

Type: DeckMate

Model:

Serial Number:

Owner's Manual for
Strong Manufacturing Company
DeckMate

Note

The warranty is void on the machine if the engine exceeds 2100 RPM, or other adjustments or modifications are made without the written consent of Strong Manufacturing Company, Inc.

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Preface

The DeckMate has been designed to INCREASE PROFITS by increasing your production and by lowering your material and labor cost.

The basic idea was to design a machine that would be simple and easy to move from job to job, set up, and operate and maintain.

We are confident that your new DeckMate mixer-placer will INCREASE PROFITS...but the life and service received from this piece of equipment will depend entirely upon the care and attention you give it during daily and routine use.

In order to help you with the proper servicing and care of the machine, the operation and maintenance manuals from the various suppliers of components are included. These should be carefully read and followed by those who will be responsible for the maintenance of the machine. Other pertinent information is given in the following pages to insure the best performance of the machine and to help you pour a better and more profitable roof deck.

You should remember that the nature of your business...that is, the mixing and pumping of cement, lightweight insulation aggregates, water and admixtures, creates the most severe conditions under which the machinery must operate. It was with these conditions in mind that the selection and design of the various components were made.

Strong Manufacturing strongly urges the customer to adopt the following rules when operating this piece of equipment. Adherence to these safety rules can help prevent possible damage to equipment, bystanders and employees.

1. Never use weathered, rotten or damaged hoses in conjunction with pumping operations; they represent a hazard to operators, bystanders and personnel on top of the roof. These hoses should be a minimum of 600 PSI tested hose.
2. Be sure guards are installed properly, never remove a guard for convenience sake. The manufacturer would not have installed them if they were not necessary.
3. Never run the machine without the mixer lids and grates installed. Failure to do so not only is a safety hazard, but the danger of foreign objects falling into the mixer may cause extensive and costly damage.
4. Always use the pressure gauge supplied with the machine, not only does it forewarn the operator of rising pressure that may constitute danger, it serves as a handy device to help maintain a consistent mix.
5. Be sure to have plenty of help when erecting the auger onto the machine. Be sure the operating boom assembly is properly working.
6. **Never** make adjustments or repairs when the machine is running.
7. Be sure jack stands are firmly in place and tight. A hopper full of mix is heavy and will tend to get the machine out of balance.
8. Never operate the hydraulic system in excess of 2000 PSI.

Safety

The following Safety section should be read and carefully by anyone associated with the operating or maintenance of the machine.

Additional copies of this Safety section may be obtained from Strong Mfg. free of charge.

Safety

A. Engine

1. **Do not run the engine in an enclosed area.** Exhaust gases contain carbon monoxide, an odorless and deadly poison.
2. **Do not fill fuel tank** while engine is running.
3. Do not operate the engine when an odor of fuel is present or other explosive conditions exist.
4. If fuel is spilled, move machine away from the area of the spill and avoid creating any source of ignition until the fuel has evaporated.
5. Do not store, spill or use fuel near an open flame, or devices such as a stove, furnace, water heater which utilize a pilot light, or devices which can create a spark.
6. Refuel outdoors preferably, or only in well ventilated areas.
7. **Do not operate engine without a muffler.** Inspect periodically and replace, if necessary.
8. Periodically clean the muffler area to prevent grass, dirt and combustible material from accumulating.
9. **Do not** operate the engine on any forest covered, brush covered or grass covered unimproved land.
10. Except for adjustment **DO NOT** operate the engine if air cleaner or cover directly over the carburetor/injector air intake is removed.
11. Do Not choke carburetor to stop engine.
12. Do not tamper with the engine speed selected by the original equipment manufacturer.

13. **Do Not Touch** hot muffler, engine, or radiator as contact may cause burns.

The engine on your machine has been set to run at 2100 RPM during operation. This speed should not be exceeded, as it will damage the engine, hydraulic pump, and hydraulic components.

The engine operations manual should be used to determine maintenance procedures and safety checks.

Caution: Failure to observe the above warnings can result in severe bodily injury, including eye injury, burns, loss of sight or limbs and possible death.

B. Electrical

1. Use qualified mechanic only to perform all electrical service to machine.
2. Never remove any covers from the electrical components without first disconnecting the negative battery cable from the battery.
3. The electrical system on your machine is 12 volt. D.C., negative ground. Use only replacement components rated for the correct voltage that machine is equipped for.

Caution: Failure to observe the above warnings can result in severe bodily injury and possible death.

C. Hydraulics

1. Always check to see that hydraulic valves are in neutral or OFF position, prior to starting power supply.
2. Never disconnect a hydraulic line with power supply running. When working on hydraulics, shut off power supply. Never reset hydraulic relief valve to a setting above 1750 PSI, or that which was set when machine was received.

3. Inspect hoses regularly for wear. Replace if breaks, tear, or soft spots appear.
4. For pressure hoses, replace with hoses designed to operate at or above 2000 PSI pressure and for return hoses, replace with hoses designed to operate at, or above 1000 PSI.
5. When working on hydraulics, use only a qualified hydraulic mechanic.
6. Where possible, replace all components with same, or equal manufactured products.
7. Keep hydraulic oil off hot part such as engine exhaust as the oil will ignite at high temperatures.

