DracoDrum™

C12

User Guide and Installation Manual

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Introduction

Congratulations and thank you for the purchase of your DracoDrum Combi Drum

The drum is designed for simplicity of installation and use.

On the following pages we will show you the different components of your drum, how to install it and how to perform fault finding if something should stop working as it should.

Product Information

The following components are all IP54 rated

- Control box
- Junction box
- Umbilical plug and socket

Incoming Power Rating

100 – 230V, 50-60hz, Globally universal.
Stepped down to 12V DC via the control box

Environmental

Operational temperature range – 4 to 42 Celsius. The unit should be protected outside this range

Motor

12V DC Brushed, worm gear, rim drive,output approximately 22RPM

Valve / Wash pump

12V DC Solenoid type ¾" BSP / 12v DC Diaphragm pressure pump

Mesh Screen 58 or 77 Micron 316L Stainless Steel (77µm standard)

Maximum flow Rate 12,000 LPH @ 77µm
Biological Capacity (media) 110 litres @66% fill

Dimensions

Width –	510mm
Overall height –	750mm
Length -	1010mm
Height above water level (gravity fed) –	195mm
Height above water level (pump fed) –	242mm

Total power usage

0.5 watt standby, 35 watts in operation (water valve) 84 watts in operation (water pump)

Getting to know your DracoDrum Combi

A – Removable Waste Tray

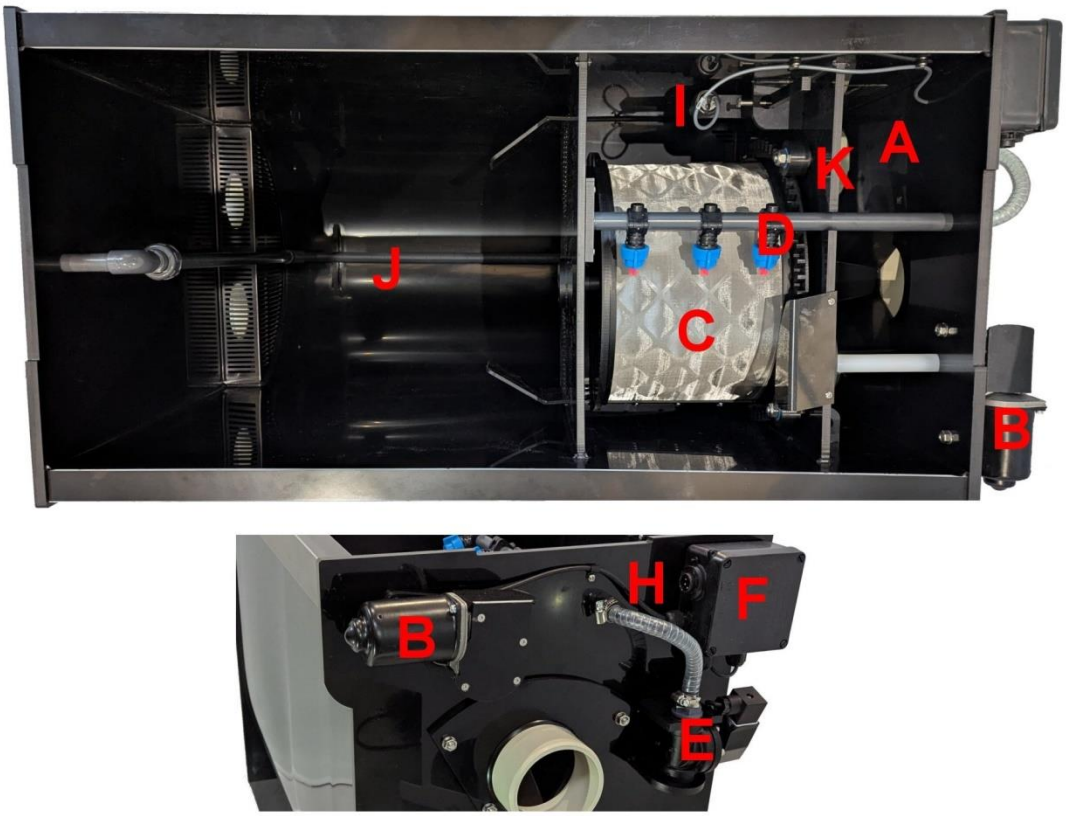
B – Waste Outlet

C – Water Inlets from Pond

A - Water outlet to pump/pond

B – Drain valve

C – Airbar termination



A – Dirty water/Inlet Chamber

B – Drive Motor

C – Drum

D – Spraybar

E – Water Valve for Spraybar

F – Electrical Junction box

H – Umbilical socket for Controller connection

I – Water level sensor

J – Biological chamber

K – Baffle plate

Installation

Make sure that the combi is placed onto a flat, strong surface, such as a concrete plinth. Or flagstones with foundation. Wood or paving stones placed on bare ground will not support the weight of the filter long term.

The height of the filter in relation to the pond is covered in the next section.

