



D-25 Continuous mixer User Manual

Electric

- #60010054 ASSY, MIXER, CONTINUOUS-D25-132LB**
- #60010085 ASSY, MIXER, CONTINUOUS-D25-78LB**
- #60010093 ASSY, MIXER, CONTINUOUS-D25-2"**
- #60010084 ASSY, MIXER, CONTINUOUS-D25-132LB-3 PHASE**
- #60010108 ASSY, MIXER, CONTINUOUS-D25-78LB-3 PHASE**
- #60010098 ASSY, MIXER, CONTINUOUS-D25-2"-3 PHASE**
- #60010106 ASSY, MIXER, CONTINUOUS-D25-132LB-480V-3 PHASE**
- #60010099 ASSY, MIXER, CONTINUOUS-D25-78LB-480V-3 PHASE**
- #60010107 ASSY, MIXER, CONTINUOUS-D25-2"-480V-3 PHASE**

REV-7 11/10/2014

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Dear Customer,

Before starting this machine please complete the following;

Machine Date of purchase.....

Machine serial number.....

Please read the following information contained within this manual and fully familiarize yourself with the equipment.

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Section 1 - General Safety information

Danger

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

Electrically powered machine.

Always ensure that all power to the machine has been turned off and isolated before ANY maintenance / repair work is carried out on the machine.

Ensure that all guards 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 the nozzle unit is correctly fastened to the front of the mixer unit of the machine, and free of damage before attempting to start or operate the machine.

Ensure that the breaker assembly is free to rotate within the nozzle assembly prior to starting the machine.

The D-25 continuous mixer unit can produce high torques and can use high voltages. Care must be taken by authorized persons when using and working with this machine.

Section 2 - Machine Description

Function

The continuous mixer uses pre-bagged, pre blended material, that is broken via the bag breaker on the hopper, and poured into the hopper, that then discharges into the nozzle and mixes it with water, to provide a usable mixture at its outlet.

The machine has a drive motor, that turns a drive shaft within a material hopper that in turn rotates a helical feed screw, in turn rotating a mixing shaft. The combination of these shafts and mixing components move material from the hopper through to the mixing nozzle, that with the addition of an adjustable water control that hydrates the mixture to the desired level. The mixing tines in the nozzle tube, mix and shear the material so that once it emerges from the discharge aperture, the mixture is correctly mixed and sheared ready for use or for pumping to the application.

The machine is driven by an electric motor powered by 220VAC 3 phase 60/50Hz, via an electronic variable speed inverter supplied by two phase 208VAC 60 Hz, or 220/240 VAC 50/60Hz, or 440/480 VAC 60Hz 3phase. Input power

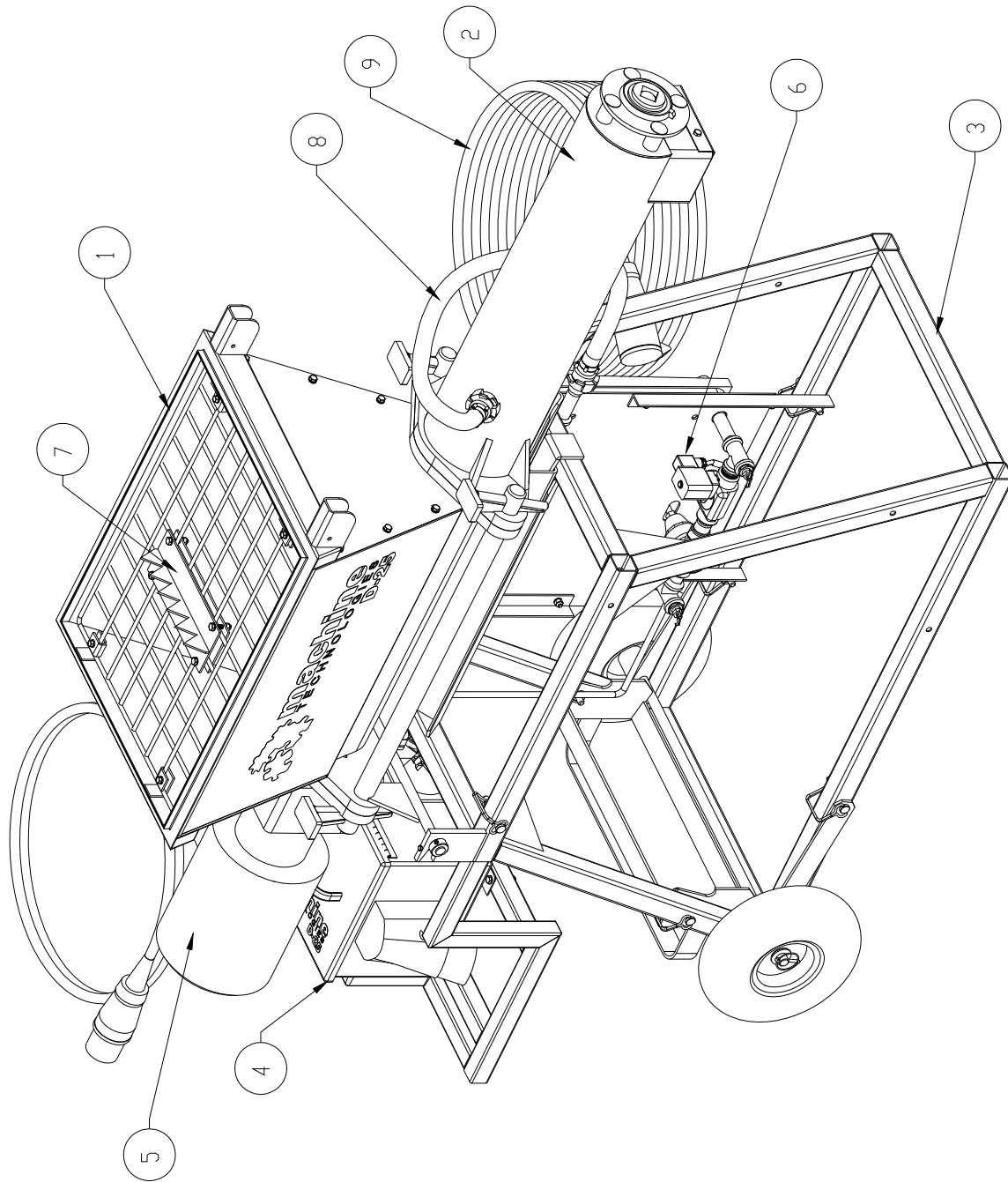
The inverter control box allows the user to adjust the speed of rotation and in turn the volumetric displacement per rev of the feed screw, to provide the require “flow” of material. The control box also contains control for a water valve that operates when the unit is started in the “feed” direction. If the unit is reversed for any reason the water will turn off, and then turn back on once the reverse knob is released.

The continuous mixer is fitted with a water control assembly, that contains a pressure regulator, a control valve and a visual water flow meter. The flow of water out of the flow meter into the mixing nozzle is adjustable via the control knob at its base. Turning clockwise reduces the flow rate, counter clockwise increases the flow.

The difference between the machines is primarily the material dosing rate, which is controlled by the dosing screw. There are three versions of dosing screw available, a “132 lb” a “78 lb” and a “2””, the differences in the screws being the pitch.

Machine illustrations

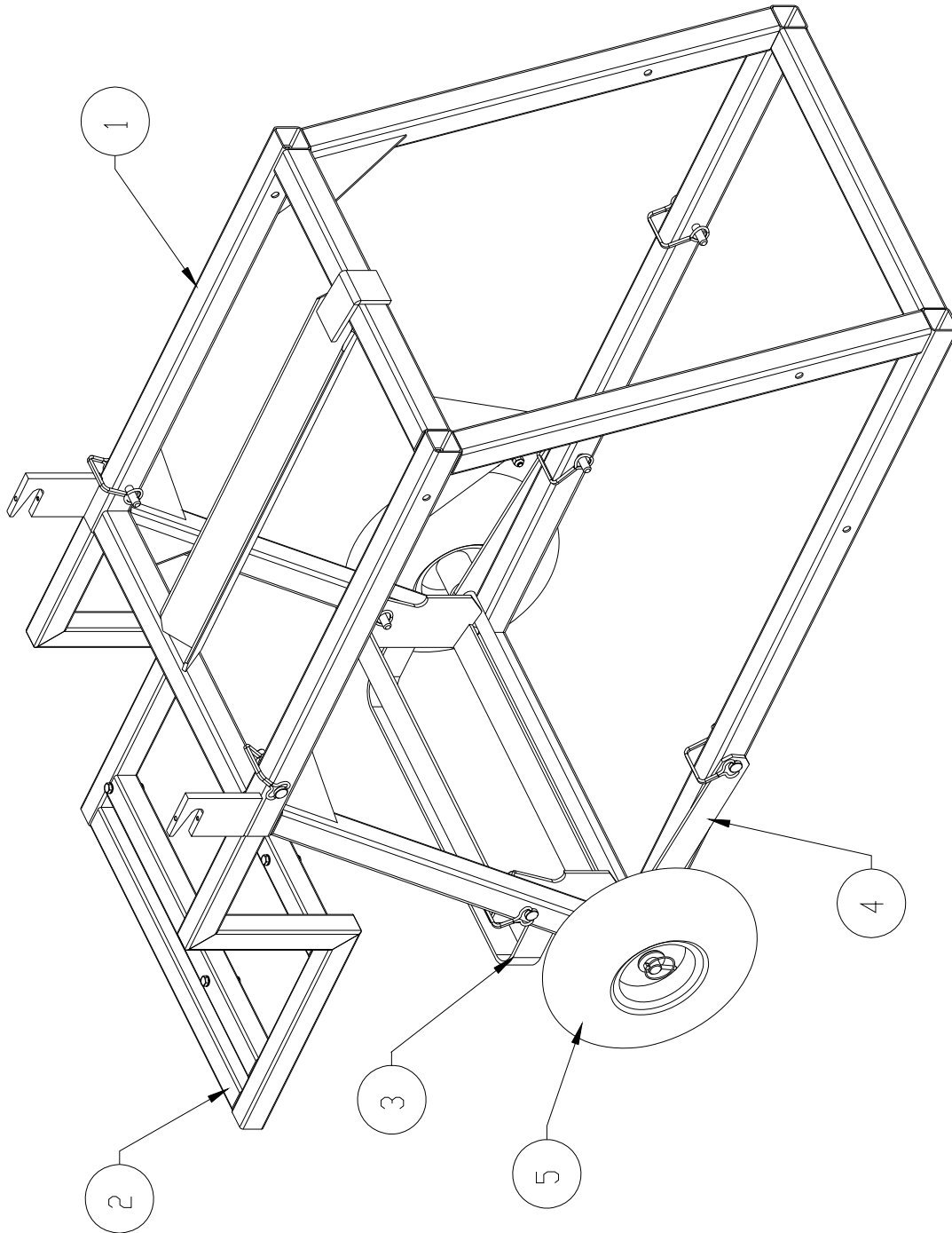
Machine



- | | | |
|---------------------------|----------------------------|----------------------------|
| 1 – Hopper unit | 2 – Mixing nozzle assembly | 3 – Base frame assembly |
| 4 – Inverter drive module | 5 – Drive motor | 6- Water control module |
| 7- Bag Breaker. | 8 – Water hose assy | 9 – Power cord and socket. |

Base Frame assembly

The base frame can be re-configured to have the wheels, axle etc. located at the opposite end of the unit, with the handle thus also being mirrored. The control panel assembly on handle assembly can be moved, by pulling the pins keeping the handle assembly in place in the frame, then sliding the handle out, allowing access to the control box itself