Caution: Failure to observe the above warnings can result in severe bodily injury, including eye injury, burns, loss of sight or limbs and possible death.

D. Machinery

1. Read all **WARNING** and **CAUTION** signs before starting machine.
2. Never remove guards with motor or engine running. Turn ignition off and remove key on engine and tag when necessary to remove guards, or work on machine.
3. Never operate machine with worn parts or loose parts or parts needing adjustment.
4. Make sure all guards are in place before starting motor or engine.
5. Allow engine to cool before filling fuel tank. Do not over fill fuel tank. If spill occurs, wash away with water, making sure spillage is taken up with some type of absorbent. If nothing else, use a bag of cementitious mix. After containing spilled fuel, remove materials containing fuel from area and dispose of according to current regulations.
6. Never operate equipment without fire extinguisher that is in good operational condition when engine is used.

7. Never operate equipment with excessive load. Hydraulic components should not be run at continuous pressures above 1500 PSI for any length of time. Do not operate with continuous material pump pressures as evidenced by the pressure gauges.
8. Never pump at excessive pressures as evidenced by the pressure gauges.
9. Inspect material hoses daily for wear or damage and replace with equal quality.
10. Never point hose discharge at anyone or hold hand over end of hose.
11. Always stand clear of pump discharge while pumping. If a plug occurs, pressure will build up to extremely high pressure very quickly. If the bell reducer, pressure gauge, hose, or couplings have a weak spot, they may rupture.
12. Have all personnel at mixer wear safety glasses, dust mask and goggles, when mixing and/or pumping.
13. Never spray water onto a hot engine, electrical motor or switches. Use caution in washing up to prevent wetting above components.
14. Install new safety decals when others are worn or faded.
15. Always disconnect battery cable when not in use to prevent machine from being started by unauthorized personnel.
16. Keep empty bags out of area to prevent fire hazard.
17. Loose clothing, hair and jewelry should not be worn by operator, or by anyone working on, or around machine.

Caution: Failure to observe the above warnings can result in severe bodily injury, including eye injury, burns, loss of sight or limbs and possible death.

E. Water

1. Never connect water to machine when line pressure is over 150 PSI.
2. Always flush water lines prior to connecting to machine, as damage to the water meter will result from sand or other foreign particles getting into system.
3. Bleed all air from water lines prior to water reaching the water meter.
4. Use only water that is fit for drinking.
5. Disconnect water from machine at end of shift, and drain meter and lines, if possibility of freezing exists.

Caution: Failure to observe the above warnings can result in severe bodily injury, including eye injury, burns, loss of sight or limbs and possible death.

Engine

The standard power unit is a diesel engine effective 2000. These water-cooled engines are designed for industrial application and are the best engines for the job. The engine is also the most costly single piece of equipment on the machine. When referring to the manual for service recommendations, use those given for the most **severe conditions**.

Gasoline Engine

Some of the older DeckMates have gasoline engines, which this section will deal with. Disregard if your machine was built after the year 2000.

The engine speed is set to turn the pump at 550 RPM when the transmission is in 4th gear at the engine speed of 2100 RPM. This speed will give the maximum production with the minimum wear of the pump. When pumping against high pressure, or when necessary to slow the discharge down, shift the transmission in a lower gear. Never slow the engine RPM down when pumping under full load, as this will cause the engine to “lug”, setting up high cylinder head temperatures and causing engine damage.

The engine is equipped with a full range variable speed governor. This means that at a given throttle setting the engine will maintain a given RPM unless overloaded. When the engine RPM falls off, it is caused either by load being greater than the engine can carry or the engine is not developing its required horsepower. When this occurs, check to see that the discharge pressure is not too great as caused by a restriction in the lines or a mix too dry. The other possibility is the engine is not functioning properly, which could be caused by the engine not getting fuel properly.

The engine has been serviced with a break-in oil, which should be changed after 40 hours of service and replaced with a good grade of H.D. oil. Refer to manufacturer’s maintenance and operator’s manual for grade oil to use.

Diesel Engine

If your machine is equipped with a diesel engine in lieu of a gasoline engine, the following instructions apply. Carefully read and study the operations and maintenance manual that is supplied by the engine manufacturer and included with your machine.

Your machine has been equipped with safety monitoring devices to help protect your engine. They include oil pressure and oil or water temperature. These gauges are preset at the factory and should not be adjusted.

When starting the engine, hold in on the INTERLOCK button and engage the starter. The engine should start. Hold the push button in until the pointers on the gauges are clear of the pegs they are resting on. Release the push button and the engine should continue to run. In the event the engine will not continue to run after running for a few seconds and releasing the push button, the cause must be determined.

