MP200
Centrifuge

Installation and service manual

Enter

IOW Group

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Introduction

This manual has been designed for people using and operating the centrifuge.

This manual contains important safety and operating instructions.

Please ensure that all people operating the centrifuge have access to and have read this manual.

Any national regulations regarding the operation and running of the centrifuge are not included in this manual and must also be adhered to where applicable.

We would like to draw the operator's attention to the environmental laws that operate in your area; these must be complied with especially for the disposal of contaminated sludge.

We reserve the right to change this manual, and make technical changes to the centrifuge without recourse.

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Safety

2.1 Symbols and Warnings

This symbol is used to show care and attention must be taken. Ignoring this could cause damage to the centrifuge and may endanger the operator.

Instructions in this manual must be followed to avoid damaging to the centrifuge.

Special care must be taken to ensure economical and trouble free operation.

2.2 Correct usage

The centrifuge has been designed to spin at high speeds and at high flow rates and can consequently cause damage and injuries to the operator or third parties. The centrifuge must therefore not be used in any of the following circumstances.

- Being used for another use that is not specified.
- Operating the centrifuge outside the specified parameters.
- Modifying the centrifuge without consulting the manufacturer.
- Running the centrifuge without maintaining and repairing parts that have been worn without using original spare parts.

The centrifuge is designed for cleaning lubricating oils and lubricating oils ONLY. The manufacturer accepts no responsibility for damage or injuries if the liquid being cleaned has not been approved by ourselves.

2.3 Operating Safely

As with all rotating equipment, it is essential that the centrifuge is operated and maintained by suitably qualified people.

Under no circumstances should the centrifuge be run that could affect operational safety.

The centrifuge should be checked on a daily basis to check that the revolution counter is showing the same speed as the day before; a deviation of more than 25% should be investigated to ensure the operational safety of the centrifuge.

Any unauthorised modifications to the centrifuge and/or use of non-genuine spares will render the manufacturer's warranty null and void.

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Centrifuge Concept

The centrifuge consists of a housing assembly, a cover assembly, a unique patented bowl, and a revolution counter.

The oil inlet into the bowl has a larger diameter than the outlet and is in conjunction with the bowl discs; this then causes the heavier particles to deposit themselves onto the bowl wall.

Once in the bowl, the oil is forced through the disc stack and into the top turbine chamber where it is then expelled by the turbine vanes to the nozzles.

The nozzles then eject the cleaned oil giving rotational speed to the bowl. The cleaned oil is then allowed to flow back into the sump.

The speed of the centrifuge bowl is monitored by magnets set into the distributor plate and is then displayed on the SCU Control Panel. The speed should be checked when it is either new or has been cleaned.

After 10 minutes of running RPM should be set. As the sludge cake builds up, it impairs the oil input and also decreases separation efficiency.

This then allows more contaminates to pass through the centrifugal field and will start clogging the mesh insert. The reduced input and output causes the bowl to slow down.

Centrifugal concept *(continued)*

We recommend that the centrifuge is cleaned when the revolutions have decreased by 30% of the initial speed. At this point, the sludge cake should be approximately 12mm away from the bowl discs.

If the separator bowl is allowed to slow down below 30%, then the sludge cake could start to enter the disc stack, which will cause problems for the operator to clean them properly!

The SCU also monitors run time, alarm hours should set depending on fuel burned.

If an air assisted drain is used, as the oil level rises inside the chamber, it lifts the float and actuates a valve connected to an air supply. The pressurisation of the chamber causes the oil to return to the sump quicker.

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Installation Guide

The centrifuge should be mounted securely either to the engine or can be mounted remotely. If mounted any distance from the engine, an air assisted drain may be required.

Care should be taken in choosing a site so that there is sufficient room to remove the spinner shield and bowl; also bear in mind that during cleaning, oil is likely to drip from the shield or bowl.

Care should also be taken in mounting the SCU Control Panel depending on which controller has been ordered with the centrifuge, as the displays on both controllers should be easily visible.

The operating oil pressure of the MP200 should not be in excess of 7 bar and should not be below 2.3 bar. Recomennded pressure is between 3.5 to 6.5 Bar.

The oil feed line to the centrifuge should be close to the engine's oil pump and preferably before the oil cooler and full flow filter.

The centrifuge should preferably be mounted upright and no more than 5 degrees from horizontal, as this will affect the efficiency of the centrifuge. The minimum bore size for the oil inlet pipe should not be below 12 mm.

If the centrifuge is fitted with an air assisted drain valve, then an air pressure line should be made available with maximum air pressure of 3 bar and a minimum pressure of 2.5 bar.

Please note the air assisted drain valve must not be connected into an air brake system.

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Regular Cleaning Procedure

Tools required

MP 200 Spanner (200041)
or 41mm Spanner

5.1 Stop the flow of oil to the separator by either closing the separator isolator valve (If fitted) or by stopping the engine.

IMPORTANT

Make sure the separator bowl has come to a complete stop before proceeding. (It is recommended that a two-minute delay should be sufficient to ensure the bowl has stopped.) Also, check that the rev counter is reading zero.

CAUTION

Hot oil and centrifuge components (danger of burns)

5.2 Remove the Band Clamp (200028).
Unscrew and remove Cover Assembly (200033).

BEWARE

This is a left hand thread, and direction for unscrewing is CLOCKWISE.

5.3 Allow the oil to drain from the Bowl Assembly (200038). This can be sped up by lifting the bowl about 10mm from the Spindle (200012). Caution - Hot oil.

Care should be taken when removing and replacing the bowl, as the bowl bearings are easily damaged; this can cause a reduction in operating speed, and therefore reduced separation results.

5.4 Secure the Bowl Assembly (200038) with the Box Spanner (200034) if supplied, alternatively use a 41mm Spanner or Socket. Unscrew Bowl Nut (200017) using a 41mm spanner.

BEWARE
this is a left hand thread, and direction for unscrewing is CLOCKWISE.