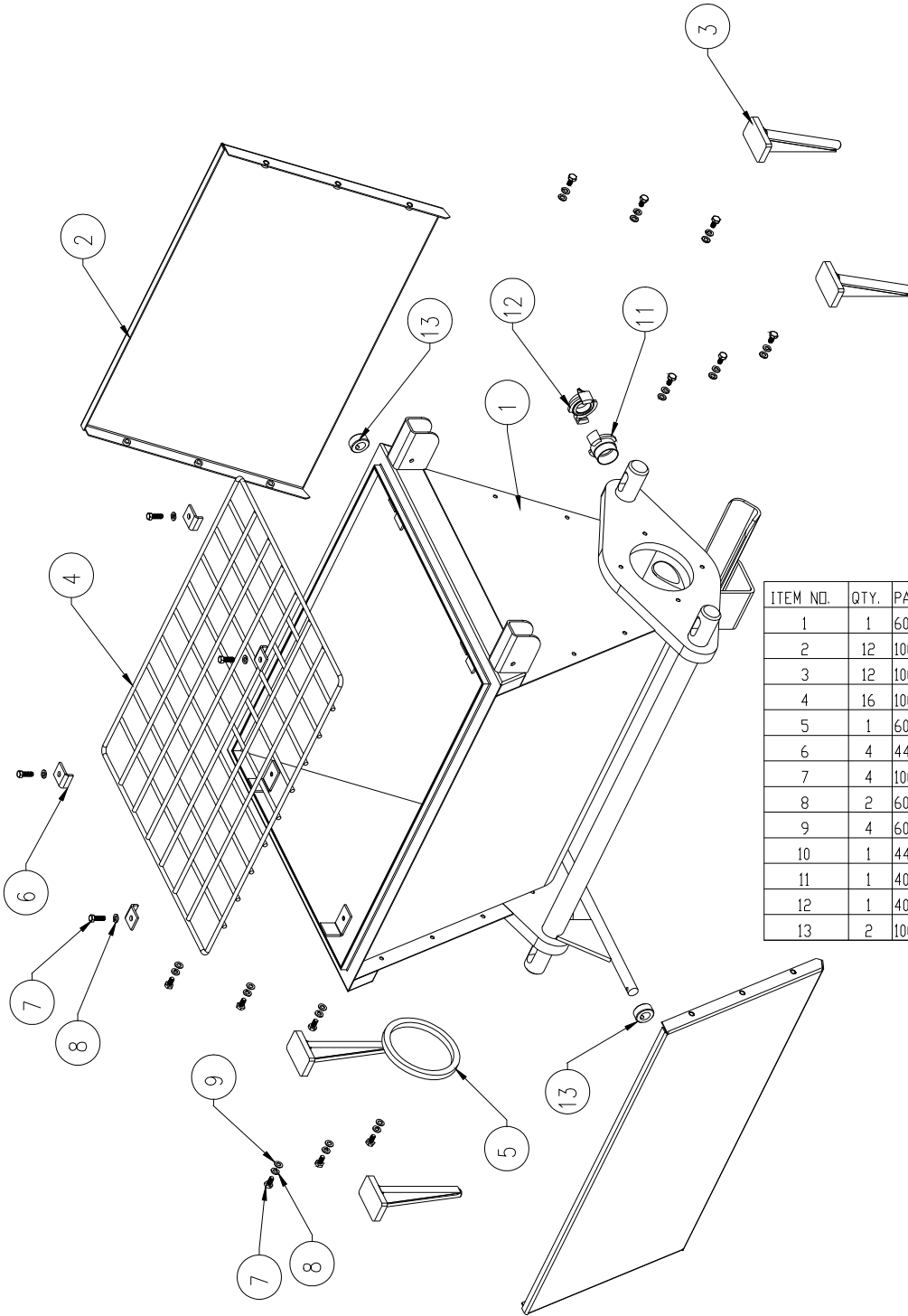
1 – Base frame
5 – Wheel / Tire

2 – Handle

3 – Axle lock

4 – Axle

Hopper unit

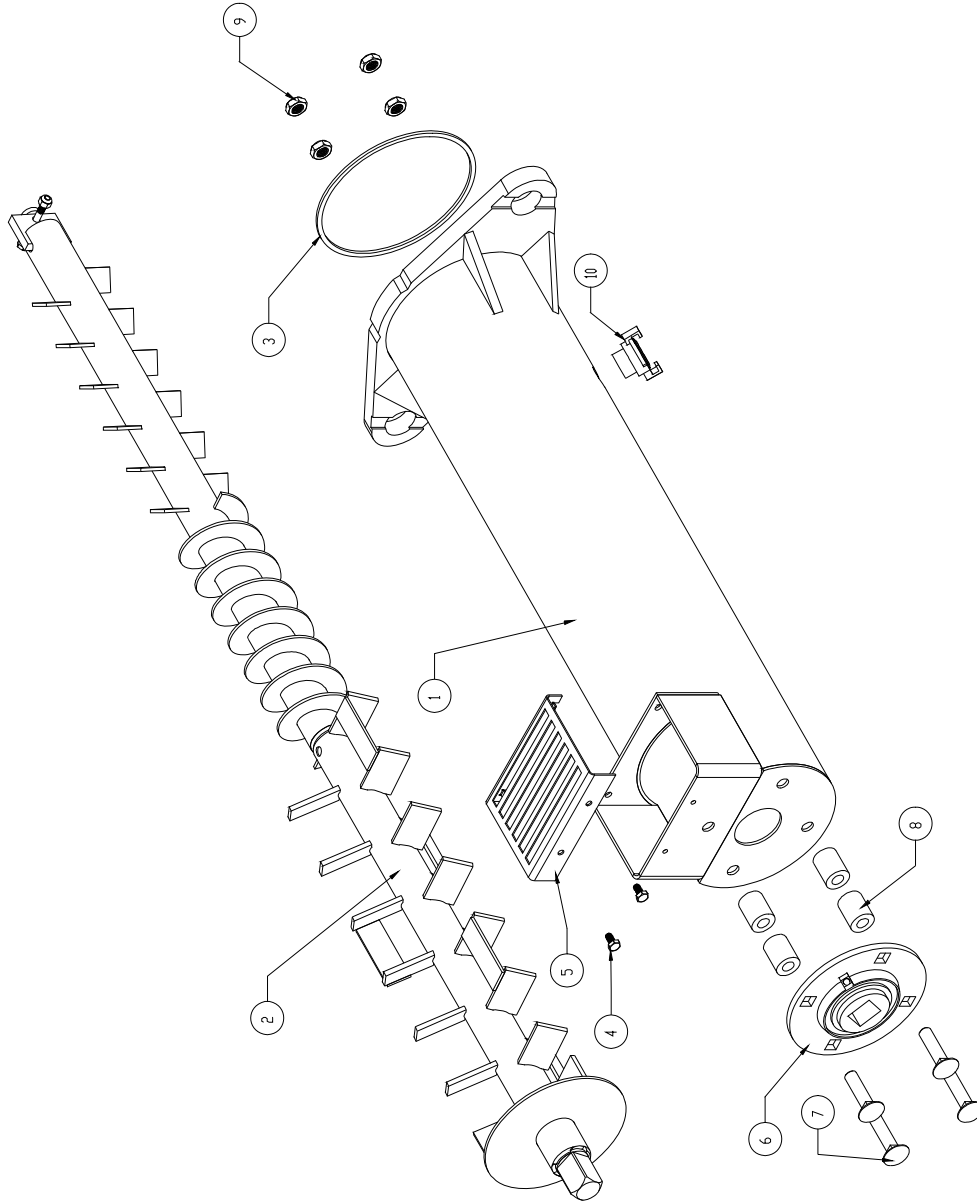


ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	60010009	ASSY,HOPPER WELDED-PUMP X
2	12	10000065	BOLT HEX 1/4-20x1/2"
3	12	10000009	WASHER,FLAT 1/4"
4	16	10000008	WASHER,SPLIT 1/4"
5	1	60010019	ASSY,GRID HOPPER ASSY
6	4	44010042	KEEPER,PLATE GRID HOPPER
7	4	10000015	BOLT,HEX 1/4-20x0.75"
8	2	60010021	ASSY,FLAT SIDE PANEL
9	4	60010071	ASSY,WEDGE 2 PART
10	1	44010052	SEAL,RUBBER MOTOR G/BOX FLANGE
11	1	40000010	GEKA STYLE FITTING 1" NPT FEMALE
12	1	40000011	GEKA STYLE HOSE END CAP
13	2	10000074	COLLAR LOCKING 5/8" BORE

Mixing Nozzle Assembly

The complete mixing nozzle assembly is available in three different versions,
 60010056 ASSY,MIXING TUBE D25-COMLETE-132LB
 60010086 ASSY,MIXING TUBE D25-COMLETE-78LB
 60010092 ASSY,MIXING TUBE D25-COMLETE-2"

132LB shown (60010056).

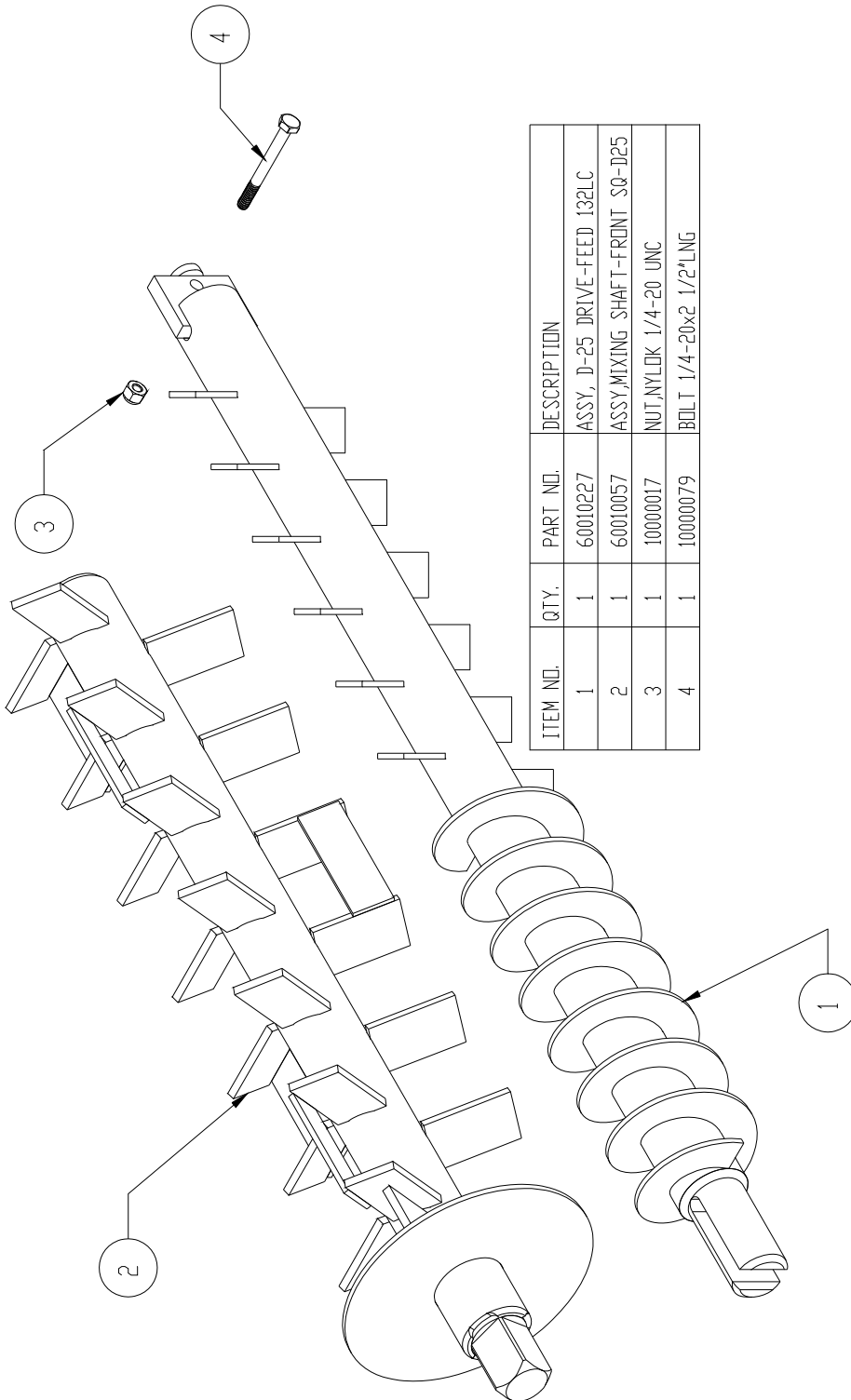


ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	60010065	ASSY,CONT MIXER, MIX TUBE
2	1	60010066	ASSY,BREAKER-DOSING-MIX-D25-132lb
3	1	44010128	SEAL, CONT MIXER
4	2	10000065	BOLT HEX 1/4-20x1/2"
5	1	44010129	GUARD, FINGER -D25
6	1	40000017	SQ BEARING,FLANGE,GREASE FLANGE
7	4	10000075	BOLT,CARRIAGE 1/2-13x2"
8	4	44010130	SPACER 1/2" BORE 1" OD
9	4	10000090	NUT,NYLDC 1/2-13 THIN THK
10	1	40000009	GEKA STYLE FITTING 3/4" MALE PIPE