If you do not need to use both the inlet or outlets make sure you seal the unused inlet/outlet securely to stop any leakage. The pipes are standard 110mm (4")

All pipes joined to the unit should be done with a good quality 4" rubber "boots" or collars.

The unit should also be protected from freezing temperatures.

Setting water levels and Adjusting the solid state float switch

Gravity fed systems

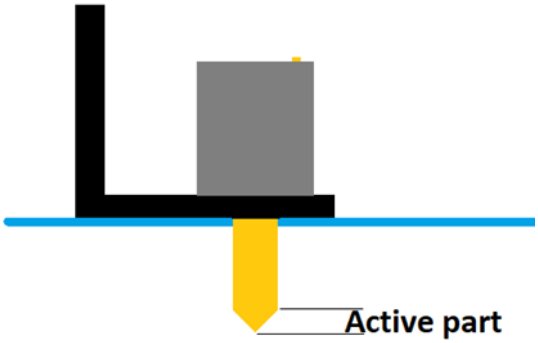
All our new drum systems now come with etched markings to help with setup of the system.

In the above picture, the line under the "G F STATIC LEVEL" is where your pond water level should be, with your circulations pumps switched off. This will maximise the amount of drum you have underwater, increasing available flow rate and time between washes.

The numbers underneath will help with diagnosing problems. When you turn your pumps on, the water level will naturally drop. It is always worth noting which number your water drops to when first installing, so that if there are issues in the future, it can be referred to. Ideally the water drop should not pass 4 as that would show a limitation in your bottom drain/skimmer pipework that reduces wanted flow.

Setting the water sensor

The sensor we use is an opto- electrical unit. It operates by changing diffraction in the tip of the sensor as it passes in and out of liquid. It also has a yellow led on top which lights up when the sensor is active, helping with diagnosis.



As you can see from the above diagram, lowering water from only the tip and the first 4mm of the bottom of the sensor is all that is needed to trigger the unit.

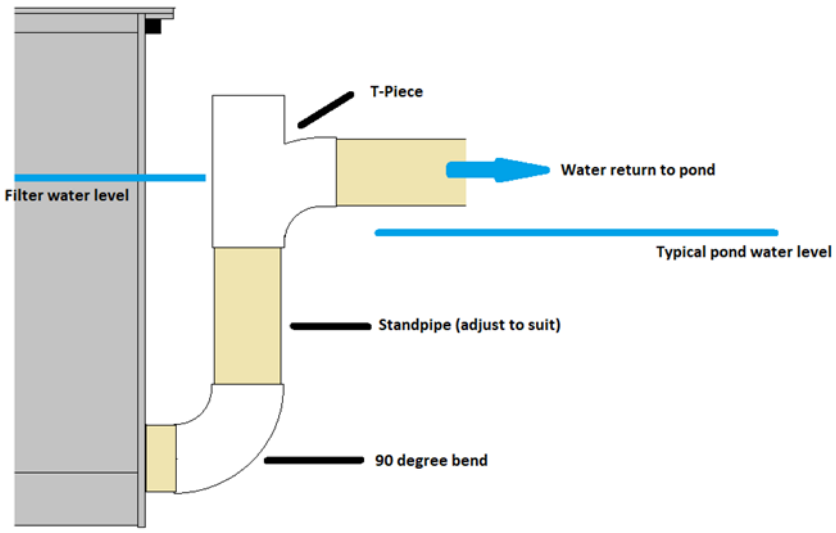
In a gravity fed system, as the screen of the drum gets dirty, the water level around the sensor will drop. Eventually it will drop so much that it will expose the tip of the sensor making it active as shown by the lighting up of the integral LED. This will trigger the drum which will then clean itself and allow the water level to rise back up to its previous level, submerging the tip of the sensor. This will switch it off and allowing the drum to stop washing.

