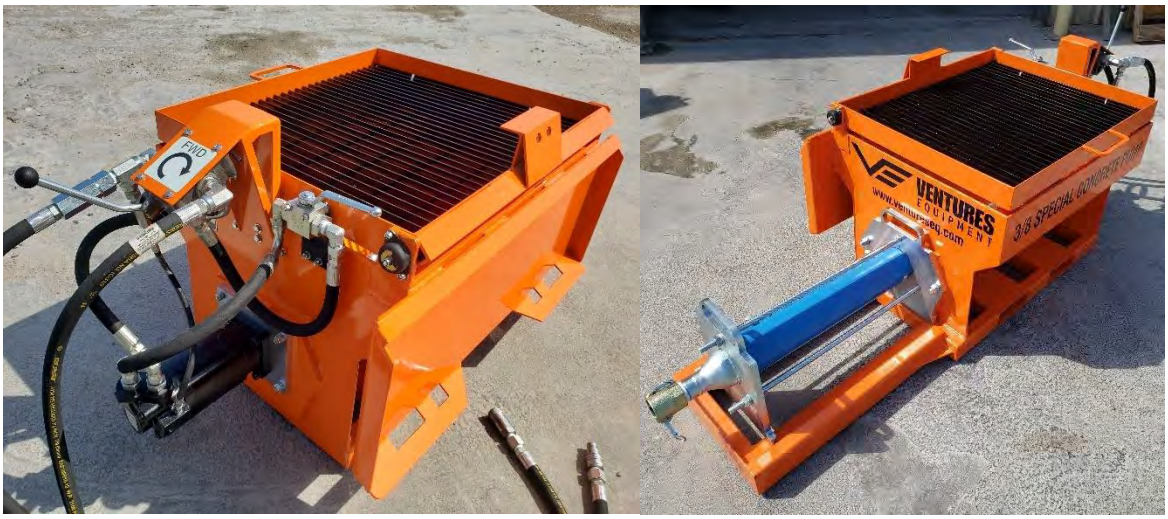
3/8 Special SSU user Manual



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ventureseq.com

Dear Customer,

Please make a note of;

Machine Date of purchase……..

Machine serial number……

Please familiarize yourself with, and understand the operation of this equipment by reading the information contained in this manual.

Contents **Page**

Section 1 - General Safety information

Danger

Follow these instructions very carefully in order to avoid injury to yourself or others.

The 3/8 Special SSU pump, creates large amounts of torque and pressure during operation from both the pumping unit and from the hydraulic power source. Take appropriate safety precautions to avoid injury to self, the operator and to persons nearby. Wear safety clothing and eye protection when operating, maintaining or working nearby this equipment.

Gas / Hydraulic powered machine. Always ensure that the machine is not running and that all parts are stationary before ANY maintenance / repair work is carried out on the machine.

During and after operation the machine is HOT. Ensure that the unit has fully cooled before attempting any maintenance, fluid changes, fuel refilling, or other procedures.

Use caution when close by or in the vicinity of the machine as surfaces will become hot during operation and could cause burns to the skin when touched.

Ensure that all guards or grates are correctly fitted before starting or attempting to operate the machine.

Ensure that all fasteners are present and correctly fitted before attempting to start or operate the machine.

Ensure that all components of the machine are present, properly attached and free of damage before attempting to start or operate the machine.

Check for oil or hydraulic leaks on the machine, hoses, connections and fittings prior to use and during use. Stop operation immediately if leaks are found and seek assistance before commencing operation.

Authorized persons ONLY can use this machine.

Section 2 - Machine Description

Operation / Function

The 3/8 Special SSU pump is designed to fit to a “Skid Steer” style loader using the universal skid steer quick attach system. It uses a hydraulic power pack or an auxiliary hydraulic supply from a piece of machinery, typically a “Skid Steer” style loader to power the SSU, which turns a hydraulic drive motor to turn a driveshaft within the pumping hopper. The driveshaft turns a rotor stator pump, attached to the front of the hopper, which moves the material through a hose to the location of utilization.

The hydraulics drive a choice of hydraulic motors the displacement and size of which vary based upon the chosen Rotor Stator pump unit.

The closed hydraulic system contains a pressure and return hose with ½” threaded flat faced couplers, a lever operated flow isolation valve, directional control valve with hand lever and a hydraulic motor.

The directional control valve provides clockwise rotation, counter clockwise rotation and stop control of the hydraulic motor. The rotational speed is controlled by the amount the control lever is moved in either direction and / or by the auxiliary hydraulic power feed’s volume of flow, typically the RPM of the skid steer machine.

The hydraulic motor transmits its rotary action through a fully sealed universal joint coupling to the drive shaft that is equipped with directional flighting, helping to convey and mix the material as it travels towards the rotor stator pumping unit.

The pumping unit is a progressive cavity “rotor / stator” pump unit comprised of a helical rotating “rotor” within the rubber lined “stator”. As material is drawn / fed into the pumping unit it is moved through a series of cavities that progress from one end to the other, causing the material to be moved towards the outlet.

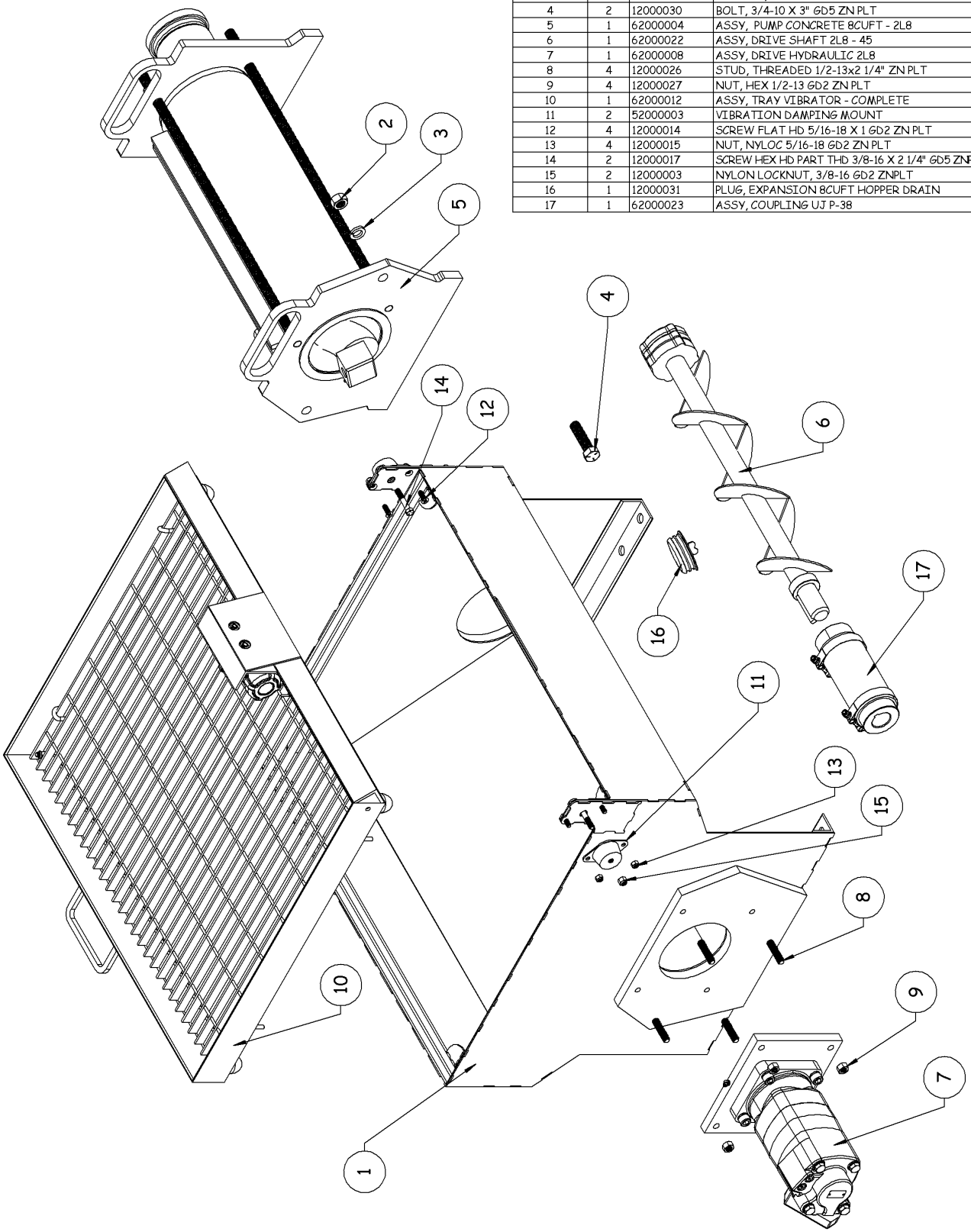
Once the material has reached the outlet it is guided through a reducer via a std. 4” concrete flange connection, or camlock connection into the dispensing hose through to the hose outlet where the material is applied.

