessary (kit P/N 6899717701).
8. Fit a new paper insert (Part No. 6893330101) into the rotor cover.
9. Reassemble the rotor assembly.
10. Inspect the control mechanism within the level control base (LCB). This can be done using a thin wire with a hook on one end to raise the float within the LCB. If the air supply to the unit is turned on, air should flow into the control mechanism. The air flow should stop if the float is lowered.
11. Replace the rotor on the spindle and check that the rotor spins freely.
12. Replace the centrifuge cover and band clamp and fasten hand tight.
13. With the centrifuge running, check all joints for leaks.

## Important Notes

The MANN+HUMMEL Oil Cleaning Centrifuge is designed to provide extended service without the need to replace major components. However, after extended periods of operation wear and damage to the centrifuge spindle and rotor assembly may become evident. For this reason it is recommended that the centrifuge spindle and rotor assembly bearings are visually inspected for damage and wear during the cleaning process. If excessive wear or bearing play is evident, the rotor body assembly (Part No. 6899514101) and/or the centrifuge body assembly should be replaced.

The FM090-LCB TRANSIT centrifuge assembly is fitted with a cut off valve (C.O.V.), which is located in the centrifuge body. The C.O.V. is designed to protect the engine by stopping the supply of lube oil to the centrifuge at start-up and during periods when the oil pressure is below the C.O.V. rating. This item is intended to provide maintenance free operation for extended periods and should only be disassembled and inspected for damage if a problem becomes evident.

\*\*In order to prevent particles larger than the rotor nozzles from blocking them, a sump strainer should be added as part of the installation.

The FM090-LCB (6899145201 & 6899145301) requires the fitting of the Inlet Nipple, Outlet Nipple and Air Connector, prior to installation.

- Fit the Inlet Nipple (6890644001) to the Body Assembly (6899222401) in the port opposite to the C.O.V. assembly, tighten to a torque of 28-30Nm
- Fit the Outlet Nipple (6890643901) to the Drain Body Assembly (6899097901) in the port marked oil/out, tighten to a torque of 28-30Nm.
- Fit the Air Connector (6890643801) to the Air Valve Assembly (6899915801), tighten to a torque of 12-14Nm.

## Installation

### Mounting:

The centrifuge must be securely mounted close to the engine using the anti-vibration mountings supplied and ensuring that there is sufficient headroom for easy removal of the rotor from the spindle. The centrifuge should be mounted vertically where possible; if an angle mounting is necessary, this should not be more than 15° from the vertical.

### Oil Pressures:

Oil pressures should be no less than 2.2 bar and a maximum of 7 bar, the preferred range being 3.5 bar to 5.5 bar. An oil feed should be selected as close to the oil pump as possible and preferably before the oil cooler and full flow filter if fitted. The oil feed pipe should be at least Ø9.5mm and the oil drain pipe should be at least Ø12.5mm.

### Level Control Base:

Air feed to the centrifuge should be taken from the auxiliary air protection valve using a ¼" O.D. nylon tube. The air pressure to the centrifuge should be above 2.4 bar (35 psi) and not exceed 8.6 bar (125 psi). Auxiliary equipment should not be connected to an air brake system except through a device, which protects the service and secondary brake system of not less than 75% of the design pressure corresponding to a deceleration of 0.6g

## Maintenance Action

### Every Oil Drain Interval:

- Clean Rotor Assembly / Replace Paper Insert (Part No. 6893330101)
- Inspect Centrifuge Cover O Ring & Rotor Body O Ring. Replace if damaged
- Inspect Rotor Bearings for wear and replace Rotor Body Assembly if necessary
- Inspect Spindle for wear and replace Centrifuge Body Assembly if necessary

Please note that this should be used as a guide only. Maintenance intervals for the centrifuge are dependant on a number of factors and differ with engine type and operational environment.

# Spare Parts List

<b>FM090-LCB</b>	Part Number	QTY	FM090-LCB (6899139301)	FM090-LCB (6899144301)	FM090-LCB (6899145101)	FM090-LCB (6899145201) (6899145301)
CUT OFF VALVE RATING (BAR)			1.3	1.3	1.3	1.3
OIL INLET THREAD			1/2" NPTF	1/2" NPTF	1/2" NPTF	1/2" NPTF
OIL OUTLET THREAD			1/2" NPTF	1/2" NPTF	1/2" NPTF	1/2" NPTF
<b>BODY ASSEMBLY</b>	6899222401	1	•	•	•	•
<b>ROTOR ASSEMBLY</b>	6899416801	1	•	•	•	•
ROTOR BODY ASSEMBLY	6899514101	1	•	•	•	•
ROTOR COVER	6890464501	1	•	•	•	•
STAND TUBE	6893323401	1	•	•	•	•
ROTOR COVER NUT	6890183901	1	•	•	•	•
NOZZLE	6890492701	1	•	•	•	•
PAPER INSERT	6893330101	1	•	•	•	•
<b>COVER ASSEMBLY</b>	6899312901	1	•	•	•	•
<b>BAND CLAMP</b>	6890324801	1	•	•	•	•
<b>DRAIN BODY ASSEMBLY</b>	6899097901	1	•	•	•	•
AIR VALVE ASSEMBLY	6899726101	1	•	•	•	•
AIR CONNECTOR	6890643801	1		•	•	•**
SET SCREWS	6890166716	4	•	•	•	•
ANTI VIBRATION MOUNTS	6890327001	4	•	•	•	•
ANTI VIBRATION WASHERS	6890145601	8	•	•	•	•
INLET NIPPLE	6890644001	1			•	•**
OUTLET NIPPLE	6890643901	1			•	•**
<b>FM090-LCB KITS</b>						
CUT OFF VALVE (C.O.V) KIT	6899071901	1	•	•	•	•
SEALS KIT	6899717701	1	•	•	•	•
FLOAT ASSEMBLY KIT	6899077401	1	•	•	•	•
AIR VALVE & CONNECTOR KIT	6899725801	1	•	•	•	•
MOUNT KIT	6899725901	4	•	•	•	•

Speak To An Advisor Today About Centrifuge...