To set the ideal height, perform a manual wash of the drum by pressing the green button on the control panel. Then turn your circulation pump on and allow the water level to drop and stabilise. Loosen the M6 bolt that holds the sensor in place, and slide it up or down so that the horizontal part of the bracket is just above or touching the water surface. Tighten up the bolt so the sensor doesn't slip down. This should allow the drum to immune from any transient fluctuations in water level in the filter.

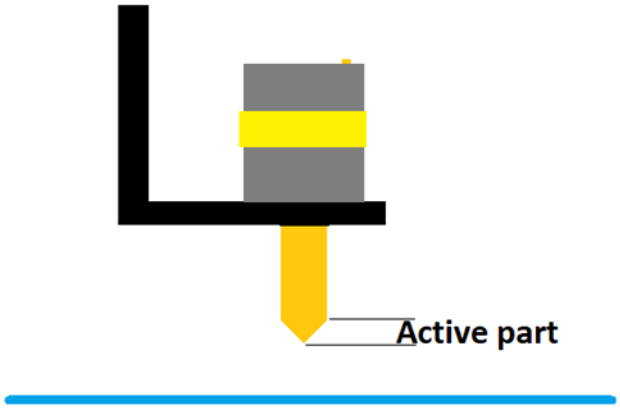
Pump fed systems

In pump fed systems, the drum relies on water in front of the drum to rise as it gets dirty, so the water level in the filter system as a whole will be naturally lower than a gravity system. Again, on our new systems, we have handily marked where the water level should be when the circulation pumps are turned on

Again as in the gravity system, perform a manual wash on the drum before proceeding. Then, using a standpipe on your return to the pond, you should be able to “tune” the water level so it hits this mark.

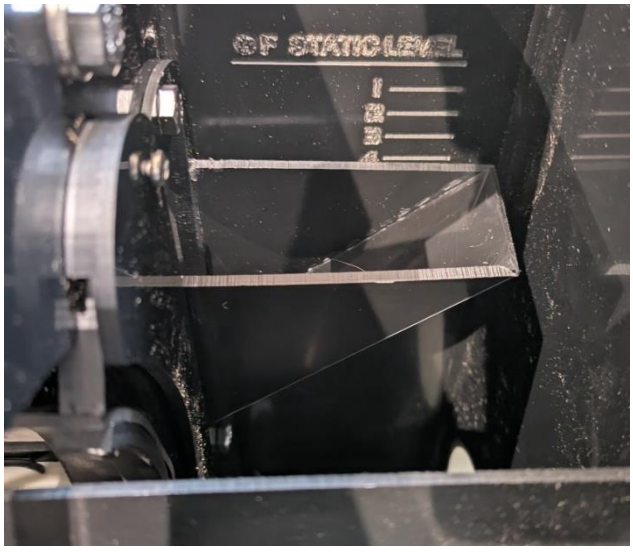


The sensor should then be set up as shown in the diagram, with the tip out of the water and set about 20mm above your running water level. To verify, the horizontal part of the bracket should be level, or just above the top of the waste tray allowing the tip to be below it. Loosen the M6 bolt that holds the sensor in place, and slide it up or down to get it into position.



When in operation, in a pump fed system the water level will rise and this will trigger the sensor as the tip is submerged. The integral yellow LED light will come on, showing it is active. The drum will then start its cleaning process, allowing the water level to drop back down, switching the sensor back off and allowing the drum to stop cleaning.

If for any reason the drum becomes blocked, the filter has a bypass chute fitted to pump fed systems, allowing water to automatically bypass the system. It is located in the dirty water chamber.