A number of different devices can be fitted to the outlet of the tube for different means of application. For details of these different devices please contact Ventures Equipment directly.

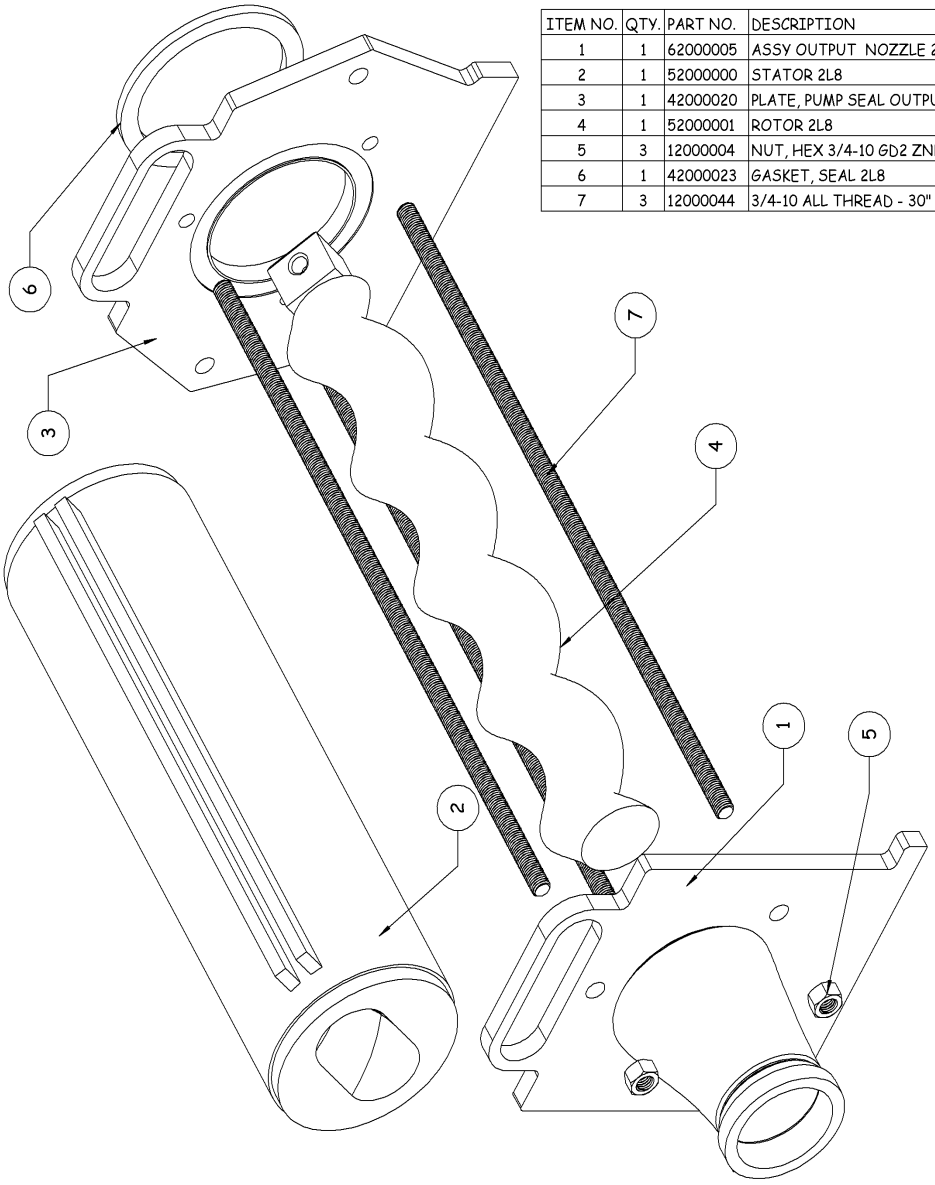
Machine illustrations

Pumping Section – 2L8 rotor/stator fitted

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	62000001	ASSY, HOPPER 8CUFT
2	2	12000004	NUT, HEX 3/4-10 GD2 ZNPLT
3	2	12000029	WASHER, SPLIT 3/4 - GALV
4	2	12000030	BOLT, 3/4-10 X 3" GD5 ZN PLT
5	1	62000004	ASSY, PUMP CONCRETE 8CUFT - 2L8
6	1	62000022	ASSY, DRIVE SHAFT 2L8 - 45
7	1	62000008	ASSY, DRIVE HYDRAULIC 2L8
8	4	12000026	STUD, THREADED 1/2-13x2 1/4" ZN PLT
9	4	12000027	NUT, HEX 1/2-13 GD2 ZN PLT
10	1	62000012	ASSY, TRAY VIBRATOR - COMPLETE
11	2	52000003	VIBRATION DAMPING MOUNT
12	4	12000014	SCREW FLAT HD 5/16-18 X 1 GD2 ZN PLT
13	4	12000015	NUT, NYLOC 5/16-18 GD2 ZN PLT
14	2	12000017	SCREW HEX HD PART THD 3/8-16 X 2 1/4" GD5 ZNPLT
15	2	12000003	NYLON LOCKNUT, 3/8-16 GD2 ZNPLT
16	1	12000031	PLUG, EXPANSION 8CUFT HOPPER DRAIN
17	1	62000023	ASSY, COUPLING UJ P-38



