



Activate
Your Warranty
By Registering
TODAY!!!

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T170 HydroSeeder®

Operator Instructions and Parts Manual


Model **MB** Serial No. _____

For Office Use Only

Date	Update Description	Code
09/20/17	Initial release; Agitator Improvement	MB2017
10/11/17	Hydraulic hose update	MB2017
11/10/17	Revision A: Correct part number for battery (International AGM Battery); Added Hose Protector and Swivel Adapter Fitting	MB2017
05/21/18	Revision B: New Automatic Lubricator on Pump	MB0521



ACTIVATE YOUR FINN EQUIPMENT WARRANTY

 It is the responsibility of the Finn Dealer to register your Finn Equipment shortly after the equipment start-up and operation overview at which time you will be asked to sign off on the **WARRANTY VALIDATION FORM**.

Be sure to confirm with your sales representative that this has been done.

This registration process activates the Finn Limited Warranty.

What should you do if you need repairs or parts under Warranty?

How to get parts and or repairs done under warranty:

Notify **YOUR DEALER** immediately when you discover a faulty material, workmanship, or faulty component. **Do not** wait weeks or months to get it reported. Be sure to tell the dealer that this is a failure that occurred under warranty.

NOTE: Warranty work must be done by a Finn Authorized Dealer in order to be covered by the Finn Warranty Program, unless otherwise approved by the Finn Warranty Administrator.

Instructions to Dealer on processing warranty work:

Initiating a claim

1. Be sure to have the model, serial number and number of hours on unit.
2. A description of the problem as understood at the time.
3. Call Finn's Warranty Administrator to secure warranty claim authorization number.
4. Confirm with Warranty Administrator that the unit is eligible for warranty coverage.
5. Any parts needed for the repair work should be placed with the Warranty Administrator instead of the parts department. These will be shipped to you at no charge pending the outcome of the investigation.
6. Labor hours must coincide with the published "Labor Schedule" or estimate approved by the Finn Warranty Administrator.
7. Once work is done, a Finn Warranty Claim Form must be filled out and emailed along with any related receipts or invoices to the Warranty Administrator. We ask that this is done ASAP after work is completed.

Faulty or failed parts:

IF Finn wants you to return failed parts, you will receive a return shipping label in the package with new parts. On that Label will be marked a return authorization number. (Which is the same number as you claim number.)

Please also mark the outside of the package that you are shipping back (using a marker) with the claim/return number. **THESE PARTS MUST BE RETURNED WITHIN 10 DAYS!** Failure to do so can void warranty coverage.

NOTE: Further information and related forms can be found on the Finn Web site in the Dealer Portal warranty section.



WARRANTY PERIOD

Hydroseeders® and Straw Blowers: 2 years or 2000 hours, whichever comes first.

Bark Blowers: 1 year or 1200 hours, whichever comes first.

COMMERCIAL LIMITED WARRANTY
EFFECTIVE 01/01/2018

OUR WARRANTY TO YOU

Finn Corporation warrants to you, the original purchaser, for use (or rental to others for use) and to a second owner who purchases a used machine from an Authorized Dealer Rental Program (the remaining warranty), all new construction machinery, parts and attachments (except those referred to herein) that are manufactured by Finn to be free from defects in material and workmanship for a period noted above. Replacement parts provided under the terms of this warranty are warranted for the remainder of the warranty period applicable to the product to which parts are installed, as if parts were original components of the product.

TO QUALIFY FOR WARRANTY CONSIDERATION

- A. Your Finn Dealer will register your equipment with Finn.
FAILURE TO REGISTER WILL VOID THE WARRANTY.
- B. Notify your dealer same day or next day of any need for work under warranty.
- C. Warranty work must be done by an authorized Finn dealer or service provider of Finn's choice and any parts must be ordered through the Finn warranty administrator.

WHAT FINN WILL DO

Upon notification to Finn concerning a failure of material or workmanship in accordance with the above stated Warranty, Finn Corporation will:

- A. Verify claim falls within the valid warranty time frame.
- B. Verify the product and equipment has been registered with Finn.
- C. Upon affirmation of warranty period and registration, Finn will provide new or repaired replacement part(s), whichever Finn elects and a return shipping label for returning failed parts if applicable.
- D. Evaluate the part when defective part is returned. If damage to a part is determined not to be covered under the warranty, the customer will be billed.
- E. Reconcile costs with customer for parts and shipping, as determined by our inspection of failed parts, and confirmation of warranty coverage, per the terms of this warranty.
- F. Correction of nonconformities, in the manner provided above, shall constitute fulfillment of all liabilities of Finn Corporation.