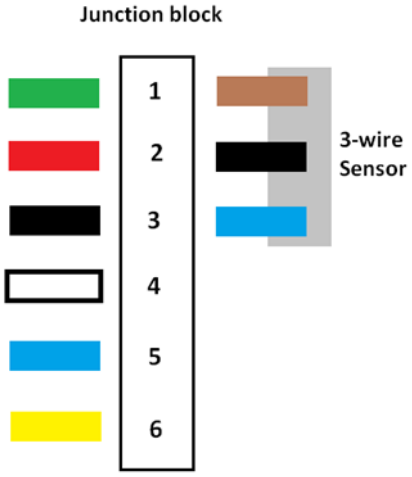


Sensor Maintenance

There is very little to go wrong with the sensor, as it is a solid state, fully sealed unit. However, over time and depending on the nature of your water it may need cleaning. In a hard water area, calcium may build up over time and stop the sensor from triggering. In this case, using only a soft cloth soaked in white vinegar, give the lower part of the sensor a good wipe. In high fish density ponds, the problem may be biofilm. This will cause erratic triggering. Again, with only a soft cloth, wipe the end of the sensor. In both cases, take care not to scratch the plastic as this may impair the operation of the sensor.

Sensor Replacing

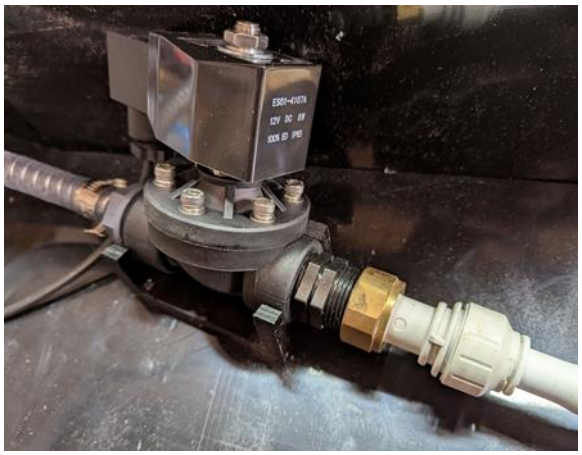
The wiring schematic in the junction box is shown below. Bear in mind it is a 3 wire unit and its "ground" is now shared with the motor ground. Be mindful that the sensor has to be wired correctly or it will result in permanent damage to the item.



Connecting the Water

Water valve operated spray bars, We now supply nylon body water valves to eliminate corrosion and reduce frost damage, though they will still need protection to carry on functioning in cold weather.

Connect your incoming water supply to the valve, through one of the services ports. In the UK this should be via a standard 15mm pipe. An adaptor will be required and the valve body uses a standard 3/4" BSP female thread.



The above example shown with 15mm “speedfit” pipe attached as we do not recommend the use of hozelock hose adaptors. When the water valve closes, it does so immediately, causing a pressure surge in the feed pipe. This surge has been known to “blow off” hozelock fittings, putting the drum into a position where it cannot clean itself.

Optional Pressure Pump the above can be ignored as the water is taken from the “clean” side of the drum.

Airbar and Biological media types

Attach an air supply from a minimum size 80 litres per minute pump to the airbar termination at the rear of the unit . A standard 90 degree rubber air boot will fit snugly. We would always suggest placing air pumps higher than the filter. Some pumps, when powered off, may siphon water back down the air pipe, damaging the airpump.

Add your choice of biological media to the unit. If already mature, then it can be added in one go. If it is new media, we recommend adding small amounts in stages to allow it to start circulating.

Micro K1 cannot be used in this unit as it may pass through the outlet grill, as may “biochips”. As of writing we recommend either K1 (or larger) or Hel-x 13, the latter giving larger surface area per cubic volume.

Control Unit

You now need to decide where you want your control unit to be and ensure it is securely attached. The unit comes with a 4 metre cable to allow you a considerable amount of flexibility. If you do not need to use the entire 4 metre length we suggest you use a cable tie or equivalent to ensure it is kept tidily and safely out of the way rather than cutting it, just in case you should change your mind in the future.

The Control unit should be sited so that it is vertical, not laid flat on the ground or where water may accumulate. It should also be kept out of direct sunlight as in summer the temperature inside could exceed operational limits.

Ensure that the red off button is pushed in and self-locked in the "off" position before you plug the unit into the power supply and before you attach the umbilical onto the Combi

Once you have secured your control unit, route the cable back to the Combi unit through one of the services ports and plug it in. The cable socket has an alignment notch, which faces up from the equipment tray base.