2L8 Pump Assembly

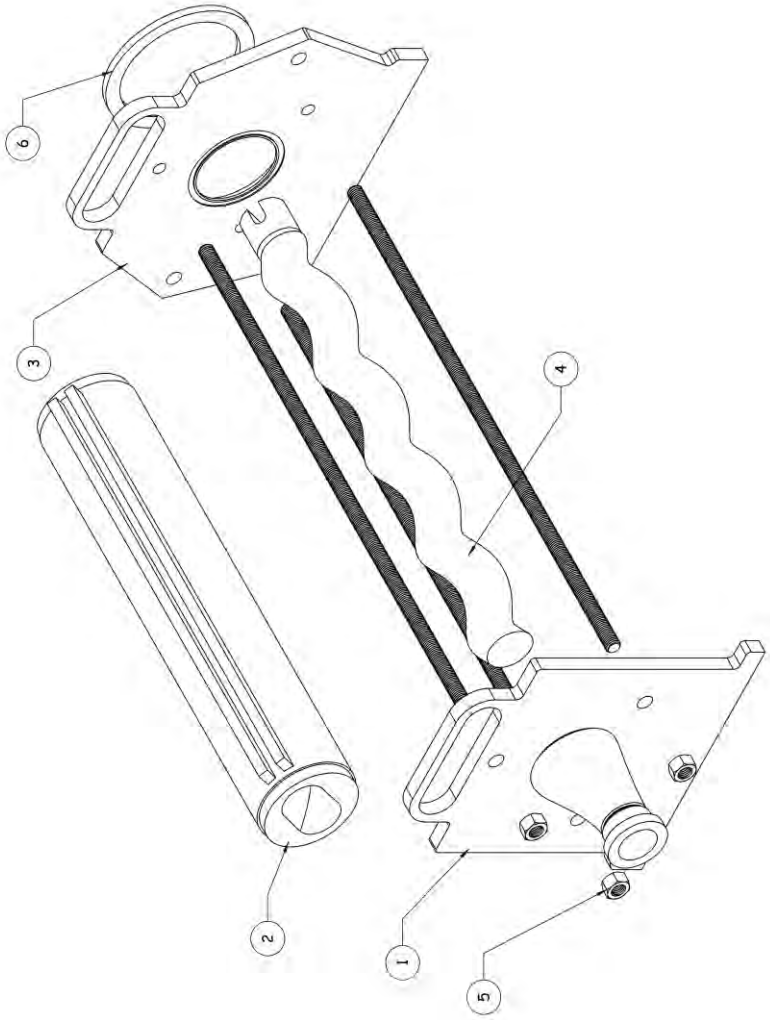


ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	62000005	ASSY OUTPUT NOZZLE 2L8
2	1	52000000	STATOR 2L8
3	1	42000020	PLATE, PUMP SEAL OUTPUT 2L8
4	1	52000001	ROTOR 2L8
5	3	12000004	NUT, HEX 3/4-10 GD2 ZNPLT
6	1	42000023	GASKET, SEAL 2L8
7	3	12000044	3/4-10 ALL THREAD - 30"

Note output is a 4” concrete flange

6012 Pump Assembly

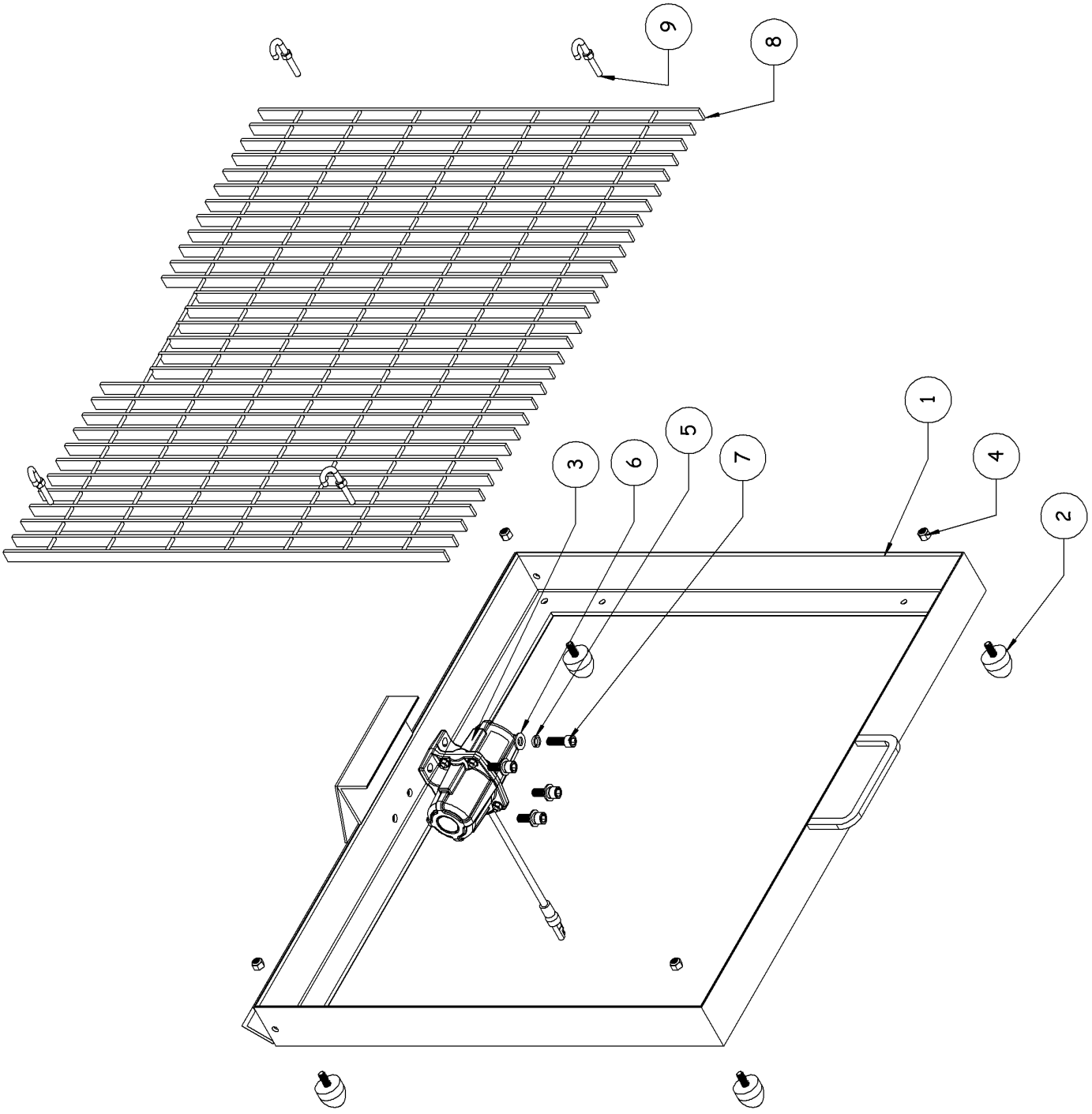
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	62000020	ASSY, OUTPUT NOZZLE 60-12
2	1	52000004	STATOR 60-12
3	1	42000054	PLATE, PUMP SEAL OUTPUT 60-12
4	1	52000005	ROTOR 60-12
5	3	12000004	NUT, HEX 3/4-10 GD2 ZNPLT
6	1	42000023	GASKET, SEAL 2L8
7	3	12000044	3/4-10 ALL THREAD - 30"



Note: output can be 2” male NPT thread or flange.