WHAT THE WARRANTY DOES NOT COVER

1. Normal wear parts, Allied Equipment, trade accessories not manufactured by Finn, such as but not limited to items such as various filters, fluids, brakes, clutch linings, coupler insert, belts, hoses, light bulbs, mechanical seal, over center clutches, tires, ignitions, starters, batteries, carburetors, engines or like or unlike equipment or accessories. (Such being subject to the warranty, if any, by their respective manufacture).
2. Secondhand, used, altered, or rebuilt machines or parts.
3. Defects, malfunctions or failures resulting from accidents, abuse, misuse, improper servicing, or neglect of required operational guidelines and maintenance service, as outlined in the Finn Corporation's Operators Manual(s).
4. Any defect or failure of products warranted arises out of or is caused by accessories or parts not manufactured or supplied by Finn Corporation, whether same are supplied by purchaser, dealers, or any other party.

STORAGE

Dealers and customers are responsible to follow all guidelines related to Seasonal and Long Term Storage of Equipment, as advised in operation and equipment manuals. i.e. Finn, Engine, Clutch, Pump, Motor, etc. Equipment failures caused by neglect of these guidelines are not warrantable.

THIS IS THE ONLY EXPRESS WARRANTY ON OUR PRODUCTS

We neither assume nor authorize anyone to assume for us any other express warranty. The Distributor/Dealer has no authority to make any representation or promise on behalf of Finn Corporation or to modify the terms or limitations of this warranty in any way.

THIS WARRANTY THEREFORE SHALL BE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

LIMITATIONS ON OUR RESPONSIBILITY WITH RESPECT TO PRODUCTS PURCHASED

THE REMEDIES OF THE USER SET FORTH HEREIN ARE EXCLUSIVE, WITHOUT REGARD TO WHETHER ANY DEFECT WAS DISCOVERABLE OR LATENT AT THE TIME OF DELIVERY OF THE PRODUCT TO THE PURCHASER.

ALL WARRANTY REPAIR MUST BE DONE BY A FINN AUTHORIZED SERVICE PROVIDER OR AUTHORIZED REPAIR SHOP OF FINN'S CHOICE.

TRANSPORTATION, HAULING, STORAGE, OR OTHER SIMILAR COSTS ARE NOT PART OF FINN'S OBLIGATION UNDER THE LIMITED WARRANTIES AND IS THE RESPONSIBILITY OF THE EQUIPMENT OWNER.

THE ESSENTIAL PURPOSE of this exclusive remedy shall be to provide the original purchaser with repair or replacement of parts that prove to be defective within the period and under the conditions previously set forth. This exclusive remedy shall not have failed of its essential purpose (as that term is used in the Uniform Commercial Code) provided Finn remains willing to repair or replace defective parts within a commercially reasonable time after it obtains actual knowledge of the existence of a particular defect.

IN NO EVENT shall Finn be liable for any special, consequential, incidental or indirect damages, including lost profits or lost commercial opportunities, with respect to the sale of the above warranted product or anything done in connection therewith, or for property damage sustained by a person claiming to be a third party beneficiary of a surviving warranty under the law of any jurisdiction.

NOTICE

FINN CORPORATION URGES the use of only Finn corporation supplied parts and attachments to assure proper performance and safe operation of Finn corporation equipment. Insist on parts and attachments manufactured or supplied by Finn corporation when you purchase, repair or replace your Finn equipment and attachments. Finn corporation cannot assure that parts and attachments not manufactured or supplied by Finn meet Finn corporation's quality standards, specifications, or operating requirements. Our warranty is not effective to the extent any failure of or defect in a Finn corporation product arises from or is caused by parts, attachments or components not originating with Finn corporation. Use of Finn corporation equipment with parts and attachments not manufactured or supplied by Finn could result in personal injury and void warranty coverage.

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SAFETY FIRST

With any piece of equipment, new or used, the most important part of its operation is **SAFETY!**

FINN Corporation encourages you and your employees to familiarize yourselves with your new equipment and stresses safe operation.

The first five pages of this manual are a summary of the main safety aspects associated with this unit. Be sure to read and understand completely before operating the machine.

The symbols below are used throughout the operation and maintenance sections of this manual to call attention to safety procedures.



Danger indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.



Warning indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.



Caution indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.



Notice indicates important information, that if not followed, MAY cause damage to equipment.

NOTE: This is helpful information.

CALIFORNIA PROPOSITION 65



The engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm. Wear protective equipment.



Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

HYDROSEEDER® SAFETY SUMMARY SECTION

It is important that operators of this machine are familiar with all safety aspects covered in this section and have read the entire Operator's Manual before operating the machine. Always keep a copy of this manual with the machine. It is the responsibility of the operator of the machine to fully understand this safety summary section. Remember that YOU are the key to safety. Good safety practices protect not only you, but also the people working with and around you. Keep in mind that this safety section is written for this type of machine only. Practice all other usual and customary safe working precautions. Above all, remember that safety is up to you.



TheFINN HydroSeeder® is designed to mix and apply water, seed, fertilizer, agricultural lime, and hydraulic mulch to the prepared seedbed. The resultant slurry from mixing one or more of the above materials may react, causing harmful or deadly gasses within the tank. Heat, evaporation, or extended emptying period can/will accelerate the formation of these gasses. Please contact your supplier(s) of these slurry components regarding their potential reactivity.

I. PRE-START EQUIPMENT CHECK (equipment check is to be made with the engine off)

1. If you have a chassis-mounted unit, check devices securing HydroSeeder® to the truck or trailer frame.
2. Make sure loading hatch bag cutter is in place and secure.
3. Check that all guard railings are in place and secure.
4. Verify that all guards are in place and secure.
5. With the ignition switch ON, verify that the signal horn is operating correctly.
6. By carefully looking down through the loading hatch, inspect the slurry tank for foreign objects. Never enter the tank without following the procedures described in step 3 of section IV. MAINTENANCE.
7. Remove unnecessary objects (or material) from the tank top.
8. Make sure no one is working on or inside the machine. Give a visual and audible signal that all is clear, before starting the engine.
9. Inspect all hydraulic hoses for cracks, bulges, or damage. If hoses are bad, replace immediately.
10. Inspect all discharge hoses for cracks, bulges, or damage. If hoses are bad, replace immediately.

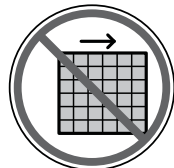


II. MACHINE OPERATION

1. Always wear safety goggles when operating the machine. Other safety attire such as safety shoes, ear protection, gloves, hard hats, dust masks, etc. should be worn as required by warning decals on machine, operator's manuals, or job site requirements. Remove rings, watches, etc. Avoid wearing loose-fitting clothing that may get caught in rotating machinery.








2. Do not operate the machine without all guards in place.


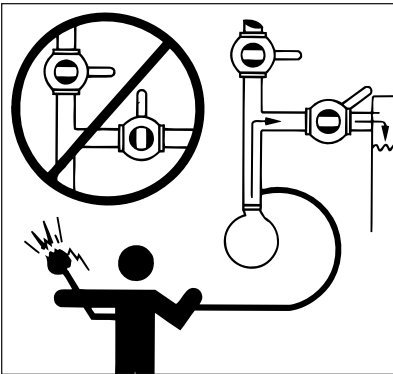




3. Do not load unit while in transit. Load only when parked and unit is as level as possible. Take care not to drop pens, lighters, etc. or pieces of paper or plastic bags into the tank, as these objects might plug the slurry system. Should any object be dropped into the tank, do NOT reach into the tank to retrieve the foreign object. See step 3 under section IV. MAINTENANCE before allowing any personnel to enter the tank.
4. Make sure area to be sprayed is clear of all persons, animals, etc.
5. The driver of the carrying or towing vehicle is responsible for the safety of the operator(s) of the machine. Make sure the driver is aware of and avoids all possible hazards to the operator(s) of the machine, such as low tree limbs, low power lines, etc. Vehicles on which equipment is mounted or towed must be stopped and started gradually. Avoid abrupt starts or stops. Never operate on a slope or a hill that may endanger the driver and/or the operator(s). All personnel should review and be familiar with stop/start signals between the driver and operator(s) before going into operation. Only the operator should be located on the platform during operation.

II. MACHINE OPERATION (Continued)

6. Operator(s) of equipment should never ride on the machine at speeds of greater than 5 mph (8 km/h). 
7. Never operate machine in an enclosed area without venting the engine exhaust of both the equipment and vehicle on which the equipment is mounted. Deadly carbon monoxide fumes can accumulate. 
8. Never operate this or any other machinery when fatigued, tired, under the influence of alcohol, illegal drugs, or medication. You must be in good physical condition and mentally alert to operate this machine. 
9. Never modify the machine. Never remove any part of the machine (except for service and then reinstall removed components before operating). 
10. Use proper means (steps, ladder) for mounting and dismounting of the machine. Never mount or dismount a moving machine. 