ASSY,BREAKER-DOSING-MIX-D25

- 60010066 ASSY,BREAKER-DOSING-MIX-D25-132lb
- 60010087 ASSY,BREAKER-DOSING-MIX-D25-78LB
- 60010091 ASSY,BREAKER-DOSING-MIX-D25-2"

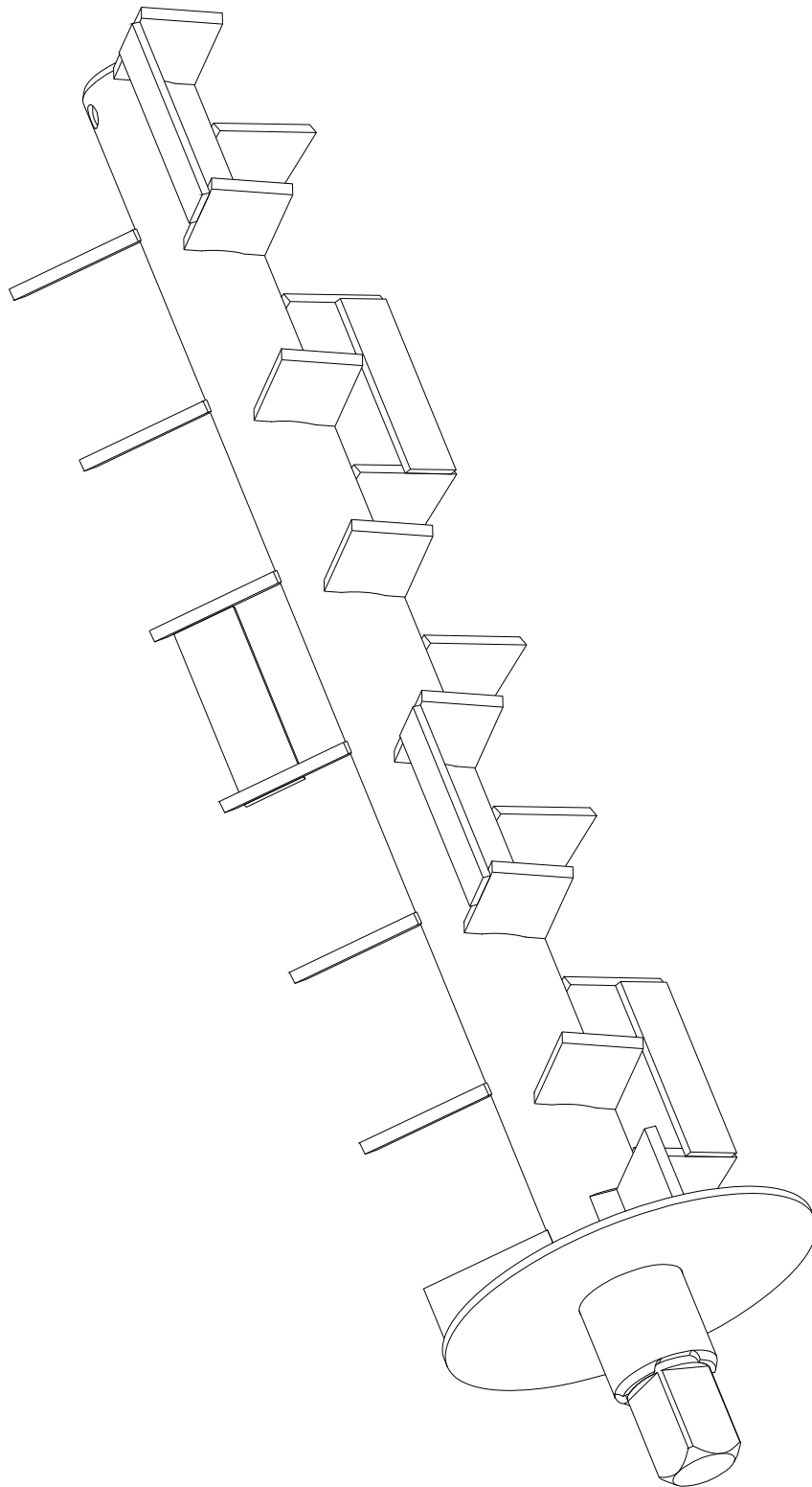
Note - 60010066 shown. Differences shown on page 12



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	60010227	ASSY, D-25 DRIVE-FEED 132LC
2	1	60010057	ASSY,MIXING SHAFT-FRONT S0-D25
3	1	10000017	NUT,NYLOK 1/4-20 UNC
4	1	10000079	BOLT 1/4-20x2 1/2" LING

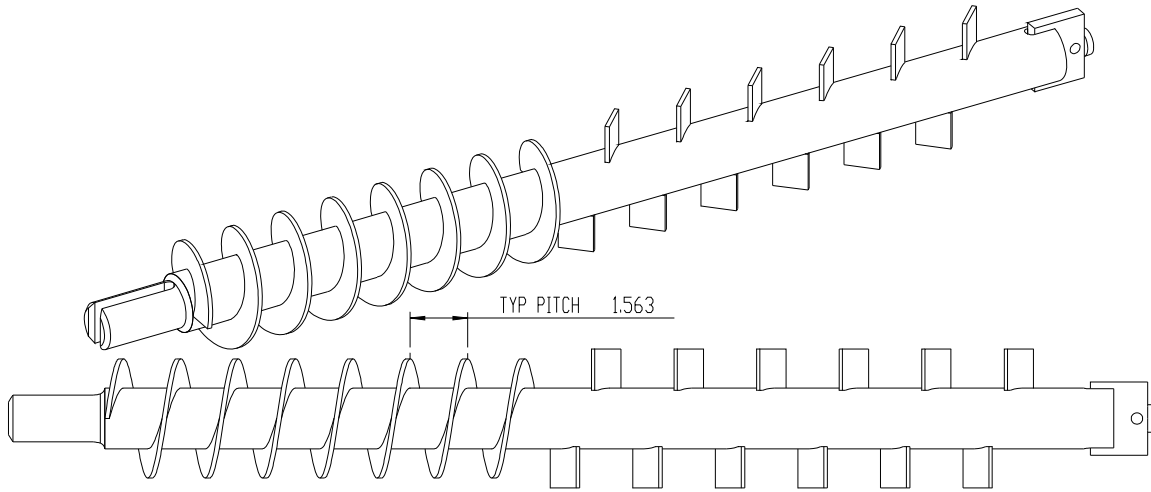
ASSY,MIXING SHAFT-FRONT SQ-D25

60010057 ASSY,MIXING SHAFT-FRONT SQ-D25 - shown

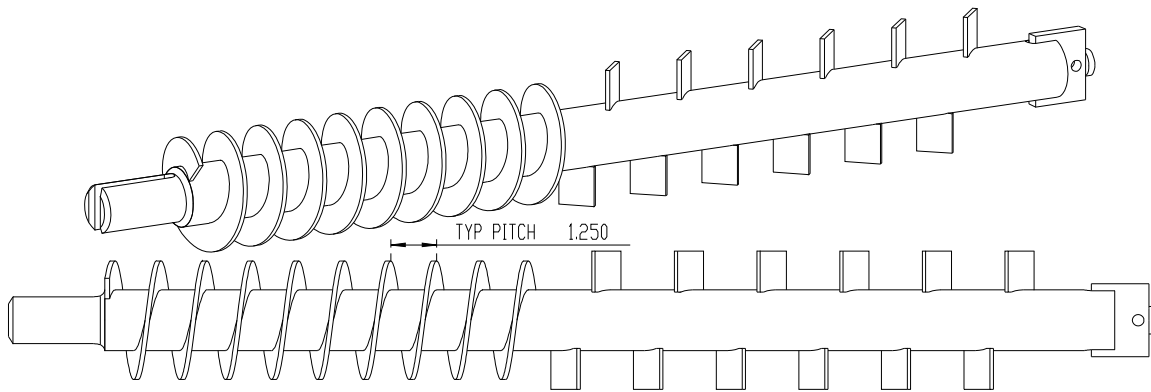


The primary difference between ALL the various combinations of low, standard and high output shaft, tube etc. assemblies is the dosing / feed screw