Remove Washer (200016), and then remove Top Turbine Plate (200024) along with Top Turbine Impeller (200039), separate Top Turbine Plate (200024) from Top Turbine Impeller (200039), and remove the Mesh Insert 200004.

5.5 Carefully remove the Bowl Wall (200009), and remove the sludge deposits by pulling the Paper (200023) from the Bowl Wall (200009). Remove all O-Rings.

Clean all the bowl components using a suitable cleaning liquid. We recommend **BIO Gen Active**. Care should be taken not to scratch any of the surfaces during cleaning, as this can cause the sludge to stick.

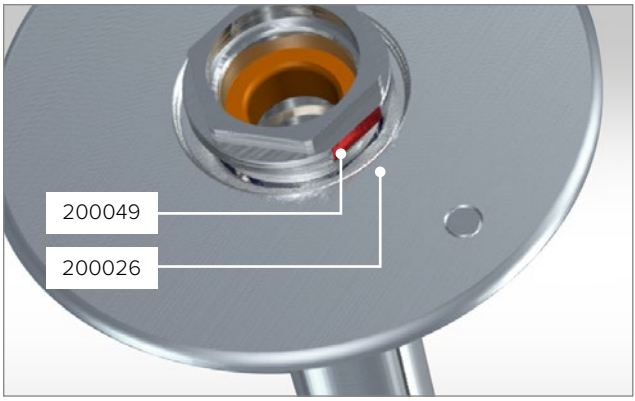
Providing the sludge cake has not entered into the Disc Stack, there should be no need to clean the Bowl Discs (200021). Check that the 4 x Nozzles (200019) are clean (We suggest blowing compressed air through each one before reassembly).

5.6 Check all Bowl O-Ring grooves and O-Rings for wear or damage and replace if required. We recommend that all O-rings are replaced every 3,000 hours or annually, whichever comes first. The O-ring Kit part number is 200037.

5.7 Fit a new Paper (200023) into the Bowl Wall (200009) and also fit new Mesh Insert (200004) into Top Turbine Impeller (200039). Grease all O-Rings using suitable silicon grease.

5.8 Reassemble the Bowl Assembly (200038).

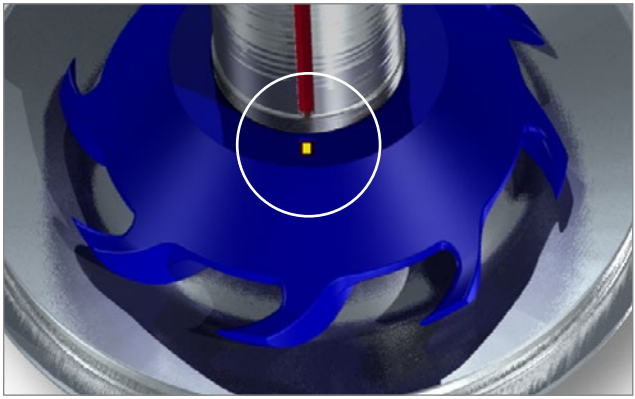
Be aware of the following locations



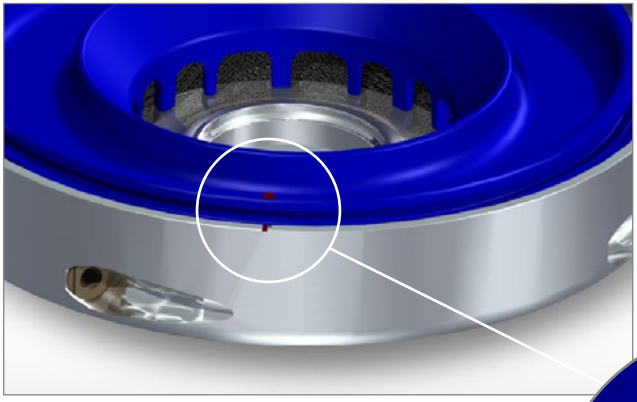
Bearing Tube Assembly (200049) location in the Distributor Plate Assembly (200026).

Continued on next page

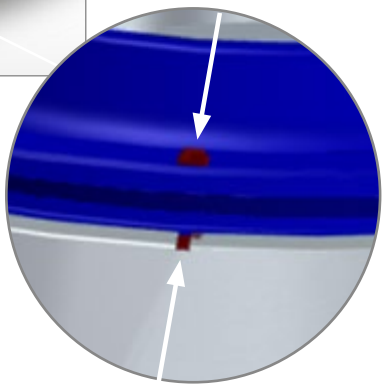
Be aware of the following locations *(Continued)*



Distributor Impeller 200027 (recess) to align with any of the four slots on the Bearing Tube Assembly.



Ensure Mesh Insert (200004) is fitted prior to this assembly. Top Turbine Plate 200024 align with Top Turbine Impeller 200039.



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PLEASE TAKE NOTE

All threads are left handed therefore tightening them require **COUNTER CLOCKWISE ROTATION**.

There is a stop for Bowl Nut (200017) that needs to be tightened to hand tight (Approx. 3 – 5Nm). Gently lower the Bowl Assembly (200038) onto the Spindle (200012) and once it is down rotate the bowl assembly by hand; the bowl should rotate freely.

5.9 Fit the Cover Assembly (200033), and tighten to hand tight up to stop (Approx. 3 - 5Nm).

PLEASE TAKE NOTE

All threads are left handed therefore tightening them require **COUNTER CLOCKWISE ROTATION**.

5.10 Fit the Band Clamp (200028), and tighten to hand tight (Approx. 3 – 5Nm). Once the separator is running, check for any oil leaks, and rectify if there are any.

5.11 After 10 minutes reset SCU Unit
(refer to 6.10 Start up and maintenance).

NOTES OF IMPORTANCE

The IOW Group Separator is robustly designed so that none of the major components should need replacement for at least 24 months, if properly checked and maintained.

Please check Spindle (200012) and Bearing Tube Assembly (200049) at every cleaning cycle of the Bowl Assembly (200038).

If the Spindle (200012) or Bearing Tube Assembly (200049) shows signs of wear they should be replaced.