Using Your DracoDrum Combi

Starting your Drum for the First Time

Turn on controller by twisting and unlocking the stop button. You should see a green light and a red zero. The drum is now ready to go.

Operation and Failsafe mode

When running, the drum should show a green light to confirm power is on. Initially you will see a red zero to the right of the unit. This will change as it displays the minutes between the last 2 washes. When triggered, the red sensor led will flash. This flashing will only occur whilst the sensor is actually triggering or whilst you are pressing the green button in. Once triggered this initiates a wash "cycle" and 2 blue leds will light. One for the wash pump and one for the drive motor.

A wash cycle is approximately 30 seconds. Once the 30 seconds is up, the blue leds will extinguish and the drum will stop. If the red led continues to flash, the drum will continue to wash until the red led stops flashing. If this situation lasts for more than 4 minutes, the drum will auto stop, wait for 2 minutes and then continuously monitor the sensor. Once the sensor is no longer active, it will auto restart. Whilst it is monitoring, the red led will come on solidly (failsafe mode).

You can select up to 4 wash cycles for your wash duration, so you can set the drum to wash for up to 2 minutes each time. If you need to manually trigger a wash, for example maintenance, you can press the green button on the controller to start the drum. If there is an issue with the drum, pushing the emergency stop will shut off all power within the controller as a safety feature.

Making Adjustments

Your DracoDrum allows you to make 2 adjustments to it, the length of the wash and the height of the water sensors.

Rotations per wash

You can select between 1 and 4 periods per wash. A period is *not* a full rotation but rather lasts for approximately 30 seconds. This is to ensure the same part of the screen is not constantly underwater and all parts of the drum are used equally.

To adjust the number of periods, simply turn the dial on the control box to the required number

NB: The system will over ride and continue to wash for more durations if the water level should not have reached the required minimum height that you have set with the internal water sensor after a wash.

Timed wash Option

This works in conjunction with the auto wash NOT as an either/or scenario. The auto wash function has not changed.

The ‘Wash override’ allows you to choose between 3 settings, Off, 45, 99 (the latter 2 referring to minutes between washes). This forces the system into a wash at either 45 or 99 minutes since the last wash, or you can choose to not have this feature in use by leaving it on ‘Off’.

If you select the 45 or 99 and your screen blocks, the auto wash will activate so it may be a case that your system has to wash much more frequently to deal with the solids within your system than either 45 or 99 minutes. As said it is a dual system, you cannot switch off the auto wash.

This may be particularly relevant in the winter months when reduced feeding, algae growth means you water stays quite clear in comparison to warmer months. In these instances the system auto trigger system will not be activated for longer periods of time.

LED Lights on the Control Box

There are 4 LED lights on your control box which tells you what the drum is doing

Green – There is power going to the controller

Red – When lit and flashing, the sensor is active and detecting low water level to trigger a wash, or you are pressing the manual wash button.

Blue – When lit they indicate if the motor is currently active (rotating the drum) and if the wash bar is currently active

Day to Day usage

Once you are initially satisfied with the settings of your sensor and number of rotations per wash cycle, simply ensure that the green on LED is lit, the lid is down and you can walk away and leave it to do its thing.

Initially the drum will wash more frequently as it is removing all the particulates from your water down to 58 or 77 microns.

You can adjust the sensors and wash duration as many times as you want to until you get to the optimum setting for your particular filter set-up.

NB always ensure the red Off Button is activated before doing anything within the drum to ensure it will not start a cleaning cycle

All drums produce some noise whilst they are going through a wash cycle and the DracoDrum Combi is no different. However with the lid down and, in our own system, the decking covers down , it is very much just a background noise, it does not sound like someone is trying to excavate your back garden and in fact we have found it allows you a smile knowing that your Drum is doing its thing whilst you can enjoy the serenity of your koi and garden.

DracoDrum Combi will automatically restart without any external intervention upon any power failure

Bypassing the drum

There is a built in bypass plate located in the dirty water chamber, on the right hand side. It can be removed by first undoing the 2 M8 (13mm spanner/socket) bolts that hold it in place, then pull it out of its locating hole. On pump fed systems, this plate is replaced by the overflow chute, but can be removed in the same way.