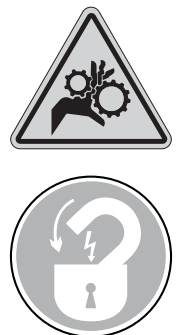
III. SLURRY APPLICATION

1. Do not aim discharge spray toward power-lines, transformers, or other high voltage electrical conductors. Also do not aim discharge spray towards people, animals or anything other than the intended application area. 
2. Never engage (turn on) the slurry pump when both the recirculation and discharge valves are closed (as illustrated to the right). Operation with both valves closed will result in extreme heat generation that could cause severe bodily injury and damage to the equipment. 

3. Recirculation valve must be open and material flowing back into the tank when using the remote valve. A closed or plugged recirculation line will cause extreme heat in the pump or discharge lines that will result in severe bodily injury and damage to the equipment.
4. During application through a hose, high pressure can be exerted at the end of the hose. Hose-holding personnel must establish good footing. The operator should apply gradual pressure to the hose only after hose-holding personnel are firmly positioned and have firm control of the hose. Additional personnel to direct hose may be necessary if working on slopes. The proper technique for grasping the hose used by hose-holding personnel is to route and firmly grasp the hose over the shoulder or under both arms. Never route/hold the hose so it goes between the legs. If the hose-holding personnel finds that it is uncomfortable for him to handle the hose by himself, additional hose-holding personnel should be positioned at the end of the hose.
5. Plan application so that the farthest area is covered first, then work back toward the HydroSeeder®, so individuals are not walking back over slippery ground.
6. Before opening any valves or pipe clamps, shut machine down and check if material in the pipe is hot. If hot, do **NOT** open valve or pipe clamps as the hot material may cause severe personal injury. Allow to cool and open with caution. 
7. Except when loading materials, keep loading hatch lid closed to protect operator and prevent splashing of wet material onto the tank top. 
8. Wash off spillage of slippery mulch or slurry additive from the tank top and platform before operating equipment.

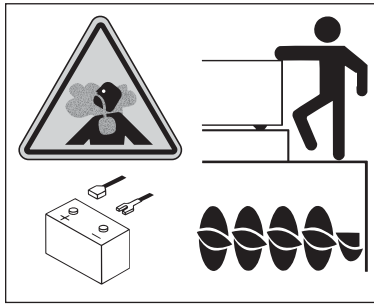
IV. MAINTENANCE

1. Before servicing the machine, turn off engine and allow all moving parts to stop. To prevent accidental starting, disconnect battery cables. Tag the engine operating area to show that the machine is being serviced. Use lockout/tagout procedure (Occupational Health and Safety Administration (OSHA) 29 CFR 1910.147).



IV. MAINTENANCE (Continued)

2. Certain hydroseeding amendments, when combined with or without the addition of water or heat or the element of time, may react causing harmful or deadly gasses.



Consult your material suppliers regarding reactivity information. The slurry tank must be flushed and drained after each day of operation.

3. Your slurry tank may be considered a confined space by OSHA under 29 CFR 1910.146. Before entering any confined space, your company must develop a procedure for safe entry. Make sure your company's plan meets all the requirements of 29 CFR 1910.146, or local legal requirement, including the following:

a) Drain, flush, and ventilate tank interior.

- b) Turn off engine, disconnect battery cables, and perform lockout/tagout procedures (29 CFR 1910.147).



c) Provide continuous ventilation or proper breathing apparatus.

d) If tank must be entered, personnel entering the tank must be tethered to a lifeline.

e) Provide a stand-by individual outside of tank who is able to communicate with person inside and haul him out with the lifeline if necessary.

4. Before loosening any clamps or opening any valves, determine if material in the line is hot by feeling the pipe. Do NOT allow material to come in contact with personnel. Severe bodily injury could result.



5. On trailer mounted units, perform general maintenance such as checking the safety chains, hitch and hitch bolts, tires, and brakes. Repair or replace if worn or broken. Never operate machine on improperly inflated or damaged tires. Always use a safety cage or cable restraints when inflating a repaired tire.



6. Radiator maintenance: Liquid cooling systems build up pressure as the engine gets hot. Before removing radiator cap, stop the engine and let the system cool. Remove radiator cap only after the coolant is cool.



7. Battery maintenance: Lead-acid batteries contain sulfuric acid, which will damage eyes or skin on contact. Always wear a face shield to avoid getting acid in the eyes. If acid contacts the eyes, flush immediately with clean water and get medical attention. Wear rubber gloves and protective clothing to keep acid off skin. Lead-acid batteries produce flammable and explosive gasses. Keep arcs, sparks, flames, and lighted tobacco away.