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Repair & servicing

Unless specified by the engine manufacturer, we recommend that servicing of the centrifuge is carried out at every oil change.

Cleaning of the centrifuge is dictated by the SCU Control Panel. Every time the centrifuge is stripped for cleaning, the Paper (200023) and Mesh Insert (200004) should be changed; however, the O-Rings and Gaskets do not require replacing every time.

After the initial installation, the centrifuge should be monitored for sludge build up.

We recommend that the centrifuge is stopped and cleaned when the revolutions drop by 30% of initial speed.

Please check position of sludge cake, we recommend that the sludge cake should be no closer than 12 mm from the disc stack. This can be adjusted by settings described in chapter 6.10 (Alarm Percentage Offset).

Sludge cake can also be controlled by Run Hours Alarm described in chapter 6.10 Alarm Hours Setting.

The centrifuge is guaranteed for 12 months of operation; however, the guarantee excludes the following:

Natural wear and tear.

Incorrect maintenance or incorrect repairs.

Assembly errors while installing or removing the centrifuge.

Unauthorised modifications.

Use of non-genuine spare parts.

Corrosion damage during transport and/or storage at customer's facility.

The following spare part kits are available:

We recommend that a Minor Cleaning Kit (200040) and an O-Ring Kit (200037) should always be in-stock. All other parts are stocked by the manufacturer and are available for next day delivery.

1	Housing Assembly	200XXX
2	Cut Off Valve Kit	See 6.2
3	Bowl Assembly	200038
4	O-Ring Kit	200037
5	Minor Cleaning Kit	200040
6	Sensor Kit	200047
7	Pressurised Drain System	See 6.7
8	SCU 0002 Monitoring System	200029

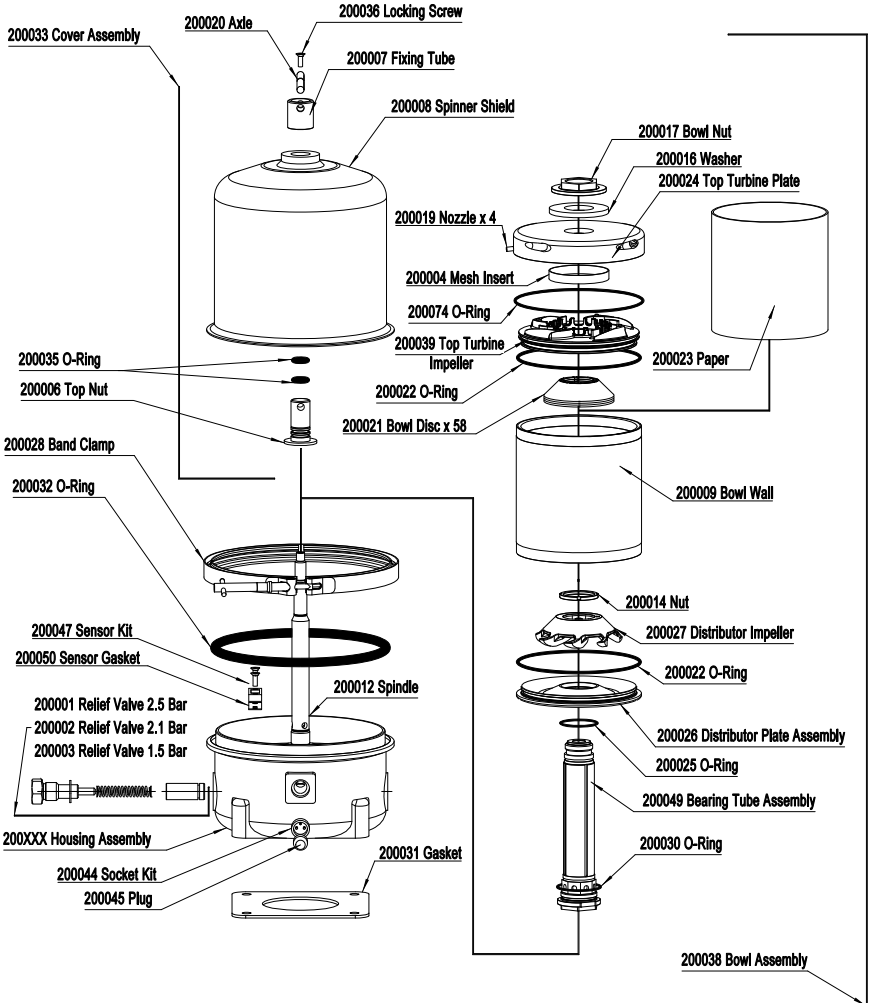
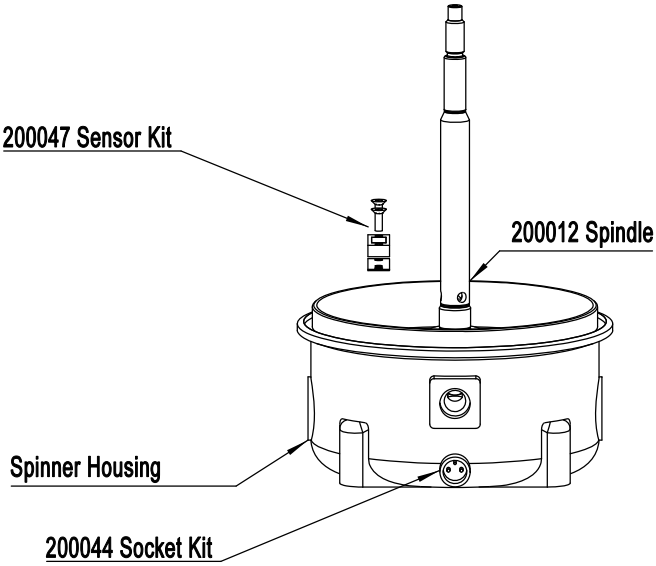


Figure 1

Shows the spare parts available and should be referred to so that the correct parts or kits can be ordered.