Maintenance

NB always ensure the red Off Button is activated before doing anything within the drum to ensure it will not start a cleaning cycle

All drums at some point will either suffer from biofilm build-up or limescale deposits. This is easy to see on a Dracodrum Solum as the "time between washes" display will start to decrease.

Cleaning the Screen

Set the wash duration to 4, press the manual button and jetwash the screen with a standard nozzle, not a pulsating one. The nozzle should be about 3 to 4inches from the screen to gain maximum benefit. Once done, set the wash duration back to how it was. White vinegar will help with limescale, whilst Hydrogen peroxide will help with biofilm (use with care and always read the instructions on the bottle) .

Waste Tray

Every fortnight or so (or more if there is a blanketweed/heavy leaf issue), power off the drum, and check for debris. If particularly bad, unscrew the M8 nuts holding the waste tray on, disconnect the drain pipe and withdraw the waste tray. Make sure it is clean and then replace. All bolts on the front of the drum holding the plate should be finger tight only. We actually use a socket without the ratchet to tighten them up in the factory. You can also gain access to the waste tray without removing it via the removable drum panel (page 15).

Drum seal

The drum seal is now held on a pair of carriers located at the front of the drum, just inside the rim. These can be removed by just pulling them out of their slots in the baffle plate, so that the main seal can be inspected and replaced on the bench, keeping tools away from the main drum screen. To replace the seal itself, unscrew the No8 self-tapping posidrive screws and the clamp strip and seal will come off. To refit, clamp the new seal between the carrier and the seal strip and replace the screws. Replace the carriers in the drum slots located in the baffle plate at the front of the drum.

A video of their removal and refitting can be seen on our DracoDrum facebook page.

Spraybar

If a jet gets blocked, the blue carrier holding it can be removed by turning anticlockwise half a turn. This will then let you gain access to either clear it by blowing on it the opposite way to normal flow, or replacing. To re assemble, turn clockwise half a turn.

General

Periodically to is wise to purge your filter. Although DracoDrum filters down to 77 micron, there are still particles smaller than this in the waste column. These can congregate within a filter and on our own heavily stocked system, a bi-monthly cleanout is usually carried out. You will get a feeling for how often you need to do this as every system is different. You will generally find that the Biological chamber does not need cleaning regularly due to its shape and operation.

Tips

All drum filtered systems should have a trickle in. This is crucial on a pressure pump wash system as the drum extracts water from the pond to wash itself. It is highly important in any event as you will now no longer be doing water changes by cleaning your filter. Failure to do so will likely result in a build up of nitrate (and increased algae and blanketweed issues) and a drop in Carbonate hardness (KH) and buffering capacity of the pond.

There may be a slight nitrite level increase after fitting any drum. This is down to a switchover in the type of nitrobacter inhabiting your system to a "clean loving" variety. This usually lasts no more than a couple of weeks and has not been seen to be detrimental to fish stocks.

Gravity fed systems, you can do a partial bottom drain purge by switching off your drum but not the circulation system. Allow the water level within the filter to drop as low as it can, then turn the drum back on. The backfilling water should increase flow down the bottom drain pipe and clean the pipe run. If using the optional pressure pump, allow the water level to drop to nearly the bottom of the inlet tube. You will not damage the wash pump by running it dry as it is self-priming.

If the pond is not entirely clear, it may be that the float switch is too low in the water for gravity fed systems or the drum is too high up for pump fed. If that is the case, the water pressure “differential” between the inside and the outside of the drum screen is too great and waste can extrude itself through the screen and cause the water quality to become turbid. Readjust the float switch higher in the water (gravity) or drop the drum lower in the water (pump) to resolve this.

Diagnostics

The DracoDrum should be virtually problem free, but like any electro mechanical device, it may occasionally need help. The 4 LED's on the control panel can help to diagnose issues.

- **RED sensor led** goes solid (stops flashing) And drum stops washing after 4 minutes (drum failsafe mode – see paragraph 2 in "operation")

  Water sensor is too high (gravity) too low (pump fed). Reset height.

  Waste Tray is full of dirt and is not expelling water - clean waste tray.

  Screen is blocked but tray is empty (will be accompanied by low "time between washes" display), jetwash screen.

  If screen is clean, maximum flow rate of the drum has been exceeded, so water level cannot return to running level. Reduce flow.