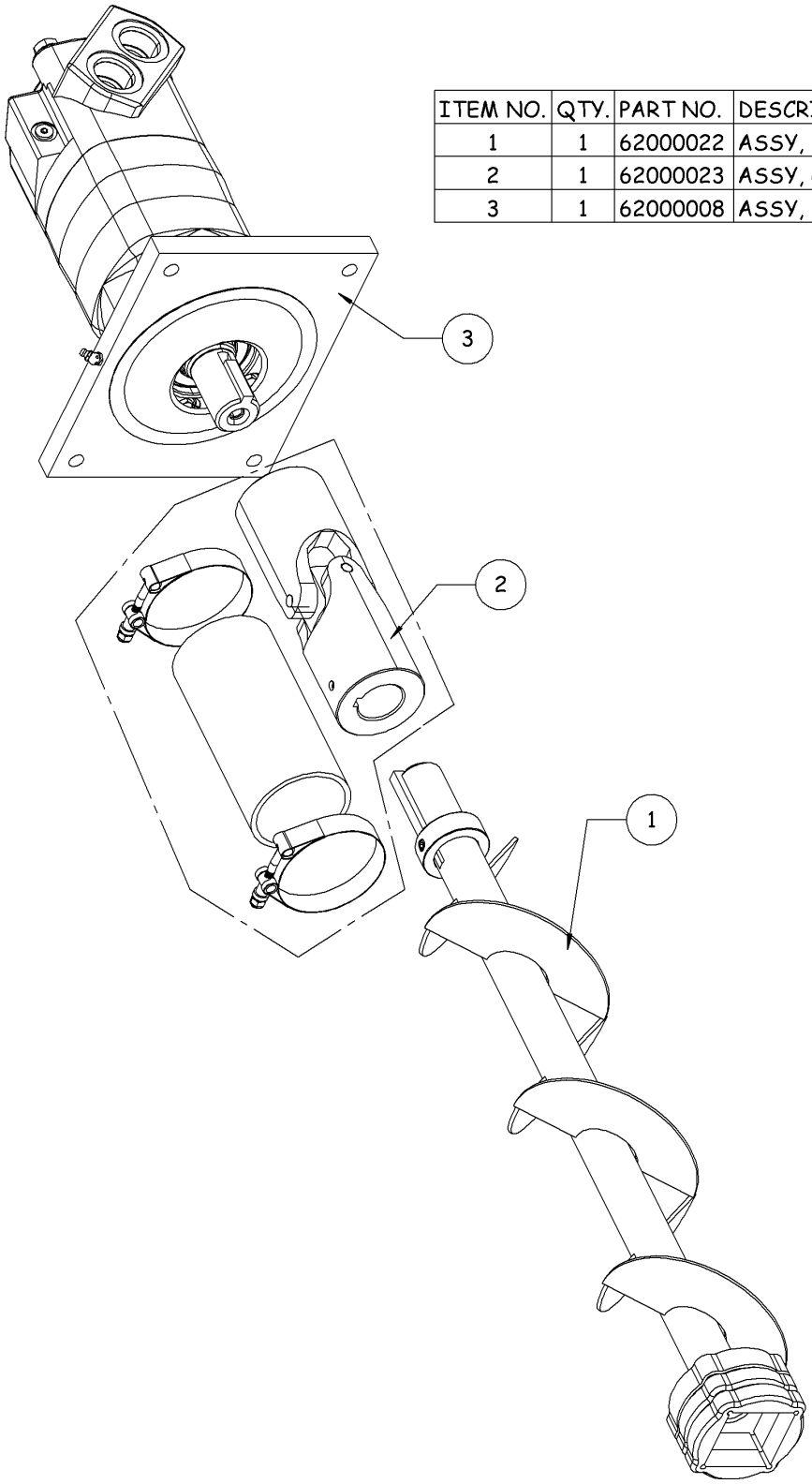
Grate Assembly with optional Vibrator

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	62000014	ASSY, VIBRATOR TRAY 8 CUFT
2	4	12000018	STOP, BUMPER VIB TRAY 8 CUFT
3	1	22000000	VIBRATOR, SDC12-200
4	4	12000003	NYLON LOCKNUT, 3/8-16 GD2 ZNPLT
5	4	12000022	WASHER, HI COLLAR 7/16"
6	4	12000023	WASHER, STEEL 7/16" ZN PLT
7	4	12000024	SCREW, SOC HD 7/16-14x1 1/4 GD8 ZN PLT
8	1	42000084	GRATING, P38.
9	4	12000045	BOLT, J 5/16-18 x 3" WITH NUT ZN PLT



Drive Line Assembly

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	62000022	ASSY, DRIVE SHAFT 2L8 - 45
2	1	62000023	ASSY, COUPLING UJ P-38
3	1	62000008	ASSY, DRIVE HYDRAULIC 2L8



Note - #2 comes complete with seal tube, UJ and clamps – unit will require greasing prior to use. Refer to Section 5 - “seal replacement and UJ removal” for instructions.
Note - The motor fitted to #3 varies depending upon the Rotor / Stator chosen.

Controls

Connection hoses with flat faced couplers ½" NPT size.

SSU hydraulic flow shut off valve.

Open flow

Closed flow

Clockwise and counter clockwise rotation control valve.

Pushing the lever "Forward" will run the motor in the direction that will turn the rotor / stator pump in the pumping direction Pulling the lever back will "Reverse" and will make the pump reverse. The center position is a stationary position for the pump rotor. The amount that the lever is moved in either the forward or the reverse direction also controls the speed / RPM of the pump motor. Varying the input hydraulic flow can also be used to control speed.

Forward position

Reverse position

Center / OFF position

Hydraulic drive motor

The hydraulic drive motor is fitted with three hoses, two large hoses for directional control fluid flow and a case drain hose to allow any internal leakage of oil to flow back to source providing extended life to seals and maintaining motor performance The motor is attached to a mounting plate that contains a seal which must be greased on a regular basis – (see Section 5 Seal greasing)

Section 3 –Transportation and pre-operation checks

Overview

The unit is a “Skid Steer Quick Attach” connection type machine for use with typical skid steer type equipment. The unit does however also have “Fork” pockets to allow simple transportation and storage using a fork lift.

Prior to any transportation ensure ALL parts of the pump, ALL grates secured, ALL tools, etc. either stowed or secured.

Drive system

Ventilation exhaust and fluid levels

Ensure that the pump units “power source” be it a specific purpose power unit or a Skid Steer type loader is positioned such that the exhaust fumes are extracted or dissipated from the immediate area of the pump and the operator

Prior to operation ALL fluid levels should be checked and be in good order.

Engine oil level

Check using the oil level in the hydraulic power source prior to operation, using the manufacturers specified method

Hydraulic fluid

Hydraulic oil level should be checked in the hydraulic power source prior to operation, using the manufacturers specified method

Fuel level

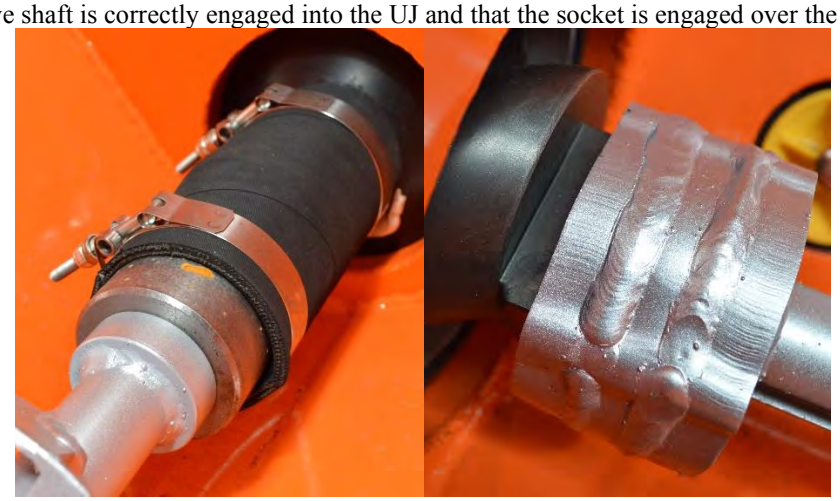
Ensure that the hydraulic power source is checked for sufficient fuel for the intended duration of operation, prior to operation using the manufacturers specified method.
Danger – Do not fill whilst the engine is running.
Danger – Do not fill whilst the engine is hot.