Never override the safety switches by devising a method of holding in the push button. Severe engine damage may result. **DO NOT BYPASS SAFETY DEVICES.**

Your machine is also equipped with a safety interlock switch on the mixer. The mixer grate must be in place for the engine to start. Check the safety interlock daily for proper operation. Do not operate the machine without a properly operating safety interlock on the mixer.

The proper engine RPM for the DeckMate is 2100.

Hydrostatic Drive

Some Strong equipment is constructed with a hydrostatic pump drive in lieu of a transmission and gearbox. Special instructions apply for the use and maintenance of these drives.

A joystick located at the operator's platform controls the material pump output. With the engine speed set at minimum RPM's, slowly push forward on the joystick to engage the material pump. As the joystick moves forward the pump speed increase until it reaches maximum speed. At the center position the pump will be in neutral and will not rotate.

To reverse the material pump, pull back on the joystick. The further back the joystick is moved, the faster the pump rotates.

Always return the joystick to the neutral position when not in use. Before starting the engine or servicing the machine be sure all controls are in neutral and all personnel are clear of rotating or moving parts.

The hydraulic tank that furnishes hydraulic oil to the hydrostatic pump as well as all other hydraulic circuitry is equipped with an in-tank line filter. This unit contains a 10-micron element design to protect your hydraulic components. An indicator on the housing is used to show the condition of the filter.

The filter should be changed when the indicator reaches the change zone. Replacement filters should be 10 microns only. Always replace filters with those meeting the specifications of the original.

Safety

CLEANING, REPAIRING, SERVICING AND ADJUSTING PRIME MOVERS, MACHINERY & EQUIPMENT

SECTION 3314 – GENERAL INDUSTRY SAFETY ORDERS

Machinery or equipment capable of movement shall be stopped and the power source de-energized or disengaged, and, if necessary, the movable parts shall be mechanically blocked or locked to prevent inadvertent movement during cleaning, servicing or adjusting operations unless the machinery or equipment must be capable of movement during this period in order to perform the specific task. If so, the **EMPLOYER** shall minimize the hazard of movement by providing and requiring the use of extension tools (e.g. extended swabs, brushes, scrappers) or other methods or means to protect employees from injury due to such movement. Employees shall be made familiar with the safe use and maintenance of such tools by thorough training.

Strong-Mate Mixer

The Strong patented double-drum mixer is a unique design, which allows for very fast and thorough mixing without the degradation of fragile materials. The mixer is furnished with guards over the mixer paddles, a safety kill switch which senses the guard on the mixer opening and a guard covering the mixer drive components (chains and sprockets).

Operation of the mixer without all the guards and safety switches in place and functioning properly will lead to hazardous working conditions. All guards should be inspected daily. The safety kill switch should be checked each day to assure the power supply is de-energized in the event the mixer grate is removed.

Always wear eye protection and an approved dust mask when operating the mixer. Never wear loose fitting clothing, jewelry, loose long hair or any other object that may become entangled in rotating parts. Never allow objects to rest on the mixer grate. Garden hoses, tools, etc. may fall into the mixer and cause mechanical damage to the mixer as well as physical damage to the mixer operator.

Mixer Operation

Before energizing the power supply (electric motor, engine, etc.) make sure the inside of the mixer is free from any foreign material. Check all guards, grates and the kill switch to assure they are in good condition and working properly. Disengage the mixer control valve or switch. The mixer should be set up as level as possible to promote optimum mixing action. All hydraulic valves and switches must be in the **OFF** or **NUETRAL** position.

If the mixer is equipped with a water meter, connect the water supply to the proper inlet. Open a valve upstream from the water meter to allow air in the hoses to escape. Turn the water supply on slowly to prevent possible damage to the meter. Close the mixer door.

It should now be safe to energize the power supply. Add water to the mixer and allow the mixer to agitate. If the machine is equipped with a pump, the water may be dumped into the pump hopper and pumped through the material hoses to lubricate the hoses. If not equipped with a pump, the water may be dumped out or used to make the first batch of material.

Meter the correct amount of water into the mixer. Slowly add the proper amount of material reserving a small amount to be added after the mix has become wet in the mixer. Observe the consistency of the mix and slowly add the remaining material to the mixer. If the mix consistency varies in the mixer, add the reserved material to the wettest end.

Allow the mixer to run until the mix becomes consistent throughout the mixer. Open the door and discharge the material. Close the door. With the wash-down hose on the meter side of the water, wash off the mixer grate and any other accumulated materials. Meter in the remaining water and slowly add the material for the next batch. Be sure all the water is in the mixer before adding the material. The mixer can be installed or damaged by overloading. Allow material to mix until homogeneous.

Mixer Clean-Up

The mixer can be kept reasonably clean if washed down with metered water between batches. To clean the mixer at the end of the day or end of the job, discharge all material from the mixer. Close the mixer door. With a garden hoses or pressure washer, wash down the top of the mixer grate. Allow the water to run into the mixer until approximately half full. Allow the mixer to agitate until all built-up material is cleaned from the paddles and mixer walls. Open the door and discharge the water.

