VALENTINE OIL PUMPS

GUIDELINES FOR SERVICING & FAULT FINDING

ISOLATE THE POWER SUPPLY BEFORE COMMENCING ANY WORK

Note: Depending on what fryer you are working on, the pictures may vary to the ones shown. This should make little difference when carrying out any work on the pump unit. They are very similar.



New style oil pump **Older style (4 Screws)** **Older style (3 screws)**

There are three different types of pump unit, two have four and one has three cover screws. They look similar. The three-screw cover is the oldest style. Before you remove the pump head retaining screws you need to mark the cover plate to aid the re assembly process later. (The cover plate is off set)

The oil pick up pipe is shown on the left hand side, this pipe is located in a downward position in the oil drain bucket when the fryer is in use. The pump is bolted to the panel just below the oil pan. Note the position of the oil pick up pipe angle in relation to the body of the oil pump.

The oil pumps are located behind the cover panel on both models


Zenith Series **V Series**

Depending on the model and type, the oil pump will only operate when the control timer knob is turned in a clockwise direction. It is suggested that the fryer main on / off switch is turned to the off position.

If the oil pump control knob is turned on and the pump can be heard turning, the pump motor should we working okay despite not pumping oil.

There are a few possible reasons for the oil not to pump if the pump motor can be heard turning.

1) The internal impellor blades have become stuck within the central brass boss.
2) The pump is taking in air somewhere. (The seals may be worn or damaged)
3) The pump cover plate has not been re assembled in the correct position.
4) The oil pick up pipe has become blocked.
5) The oil bucket has a built up of sediment covering the base of the pick up pipe.

The pump cover plate will need to be removed to reveal the pump unit.

Zenith Series **V Series**

<u>NOTE; Before you remove the pump cover plate, mark it to aid with the re assembly process.</u>

There are three types of pump unit. Two with four cover screws and one with three screws.
The cover is offset as shown below. If it is re assembled in the wrong position the pump will suck in air and not work correctly.

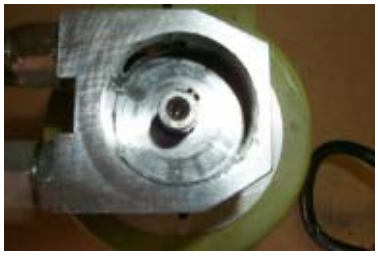
Pump Cover Plate – Offset **Pump unit with cover plate removed**
Note the gap on the right hand side of the brass boss.

The cover plate is offset, the wider side should be located on the in / out pipe side of the pump.
Note the seal on the rear of the cover plate. "O" Ring Large Black Part No: 623582. This may need to be replaced. The central brass boss should have the larger gap **<u>opposite</u>** the in / outlet pipes as shown.

There are a number of reasons why the pump will not work correctly. One of the main reasons is that the impellor blades have become stuck within the brass boss due to one of the reasons below.

1) The operator is not using the oil bucket filter that was supplied as standard equipment.
2) The operator is not using the top micro filter that was supplied as standard equipment
3) The operator is not cleaning the oil residue / sediment from the oil bucket after filtering.
4) Lack of general maintenance.

The impellor blades can become stuck within the brass boss if both of the filters supplied as standard equipment are not used during the draining and filtering process. Fine particles settle in and around the impellor blades when the top filter is not used, ultimately the impellor blades can seize inside the brass boss and cannot move correctly. The brass boss and impellor blades will need to be removed and cleaned.

Brass boss / impellor blades **Pump with brass boss / impellor blades removed**

Pump impellor Brass boss part No: 341633 Pump Impellor Blades part No: 623584

Extreme care should be taken when removing the brass boss and impellor blades. The ceramic impellor blades are small and can easily be lost during the removal process. Not all the blades may be stuck. The brass boss is located over an small key and should be refitted the same way it came out. Ensure that the small key does not fall out and get lost. The impellor blades can be cleaned in hot soapy water. A small amount of cooking oil can be used to pre lubricate the blades and boss assembly before re installing. As the impellor blades can fall out once they have been cleaned, it is recommend that you fit the brass boss onto the shaft first, then slide the impellor blades into their individual locations.