8. Filling of fuel: Never fill the tank with the engine running, while smoking, or when near an open flame. Never smoke while handling fuel or working on the fuel system. The fumes in an empty fuel container are explosive. Never cut or weld on fuel lines, tanks, or containers. Move at least 10 ft.. (3 m) away from fueling point before starting engine. Wipe off any spilled fuel and let dry before starting engine.



IMPORTANT: Be careful not to allow fuel, lubricant, hydraulic fluid, or cooling fluids to penetrate into the ground or be discharged into the water system. Collect all fluids and dispose of them in accordance with local municipal regulations.

9. It is recommended that only authorized, genuine FINN replacement parts be used on the machine.

10. Do not use ether cold start fluid, if engine is equipped with glow plug-type preheater, or other intake manifold type preheater. It could cause an explosion or fire and severe injury or death.



11. Diesel fuel or hydraulic fluid under pressure can penetrate the skin or eyes and cause injury, blindness, or death. Pressure may build up in the hydraulic system; use caution when removing the cap.



12. Make certain that all decals on the machine are maintained in good legible condition. Replacement decals are available through FINN Corporation. See next page for the current safety decals mounted on the unit. See the Parts Section of this manual for the location and quantity of all decals on this unit.

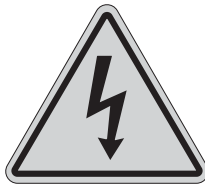
13. Do not pressure wash this unit. Do not pressure wash around any control boxes, radio remotes or control panels. Pressure washing this unit can cause damage to the electrical systems and components and also cause the unit to not function. Pressure washing injects water into sensitive electrical components. To clean the unit, use a method that controls the amount of water that is applied to surface of the unit.



COMMON SAFETY DECALS



Hazard/
Attention



Electrical
Shock Hazard



Hearing
Hazard



Arc Flash
Hazard or
Explosion
Hazard



Electrocution
Hazard



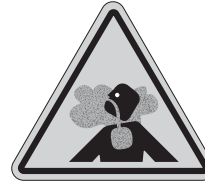
Fire Hazard



Body
Entanglement
Hazard



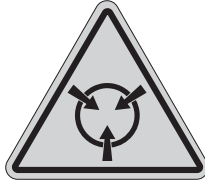
Electrostatic
Discharge
Hazard



Fumes/Dust
Hazard



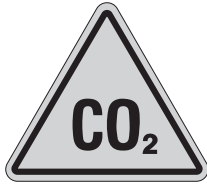
Burn Hazard



Electrostatic
Sensitive Area
Hazard



Pinch Point/
Entanglement
Hazard



Carbon
Dioxide
Hazard



Explosive or
High Pressure
Hazard



Grounding
Required
Hazard



Corrosive
Hazard



Explosive
Material
Hazard



Crush Hazard



Cut/Crush
Hazard



Vision Damage
Hazard



Crush/Pinch-
point Hazard



Cut/Sever
Hazard



Vision and
Hearing
Damage
Hazard



Crush/
Entrapment
Hazard



Sever/Reach
Hazard



Vision,
Hearing and
Respiratory
Damage
Hazard



High Voltage
Hazard

COMMON SAFETY DECALS



Heavy Object
Hazard



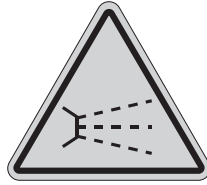
Skin Puncture
Hazard



Vision
Protection
Required



Hot Surface
Hazard



Splash/Spray
Hazard



Hearing
Protection
Required



Loose Clothing
Entanglement
Hazard



Stumble
Hazard



Vision, Hearing
and Head
Protection
Required



Pinch Point/
Moving Belt
Hazard



Trip Hazard



Breathing,
Vision, Hearing
and Head
Protection
Required



Poison
Hazard



Watch Head/
Overhead
Hazard



Foot
Protection
Required



Radio
Frequency
Hazard



Fall/Loss
of Balance
Hazard



Lockout/
Tagout
Procedure
Required



Remote Start
Hazard



Mandatory
Operator
Action
Required



Gloves
Required



Sever by
Rotating Parts
Hazard



Read Manual



Trailer Safety



Rotating Shaft
Hazard



Breathing
Protection
Required

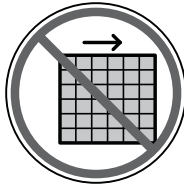


Lift Point

COMMON SAFETY DECALS



Do Not Ride
on Moving
Vehicle



Do Not
Remove
Guards



Do Not
Obstruct
or Block



Do Not Spray
Power Lines






Do Not Touch



Do Not
Pressure Wash

Additional SAFETY Decals

! DANGER

CONFINED SPACE HAZARD! (Reference: OSHA 29 CFR 1910.146)

Before entering tank:

1. Drain, flush and ventilate tank interior.
2. Turn off engine and disconnect battery cables.
3. Continuously ventilate area or wear appropriate breathing apparatus.
4. Provide standby individual outside tank able to communicate with person inside and able to remove him with a lifeline if necessary.