Shut down the power supply and lock it out. At this time, the mixer grate can be removed if material build-up could not be removed by any other method. The mixer grate can be turned upside down to facilitate removal of material from the underside. Any material remaining on the paddles or inside of the mixer body can be removed with scrappers or other suitable tools. Any large pieces of hard material should be removed from the mixer before replacing the mixer grate.

After removing set material, replace the mixer grate. Be sure the kill switch is properly located on the grate. The power supply should not be capable of energizing if the kill switch is working properly.

With all valves and switches disengaged, energize the power supply. Turn the mixer on and flush any remaining residue from the mixer. After the mixer is thoroughly cleaned, disengage the mixer and shut down the power supply. Grease the four (4) alemites that say, "Grease Twice Daily". Spray the outside of the mixer with a de-bonding product such as Steel Guard to facilitate ease of cleaning after the next use. A wax-type product is preferred over an oil-base because the wax will dry and not be slippery. If freezing temperatures are expected, drain all water lines, valve and meter. Be sure **all** water was discharged from mixer.

Strong-Master Pump

The pump consists of the rotor and stator, connecting rod and drive shaft assembly. The pump is equipped with a 2R10-0 rotor and stator that screw into the slurry through. The rotor will usually out-last the stator. The stator should last about 2000 cubic yards when using vermiculite or foam as an aggregate. If harsher aggregates are used, such as a perlite or sand, the rotor and stator may wear out at the same time. As the rotor wears, the life of the stator will decrease. The life of the stator can be prolonged by reversing end every 500 yards to allow the wear to be uniform.

To remove the stator, loosen the “U” bolt clamp and break the joint with a pipe wrench. Unscrew the stator and pull it from the rotor.

A worn stator or rotor will affect the yield. Material is “ground-up” in the stator rather than pumped out. When the pump is functioning properly, a smooth flow of material is discharged from hose. When wear is excessive, the material flow will decrease and become intermittent. When the flow breaks, a small puff of vapor comes out. As the wear increases, this comes out at short intervals and indicates a need to change.

Packing Chamber

The Strong-Master size 100 PUMP features a packing chamber specially designed to handle cementitious slurries.

The packing chamber consists of a set of specially prepared packing and one lantern ring. These stationary rings seal against the rotating drive shaft that has been hard chromium plated to resist wear. To maintain the sealing pressure required, a grease fitting and a conventional packing gland are utilized.

The packing chamber must be kept well-greased. This should be done every four hours of operation and at the end of each operational day. This will prevent water and mix from entering the chamber and setting up.

The packing gland is used to maintain a uniform packing pressure as the rings wear. There is adjustment for one full ring of packing. When the gland has bottomed against the chamber an additional ring should be added.

When the packing chamber continues to leak after greasing and gland adjustment, the original rings are too badly worn or dried out and will not seal. Remove the gland and all of the rings. Replace with complete new set as shown on the pump drawing. The lantern ring and chrome plated drive shaft usually will not need replacing, but they should be inspected and cleaned.

If the holes in the lantern ring are stopped up with dry material, they should be cleaned as grease will not reach the packing and rapid wear of the packing will occur. The chrome on the drive shaft should be inspected for wear and cleaned or replaced. Excessive grooving or lack of chrome indicates a need to replace the drive shaft.

Dismantling and Installing Pump Drive Unit

Drawing No. 04101001

For a Deck-Mate with a transmission, disconnect drive shaft. Remove square head set screw from drive hub. Loosen boot clamps (6) and slip off end of boot (5). Roll boot from drive hub. Remove four ½ inch bolts holding drive assembly to suction hopper (#2). Remove bottom half of frame cradle. Entire unit will lift clear of suction hopper. There is approximately 1/16 inch clearance all around between the drive hub and the center hole into the slurry trough. Set-up concrete may block passage of the drive hub. To install new unit, reverse the above procedures following the steps below:

It is important to set frame cradle to drive assembly last in order not to place a strain on it. Pack drive hub with Nebula EP2 or equivalent grease. On the drive housing is a raised boss, which fits into a counter bore in the suction hopper bolting face. Examine both of these sections for burrs. Remove with flat mill file. Make sure all foreign matter is removed from all mating surfaces. Wipe with grease after cleaning. Pull the four housing bolts up, alternately, so that housing faces contact all around. After drive unit is secured in place, tighten frame cradle set screws until cradle is firm against drive assembly. Tighten lock nuts and mounting bolts. Complete balance of the assembly in reverse order of the dismantling.