Pumping unit

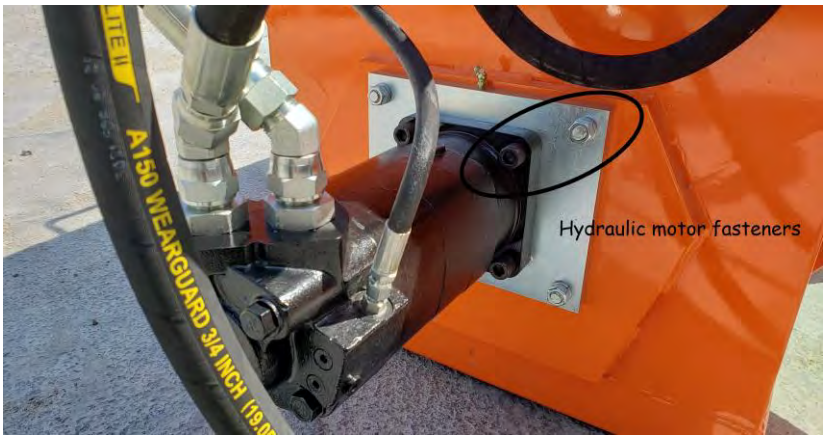
Ensure that the pumping unit is correctly secured to the front of the material hopper and all nuts tight and secure.

Pay attention to the clamp nuts installed either side of the stator unit. Make sure they are fully tightened.

Check that the drive shaft is correctly engaged into the UJ and that the socket is engaged over the head of the rotor.



Check that the fasteners that hold the hydraulic motor to its mounting plate and in turn the plate to the hopper are secure.



Check that the grate is in the lowered position, resting on its rubber “bumper” feet. *(Optional vibrator unit shown fitted)*

Rubber / Poly bumper shown.

Ensure that ALL fasteners are present, in good condition and tightened securely prior to any operation.

Section 4 – Machine operation

Ensure that the unit is clear of bystanders and other possible hazards before starting.

Startup

Operation

The grate / safety cover is used to both protect the operator and to assist in the grading of the material passing into the pumping hopper. The grate will prevent items larger in size than the rotor / stator can process. **The grate must be in the lowered position during operation and the “SSU flow shut off valve” in the OPEN position.**

The grate hinges upwards and swings past vertical to allow for unobstructed access to the hopper.
When a vibrator is fitted it aids the flow of material through the grate into the hopper.

Connect the hydraulic power source to the SSU pump unit using the corresponding flat faced coupler. Wipe the faces of the couplers prior to connection.

Connect hoses of the required length to the SSU pump section and start the hydraulic power source. Do Not start the pump at this time.

Pre-wet the pumping hopper with water and a small amount of dish soap. Approx. 2 fl/oz of dish soap / gallon of water is adequate and provides a level of lubrication for the dry rotor and stator making it easier to break free without damage. Fill the hopper until the center drive shaft is covered with water, then add sufficient water and dish soap to be able to wet out the center of all the fitted pump hoses

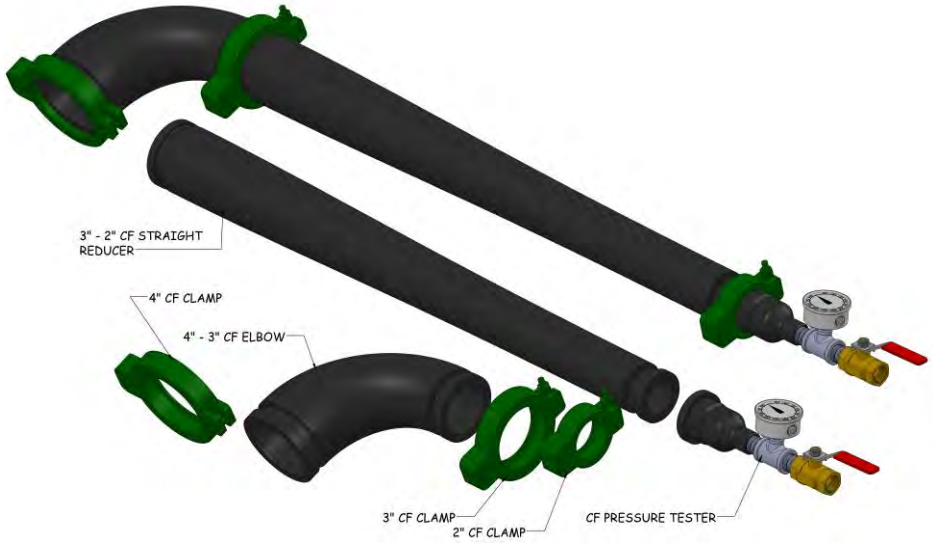
- Run the pump in the pumping direction by moving the start lever to the forward position.
- Observe the hydraulics to rotate the Rotor/Stator pump in the forward direction, indicated by the water from the hopper being pumped out of the unit.
- If the drive shaft does not start turning immediately move the control lever to the “reverse” position and observe the pump to turn in reverse.
- Immediately push the lever back to the “forward” position and check that the pump now runs in the forward direction.
- If the driveshaft does not turn, then repeat both the forward and rev operations to rock the rotor back and forth to progressively draw the soapy water into the rotor stator allowing lubrication, which in turn allows the driveshaft to turn the rotor.

When the driveshaft will repeatedly rotate without trouble then either continue to run the unit until the hopper no longer empties the water (If recently pressure tested) and then drain the hopper and hoses, ready for operation OR . Stop the pump by moving the control lever to the stop / middle position and continue to pressure testing.

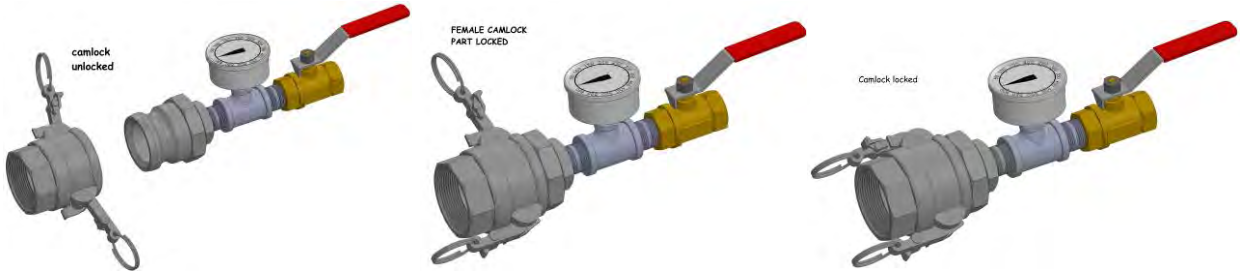
Pressure testing the Rotor and Stator using the supplied pressure tester before each use helps to not only check the amount of wear to the Rotor and Stator but also to ensure your setup will be able to achieve the desired pumping distance/height.

Attached the supplied pressure tester to the output of the SSU pump, by either inserting the male camlock fitting into the pumps female camlock fitting then closing the “ears” of the clamp to ensure safe and complete retention…OR...by placing the Concrete flange (CF) tester assembly face against the CF face of the pump unit then place the opened clamp around the two flanges and close using the nut or lever then ensuring that it is fully secure.