6.1 Housing Assembly (200XXX)



6.2 Cut off valve kits (200001), (200002) and (200003)

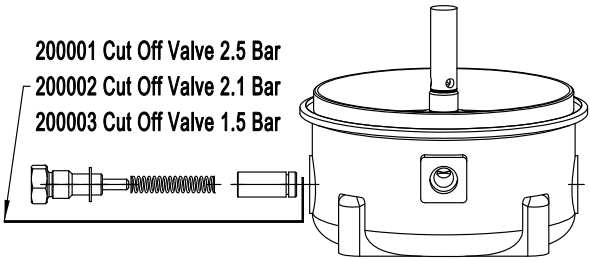
Tools required: 27mm spanner

If the cut off valve requires replacement, because of a mechanical fault or another cut off valve is required with either higher or lower pressure setting, the procedure is as follows.

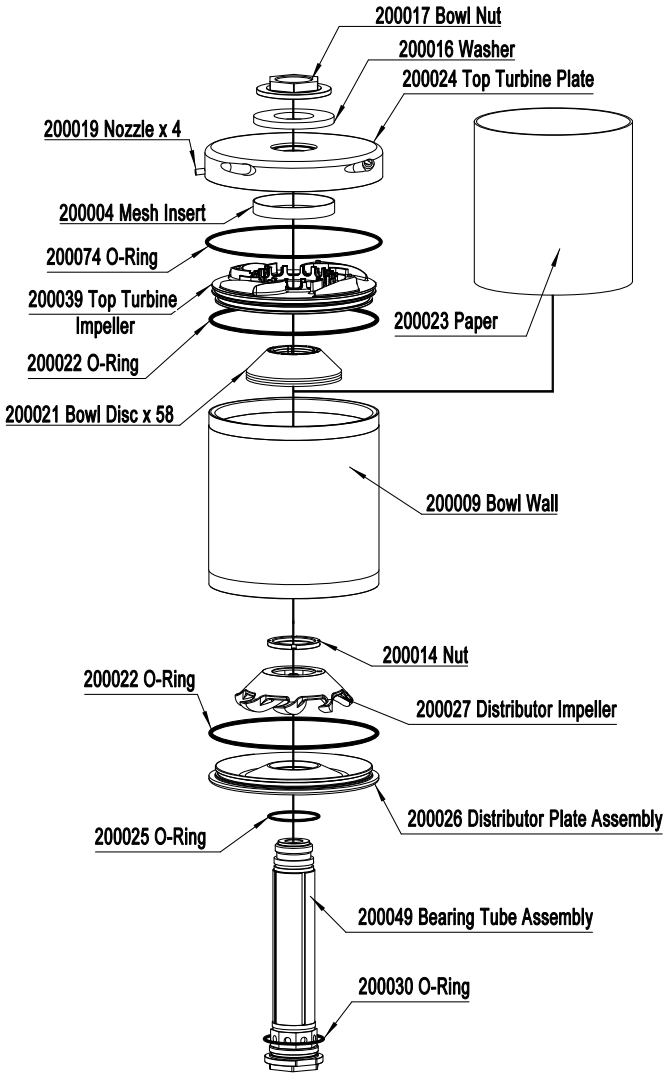
Ensure that the oil inlet to the centrifuge is isolated, or the engine is not running. Unscrew the outer plug using the 27mm spanner. Once this is out, the spring and the piston can then be removed.

Replace all parts, and then retighten with 15Nm torque setting. Run up the centrifuge, and check for oil leaks.

Tighten up till leak stops.



6.3 Bowl Assembly (200038)



6.4 O-Ring Kit (200037)

Tools required: MP 200 Spanner (200041) or 41mm Spanner and Box Spanner (200034), 2mm Allen key, Hook Spanner for 45mm ring or Hook Spanner (200005).

For replacing 200074, 200025, 200022 x 2 and 200032 please see section 5 Regular Cleaning Procedure. For replacing 200035 x 2, please remove Cover Assembly (200033) and place on a soft surface.

Using 2mm Allen Key, undo Locking Screw (200036) and remove the Axle (200020) by sliding it out of the hole in Fixing Tube (200007) and Top Nut (200006).

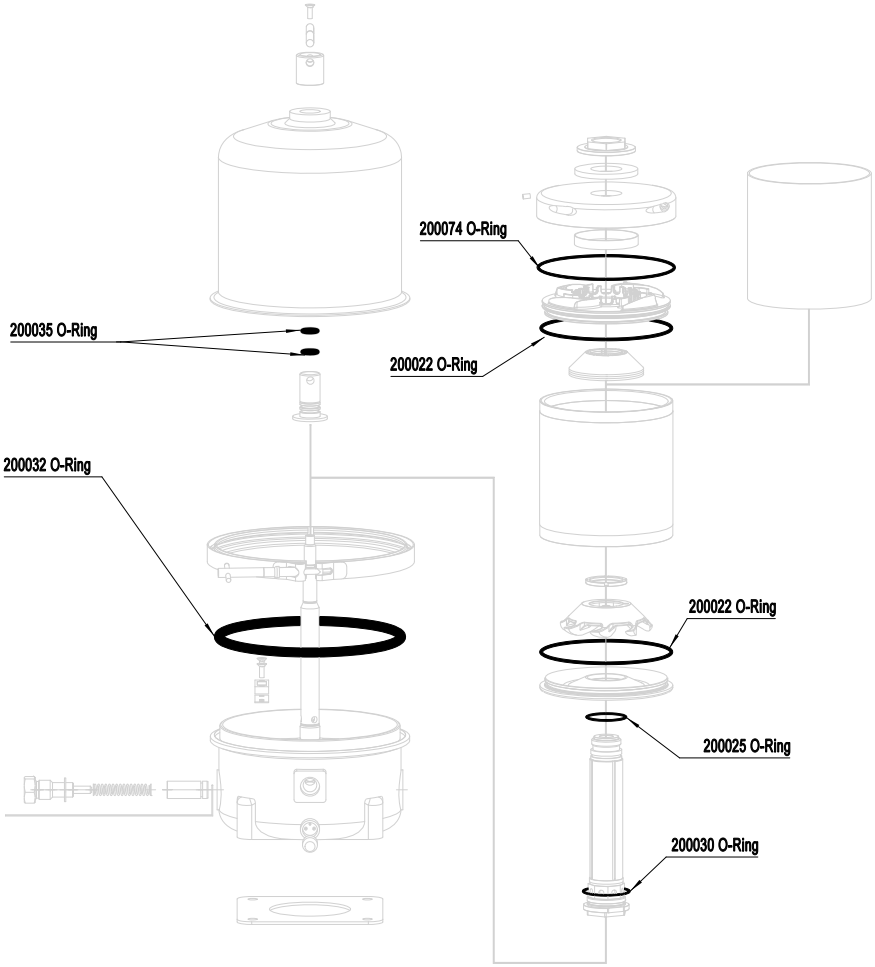
Fixing tube (200007) can now be removed. Turn Spinner Shield (200008) upside-down, and press down on the rim of the shield releasing Top Nut (200006). Replace the 2 x O-Rings (200035) and reverse the above procedure for reassembly. Tighten Locking Screw (200036) to hand tight (Approx. 3 - 5 Nm).