Set-Up and Operation of Materials Loading System

To set up auger and ground hopper for operation have the pump spotted and leveled with two leg stands in firm contact with ground. It is best to have a small piece of 2" X 6" timber under these stands to keep from settling into ground during operation. Remove auger hydraulic motor from its storage rack and place at one end of mixer to keep it from being damaged by auger head when auger is being positioned. Next, place mixer lids/grates over mixer with rubber gasket in place. Then raise the auger with the auger lift boom. The auger is placed with the round discharge spout in this opening. The auger is then inserted into ground hopper until the stop on the auger tube is against hopper sleeve. Locate ground hopper at desired position. It can be located over a range of several feet, as desired, for most convenient loading. Next, check and see that both legs are touching ground firmly. If not, due to unlevel ground, then they should have some blocks put under them so that both feet are carrying some weight and none of the load is placed on auger tube. If auger is in a "bind" because of carrying part of hopper load, the auger screw

may rub on the bottom of hopper sleeve causing excessive wear and vibration. Clamp hydraulic motor to auger head being sure at least 75% of the flexible drive coupling is engaged. Visually align coupling to within 1/16" or less differential between related planes. Connect water and material hoses and system is now ready to operate.

Before starting engine, return control valves to their center or neutral positions. Check mixers to be sure no foreign objects are contained therein. Avoid running auger empty for an extended period. Reversing the auger while hopper is loaded may cause compaction of material at the auger intake. The material conveying system is designed for bulk handling of cement, as well as sack. Cement is introduced first to come up to the desired level or weight, and then aggregate is added. For large batches, the aggregate has to be fed into hopper with screw running, as the hopper will hold only 12 cubic feet. When using sack material, it is best to put one sack aggregate in hopper, and then follow with required cement and the balance of the aggregate. It should be pointed out that as 20% are volume when first unloaded with air-slide. After it has set and been moved, most of the air leaves. Keep paper scraps, lumpy or moist materials out of the system. If auger should choke down, it is possible to free it by reversing, AFTER material has been removed from hopper. NEVER reverse with material in hopper. It may be necessary to remove auger from hopper to get rid of bad material. If slightly moist aggregate is encountered, use ½ fresh aggregate when available.

The hydraulic valve for operating the auger has three positions, neutral, forward and reverse. During normal operations, the valve is pushed forward to the limit of the stroke. The movement should be made rapidly. Never attempt to regulate motor speed by partially opening this valve, as there is a portion of its travel where the ports are closed. If valve pedal or handle is held in this position it will cause the pressure to rise and open the relief valve. This would cause excessive heating of the oil if allowed to run any length of time. The relief valve in this system has been set at 1750 PSI.

In order to keep the mixed batches consistent, the crewmen on the hopper must signal the pump operator when material level is beginning to expose flighting in the hopper bottom. Avoid running auger without materials in it, as the screw will "chatter" and vibrate. Always stand clear of auger while running and never operate without hopper grate installed. After each day's pour, the hopper should be **CLEANED**

OUT and **COVERED** to prevent cement from setting up in it. To clean auger disconnect from hopper and run hydraulic motor in reverse until clear of materials. When a possibility of rain exists, the hopper should be disconnected and turned upside down. Water will get into hopper although it is covered during a rain, as water runs down the auger tube and into hopper. Any cement left in bottom of hopper will harden and cause severe damage to auger is started up before cleaning. This is the usual cause of failure of the auger system.

Care should be used in handling the auger while transporting to avoid bending or denting.

Pumping Procedure

At the start of each day's operation grease the packing seal in the pump drive along with the seals on the mixer as described previously. After greasing the pump and mixer, make up a batch of materials in the mixer. The water should be reduced about ten gallons in the first batch to compensate for aggregate that will be left in the auger. This is necessary only on the first batch. When mixing is complete and ready to dump, start the pump and discharge the mix in the hopper. Continue pumping until the mixture comes out end of hose. Do not run pump without water or material in hopper. Try to avoid stopping the pump with a combination of water and mixture in the hose, as the aggregate will float to the top and cause a block in the material hose. It is best to start the pumping operation at a slow rate to allow time to make up an additional batch. Once material is discharged from the end of the hose, the pumping and mixing operation can be carried on in a normal routine.

From time to time it is necessary to stop the pumping operation to remove a section of hose or move to another area, etc. When removing a section of hose, it is a must to relieve the hose pressure. To do this, the pump is put in reverse and run slowly until the discharge hose at the pump becomes soft and the pressure gauge reads "0" PSI. When pumping in reverse, be sure that materials are coming back into hopper as evidenced by the materials level in the hopper rising. Watch the discharge hose to avoid collapsing it and causing the pump to run dry. When the pump is shut down very long, turn the pump in reverse a few turns before pumping in forward. This relieves the block of materials that forms in the bell reducer when the pump is stopped with pressure on the lines.

Avoid running the pump dry. Running the pump dry just a few minutes will completely ruin a stator. When moving the hose, avoid “kinking”, as this will overload the pump. The hose recommended for use with the pump is a double-jacketed, minimum Of 600-pound test hose. When it is necessary to move the hose any distance, it is best to stop pumping.

The consistency of the mix is best judged from the way it handles on top. Only enough water to allow it to be placed and screened readily should be used. Careful feeding of the dry materials into the hopper and measuring of the water will insure a uniform mix consistency. However, on warm days water may have to be added as the temperature increases to keep the mix from getting dry.