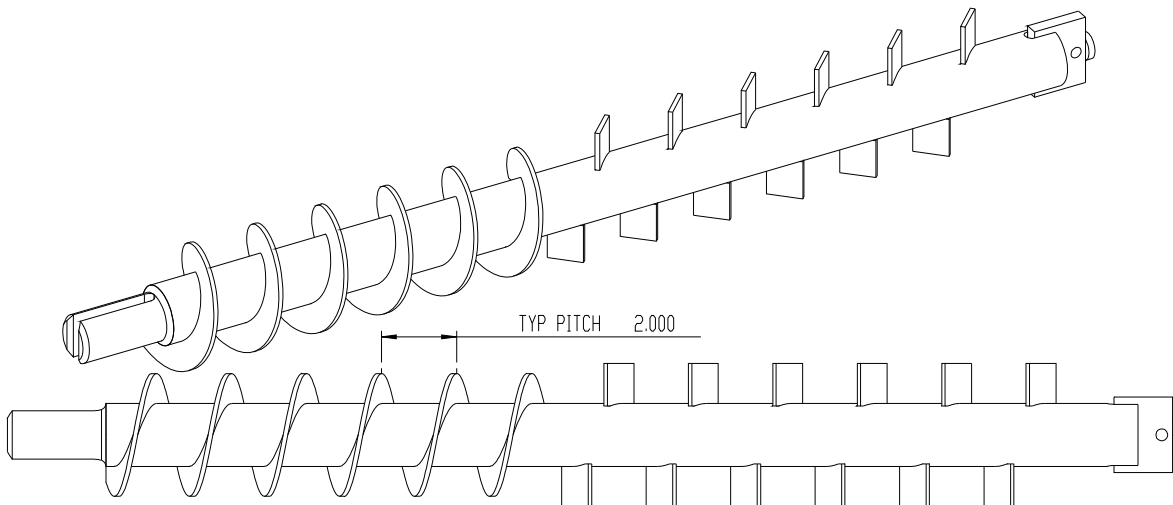
60010227 ASSY, D-25 DRIVE-FEED 132LC



60010228 ASSY, D-25 DRIVE-FEED 78LC

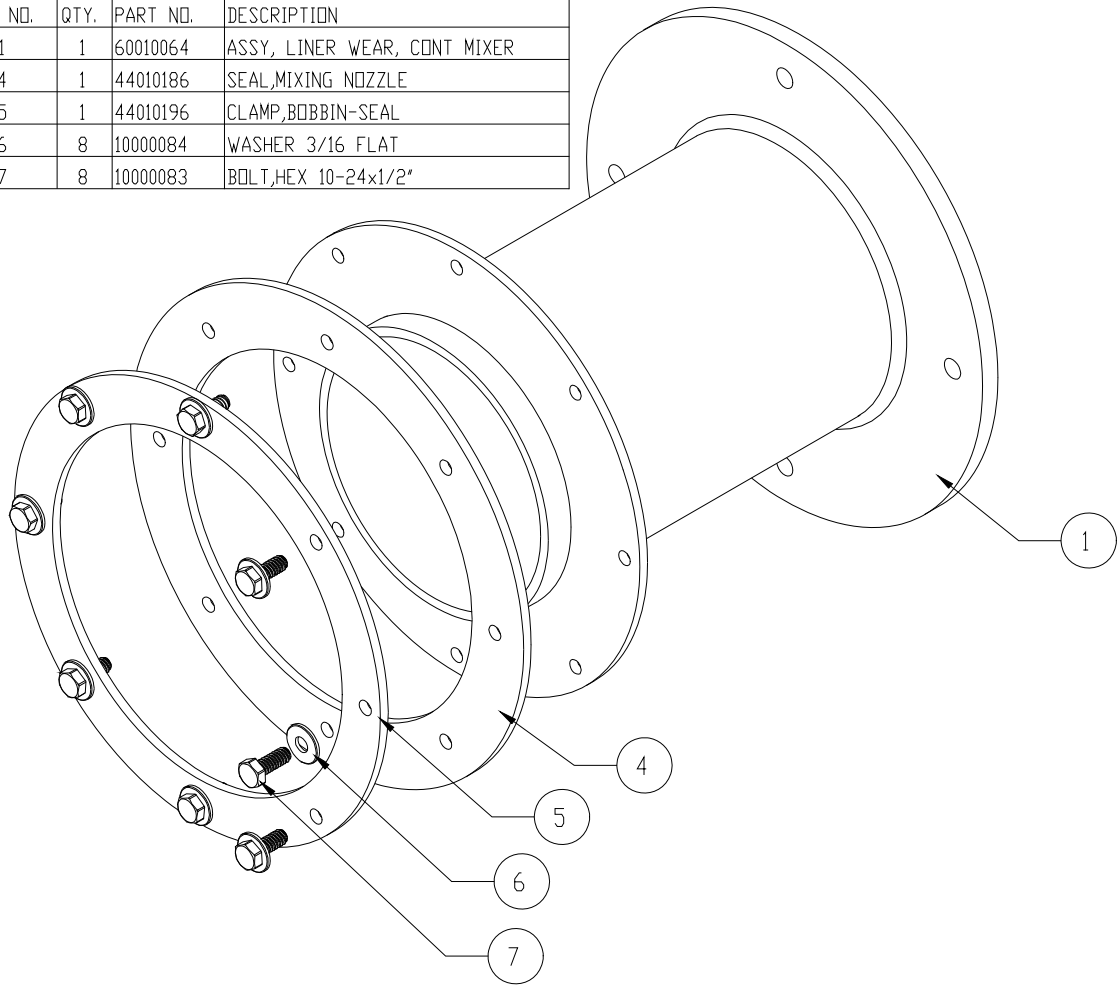


60010229 ASSY, D-25 DRIVE-FEED 2"LC



Wear liner assembly, Seal, Seal clamp, Bolts and Washers

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	60010064	ASSY, LINER WEAR, CONT MIXER
4	1	44010186	SEAL, MIXING NOZZLE
5	1	44010196	CLAMP, BOBBIN-SEAL
6	8	10000084	WASHER 3/16 FLAT
7	8	10000083	BOLT, HEX 10-24x1/2"



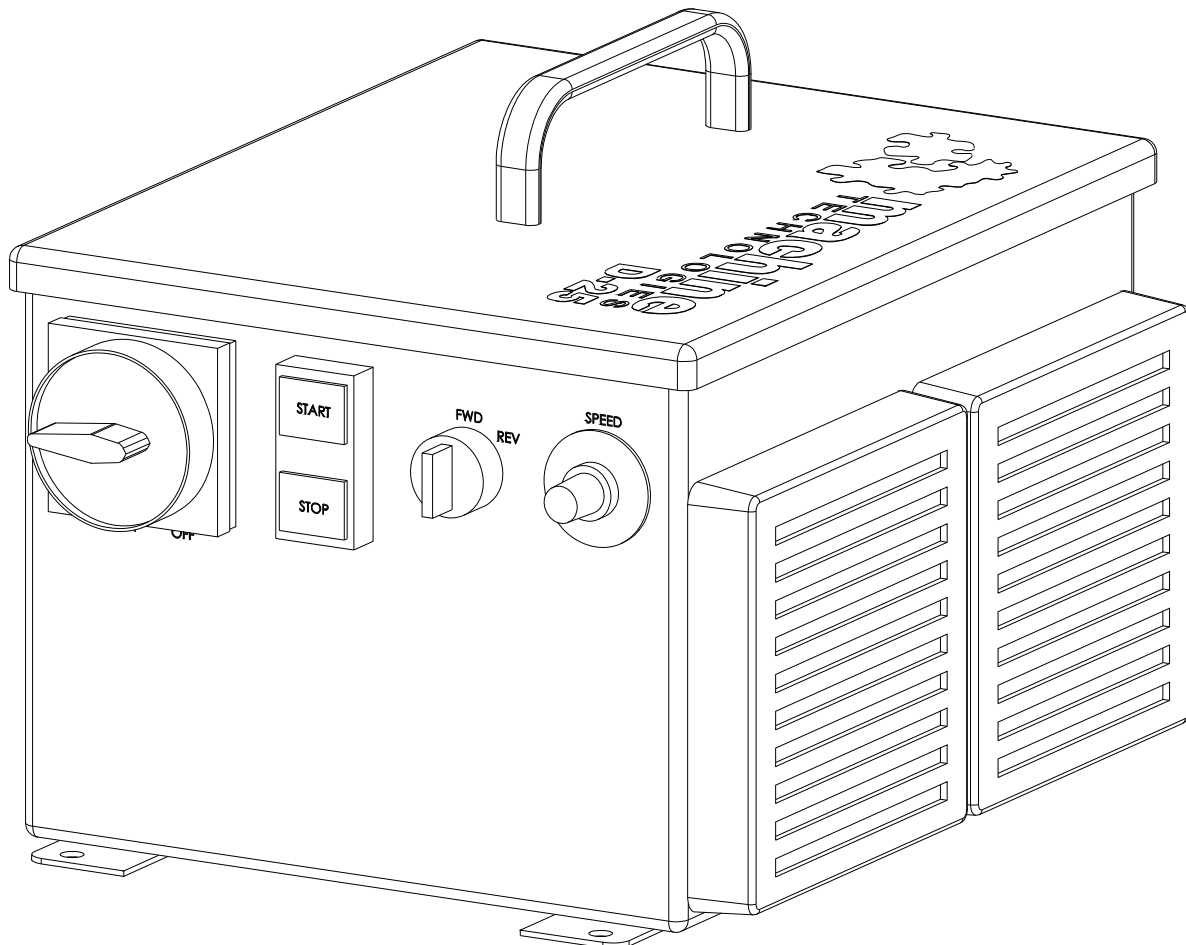
Electronic Drive module

The electronic Drive module comprises of a variable speed frequency inverter, allowing the use of 220VAC two phase to run the high torque 3 Phase gear motor. The unit is rated at 4KW providing plenty of power to run the D-25 unit.

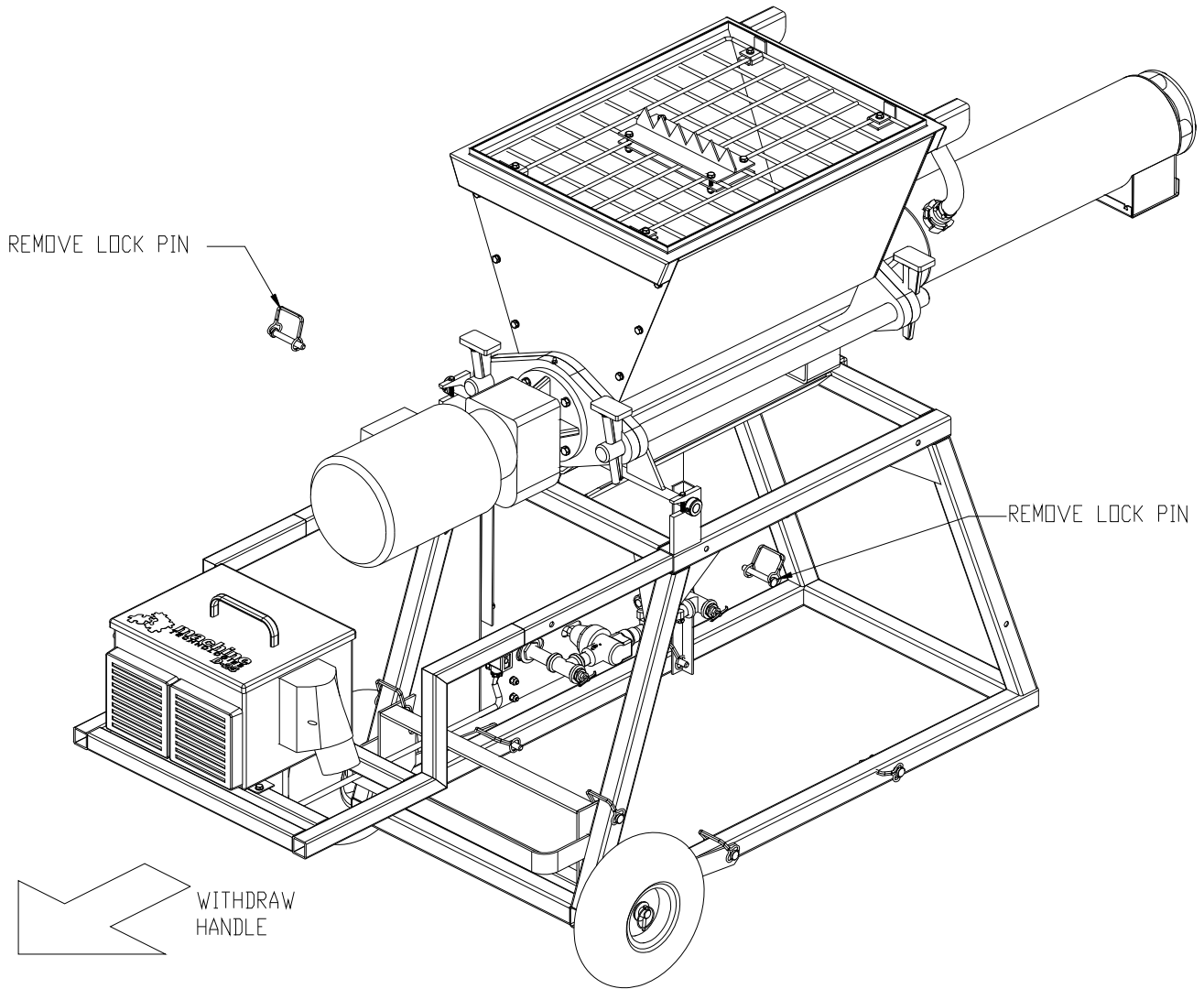
The module is supplied with an input plug allowing immediate wiring into your own 220VAC 2 phase supply (Must be carried out by an approved installer). The motor is supplied with a pre-wired plug that fits into the 3 Phase outlet of the module.

The module has a main power isolator, a combine stop / start switch, a spring return reverse switch, a speed control potentiometer, internal breakers, for each input phase, a large capacity cooling fan in addition to the fan fitted to the inverter, and a remote socket, providing the optional capability for remote operation.