For replacing O-Ring (200030), remove the Bearing Tube Assembly (200049), (see section 5 Regular Cleaning Procedure). The Bearing Tube Assembly consists of the following parts 200026, 200030, 200027 and 200014. Place the assembly on a soft surface using Hook Spanner (200005) to undo Nut (200014).

PLEASE NOTE THIS IS A LEFT-HAND THREAD; UNDOING THIS IN A CLOCKWISE DIRECTION.

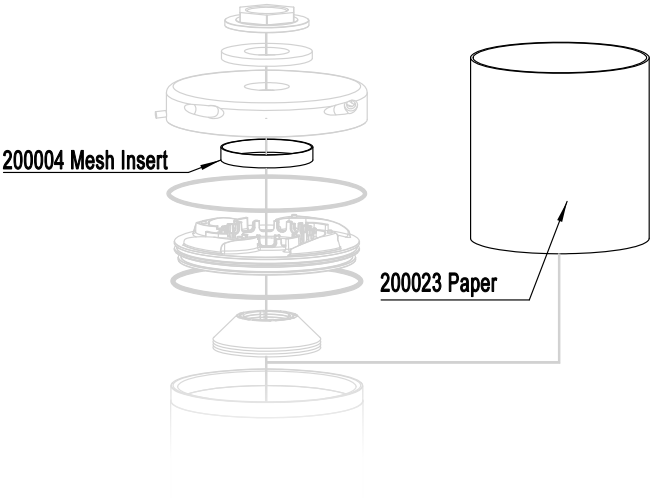
Remove the Distributor Impeller (200027), then rest assembly on top bush of Bearing Tube Assembly (200049) and carefully press down on Distributor Plate Assembly (200026). Remove O-ring (200030), and reassemble in reverse order. The Nut (200014) should be tightened to hand tight (Approx. 3 - 5 Nm).

200037 O-Ring Kit		Qty
200022	O-Ring	2
200025	O-Ring	1
200030	O-Ring	1
200032	O-Ring	1
200035	O-Ring	2
200074	O-Ring	1


200074 O-Ring
200035 O-Ring
200022 O-Ring
200032 O-Ring
200022 O-Ring
200025 O-Ring
200030 O-Ring

6.5 Minor Cleaning Kit (200040)

Tools required: MP 200 Spanner (200041) or 41mm Spanner and Box Spanner (200034). For assembly and taking apart, please **see section 5 Regular Cleaning Procedure.**



200040 Minor Cleaning Kit		Qty
200004	Mesh insert	10
200023	Paper	10

6.6 Sensor Kit (200047)

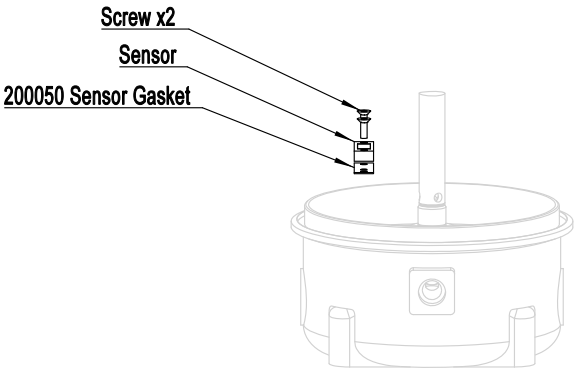
Tools required: 2.5mm Allen Key.

If the sensor requires replacement, unscrew the two Allen Bolts using the 2.5mm Allen Key. Remove the sensor, and gently pull out the wires until the plastic connector comes out. Undo the snap on plastic connector.

Replace the sensor, and ensure that the gasket is fitted underneath the sensor housing. Plug in the new connector, and then feed the wires and connector into the housing. Retighten the two Allen Bolts using the 2.5mm Allen Key. Tighten to hand tight (Approx. 3 – 5 Nm).

ENSURE...

that the wires protruding from the Sensor Housing are installed towards the centre of the centrifuge spindle. If installed incorrectly, the SCU (Separator Control Unit) will not register RPM of the bowl.



6.7 Pressurised Drain System (PDS)

Tools required: 22mm Spanner, 19mm Spanner, Phillips Screw Driver, Loctite 270.

Stop the centrifuge by either using the isolating valve if fitted or stop the engine. Isolate the air supply to the Pressurised Drain System (PDS). Disconnect the oil inlet to Housing Assembly (200XXX).

Undo and remove Band Clamp (200028) and remove Cover Assembly (200033) then remove Bowl Assembly (200038). Using the 22mm Spanner undo the 4 x Bolts (PDS-120) and then remove the Housing Assembly (200XXX).