Supplied with the machine is a pressure-measuring device to gauge the discharge pressure at all times. This attachment fits onto the bell reducer, before the first section of hose. This gauge can be used to insure a good consistent mix at all times by maintaining a consistent pressure on the gauge when pumping normally. The amount of discharge pressure is a function of the height of the building, pumping rate and consistency of the mix.

At the end of each day’s operation, the door at the bottom of pump hopper should be opened and the hopper thoroughly cleaned to prevent cement build-up. Spray suitable type oil on machine before and after pouring. Oil should not be allowed to enter the pump (rotor and stator). Petroleum products are harmful to the natural rubber in the stator and will cause swelling of the rubber compound.

Operational Procedure

The following standard checks should be made prior to starting your machine:

- Check your fuel supply, the fuel tank holds approximately 35 gallons.
- Check engine oil level. If oil is needed, add a good grade of H.D. oil as specified in engine manual.
- Check water level in engine radiator. Add as necessary. If in cold climates, a periodic check should be made on anti-freeze effectiveness.
- There is one grease alemite labeled grease twice daily which is connected to the pump drive unit by a copper line. This should be greased as described in the “packing chamber” section.
- There are four alemites on the mixer, two on each end. These should be greased as described in “The Strong-Mate Mixer” section.
- Check inside the mixer and hopper for foreign items.
- Close clean out door in bottom of hopper.
- Lower leg stands on the machine. Set-up machine with the rear of the machine slightly lower than the front. The legs should be set on 2” x 6” timbers to prevent the legs from sinking into the ground.
- Stretch out water hose and attach to water supply.
- Set-up auger as described in “Set-up and Operation of Material Loading System” section.

Before starting engine, make sure that transmission is in neutral, clutch is disengaged, PTO is disengaged, and that all control valves are in neutral. In order to start the engine, use the following procedure:

- Pull engine throttle about 1/3 of the way out.
- Turn ignition key to ON position...indicated by generator light coming on.
- Press the start button and safety switch at the same time. When engine starts, release start button but leave safety switch depressed for another 10 seconds, this switch bypasses the low oil pressure shut-down safety switch, allowing engine to build oil pressure.

Prior to attaching the hose to the pump, the bell reducer and gauge assembly has to be in place on the pump. The bell reducer provides a transition of flow from the material pump to the pressure gauge assembly. The function of the pressure gauge assembly is that it gives a direct reading of the amount of pressure required to move materials through the hose.

The amount of pumping pressure required to move materials through a hose is a function of several things.

- The type of slurry being pumped.
- Water content.
- The use of air entraining admixtures.
- Length of hose being used.
- Height material is being pumped.

The pressure gauge is also a quick indicator of a plug-up. If pressure rises fast a plug has occurred. If a plug occurs, the pump should be run in reverse until the pressure gauge reads "0" PSI. This is accomplished by shifting the transmission or hydrostat into reverse.

Caution: DO Not disconnect material hose with hoses under pressure. Always run pump in reverse until pressure gauge reads “0” PSI. Failure to do so could result in abrupt hose recoil or material blowing out under pressure and striking someone causing bruises, cuts, breaking of limb or possible loss of sight if material enters eye.

Attach water hoses to water inlet at rear of machine.

Note: Do not open inlet to water meter until wash down hose spigot has been open and allowed to run until a continuous stream of water is coming out of the spigot. Anytime a unit is attached to a different water supply, air and possible grit is trapped inside line and until this is purged per preceding instructions, it will do severe damage to your water meter.

After line is purged meter 30-40 gallons of water into the water tank. Open the discharge valve on water tank to allow water to discharge into the mixer. With clutch and PTO engaged, move control valve to forward position. This starts the mixer paddles rotating. After allowing paddles to rotate for about 15 seconds open mixer discharge door and allow water to discharge into holding hopper.

With clutch disengaged shift transmission to third gear and run pump until water is discharging at end of hose. Stop pump by disengaging clutch. If equipped with a hydrostatic drive, the clutch and PTO are omitted.

Because of wear and weathering that occurs on material hose, the following tech should be conducted at the beginning of each day to determine the condition of the hose.

The field test consists of the following:

- a. Attach all of the sections of hose which will be used in the day’s operation together just as they will be used.

- b. Pump water into the hose until it begins to discharge.
- c. Cap the discharge end securely with Test Cap.
- d. After advising all personnel to stand clear of the hose, operate the pump until the pressure indicated on the pressure the pump will produce and hold this pressure for 30 seconds.
- e. Reverse the pump until “0” PSI pressure indicates on the gauge and the discharge hoses becomes soft.
- f. Remove the cap. Operate the pump until the water has been discharged out of wet material hopper and then proceed with the pumping of the slurry.

This field test should be repeated if any damage befalls a section of the hose or if, for any reason, a section is suspected.

Caution: Never use weathered, rotten, or damaged hoses with damaged fittings in conjunction with pumping operations. They represent a hazard to operators, bystanders, and persons handling the hoses. If a hose should burst or a fitting let go under pressure, persons could be injured.