Exaggerated view of the way the blades are designed to operate, they should slide freely in and out of the brass boss. **The boss can be refitted either way round.**

Once the cleaning process has been completed and the pump has been re assembled you can carry out a test to see if the problem has been resolved.

Other things that may some require attention it the above dose not cure the problem.
Note: Depending on what fryer you are working on, the arm from the pump head casing may be a different size to the one shown in the pictures. This should make little difference to carrying out the work required, as you will be working on what you can see.


Oil pick up pipe (Note the small dot to the underside of the pick up pipe arm)

If the impellor blades are free and the pump will still not pump, the pick up pipe may be blocked. The pick up pipe can be unscrewed from the pick up head in situ and checked. The pipe can be unscrewed anti clockwise using a pair of parrot nose type pliers. (There is no seal on the pick up pipe). By blowing down the pipe you can determine if there is a blockage. If it is blocked it will need to be cleaned and re fitted.

Pick up pipe head seals

Air could be being sucked in through the pick up tube head if the pick up pipe head seals are worn or damaged in any way. Our service Manager states, that these seals do not normally cause a problem. To carry out the task of replacing the two oil seals you will need to remove the pump head casing. You will need to remove the key way from the shaft (as shown below) to allow the head to be removed from the motor body. You will also need to detached the pipe that is connected to the outlet side of the pump head, this will allow the head to be removed totally from the unit so that you can work on it.

Key way removed from shaft.

Once the pump head has been removed from the motor, you can remove the "C" clip and slide the pick up pipe head from the shaft. There are two pipe seals that need to be fitted to the pump shaft if required. ("O" rings small, Part No: 623581 x 2)

Shown: Pick up pipe removed from shaft (pump not in situ) Visual pictures only

If the shaft needs to be removed for any reason, the small indentation must face downwards or else the oil will not be allowed to flow through the pick up pipe.

The small indentation should face in a downward position; this ensures that the pick up pipe and the hole line up with each other.

Rear Seals pump head

The two seals on the rear offset boss assembly under the pump head may need to be changed at some stage. This may be required if there is an oil leak around the rear of the pump head. Like the cover plate the rear boss assembly is offset as shown below.


The large thin black ”O” ring is Part No: 623582

View after the pump head has been removed.

Before you remove the rear offset boss from the motor casing mark its location in someway. This will help when re assembling it later.


The rear offset boss assembly is made up of four parts.

1) Stainless steel offset boss
2) Circlip – Part No: 341667
3) Brass washer – Part No: 341666
4) Rear oil seal – 2 part (seal & stainless steel cover) – supplied as one part – Part No: 623583

To replace the rear seal you need to remove the circlip and the brass washer. The seal can be eased out quite easily. When you re fit the new seal it needs to be split into its two components before fitting. It needs to have a smear of **silicone grease** wiped on the front and rear of the seal before being pushed into its location. Once the seal has been pushed in, the stainless steel cover can be fitted into the seal. Replace the brass washer and circlip.

Re assemble the components and test.

Capacitor / Condenser

There are two types of capacitor, the newer style is plastic and the older style is metal

If the pump motor cannot does not run the capacitor / condenser located behind the pump cover plate may be faulty. The replacement capacitor / condenser is now the plastic type. Part No: 6320 The capacitor / condenser is rated at 240 volt

Blocked pipe – from the pump to the outlet at the top of the fryer

If the pump motor can be heard running and the impellor blades are moving freely and there are no air leaks or damaged seals, the pipe from the pump outlet to the outlet over the fryer pan may have a blockage. This cause of the blockage may be due to a build up of oil residue at some point along the pipe. The pipe will need to be removed and the blockage cleared or ultimately a new pipe will need to be fitted.