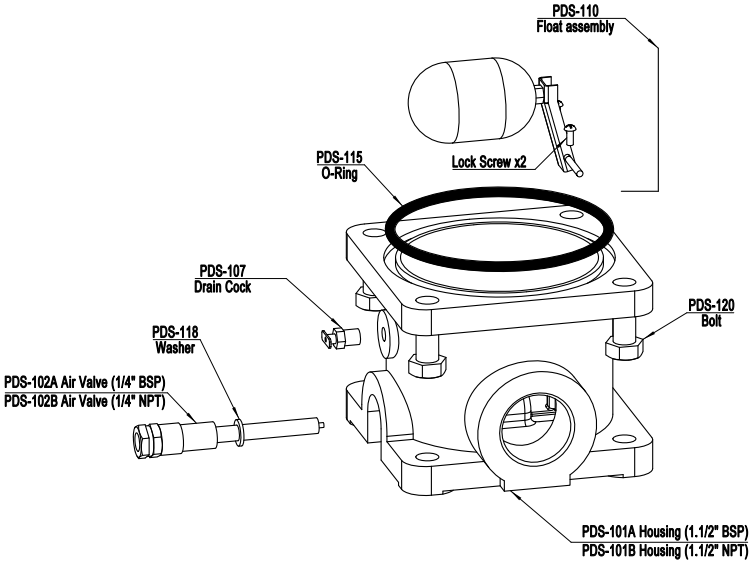
Remove O-Ring (PDS-115) and dispose of. Using the Phillips Screw Driver and remove 2 x Lock Screws. The Float Assembly (PDS-110) can now be removed. Using the 19mm Spanner, undo the Air Valve (PDS-102A). The unit is now completely disassembled.

To reassemble the Pressurised Drain System; insert new Float Assembly (PDS-110) and tighten 2 x Lock Screws using Loctite 270 to 1 – 2 Nm. Replace Air Valve with new Washer (PDS-118) fitted, then tighten to 30 Nm using the 19mm Spanner.

Reconnect the air supply to the Air Valve and then manually lift the Float Assembly (PDS-110) to ensure the air valve is functioning properly. Put in new O-Ring (PDS-115) and then place Housing Assembly (200XXX) onto the Housing. Tighten the 4 x Bolts (PDS-120) to 30 Nm.

6.7 Pressurised Drain System (PDS) *(continued)*

Place Bowl Assembly (200038) onto Spindle (200012) and then replace Cover Assembly (200033). Place Band Clamp (200028) back onto centrifuge and tighten to hand tight (Approx. 3 – 5 Nm). Reconnect the oil supply to the centrifuge. The centrifuge is now ready to run again.



6.8 SCU 0002 Control Panel (SCU 200029)

The SCU 0002 (Separator Control Unit) is designed to monitor the performance of the centrifuge. During its normal operation, it will continuously display the current RPM of the centrifuge and monitors run hours. While operating, the centrifuge bowl is processing the oil and as the sludge cake builds up, the speed of the centrifuge will slowly start to reduce. When this speed falls to the alarm level , or when the number of hours run is reached - whichever is sooner , it will show a alarm message on the SCU 0002 display, and it is also able to indicate this alarm remotely if connected via MOD BUS.

This unit requires 12-24Volts DC to operate and is provided via the power terminal block.

The separator sensor is a 3-wire device and requires +5 Volts, 0 volts and returns a signal only when the separator is operational. The +5 volt supply is derived from the circuit board.

An alarm relay closes when the separator speed drops below the alarm threshold (service required); these contacts are volt free and are rated at 24 volts' DC at a maximum current of 1 Amp. This can be used for external signalling when an alarm condition occurs.

6.9 Commissioning

Three banks of dual in line switches configure the board.

For connection to the vessels automation system, the module appears as a MODBUS slave RTU using RS485 with the following data settings:

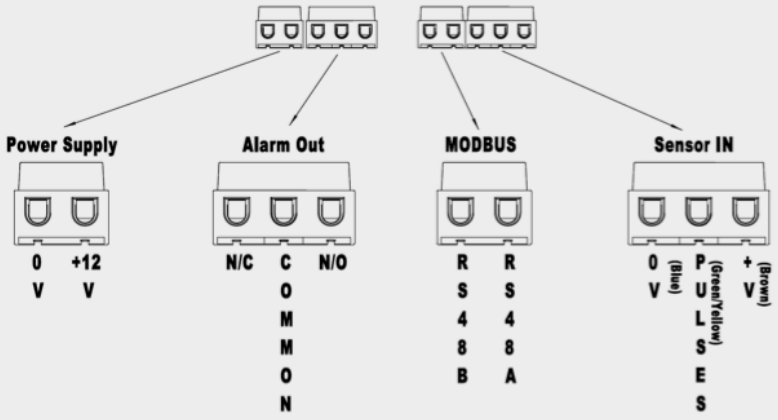
9600 Baud, 8 data bits, No Parity and 1 stop bit.

The MODBUS slave address is set via the right bank of switches (see the table on the following page). Addresses of 1 to 255 are available. The counting method employed by the switch settings is binary.

Adjusting the switches will set-up the Modbus address. It is the responsibility of the Vessels management system engineers to set-up the appropriate screens to monitor the separator.

See diagrams on next page

Board wire diagram



6.10 Start-up & Maintenance LED indications

Colour Key	Definition	Description
ON	Light is on →	The device is powered up
	Light is off →	There is no power to the device
CLEANING	Light is flashing →	Centrifuge requires urgent service!
	If light is flashing during start up or after service see Setting Operational Speed - Troubleshooting	
RUNNING	Light is on →	Centrifuge is running properly
	Light is off →	Device is not receiving signal from sensor