  Tap fed systems – Water supply has been turned off/pressure reduced substantially. Check incoming water supply.

  Failed / disconnected water valve – disconnect incoming water supply and visually check ball valve operation when pressing the "manual wash" button.

- Drum does not trigger, manual wash button has no effect

  Green led is off - no power to controller.

  Green led is on - umbilical is not correctly plugged into drum.

  NB for pump fed, drum still refuses to trigger but above points are ok, remove waste tray and clean out float switch.

- BLUE LED's continuously on, drum always washing and also no red flashing LED
- Only one blue LED comes on

  Faulty control board in both cases - Contact dealer

- BLUE LED's come on when triggered, drum rotates but no wash

  Faulty or disconnected pressure pump or water valve. Check connections in the drum terminal box (there is a diagram within the box to make this easier).

- BLUE LED's come on when triggered, drum washes but does not rotate

  Faulty or disconnected drive motor - again check the drum terminal box.

- In wash cycle, motor rotates but drum does not

  Drum is jammed. Turn drum off, remove waste tray and clear obstruction. Restart drum. If drum still does not rotate but motor shaft does, contact dealer.

- Weird display digits / “elements” missing in display numbers

  This is caused by the time between washes exceeding 99 minutes. To resolve, adjust float switch higher to bring wash time back below 99 minutes. This should also stop waste sitting in the drum for long periods of time.

- Water not coming through all jets in wash cycle

  Undo blue holding cap on blocked jet by quarter turn and remove jet assembly. "blow backwards" into the jet with your mouth and this should clear the obstruction. Check the inside of the jet to see if the obstruction is now visible and remove. Replace jet.

  In hard water areas, an old toothbrush applied to the jet should clean it. If this is unsuccessful, spare jets are available from your dealer.

Breakages

The DracoDrum is completely modular meaning that if you should have an accident, all parts are replaceable without having to buy a new drum.

We are able to supply your local dealer with all replacement parts, up to and including the chassis and drum itself, so that your drum can be fixed and up and running again in a short period of time.

DracoDrum Guarantee

As a “Gen2” model, this product comes with a 3 year ‘Return to Base’ guarantee for manufacturer faults, which is valid from date of purchase.

In the first instance the consumer should contact the DracoDrum agent from which the unit was purchased. Proof of purchase will be required along with a serial number.

Any unauthorised repairs, modifications or alterations to this unit will invalidate the guarantee.

Liability is limited to replacement of the defective parts. This guarantee is not transferable. It does not affect your statutory rights. DracoDrum Ltd and its agents shall not be held liable for any consequential loss caused by or arising from the use of any DracoDrum products including loss of fish, plants or any other livestock as a result of any failure or defect of this product.

The guarantee undertaking consists at the option of DracoDrum the elimination free of charge of material and manufacturing defects through repair, exchange of parts or replacement of the entire product. If DracoDrum repairs the product, exchanges parts or replaces the product, then the guarantee claim for the defect in question or the replaced product is valid for the remaining duration of the original guarantee period.

In cases where, upon inspection, the fault is not covered by the manufacturer’s guarantee, DracoDrum reserves the right to recover from the customer the costs of handling the guarantee claim.

DracoDrum reserves the right to alter product specifications without notification.

What isn’t covered by the DracoDrum guarantee

There are some circumstances in which a DracoDrum guarantee doesn't cover the repair or replacement of a machine. These aren't hidden in the small print. Here's what isn't covered:

- Normal wear and tear, including parts that might wear out over time (e.g. screens and seals).
- Accidental damage
- Damage caused by not carrying out the recommended maintenance.
- Damage from external sources such as transit, weather, electrical outages or power surges.
- Failures caused by circumstances outside of DracoDrum’s control.
- Faults caused by:
    - Negligent use, misuse, neglect or careless operation of the unit;
    - Use of the unit which is not in accordance with the DracoDrum’s User/Install Guide;
    - Use of parts not assembled or installed in accordance with the instructions of DracoDrum.
    - Use of parts and accessories which are not DracoDrum Genuine Components.
    - Repairs or alterations carried out by parties other than DracoDrum or its authorised agents.

Any dispute arising from the provisions of the manufacturer’s guarantee will be dealt with under the laws of England and Wales.