FLYING MATERIAL HAZARD!

Wear eye protection around operating equipment.
Failure to comply will result in death or serious injury.

P/N 41392


HYDRAULIC SYSTEM INSTRUCTIONS

1. Check oil level weekly. Add oil when level goes down to first ring on filler screen.
2. Change filter on oil tank every 500 operating hours. (Use a 10 micron filter element only).
3. Check and clean suction strainer once a year or when oil is changed.
4. Change hydraulic oil when the color turns milky white. (Color change is due to water getting into hydraulic system).
5. Keep all fittings and hoses tight and leak free.
6. Keep system clean at all times.
7. **DO NOT** start or run engine without hydraulic oil in reservoir. Permanent pump damage will occur.





HYDRAULIC FLUID ONLY

See Operator's Manual for Type.



P/N 41386

! WARNING

BURN HAZARD!

Contents could be under pressure.

DO NOT come in contact with material.

Ensure material in line is not hot before loosening clamps or opening valves.

DO NOT operate pump with both recirculation and discharge valves closed.



DO NOT use remote valve unless recirculation valve is open.

Excessive heat or bodily injury could occur.

Failure to comply could result in death or serious injury.

P/N 41385

! DANGER

ELECTROCUTION HAZARD!


DO NOT aim stream toward electrical lines.

Avoid spraying towards bystanders.

Failure to comply will result in death or serious injury.

P/N 41384

NOTICE



Seal lubricator must be kept in operation at all times for pump seal protection. See operators manual for instructions.

P/N 41387

NOTICE

To avoid damage to suction cover, tighten all bolts to 15 ft.-lbs. See Operator's Manual for instructions.

41389

STOPPING INSTRUCTIONS

Engine is equipped with a fuel shut-off solenoid. Move throttle to mid-range before stopping.

P/N 41434

! CAUTION

Use on 2 5/16 inch ball only.

P/N 41380

OPERATION AND MAINTENANCE MANUAL FOR FINN T170 HYDROSEEDERS®

This manual provides instructions for the operation and maintenance of the FINN T170 HydroSeeder®. For best results and to ensure longer life of the equipment, please follow these instructions carefully. For your safety, read the entire manual before operating this unit.

DEFINITION OF HYDROSEEDING

Hydroseeding is the process whereby seed, fertilizer and/or lime, and wood fiber mulch (using water as a carrying medium) are applied on the soil to establish vegetation.

THE FINN HYDROSEEDER® AND HOW IT WORKS

The FINN HydroSeeder® will apply seed, fertilizer and/or lime, wood fiber mulch, or stabilizing materials in any prescribed or desired combination. The materials placed in the HydroSeeder® slurry tank are mixed with water and kept in suspension by a dual agitation process, recirculation of slurry and mechanical agitation, thus forming a slurry that is pumped to the discharge assembly and directed onto the seed bed by the operator. This equipment is designed to accomplish hydroseeding in one easy operation with maximum efficiency.

MOUNTING THE HYDROSEEDER®

For speed and mobility of operation, the HydroSeeder® should be mounted on a truck or trailer. However, it is important to select a carrier with sufficient capacity to handle the added weight.

HYDROSEEDER® MOUNTING INFORMATION

- C** Distance from HydroSeeder® front to center of gravity
- OAL** Overall length of the HydroSeeder®
- HW** HydroSeeder® weight
- * Weight of HydroSeeder®, water, and full charge of granular solids only. No auxiliary equipment or loads included.

	T170	
	English	Metric
C (loaded)	71.5 in.	181.6 cm
OAL	198.0 in.	502.9 cm
HW (empty)	6766 lbs.	3,069 kg
HW (water only)	21,379 lbs.	9,697 kg
HW (full load)*	24,291 lbs.	11,018 kg