**ROTOR ASSEMBLY**  
6899416801

ROTOR COVER NUT  
6890183901

COVER  
6890464501

PAPER INSERT  
6893330101

STANDTUBE  
6893323401

O RING\*  
KIT No. 6899717701

ROTOR BODY ASSEMBLY  
6899514101

NOZZLE  
6890492701

**COVER ASSEMBLY**  
6899337701  
6899314401

COVER O RING KIT\*  
6899717701

BAND CLAMP  
6890324801

**BODY ASSEMBLY**  
6899222401

BASE O RING\*  
KIT No. 6899717701

INLET NIPPLE  
6890644001\*\*

FLOAT ASSEMBLY  
KIT No. 6899077401

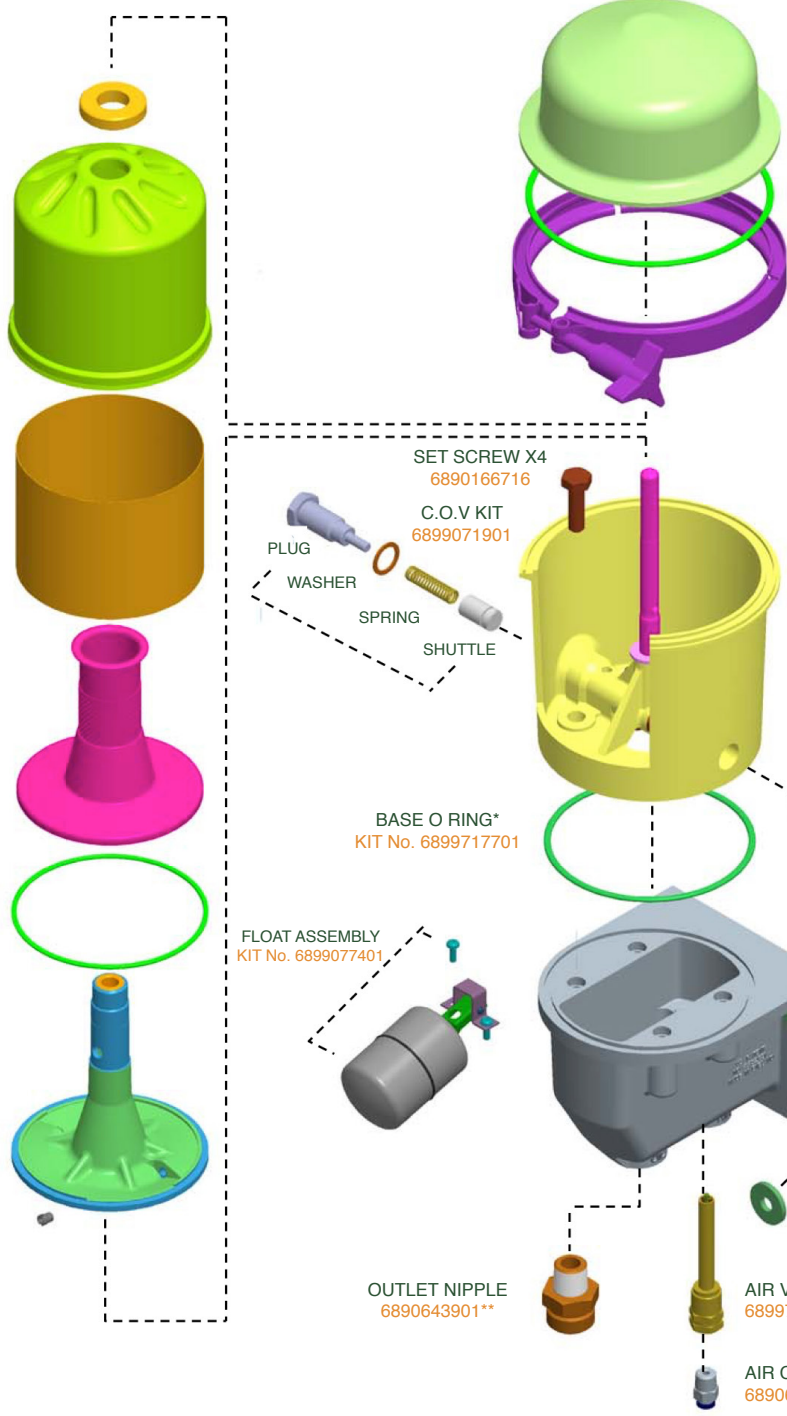
WASHER X8  
6890145601  
MOUNT X4  
6890327001

**DRAIN BODY ASSEMBLY**  
6899097901

OUTLET NIPPLE  
6890643901\*\*

AIR VALVE ASSEMBLY  
6899726101

AIR CONNECTOR  
6890643801\*\*



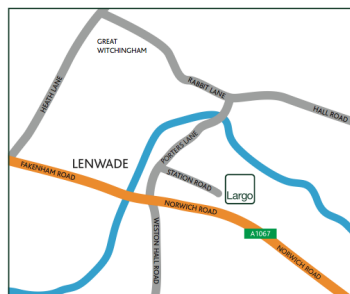
\*SEALS KIT (6899717701) COMPRISES OF C.O.V. WASHER, COVER O RING, ROTOR O RING AND BASE O RING



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