6.10 Start-up & Maintenance

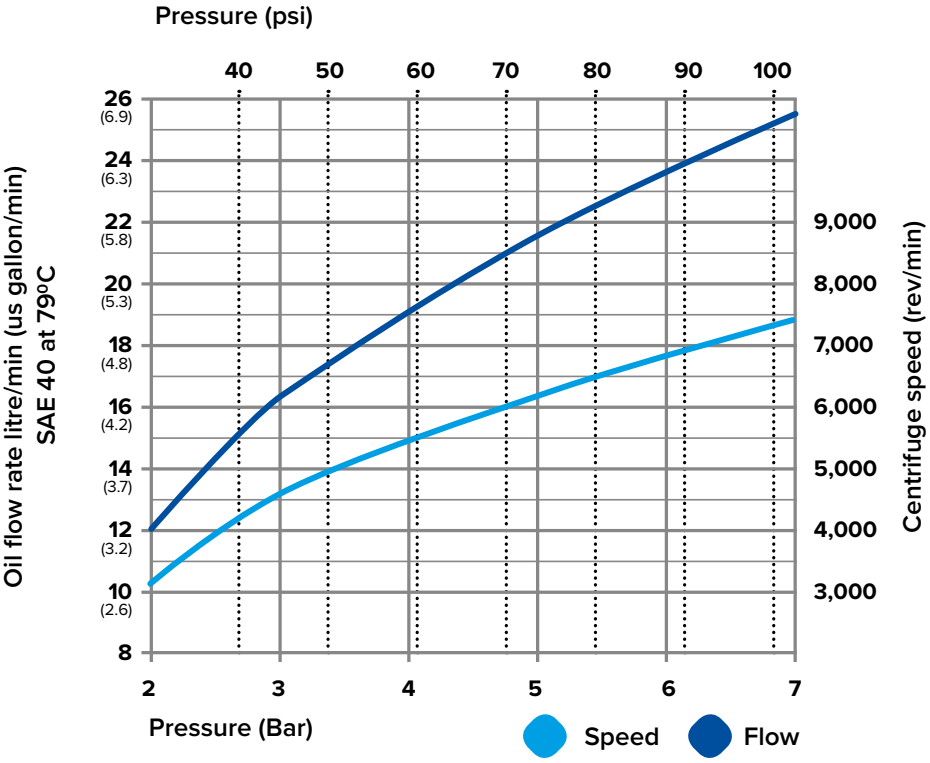
Setting Operational Speed

With the first use and after every service, it's required to set operational speed with the following procedure:

- Start centrifuge and allow to run for 10 minutes until maximum RPM is reached (See Fig.2 on the next page)
- Press Speed Set button and hold it until the display show's comment *SPEED SET XXXX* (the alarm RPM is then calculated by the device and run hours are reset to zero).

See diagram (Fig.2) on next page

Figure 2



Please note

Every installation is different. Speeds and flow rates can differ due to viscosity and temperature.

Max speed can be +/- 15% of data shown above.

6.10 Start-up & Maintenance

Setting Operational Speed - **Troubleshooting**

The display show's *LOW SPEED STOP!!*.
Please check the below options:

- Centrifuge has not been reassembled correctly - check condition of O-Rings.
- Check Nozzles 200019 and Mesh Insert 200004 for possible blockage.
- Oil pressure could potentially be low (check your pump capacity and oil level).
- Damage or wear to bushes in Bearing Tube Assembly 200049 or Spindle 200012.
- Cover Assembly 200033 incorrectly fitted.

6.10 Start-up & Maintenance

Operation

Once the set speed operation is completed, the SCU 0002 will continually monitor the RPM of the centrifuge until the set alarm speed has been reached.

At this point, the SCU 0002 will flash comment ** Urgent Service ** with current RPM. It is important that the centrifuge should not be allowed to run past this point, as the sludge cake may possibly enter the disk stack.

This will increase the time required to clean & service the centrifuge.

*When contacting your supplier please provide engine type and centrifuge serial number.

6.10 Start-up & Maintenance

Operation - **Troubleshooting**

Q: Alarm appeared too early (sludge is further than 15mm away from disk stack) or too late (sludge entered the disc stack)?

A: If trigged by Slow down See 6.10 Start-up & Maintenance; Alarm Percentage offset section or alternatively contact your supplier.*
If trigged by Hours Run Time See 6.10 Start-up & Maintenance; Alarm Run Hours offset section or alternatively contact your supplier.*

Q: Alarm did not appear and sludge has entered disc stack?

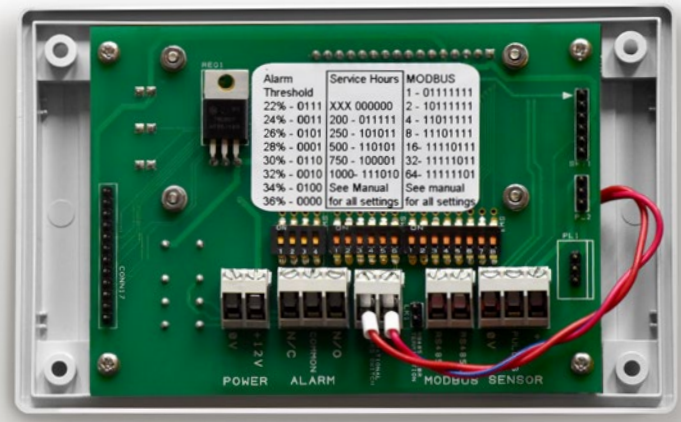
A: Ensure the Mesh Insert 200004 is fitted correctly and SCU control indicates RPM. If yes, contact your supplier.*

6.10 Start-up & Maintenance

Alarm Percentage offset

SCU 0002 is designed to keep centrifuge performance as high as possible. The alarm speed can be adjusted within percentage range of 22% to 36% of set speed (pre-set value is 30%).
This enable's control of the sludge cake thickness.

- To check the percentage setting, press the Speed Set Button twice. The display will illustrate the following comment:
  Alarm Percentage XX
- To modify the percentage setting, please remove the front panel by unscrewing the four securing screws in each corner, and expose the circuit board.
- Using the below highlighted set of micro switches, offset your value as demanded (see sticker for the micro switches positions for percentage set). See illustration on next page.
- If the sludge cake is reaching the disc stack, the offset needs to be taken below the 30% range.
- If the sludge cake is 15mm away from the disc stack, the offset needs to be taken above the 30% range.



6.10 Start-up & Maintenance

Alarm Percentage offset - **Troubleshooting**

Q: Percentage adjustment is not sufficient?