Upon delivery, the inverter drive inside the control box is pre-configured to suit your machine, the configuration can however be altered to specifically suit many special needs regarding torques, min speeds and max speeds. For information on these topics please contact Machine Technologies directly.

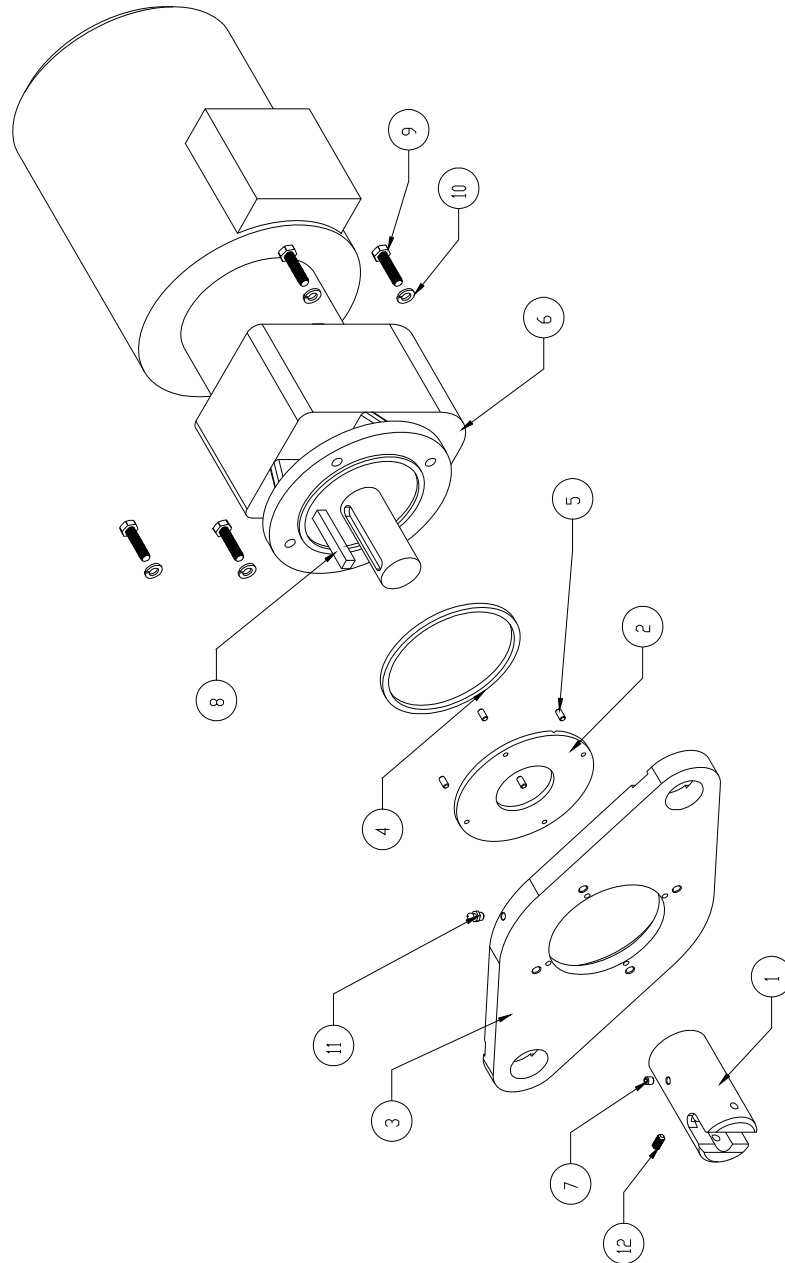


To access the control box, remove the two pins from either side of the frame assembly, and withdraw the handle with the control box mounted to it from the main frame. Do not fully withdraw the handle and box, as damage could result from dropping to the ground.



Drive motor unit

The machine is supplied with an electric motor drive.

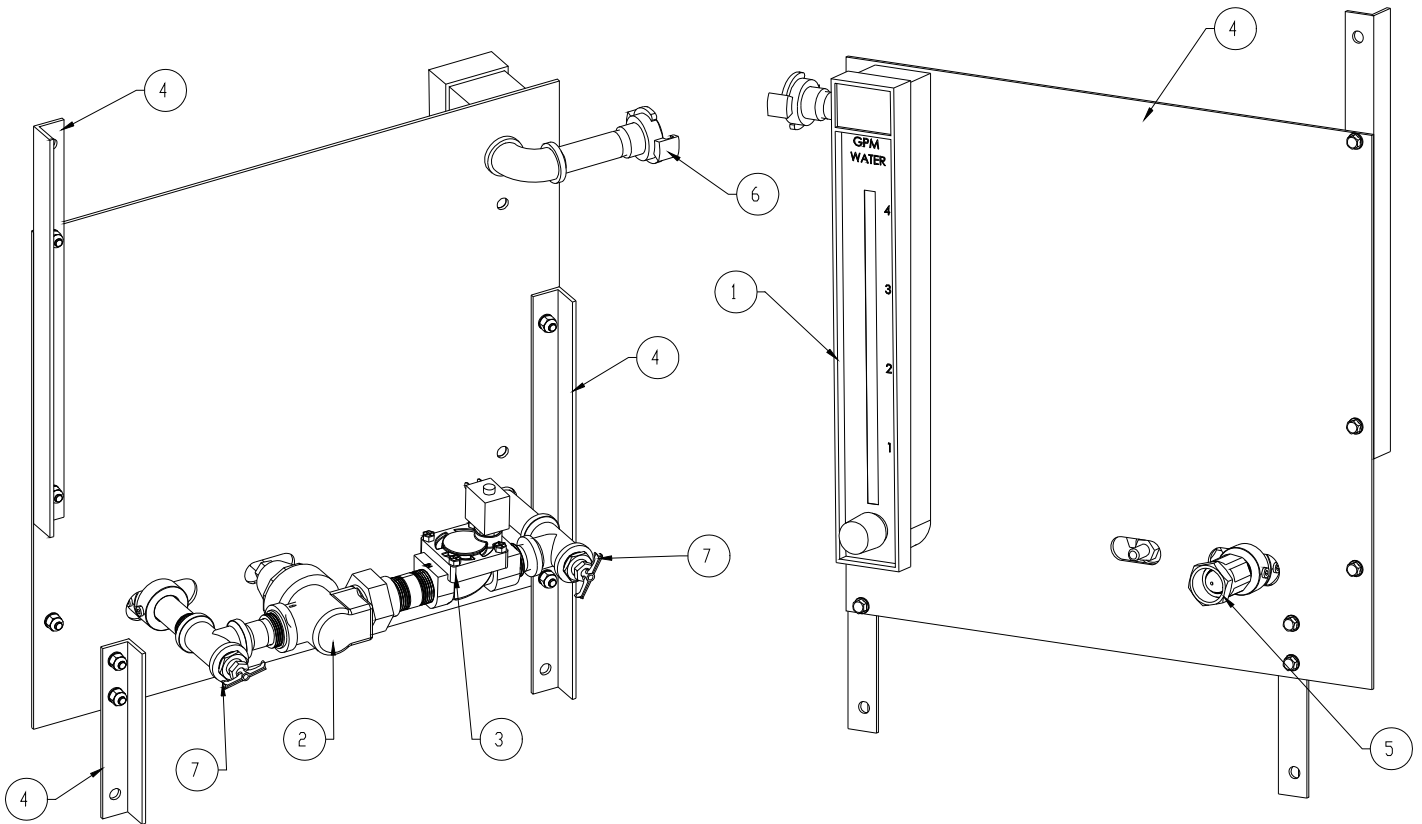


ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	44010011	DRIVE, AUGER PUMP X
2	1	44010013	SEAL,GREASE MOTOR G/BOX
3	1	44010008	FLANGE-MOTOR-MACHINED
4	1	44010014	ADAPTER,MOTOR-FLANGE
5	4	10000002	DOWEL, SEAL RETAINER
6	1	20000004	MOTOR-GEARBOX,ABM-4KW
7	1	10000005	SCREW,SET 1/4-20x1/4"
8	1	44010015	KEY,SPECIAL, DRIVE DOG 35 DIA SHAFT
9	4	10000068	BOLT HEX 5/16-18 UNC 1 1/4" LONG
10	4	10000069	WASHER,SPLIT 5/16"
11	1	40000004	NIPPLE,GREASE-1/4"-28
12	1	10000099	SCREW,SET 1/4-28-1/2LNG

Water Control Module

The water control module allows the hook up of a typical water feed to the inlet port. When the solenoid is turned on via the connector from the control box water flows through the inline pressure regulator through the solenoid valve into the adjustable visual flow meter, and out through the outlet connector. The flow rate can be adjusted at the base of the flow meter using the control knob.

When the unit is left standing for any length of time, or to be stored for freezing temperatures, the water within the system must be drained to prevent damage due to freezing. Loosen the two drain cocks (7) and allow the water to drain out, leave loose unit the unit is to be re-used. DO NOT OVER TIGHTEN when putting back into service.



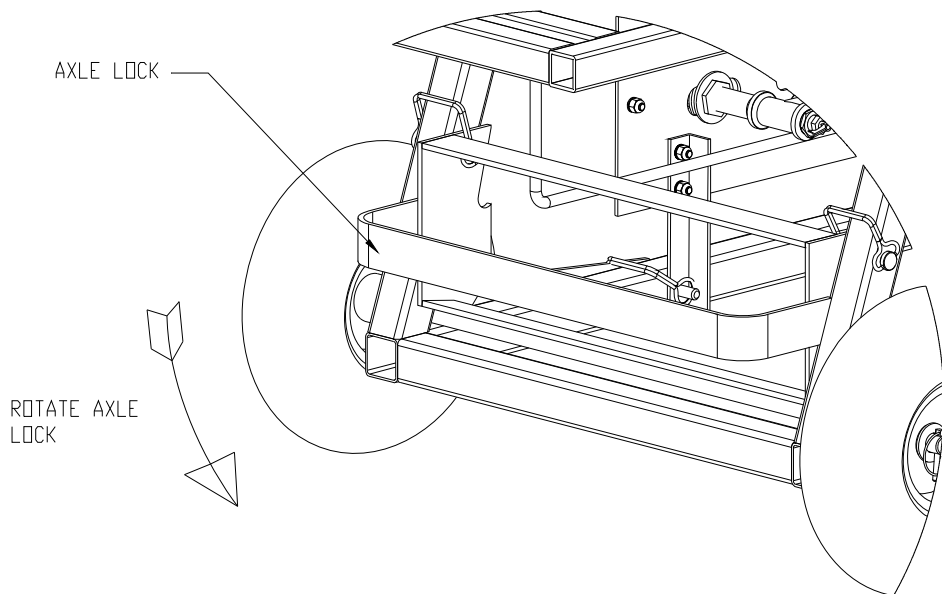
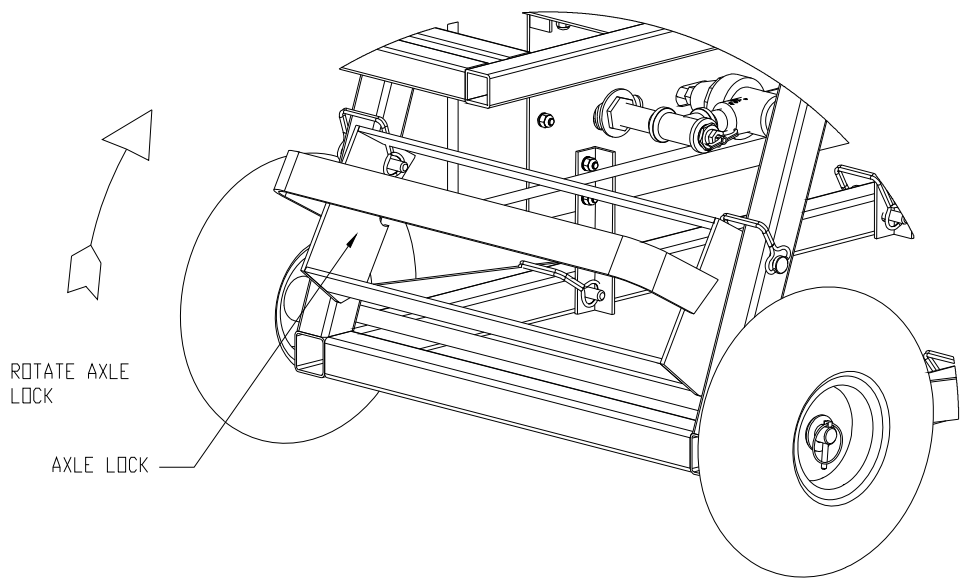
4 GPM unit shown