Concrete Flange version



Camlock version



Attach the pressure tester to the pump unit and secure. Move the ball valve to the open position (illustrated above). Fill the hopper with a water and dish soap mix (approx. 2floz / Gallon) until the drive shaft and pump opening are covered.

Start the rotor turning in the forward pumping direction until water can be seen flowing from the ball valve on the pressure tester and stop the pump. Close the ball valve by twisting the lever 90 degrees. Start the pump running in the forward pumping direction gradually increasing the RPM until a maximum pressure is displayed on the gauge (Note the reading will "pulse" up and drop down as the rotor turns. The pressure is the average of the upper and lower two readings). The test pressure at which a 2L8 Rotor and Stator are deemed suitable for use in 150 PSI, for a 6012 unit the test pressure is 300PSI. Stop the pump. Carefully open the ball valve to discharge the excess pressure within the pump assembly, take care not to discharge in the direction of other people or objects.
Remove the pressure tester from the pump unit.

Remove the plug from the base of the hopper to drain any remaining water and soap solution, then remove and drain the hoses.

Replace the hopper drain plug.

The SSU pump is now ready for operation by trained and qualified operators.

NOTE – Do not operate the driveshaft in reverse for periods longer than a few seconds. Reverse is used to break free and to depressurize the pumping hoses in the event of a blockage.
NOTE – Do not operate the unit without either soapy water or material in the pumping hopper, or premature wear and / or damage to the stator can result.

General notes for operation

- Grease drive shaft seal daily with water resistant, corrosion inhibited grease via the grease fitting / Zerk in the motor flange.
- Do not let hopper run dry while pump is running.
- To stop the machine, move the Pump Control lever to the center position.
- If a hose becomes plugged while pumping, stop the machine, then reverse the driveshaft direction on pump to relieve line pressure using the Pump Control lever set to "REV" or pulled towards the operator.
- Never point a hose towards personnel when pump is working.
- When cleaning the pump, do not remove the safety grate while pump is running. Wash out hopper with water and let it run out of the hose. When the hopper is clean, run foam balls through hose with clean water then wipe down with a damp rag.
- Hopper draining is achieved by the removal of the drain plug from the lower section.

- If access is required into the hopper, then turn off the hydraulic motor by placing the control lever in the middle OFF position before operating the hydraulic shut off valve and lifting the grate. The pumping unit can be disassembled by removing the clamping nuts facilitating easier clean up.
- 3/8 Special SSU is supplied with an adjustable stator. The sleeve can be tightened to bring working pressure back to normal range as the stator wears. This should be done evenly along the length and in small increments. Overtightening the stator will cause premature wear and heat up material. See Section 6 for details.
- Always check hoses and cords for wear.
- The unit runs at high pressures and temperatures. Use caution when moving or touching parts of the unit.
- Check the condition of the Universal joint seal tube. Look for signs of wear or cuts on the tube.
- Check that the fasteners are all secure.

Section 5 – Simple maintenance and cleaning

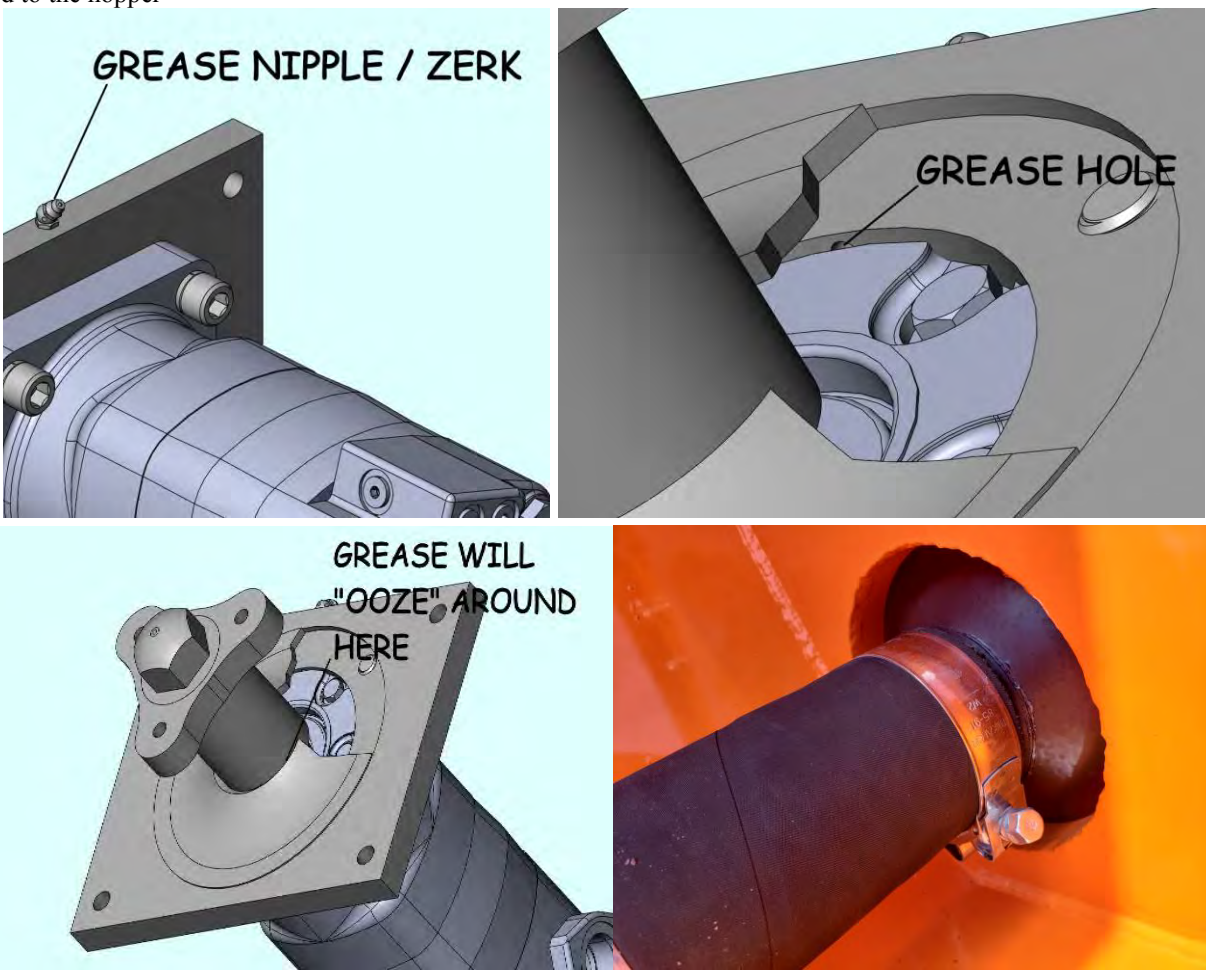
The 3/8 Special SSU pumping unit is very simple to maintain.

The biggest part of maintenance on the unit is cleaning after a job. Failure to clean properly after use will damage seals, paint, and moving parts due to material build up. This causes wear and likely hinder operation and startup next time.

Pay particular attention to the seal between the rotor stator flange and the flange on the front of the hopper. When cleaning also pay attention to the grease seal around the drive / Universal joint, fixed to the drive flange at the rear of the machine.