Note:

The fryer can still be used even if the oil pump is not working. If you disconnect any of the pipe work or pump mechanism and intend to leave site for any reason without re assembling it, you must ensure that the pump motor is isolated or disconnected so that it cannot be accidentally switched on.

If all else fails

If all else fails and you are not sure what to do next please give our Service Department a call.
They will be able to offer help and advice over the telephone should you need it.

At an agreed cost we can offer to refurbished the faulty pump if required or alternately to send one of our Engineers to site to rectify any work that need to be completed to ensure the pump system is left fully operational.

How to use the oil filtration system.

Attached at the back of this information is **a guide** for the operator on how to use the oil filtration system to gain the best results. I would suggest that a copy is left on site with the Catering Manager. If they follow these guidelines they will improve their oil / cook quality as well as eliminating any further issues with the oil pump.

Most of the problems with the pump system are due to the operator not using the two oil filters that were part of the original equipment supplied when the fryer was purchase. Before you walk away from site please ensure that these two items are to hand.

Note: These top & bottom filter must be available

There are different types of top and bottom filter for the Zenith & V Series fryers, they are very similar in design.

TOP FILTER COMPLETE **BUCKET FILTER**

The part numbers are:

Top filter: 8815
Zenith Cantine / Maxi Pump

Bucket filter: 642824
Zenith Cantine / Maxi Pump

Top filter: 63566
V Series P2 / Cantine / Maxi

Bucket filter: 6429
V Series P2 Pump / Cantine / Maxi Pump

Top filter - Mesh only 644411

SPARE PARTS AVAILABLE

Part no:	Description	Pump Specification
623582	Front cover plate & rear offset boss large “O” rings	2
341663	Pump Impellor brass boss	1
623584	Pump Impellor blades	12
623566	Pick up pipe shaft “C” clip	1
623581	Pick up pipe shaft small “O” rings	2
341667	Rear offset boss circlip	1
341666	Rear offset boss brass washer	1
623583	Rear offset boss rear oil seal (2 part)	1
341653	Pump outlet threaded nut	1
	Small key	
6320	Condenser / Capacitor	1
6235	Complete pump unit	

The top and bottom filter part numbers are listed on the previous page

There are various oil / heat proof pipes and hose parts available.

For any further technical queries please call our Service Department on 0118 957 1344

IMPORTANT REMINDER

THE TOP & BOTTOM FILTERS MUST BE USED WHEN DRAINING & FILTERING

GUIDELINES FOR CHANGING, FILTERING & CASCADING OIL

It is suggested that the oil filtering process is carried out daily. This will improve the oil quality. The fryer cleaning process should take place first thing in the morning, this will avoid to many staff passing the fryers whilst being cleaned.
The staff must not drain the oil into the oil bucket and leave it in there overnight as the oil will be to thick to pump through the filtration pump system. The draining / filtering process should be either, filter it, cascade it or discard it.

The simple method is:

After the last order at night, switch the fryer off and put the baskets through the dishwasher, put the lids on the fryers and turn the fryer power off at the wall socket. Then go home. The person working the next day needs to lift the lids to see if there is oil in the fryers and to open the door to check that the oil bucket and the oil bucket filter are in the correct position. If there is oil in the oil pan it would have probably gone semi hard / hard.

If there is no oil in the fryer, do not switch on the power.

WORKABLE OIL TEMPERATURE

If there is oil in the fryer it can be safely switched on at the wall socket. The fryer can now be switched on using the fry / melt knob located behind the door. Turn the fry / melt knob to the FRY position (2 white lights will illuminate). Set the temperature control knob to100°.

At this point you need to decide if the oil is to be discarded, filtered or cascaded.