- | | | | |
|---------------------|------------------------|--------------------|--------------|
| 1- Water flow meter | 2 – Pressure regulator | 3 – Solenoid valve | 4 – Mounting |
| 5 – water INLET | 6 – Water OUTLET | 7 – Drain cocks | |

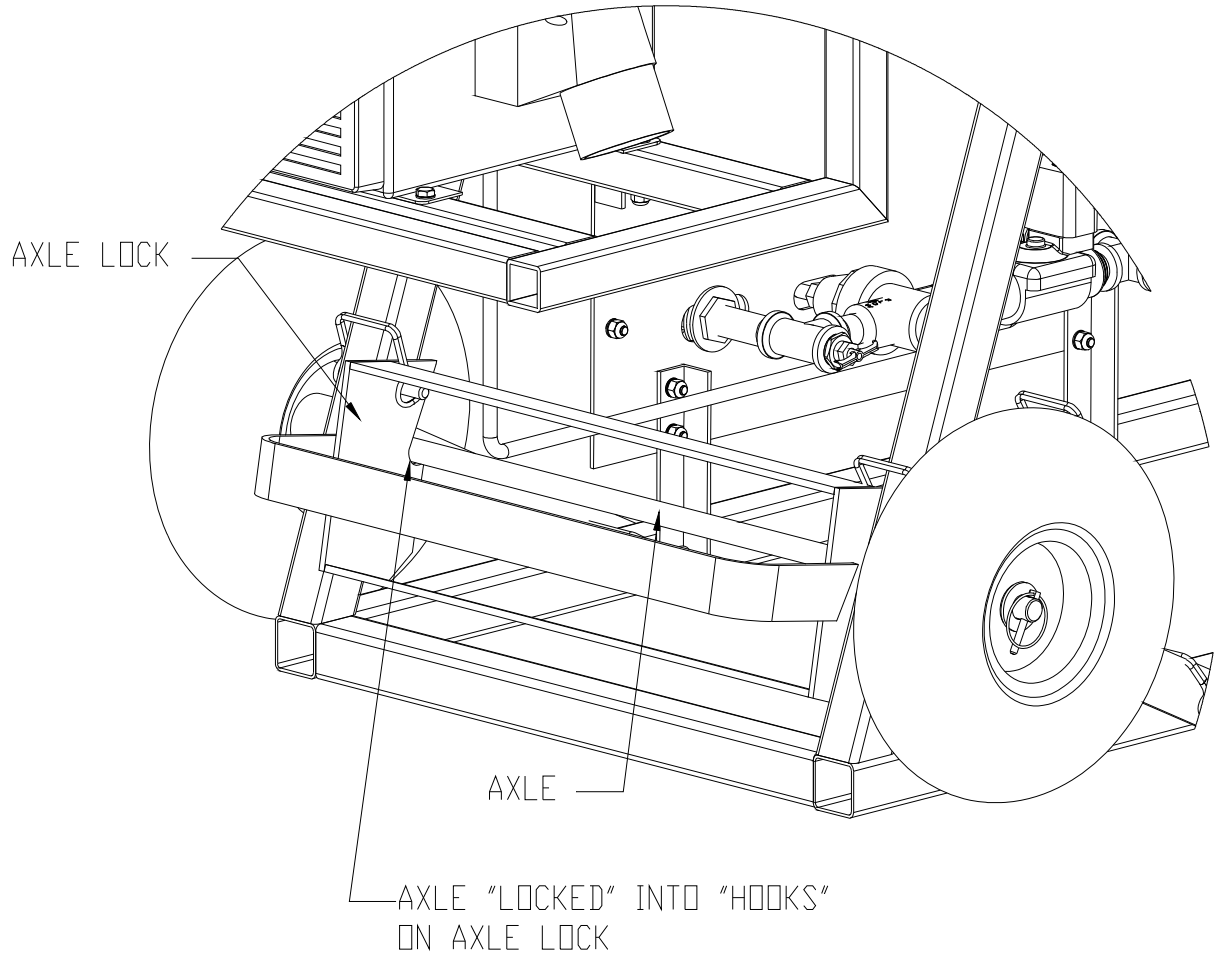
Section 3 – Transportation and positioning

The machine is typically manually transported around the job site by dropping and locking the wheels in the down position, then using the nozzle like the handles on a wheel barrow.

Lift the machine at the wheel end, and lift UP the axle lock bar and the wheels will drop to the ground. At the same time the lock bar can be dropped which will “lock” the axle in the down position, allowing the unit to be wheeled to position.



Once in position, the lock bar can be raised, and the whole unit will drop, lifting the axle and the wheels. The lock bar, on level ground, will catch the axle to keep it from lowering.



Section 4 – Machine set up

Unpacking and assembly

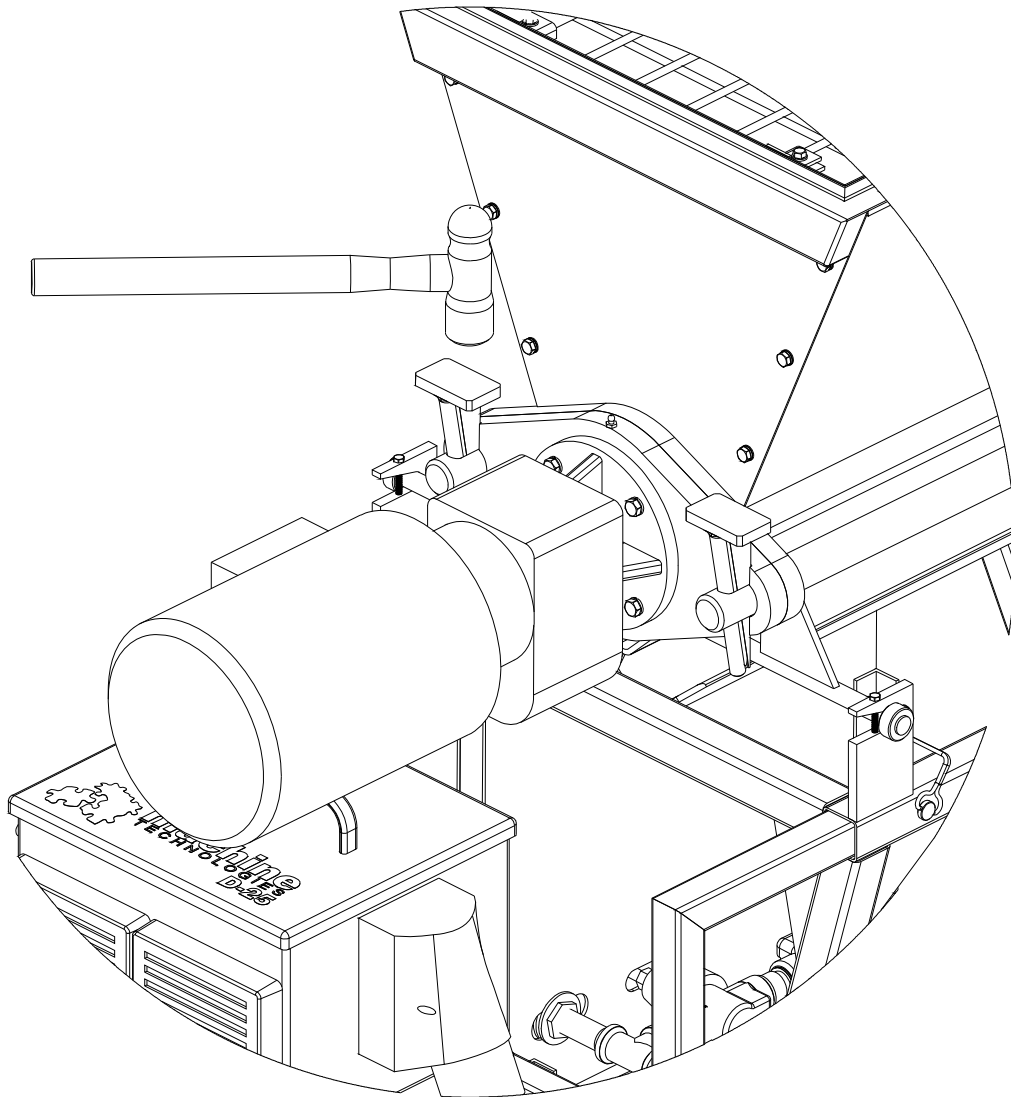
Consult the final inspection record supplied in the packing for details of your machine and the items checked prior to shipment. Keep this document for your records.

Remove the unit from the packing and the pallet.

If required,

Pre assemble the motor assembly onto the rear of the hopper, hanging it on the location rods.

Assemble the motor onto the rear of the hopper and secure with the wedges supplied.

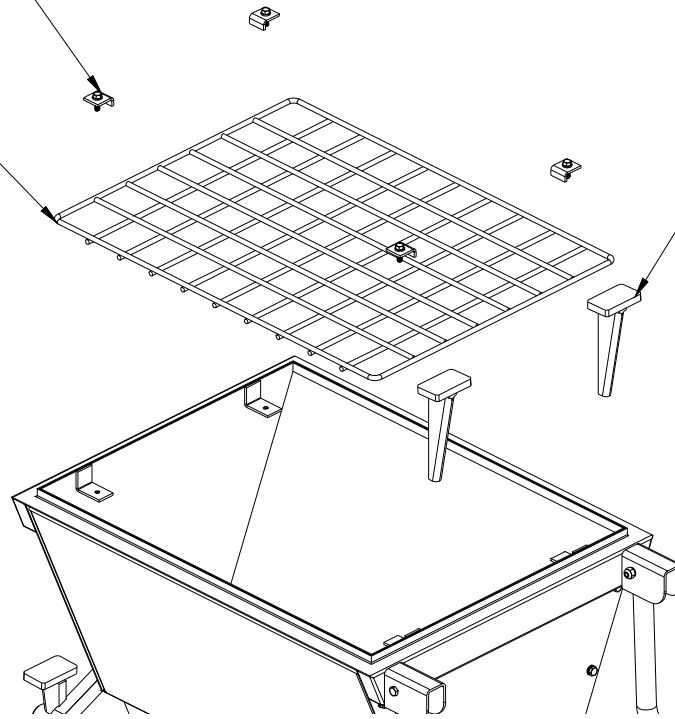


Remove the safety grid from the top of the hopper, to allow you to rotate the breaker bar assembly already fitted inside the unit.