Seal Greasing

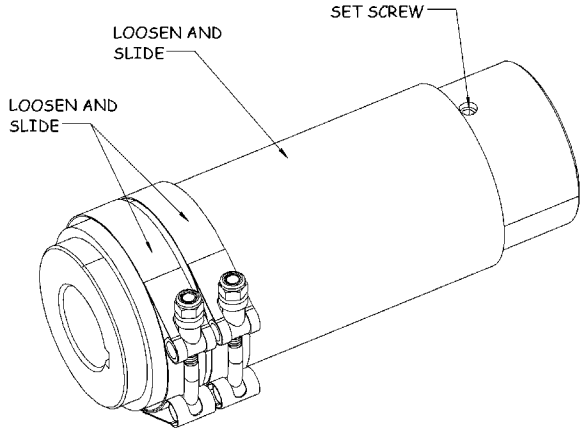
Ensure that the seal between the drive coupling and the motor is greased each day or after each clean down with a water resistant, corrosion inhibiting, extreme pressure grease. Grease until a small amount of grease can be seen "oozing" from around the drive. The illustration shows the unit removed from the hopper but it can be greased when fitted to the hopper



Grease seal replacement and UJ removal

NOTE - Grease seal replacement has to be carried out with the drive unit removed from the hopper.

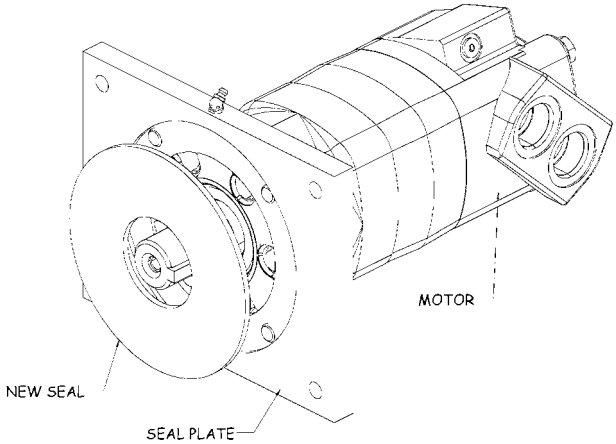
- Remove the pump assembly from the front of the unit.
- Thoroughly clean the driveshaft, the UJ and the seal area inside the hopper.
- Loosen the two band clamps on the UJ seal tube, then slide the seal tube towards the seal / motor until the set screw securing the UJ to the driveshaft is exposed.



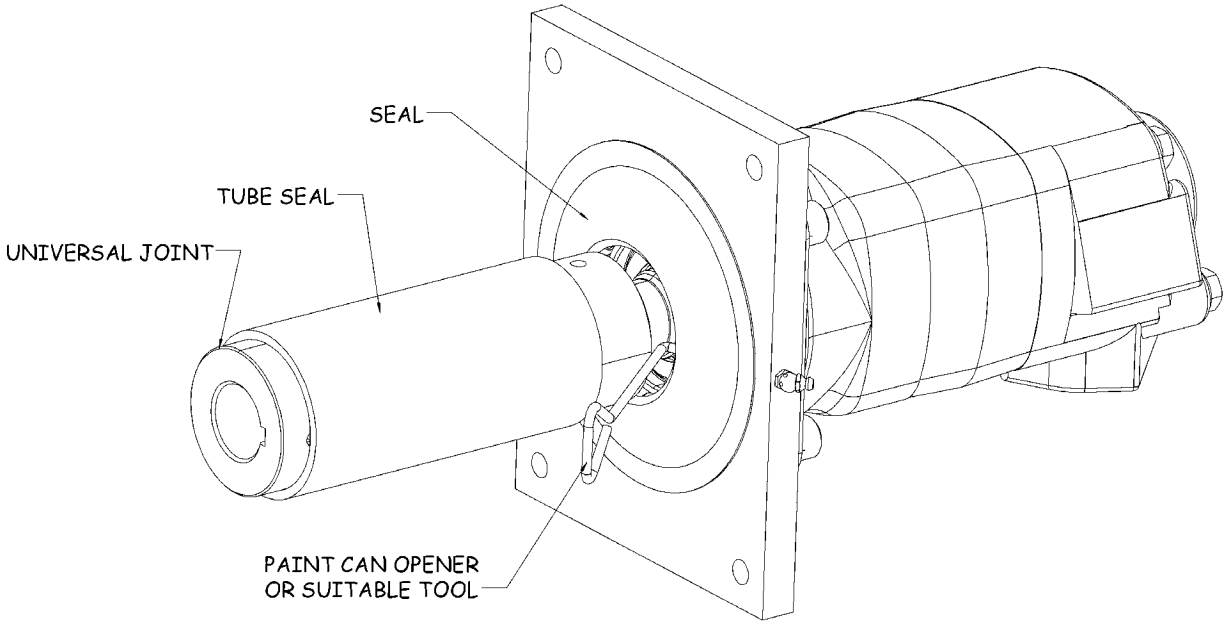
- Loosen the set screw and remove the driveshaft from the UJ.
- Slide the seal tube in the opposite direction, towards the driveshaft, until the set screw is exposed in the UJ that secures it to the motor shaft.
- Loosen the set screw.
- Remove the universal Joint.
- Remove the four fixing nuts from the flange plate and withdraw the motor assembly from the hopper rear.

- Remove the rubber seal from the counterbore in the plate.

- Thoroughly clean the seal area and the flange. Ensure that the old contaminated grease is removed.
- Apply some fresh grease to the inner lip and back face of the new seal, then place it into the counter bore in the motor mounting plate. Apply some grease to the outside of the shaft of the motor.



- Assemble the motor and grease seal assembly to the back of the hopper and retain with the four nuts previously removed.
- Slide the universal joint over the motor shaft ensuring that the key is located in both slots. Slide it on until it lightly touches the undeformed seal face, then using a suitable tool (paint can opener) hook the seal over the universal joint and use a circular motion whilst pushing the joint towards the motor fully assemble the seal lip over the UJ and push the UJ home onto the step on the motor shaft. The action of hooking the seal over the UJ is similar to assembling a tire onto a wheel rim.



Shown without hopper for simplicity

- Secure the set screw once more when the UJ is fully assembled. The seal lip will slide over and cover the set screw hole during the re-greasing process later.
- Slide the UJ seal tube back towards the motor until the other set screw that secures the driveshaft is exposed.
- Place the two band clamps over the universal joint, but do not secure yet.
- Pump fresh grease inside the UJ through the driveshaft hole until it is about 2" from the end.
- Assemble the driveshaft complete with key into the UJ until the collar touches the end of the universal joint during which time the grease will be pushed into the coupling and "ooze" from around the seal tube.
- Ensure that the key is fully assembled then lock the set screw to the keyed shaft.
- Slide the seal tube back towards the pump until about 1 1/8" of UJ is exposed, then reassemble the band clamps about ½" – ¾" from the seal tube ends.
- Grease the new seal via the grease fitting on the motor assembly until grease can be seen "oozing" from between the seal lip and the UJ

Note - Grease using a highly water resistant, high corrosion protection, and extreme pressure type grease on a daily basis, or after each time the unit is cleaned down.
Note - The seal needs to be replaced once the seal no longer holds grease, is broken or cracked or worn to the same diameter as the drive, this is indicated by a flat appearance instead of deformed when fully greased.

Hopper seal replacement

The rear of the pump assembly is fitted with a seal that mates against the hopper, it can become contaminated or damaged and need replacement.