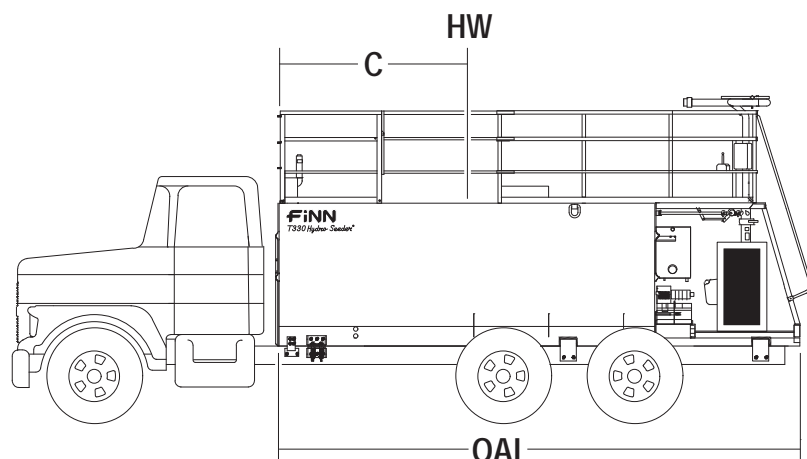


Figure 1 – Mounting Information Visual Guide

GENERAL MOUNTING GUIDELINES

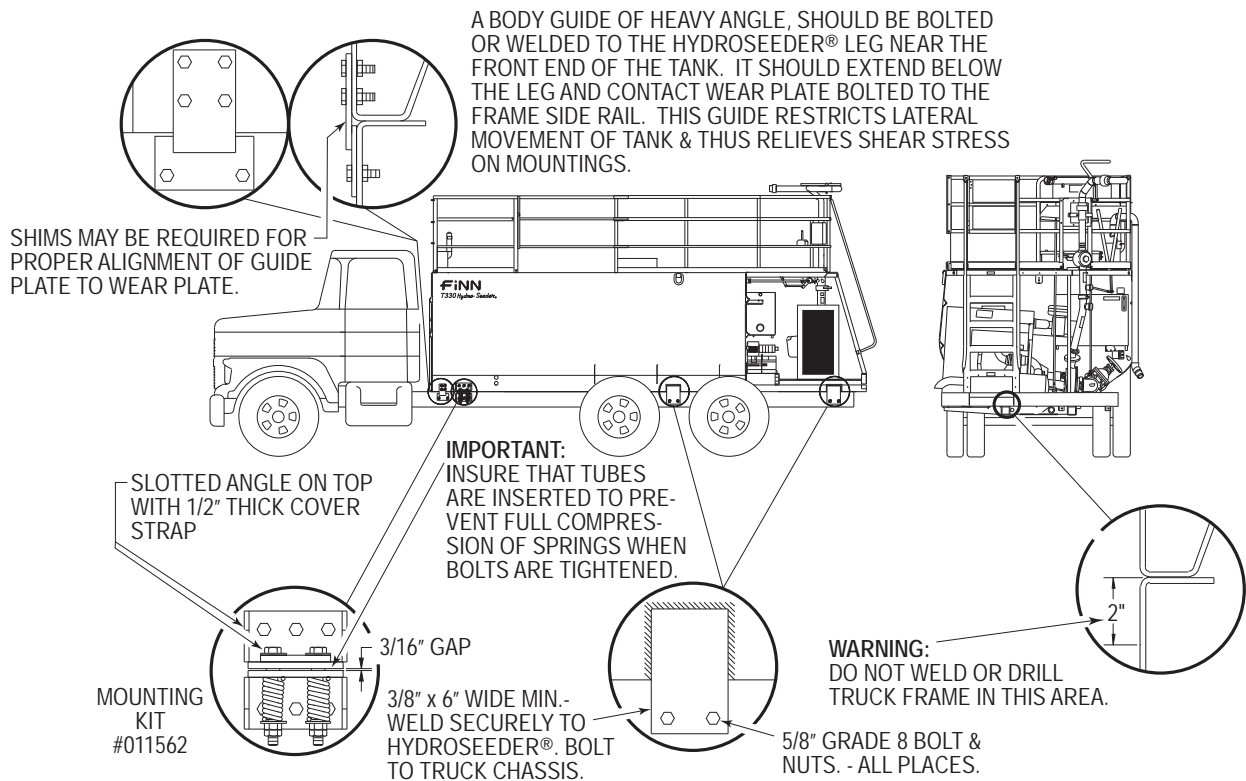


Figure 2 – General Truck Mounting Guidelines

Once the proper carrier has been selected, the HydroSeeder® must be securely mounted to it.