SAFETY CATCHES, WASHERS
AND BOLTS FOR GRID

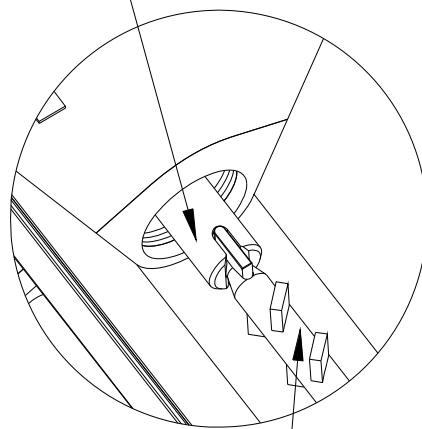
SAFETY GRID

PUMP WEDGES



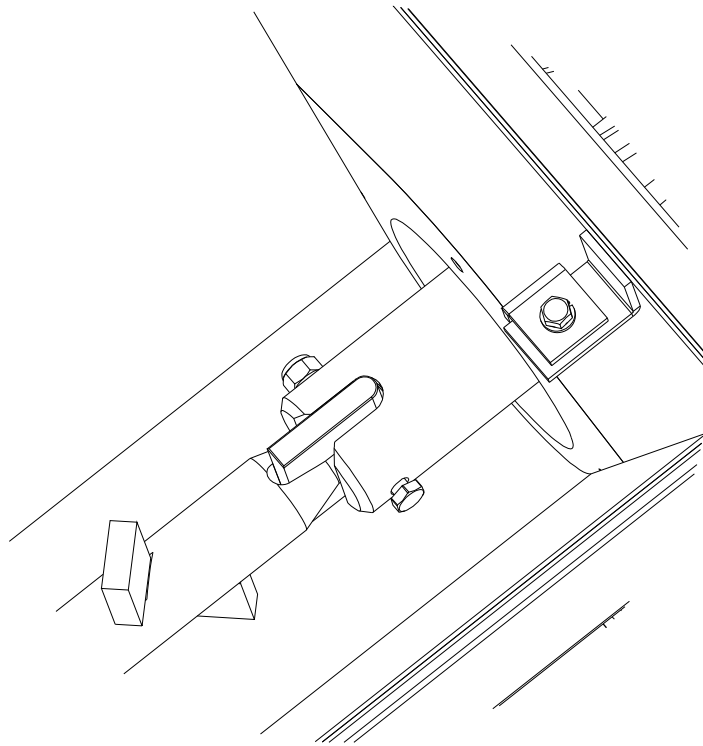
If required, rotate the breaker bar in the hopper to engage the flat end into the slot in the drive / hauling bracket of the motor assembly.

DRIVE / HAULING
BRACKET



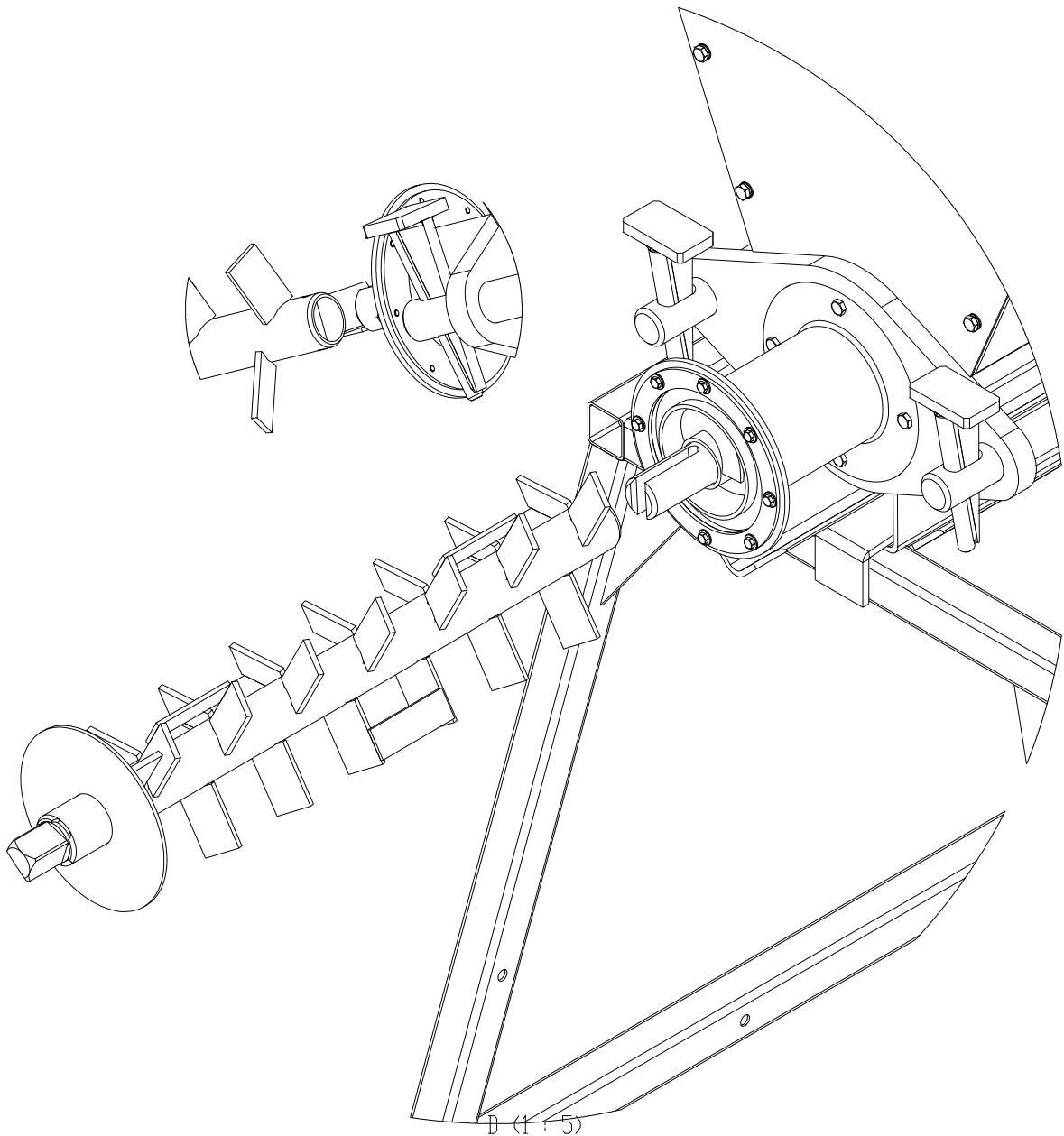
DRIVE SHAFT /
BREAKER BAR

Assemble the drive / feed shaft into the hauling bracket / drive auger, and secure with the bolt provided. This bolt is only intended to prevent the breaker bar from becoming decoupled when the nozzle is removed.



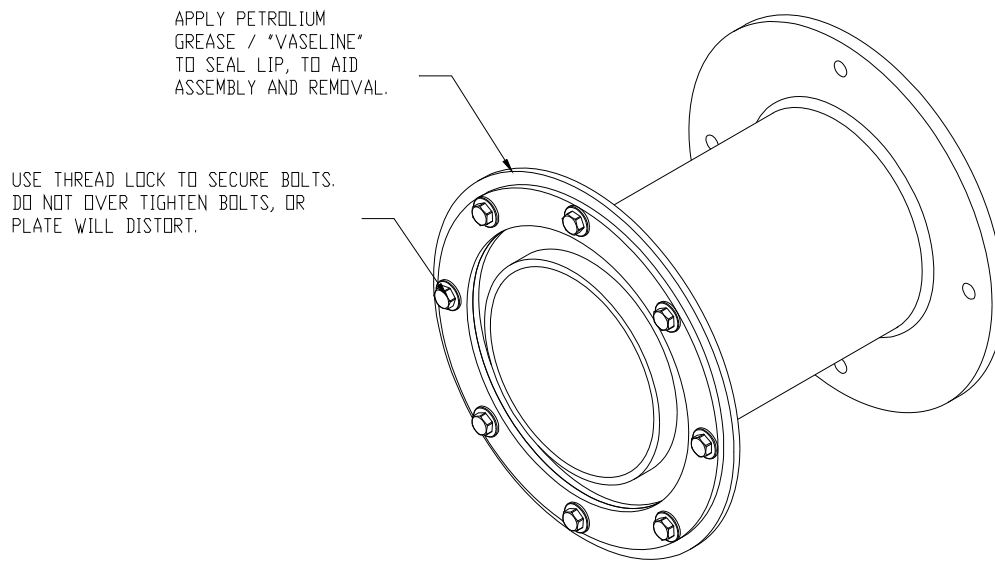
Note to remove the Drive / feed shaft either the motor can be removed and withdraw from the rear, or the Wear liner assembly can be un-bolted and the shaft removed from the front of the machine

Assemble the front section of the mixing shaft to the fitted rear section of the full breaker / mixer assembly. Ensure that the cross pin is aligned with the slot in the front of the metering shaft (fitted within the hopper / wear liner assembly).

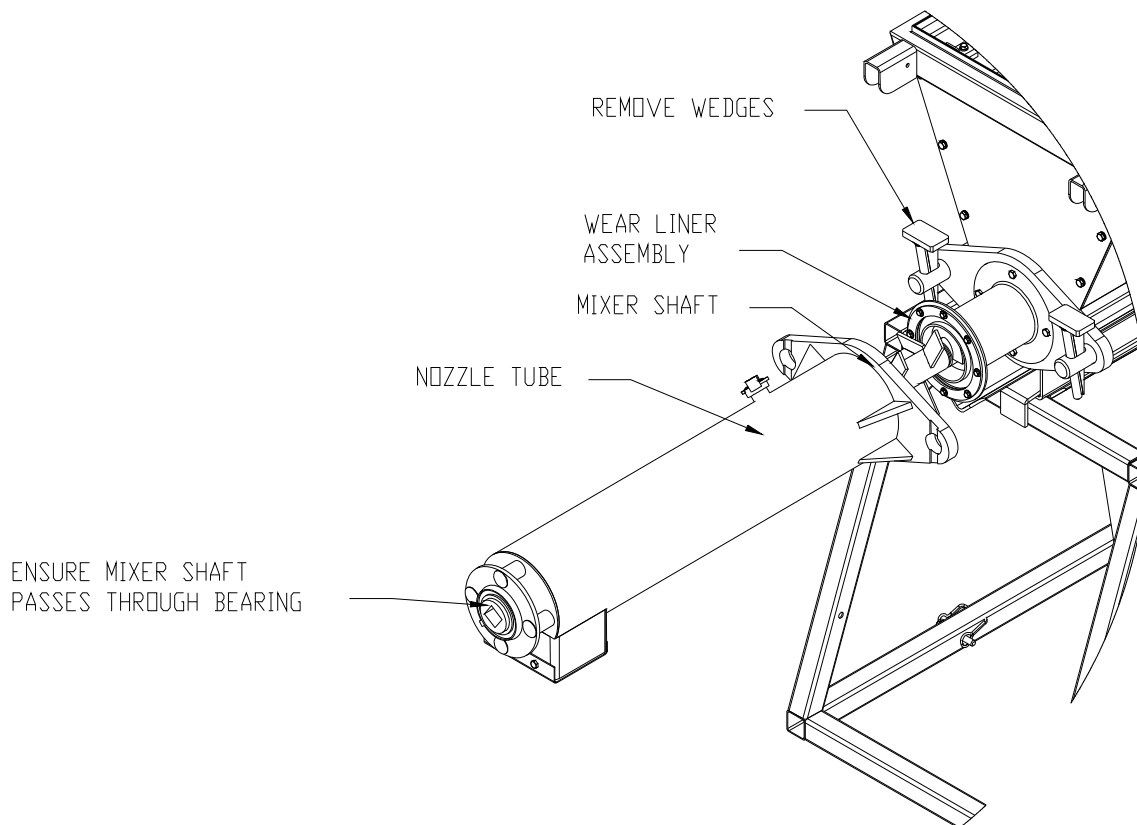


Remove the two wedges from the front of the hopper, using a hammer (if required),

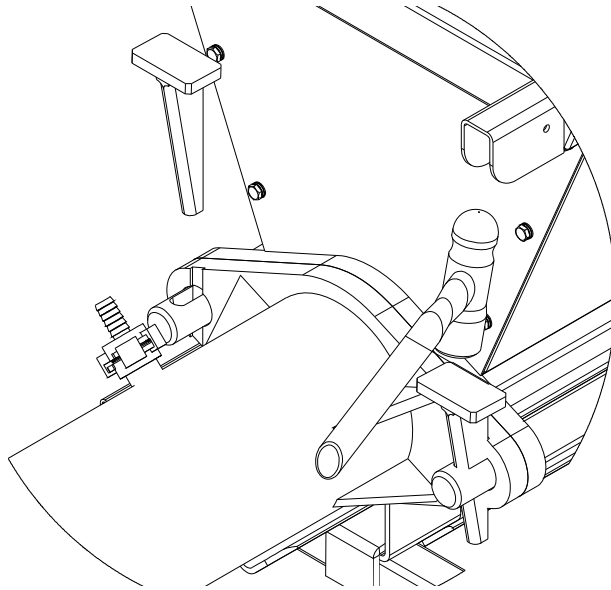
Grease the edge of the seal, and assemble the nozzle.