Whilst the oil is heating up the orange light will illuminate and when the oil has reached its pre set temperature (100°) the green light will come on and the green light will go off. At this point the oil should have melted sufficiently enough to carry out the draining process. Turn off the fryer power then open the red drain valve to allow the oil to flow into the empty bucket below. If the drain hole is blocked by debris you will need to open the drain hole by pushing a knife steel just through the drain hole before the oil can flow through. Extreme care must be taken if this procedure is carried out, as the oil will be very hot.

DISCARDING
If the oil is to be discarded I would suggest that only a half or third or the oil is drained into the oil bucket, this allows the operator to remove and discard smaller manageable amounts. If this operation is carried out two or three times it should eliminate any unnecessary spillage or potential health and safety issues regarding the lifting and moving hot oil.

CASCADING

If the oil is to be cascaded, one of the adjoining fryers oil must be discarded first. Care needs to be observed when cascading oil into another fryer.

FRYER 1 FRYER2 FRYER3

Discard the oil from the fryer (2) using the method of DISCARDING above and clean the oil pan in the manner described below. (FILTERING points 1 - 4). Do not put the oil bucket (Fryer 2) back into its location.

Fryer (1) that is going to be cascaded into fryer (2) will need to have its oil temperature raised to the WORKABLE OIL TEMPERATURE. When the oil has reached the workable temperature, drain half of the oil into the oil bucket, You may have to carryout (Point 1) of FILTERING. Carefully remove the half -bucket of oil from fryer (1) and insert the bucket into fryer (2). Using the pump system + (top filter), pump the half -bucket of oil into the pan of fryer (2) via the top filter. Carry out the same operation again and the oil will have been successfully cascaded. If you have three or more fryers you need to use the same method over and over to achieve the task.

FILTERING

1) **If the drain valve is blocked with debris from the previous shifts cooking you may have to use a knife steel to open the drain hole. (This implement is the best item in the kitchen) Push the knife steel just through the drain hole and wiggle it to open the drain hole. This will allow the oil to pass through it. Extreme care is required as the oil will be very hot.**
2) **Remove the element cover / basket carrier and put this through the dishwasher. Using the element hook provided (located behind the door) the elements can now raised into the cleaning position. They click into two positions. The first raised position allows the residual oil to run into the pan. The second position allows full access to the pan area, you can now remove any further debris using a flat fish / egg slice. Extreme care should be taken, as the elements will still be very hot.**
3) **Close the drain valve and clean the pan with blue paper roll to remove any waste matter. The scum line can be removed using a green scourer and degreasing agent All traces of liquid must be removed from the pan before the oil is pumped back in.**
4) **After the pan cleaning process has been finished the oil filtration process can commence. Lower the elements and replace the element / basket carrier and ensure the clean top micro filter is put into place. On the V400 & V600 models, it clips through the two holes located on the front of the element / basket carrier. On the V2200 model (Twin Pan) you must ensure that the oil outlet spout is turned towards the side of the fryer being filtered and the top micro filter is laid on the corresponding middle and side of the oil pan lip. Turn the oil filtration pump on (Knob below the drain valve). You should be able to see and hear that the pump is working. The oil will now start to pump from the oil bucket back into the oil pan. This will take a few minutes for each models. V2200 2 / 3 minutes, V400 3 /4 minutes, V600 4 / 5 minutes.**
5) **When the process is complete the oil pump will switch of automatically. The residue left in the oil bucket (about 200 mill) can either be discarded or carefully poured through the top micro filter.**
6) **The oil bucket must be removed and cleaned. The top and bottom filter must be cleaned. The bottom filter can go through the dishwasher. The top micro filter needs to be washed by hand in a solution of washing up liquid.**
   The interior oil bucket area, lid and exterior surfaces should be cleaned on a daily basis

There are three main reasons for using the oil filtration fryers:

1) **To prolong the life of the oil: The damaging carbonized waste products are being removed from the oil, they cannot damage the oil any further once removed.**
2) **The quality: The cooked product quality will improve after the carbonized waste product is taken away. Carbonized waste can taint the food.**
3) **Health & Safety: The staff will not have to lift or move large amounts of hot oil.**