Caution: When removing a section of hose, pressure must be relieved before undoing a fitting. This can be done by putting the pump in reverse and running it slowly until the discharge hose at the pump becomes soft.* Failure to do this will result in the hose being pressurized when the fitting is undone and material could be expelled unexpectedly striking the face with the attendant danger of blindness. Also, the hose could whip about and cause injury by striking.

Caution: Do not operate the machine unless a properly functioning pressure gauge, which is supplied with the machine for use at the discharge end of the pump, is attached. This gauge allows the operator to prevent excessive pressures, which could cause the hose to burst.

**When pumping in reverse, be sure that materials are coming back into hopper as evidenced by the materials level in the hopper rising. Watch the discharge hose to avoid collapsing it and causing the pump to run dry.*

Hydraulic System (Maintenance)

System must be kept free of dirt. Inside the tank is a strainer mounted on the pump suction line, if it becomes clogged, the pump will malfunction due to starvation. Continued starvation will damage the pump. Any increase in the noise of the system, while no load is applied, may indicate this condition. This strainer should be checked after the first 100 hours and thereafter every six (6) months. To service the strainer, unbolt and gently lift the cover plate from tank. This cover is directly over the strainer in the bottom of the tank. The strainer is connected to the suction line with pipe threads, turn it counterclockwise until it unscrews and it will come out. Rinse the strainer in clean solvent, using a paintbrush to loosen sludge on screen. If the screen shows any breaks, replace. If reusing the old screen, allow solvent to evaporate before reinstallation.

Suction line threaded connections must be maintained airtight. Use semi-hard Permatex, Teflon tape or other oil proof compound. Keep compound out of line. Do not allow contaminants to enter the suction hose as damage to the hydraulic system will occur.

Approximately 60 gallons of hydraulic oil, the same used in original installation, should be maintained in the reservoir. Oil level should be checked visually or by measuring with a tape. Never allow oil level to be less than the "low" mark on the sight gauge mounted at the end of the hydraulic tank. Overheating of oil will occur if storage level drops too low. Condition and color of oil should be checked. Change oil when considerably darker than new oil. Also, check oil temperature occasionally. It should not be more than 180 degrees Fahrenheit during last half of workday. A temperature of less than 160 F is preferable. A thermometer is part of the hydraulic sight gauge. If this is not functioning, place hand on side of tank, 130 degrees is uncomfortable to touch. Oil dangerously hot it too hot to touch.

All hoses should be checked periodically for signs of failure. It is very important to keep close watch on the pump suction hose. Check for soft spots or breaks. The oil used in the system is Mobil AW68.

DeckMate Trailer

The trailer is equipped with two 6,000-pound capacity axles with brakes on both axles and electric brakes are standard. The standard hitch is a 2-5/16" diameter ball with option for Lunette eye. Tires are 7.00 x 15, eight ply radials. Trailer weight with equipment is approximately 8,500 pounds.

The trailer is equipped with a breakaway safety switch with electric brakes which will lock trailer brakes should the trailer disconnect from towing vehicle. For electric brakes, an electrical connection is made to the battery. The safety switch has a small cable connect to tow truck, which will pull a plug in electrical switch located at front end of trailer. When this pulls, electrical current is applied from battery on the trailer to brake system, thereby actuating brakes on trailer. If your machine is equipped with hydraulic brakes, a small chain is attached to some point on tow truck hitch in line with and behind the ball hitch. This should only have a small amount of slack in chain so that in event of a disconnect the chain will actuate the master cylinder thus applying full brakes at shortest possible interval. Before moving trailer onto road or highway the system should be checked to see if operating properly. To do this, pull the safety cable or chain that attaches to towing truck. Move the tow vehicle forward. For either electric or hydraulic surge brakes, this should cause the wheels on the trailer to lock and prevent wheels from turning. If brakes fail to lock check system for cause.

If hydraulic operated, check master cylinder on surge hitch for proper fluid level. Refill and bleed as with any hydraulic brake system, until brakes are operating satisfactorily. When bleeding system, start on wheel cylinder farthest from master cylinder. Release sufficient fluid to assure that all air is removed from line. Then bleed each wheel cylinder. When properly operating, the pressure applied at master cylinder will indicate a firm "pedal" when brakes are applied. If "spongy", it indicates air is still in line. When necessary to add brake fluid, a careful check should be made to see if any lines or connections are leaking. When holding a firm pressure on master cylinder, if there is a leak in system, then the master cylinder will depress or move slowly. Replace lines, connections or wheel cylinders when leaking. If no leaks are found but brakes still do not function after bleeding, then the probable cause is the master cylinder. It can be rebuilt if cylinder is not rusted or pitted. Every 10,000 miles or six months, whichever comes sooner, check the run-up on brake shoes. They should be run-up to where there is a small amount

of drag felt when turning wheel by hand. The fluid level in master cylinder should be checked monthly and refilled with a good brand of brake fluid, same as used in towing vehicle.