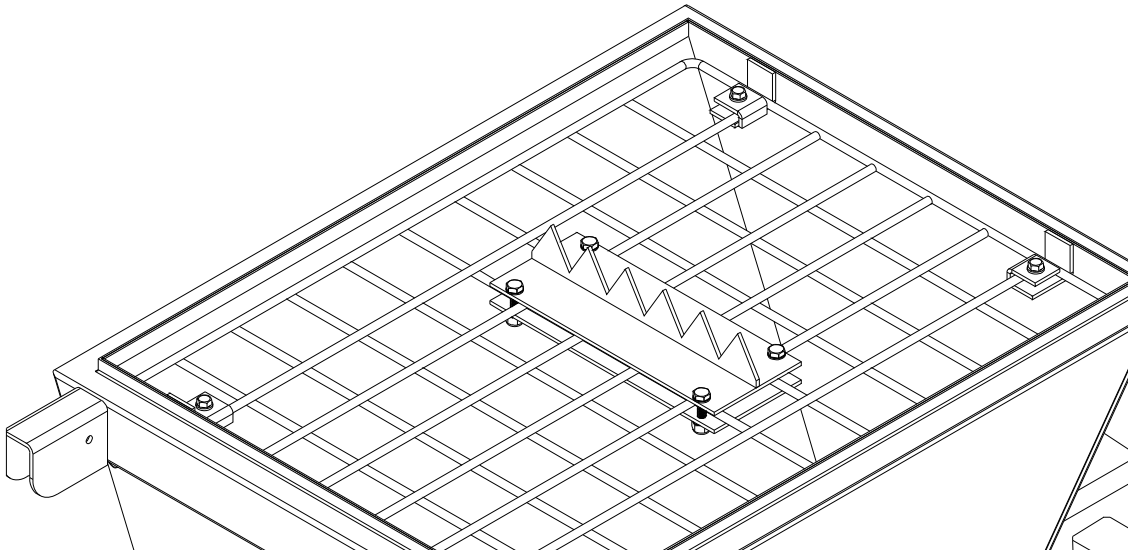
Assemble the nozzle over the end of the mixer shaft, along its length, then over the wear liner assembly, ensure that the end of the mixing shaft locates into the bearing in the end of the nozzle tube.



Assemble wedges using a hammer. ENSURE that the nozzle flange is parallel with the hopper flange



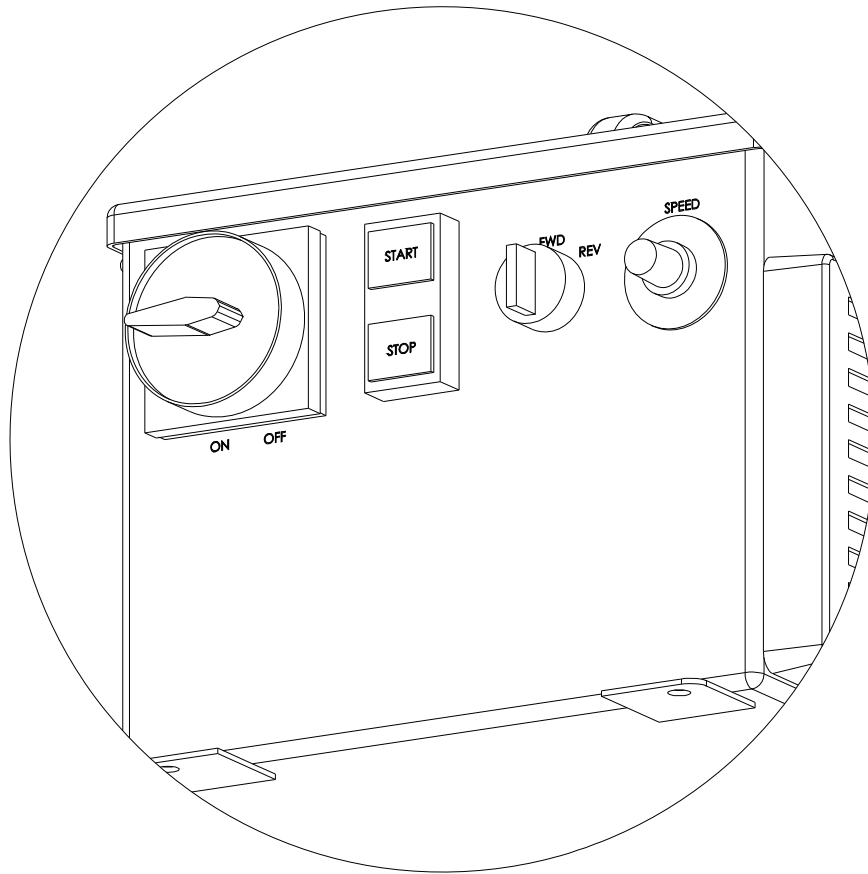
Re-assemble the safety grid to the top of the hopper, using the grid keepers and bolts originally fitted.
Ensure that the bag breaker is fitted to the grid and is facing upwards (CAUTION as the sharp edge can cause injury), if not already fitted



Operation of this machinery without the grid in place is prohibited!!

Electrical connections

1. Ensure that there are no power connections to the Electronic drive module.
2. Connect the motor power plug into the socket on the control box under the hopper.
3. Ensure that the water solenoid connector from the control box is plugged onto the water solenoid.
4. Obtain a suitable connection lead for single phase 220VAC feed to the drive module. The length must be such that the delivered voltage to the drive must be 220VAC, and capable of supplying 30A on each leg / phase. Turn the breakers OFF in the box, and remove it from the bus bar to ensure that no voltage exists on the cables.
5. Make the connection between the drive module and the main distribution box, using the supplied electric plug and your supplied cable. Ensure that the Earth is connected, as well as the two 110 VAC phases.
6. Connect the plug to the drive module, and ensure that the drive module rotary isolator switch is turned OFF.
7. Replace the breakers into the distribution box, onto the bus bar and turn them ON.
8. Turn the drive module isolator to ON, and listen for the cooling fan to turn on.



The following must be conducted by a supervisor or a qualified individual experienced in electro-mechanical equipment.

Ensure that there are no persons close to the machine.

Ensure that there are no obstructions in or around the machine.

Turn the speed control knob fully clockwise Max speed = 280 RPM (normal configuration).

9. Press the start button and observe the machine to turn the drive shaft and in turn the mixing shaft inside the nozzle tube. A scraping noise is normal, if heard, being the mixing tines running close to the inside of the tube, for maximum shear effect..
10. Turn the direction switch from FWD to REV observe the machine to turn the shaft and in turn the mixing shaft, in reverse.
11. Press the stop button.
12. Connect a water supply to the inlet connection of the water control.
13. Connect the water pipe from the water control to the connection on the nozzle tube.
14. Turn the speed to minimum, and press the start button.
15. If the water doesn't turn on, increase the speed knob on the control box until the water valve "clicks" and turns on the water. The motor should not run, but a quiet "whistle noise" from the motor is normal.
16. Once the water is proven to operate, then press STOP and turn off the machine.
17. The machine is now ready for use, by trained and qualified operators.

Section 5 – Machine operation / speed setting

The continuous mixer with a 132lb dosing/feed shaft fitted will discharge approx 132 LBS of course grain sand @280 RPM Max RPM, with the speed knob at half scale the RPM will be 140 and the delivery approx 66 LBS.

The following are to be completed by trained and experienced persons, familiar with the mixing system provided.

1. Fill the D-25 hopper with material. By dropping bags over the bag breaker, twisting left and right by approx 15 degrees, then lifting both ends of the bag to tear it in the middle. Allow the material to drop into the hopper, then remove the bag from the grid area into a disposal container.
2. Turn the water supply OFF and establish the speed the mixer should run, by either measuring the output within a certain time, or by weighing the output within a certain time. NOTE. a bucket can be placed in front of the dosing screw while the mixing shaft and nozzle are removed to perform this operation. Replace the mixing shaft and nozzle before proceeding to the next operation.
3. Turn ON the water supply, and disconnect the hose to the mixing nozzle. Place the hose end on the ground where water will not damage anything.
4. Turn the motor speed to zero, to prevent rotation, but allowing the water solenoid to operate.
5. Turn the machine ON in the FWD direction and observe water to flow through the meter. Set the water flow to suit the amount of material being delivered (base mix ratio on manufacturers information). STOP the machine.
6. Reconnect the hose to the mixing nozzle.
7. The machine is now ready for use.

General notes for operation

Turn main power switch on.

Push start button.

Adjust speed to desired output. Note the water volume does not increase or decrease when the motor speed is altered.

Do not let hopper run below the top of the mixing shaft while mixing or the mix ratios will change.

To stop machine push the stop button.

When cleaning the mixer, do not remove grate while mixer is running.

Do not spray water on or in control box. Control box should be wiped down with a damp rag.

If access is required in to the hopper, disconnect power source before removing grate.

Mixer can be disassembled by removing wedges, this facilitates easier transport and final clean up.

Always check hoses and cords for wear.

The unit runs on high voltage and is capable of high torques.

Ensure that, after every 3 hours of operation, that the nozzle is removed together with the mixing shaft for cleaning. Check that the feed screw section of the shaft (in the hopper) is cleaned at the end sticking from the hopper as this is prone to water contamination, and can suffer a material build up.

Section 6 – Maintenance

Wear parts

It is normal for wear to occur on the mixing shaft, and in the mixing nozzle. The rate of wear is very dependant upon the materials being mixed and the throughput of the machine.

The feed / metering section of the mixing shaft is also subject to wear, as is the wear liner assembly. The output of the machine will gradually decrease as these items wear. Monitor the output of your machine to indicate replacement intervals.

The mixing shaft is made of 2 sections each part is individually replaceable. The wear liner assembly is also available as a replaceable part.

Maintenance

Apply a petroleum based grease such as “Vaseline” to the lip of the mixer seal after each cleaning, to help allow easier nozzle assembly.

Each week the motor flange must be greased using a good quality general purpose water proof grease. Pump the grease until it can be seen slightly oozing from around the hauling bracket seal. Wipe off any excess to prevent immediate material build up.

After each clean down, grease the external square bore mixing nozzle bearing, until grease can be seen “oozing” from the bearing seals.

Do not grease any of the mixing shaft connections as the lubricant will attract material and cause premature wear.

Check the condition of the mixing shaft parts on a regular basis, and ensure that they fully engage with each other. Check for the level of “play” between parts and replace when they become “loose” or increased levels of wear will occur on other mating parts.

Check that all fasteners are fully assembled and tight at all times.

Ensure that the water control is free of leaks and that the system is drained if being stored or not used, in freezing conditions.

Replace any bent, damaged or torn parts immediately to prevent further damage to the machine and / or personnel.

Ensure that the safety grid is always replaced after any hopper or shaft maintenance.

Check the condition of all electrical connections a shift by shift basis.

Clean the whole machine on a shift by shift basis, including the dosing section of the mixing shaft assembly.



LIMITED WARRANTY POLICY

Machine Technologies 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.

Machine Technologies' 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 Machine Technologies' 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 Machine Technologies. 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, rotors, stators, hoses, spray caps, spray nozzles, mixing shafts, shaft couplings and connectors, dosing shafts, pump shafts, filter elements and tires).

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