Adhesive backed replacement seal

To replace the seal, remove the old seal from the rubber seal groove in the pump plate and thoroughly clean the groove with a suitable cleaning solvent such as acetone or lacquer thinner to remove the old adhesive and grease.

Cleaned seal groove – 6012 Rotor shown

Once clean, peel the paper backing from the new seal, taking care not to touch the exposed adhesive with fingers or anything greasy then place the seal into the cleaned groove and press firmly into position.

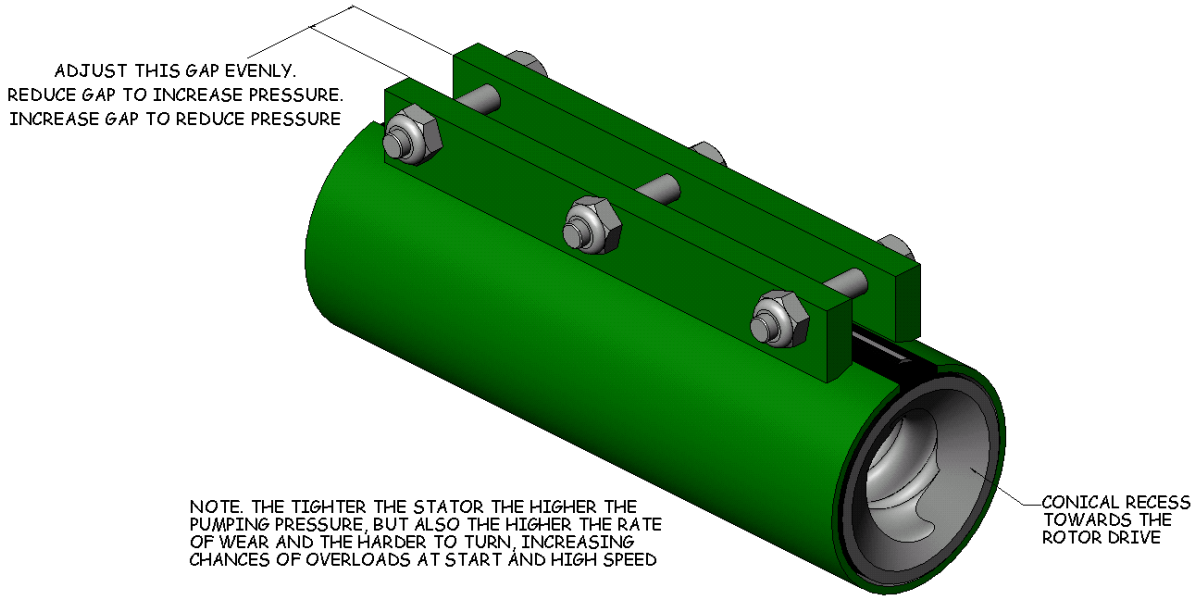
New seal fitted in position – 2L8 rotor shown

Section 6 – Notes on wear of rotor / stator pump unit

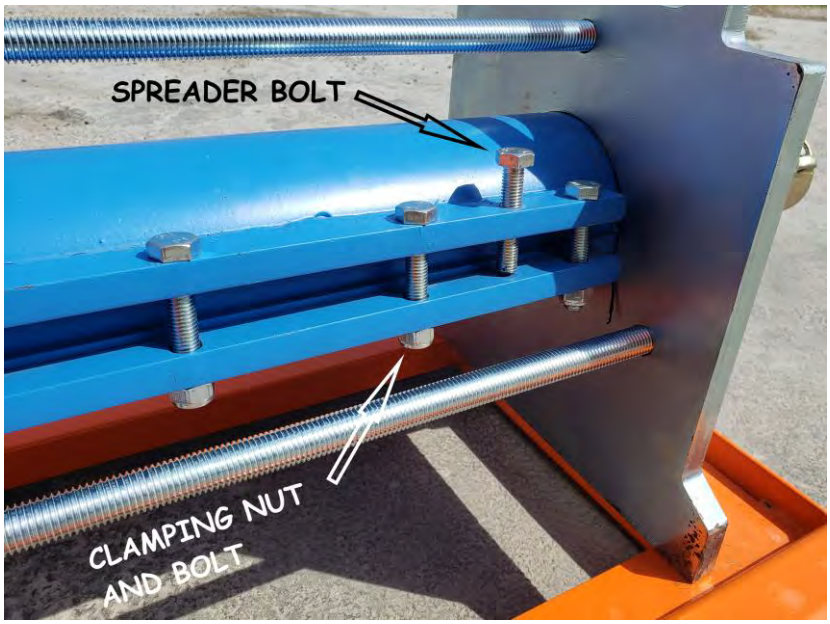
A **rot**or is the metal corkscrew looking item that **ROT**ates inside the stator.
A **stat**or is the **STAT**ionary part that the rotor rotates inside.

Stator adjustment

Some of the stators are adjustable. Some are not.
The adjustable units allow the tightening of some bolts to squeeze together two flanges, which in turn reduce the diameter of the inside of the stator allowing a tighter fit around the rotor giving renewed ability to produce higher pressures, similar to when the unit was new.



D8-1.5 ILLUSTRATED



6012 Rotor Stator shown

To loosen the Stator, slacken off the clamping nuts and bolts then tighten the spreader bolts to open up the stator.
To tighten the Stator, first back off the spreader bolts then tighten the clamping nuts and bolts.
Pressure test between all adjustments and do not over tighten.

Wear issues

Dry running of a rotor-stator pump.
A screw pump can only work reliably if there is adequate and appropriate lubrication. The lubricant reduces the friction between the rotor and the stator. If this lubricating film is damaged, high temperatures are reached and the elastomer wears within a very short time. Even if dry running lasts only a few seconds with new parts, the effect resembles that of a wheel spin on a car tire, dramatically affecting its length of service.

The use of simple dish soap or specific water based lubricants mixed with water whilst hose cleaning or pump priming can dramatically reduce the negative effects of dry running and help prolong the natural life of the rotor and stator.

Please note - Rotor stator wear is directly related to the amount of work that the unit has to perform. A low-pressure job with a smooth mix will cause less wear than a high-pressure job with smooth mix. A low-pressure job with a course mix will wear more than a low-pressure job with a smooth mix.

The life of a rotor and stator combination will need to be determined on a job-by-job basis, being dependent upon the coarseness of the mix and the amount of pressure required.

LIMITED WARRANTY POLICY

Ventures EQ. warrants each of its new machines to be free of defects in material and workmanship under normal use and services for a period of one (1) year from the date of delivery.

The warranty is issued ONLY to the INITIAL USER. The warranty period begins when the product is delivered to the initial user or when first put into service, whichever occurs first. Said warranty is void if the machine is subject to misuse, neglect, accident or abuse.

The Ventures EQ. obligation under this warranty is limited to correcting without charge, at its warehouse, any parts or parts thereof which shall be returned to its warehouse, transportation/shipping prepaid and upon Ventures EQ. examination proves to have been originally defective. Correction of such defects by repair or replacement shall constitute fulfillment of all obligations to the initial user. This warranty does not include labor or transportation charges unless specifically identified and authorized in writing by Ventures EQ., nor does the warranty apply to any unit upon which repairs or unauthorized alterations have been made.

The warranty does not apply to normal maintenance service or to normal replacement of certain machine parts which are subject to normal wear (including but not limited to pins, bushings, seals, rotors, stators, hoses, shaft couplings and connectors, pump shafts, filter elements, batteries and tires).

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