A: Please contact your supplier (provide engine and centrifuge serial number).

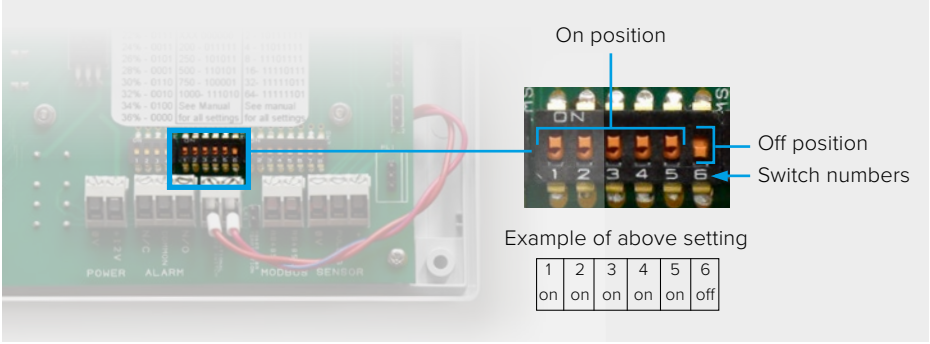
6.10 Start-up & Maintenance

Alarm Hours Setting

SCU 0002 is designed to keep centrifuge performance as high as possible. The Alarm Hours feature has been added as additional control over sludge cake build up. In case of mesh insert failure, it can be used as an main alarm until remedy is provided by Supplier.

- To check the run Hours and alarm hours, press the Speed Set Button 3 times. The display will illustrate the following comment:

- To modify the Alarm hours, please remove the front panel by unscrewing the four securing screws in each corner, and expose the circuit board.
- Using the highlighted set of micro switches (centre bank) see below, set your hours as required (see page 45-47 for Settings). See illustration below.



BEWARE

New setting of micro switches will only take affect after speed set procedure. Please refer to “Setting Operational Speed”.

6.10 Start-up & Maintenance

Alarm Hours setting - **Troubleshooting**

Q: The maximum amount of Alarm Hours is not sufficient?

A: Please contact your supplier (provide engine and centrifuge serial number).

6.10 Start-up & Maintenance

Alarm configuration table

Switch Postion 1	Switch Postion 2	Switch Postion 3	Switch Postion 4	Switch Postion 5	Switch Postion 6	Hours to Alarm
On	On	On	On	On	On	Disabled
Off	On	On	On	On	On	25
On	Off	On	On	On	On	50
Off	Off	On	On	On	On	75
On	On	Off	On	On	On	100
Off	On	Off	On	On	On	125
On	Off	Off	On	On	On	150
Off	Off	Off	On	On	On	175
On	On	On	Off	On	On	200
Off	On	On	Off	On	On	225
On	Off	On	Off	On	On	250
Off	Off	On	Off	On	On	275
On	On	Off	Off	On	On	300
Off	On	Off	Off	On	On	325
On	Off	Off	Off	On	On	350
Off	Off	Off	Off	On	On	375
On	On	On	On	Off	On	400
Off	On	On	On	Off	On	425
On	Off	On	On	Off	On	450
Off	Off	On	On	Off	On	475

6.10 Start-up & Maintenance

Alarm configuration table

Switch Postion	Switch Postion	Switch Postion	Switch Postion	Switch Postion	Switch Postion	Hours to
On	On	Off	On	Off	On	500
Off	On	Off	On	Off	On	525
On	Off	Off	On	Off	On	550
Off	Off	Off	On	Off	On	575
On	On	On	Off	Off	On	600
Off	On	On	Off	Off	On	625
On	Off	On	Off	Off	On	650
Off	Off	On	Off	Off	On	675
On	On	Off	Off	Off	On	700
Off	On	Off	Off	Off	On	725
On	Off	Off	Off	Off	On	750
Off	Off	Off	Off	Off	On	775
On	On	On	On	On	Off	800
Off	On	On	On	On	Off	825
On	Off	On	On	On	Off	850
Off	Off	On	On	On	Off	875
On	On	Off	On	On	Off	900
Off	On	Off	On	On	Off	925
On	Off	Off	On	On	Off	950
Off	Off	Off	On	On	Off	975
On	On	On	Off	On	Off	1000
Off	On	On	Off	On	Off	1025

6.10 Start-up & Maintenance

Alarm configuration table

On	Off	On	Off	On	Off	1050
Off	Off	On	Off	On	Off	1075
On	On	Off	Off	On	Off	1100
Off	On	Off	Off	On	Off	1125
On	Off	Off	Off	On	Off	1150
Off	Off	Off	Off	On	Off	1175
On	On	On	On	Off	Off	1200
Off	On	On	On	Off	Off	1225
On	Off	On	On	Off	Off	1250
Off	Off	On	On	Off	Off	1275
On	On	Off	On	Off	Off	1300
Off	On	Off	On	Off	Off	1325
On	Off	Off	On	Off	Off	1350
Off	Off	Off	On	Off	Off	1375
On	On	On	Off	Off	Off	1400
Off	On	On	Off	Off	Off	1425
On	Off	On	Off	Off	Off	1450
Off	Off	On	Off	Off	Off	1475
On	On	Off	Off	Off	Off	1500
Off	On	Off	Off	Off	Off	1525
On	Off	Off	Off	Off	Off	1550
Off	Off	Off	Off	Off	Off	1575

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Environmental disposal

The environment is everybody's business; please ensure that any components replaced during either service or repair are disposed of properly and should be recycled if at all possible.

This product has been designed to be environmentally friendly, and the manufacturer has a strict environmental policy in place.

This centrifuge can be used around the world, so special care should be taken to ensure that local regulations regarding disposal and recycling are followed.

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Accessories

SCU 0002 Control Panel

PDS (Pressurised Drain System)

Toolkit (200065)

Hook Spanner (200005) MP 200 Spanner (200041) Box Spanner (200034)

The IOW Group is an international company providing separation and filtration solutions for businesses around the world.

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