When trouble exists in electrical brake system it is generally caused by bad electrical connections. Check the electrical plug on rear of towing vehicle with a test light or preferably with a voltmeter. When moving the hand lever on actuator in cab of tow truck a current should be produced. The current should increase when moving hand lever. If no current is indicated, trouble is in tow vehicle. If a current is at the connection from truck to trailer and no brakes, check prongs on electrical connector and spread open with small screwdriver to cause a firm contact in plug. Check to see if ground wire, as well as other wires, is in contact. NOTE: A good ground is essential for proper function of electrical brakes. Grounding from the tow vehicle through the hitch is not acceptable. If all wiring checks out, remove wheel and drum and see if wiring inside of wheel is intact. Check the magnetic actuator for excessive wear. By using a steel object, check the magnet when applying hand lever in tow vehicle to see that a strong magnet exists. If not, replace magnet actuator. Adjust brake shoes every 10,000 miles or six months as described above.

The wheel bearing should be inspected and repacked with a good grade of wheel bearing grease every six months. Inspect all wiring and lights and replace when showing wear or damage.

After hooking trailer to towing vehicle and before driving away, check closely the following:

1. Trailer hitch to see that latch is closed and has safety pin. Check to see that trailer will not come off ball by lifting trailer with trailer jack. Balls and hitches wear and should be replaced when slack shows.
2. Electrical connector, the “pig-tail”, is connected to tow vehicle.
3. All lights are working properly.

4. Brakes as working properly. Move trailer slowly and depress tow vehicle foot pedal to see that trailer brakes lock.
5. Inspect tires for wear. Check tire pressure. Inflate tires to manufacturer's specifications. Under inflated tires run hot and will blow out.

When connecting the trailer to truck, extreme care should be taken to prevent running into the trailer hitch and jolting it hard as this will cause the plunger that goes into master cylinder to bend and bind causing master cylinder to stick and not completely release brakes. This will cause brake shoes to wear and heat. The heat can cause a tire to blow out and ruin tire, brake shoes and drum.

Warning: Failure to follow these instructions may result in wheel loss, which can cause injury or death! Torque wheel nuts to 90-120 LB-FT before first road use. Retorque to 90-120 LB-FT after 10, 25 and 50 miles. Check periodically thereafter.

Trouble Shooting

(Brakes)

Problem: Hydraulic brakes on trailer do not work.

Probable Cause	How To Determine	Solution
Master cylinder on trailer hitch low of oil.	Remove top from master cylinder & visually inspect fluid level.	Refill with quality brake fluid and properly bleed air as with any brake system. Inspect and correct any leaks.

Problem: Electric brakes on trailer do not work.

Probable Cause	How To Determine	Solution
Bad electrical connections.	Check voltage at electrical plug on rear of truck with test light or voltmeter while moving brake actuator lever on truck.	

Problem: Prongs are not making contact.

Probable Cause	How To Determine	Solution
		Spread prongs with knife to clean.

Problem: Wires are not making contact.

Probable Cause	How To Determine	Solution
Vibration or strain on wires.	Test wires with voltage tester.	Tighten screws that make contact with wire.
	Remove wheel and drum to check to see if wires are in contact.	Replace wires.
Brake magnetic actuator is not working.	Energize brakes and check with metal object to see if it has strength.	Replace bad magnetic actuator.
	If current is not present at electrical connection at rear of truck.	Check out electrical circuit on towing vehicle.

Manual Drawing List

Drawing Number	Description
86000013	#10 Pump Component Breakdown
8600013A	#10 Pump Component Breakdown
86000014	Safety Chain Attachment
86000017	Parts List for Deckmate w/Parts List
86000017A	Parts List for Deckmate
86000017B	Parts List – Deckmate Diesel
86000018	430 Mixer Parts Deckmate
86000019	Auger Assembly for Deckmate
86000019A	8” Auger Assembly for Deckmate
86000019B	6” Auger Assembly for Deckmate
86000019C	7” Auger Assembly for Deckmate
86000019D	7” Auger Assembly for Deckmate
86000020	Size 10 Pump w/Parts List
86000020A	#10 Pump Parts List (Seal & Packing Type)
86000021	Trailer Wiring Diagram Hydraulic Brakes
86000022	Trailer Wiring Diagram for Electric Brakes

86000023 1 of 2	Hydraulic Schematic for Deckmate Model D2F w/Admix
86000023 2 of 2	Hydraulic Schematic for D2F Deckmate w/Admix
86000024	Hydraulic Schematic Deckmate w/Bulker Quick Couplers
86000024A	Deckmate Hydraulic Schematic w/Bulker
86000025	Hydraulic Schematic for D2F Deckmate w/o Admix
15000102	Wiring Diagram for Deckmate Inst. Box
86000027	Ad-Mix Pump Assembly
86000028	Control Stand for Deckmate Model D2F
86000028A	Parts List – Operators Platform
86000029	2D630 Mixer & Mixer Drive w/ 1 15/16” Shaft
86000029A	630 Mixer Parts List
86000030	Deckmate Drive Train w/ Gas Engine
86000172	Open Throat Drive Assembly
04101001	Open Throat Drive Assembly (86000230)