CAUTION *Your FINN HydroSeeder® should be mounted by a qualified truck body installer. Failure to comply could result in minor personal injury or product or property damage.*

NOTICE *Mounting the HydroSeeder® to the truck must allow for tire clearance and frame twist. Place hard wood spacers along the length of truck rails or use FINN spring mounting kit (part number 011562) or equivalent.*

ATTACHMENTS

1. Extension hoses for reaching remote areas are available in 50 ft. (15 m), 100 ft. (30.5 m), and 200 ft. (61 m) lengths. All connections are camlock quick-operating fittings. The hose is connected to the end of the discharge boom in place of a nozzle. The nozzle is connected to the end of the hose and controlled by the person on the ground. The flow is controlled by a second person on the HydroSeeder®. This allows for a full pressure and volume operation.

CAUTION

Since the extension hose is pressurized with the full output of the pump with the recirculation closed, the equipment operator and individual at the end of the hose should exercise extreme care when operating the unit at high pressure. The high pressure on the hose can exert strong forces, causing the potential for the hose operator to lose control of hose or footing. The hose will require additional hose holders when operation occurs on slopes. Engage (turn on) the slurry pump clutch only after the hose operator is firmly positioned and has firm control of hose. Failure to comply could result in minor personal injury or product or property damage.

2. For lower pressure applications, or for close-up work, such as around buildings, the remote valve attachment can be used. The attachment includes a semi-rigid hose with quick-disconnect fittings along with a hand-held valve that fits the end of the hose and accepts the standard nozzle assemblies. The hose is connected to the outlet on the discharge pipe above the pump. The machine is run at 1/2 to 3/4 throttle to apply material where desired. When using the remote valve, the recirculation valve must be open to allow excess flow to be directed back into the tank.

DANGER

The recirculation valve must be open when using a remote valve. Failure to comply WILL result in severe personal injury or death.

3. Hose Reel: The live hose reel will mount on the HydroSeeder® or on the truck frame. The 200 ft. (61 m) capacity hydraulic rewind reel will wind up and store empty hose. A pivoting feature provides three locking positions, enabling curb-side, 45 degree, and rear-hose discharge. The entire hose reel is protected by a UV-protective canopy.
4. Hardened Pump Parts: Pump casing, impeller, and suction cover are treated with a special material that is designed to resist wear.
5. Air Flush System: The air flush option uses compressed air to purge any remaining mulch slurry from the HydroSeeder® hose, the discharge boom, and the recirculation piping. To maximize performance, all discharge plumbing should be purged after every load. The air flush system provides a quick and easy means of purging without the need to acquire a flush tank and an additional water supply.

PRE-START CHECK

The following safety check should be made to ensure operator safety:

1. Check condition of all mounting hardware that secures HydroSeeder® to truck frame.
2. Make sure bag cutter is in place and secure.
3. Inspect all railings, ensuring they are all in place and secure.
4. Make sure that all guards are in place.
5. With the ignition switch in the **ON** position, verify that the amber safety light, under the operator's platform, is flashing.

EQUIPMENT CHECK

⚠ WARNING

Equipment check should be made with the engine OFF and all rotating parts stopped. Failure to comply could result in severe personal injury or death.

1. Make sure that tool kit contains all the prescribed items. See TOOL KIT list in parts section.
2. Inspect the slurry tank for foreign objects. See number 3 in IV. MAINTENANCE of the HYDROSEEDER® SAFETY SUMMARY SECTION.
3. Check fuel level and fill if necessary.
4. Check the hydraulic oil level and fill to proper level if necessary. See HYDRAULIC SYSTEM for oil specifications.
5. Check engine oil level and fill to proper level if necessary. For oil type refer to the engine manual.
6. Check fluid level in radiator and fill to proper level if necessary.
7. Inspect air cleaner for dirt and debris; clean or replace if necessary.
8. Secure the tank drain cap on the slurry tank drain pipe.
9. Check to be certain all pump drain plugs are in place.
10. Verify that the suction line shut-off valve is completely open.
11. Engage (turn on) and disengage (turn off) the slurry pump clutch to determine if it snaps in and out.
12. Check nozzle for obstructions and clean as required.
13. Check pump discharge and recirculation valve handles for free movement.
14. Make sure all tank vents are clean and open. Do not plug or cap.
15. Lubricate equipment - See LUBRICATION AND FLUIDS CHART.
 - A. Each lubrication point is marked.
 - B. Check automatic pressure lubricator at pump. If the red indicator is fully raised, the automatic pressure lubricator contains lubricant. If not, lubricant must be replaced by the following procedure (See Figure 1):
 1. Insert the 14 oz tube (A2401-001) into a manual or pneumatic grease gun.
 2. Attach the grease gun to the grease zerk on the side of the lubricator. It is NOT necessary to remove or unthread anything from the lubricator.
 3. Dispense the grease until the red indicator rises approximately 1 inch above the cap.

Monitor the red indicator for level of grease.

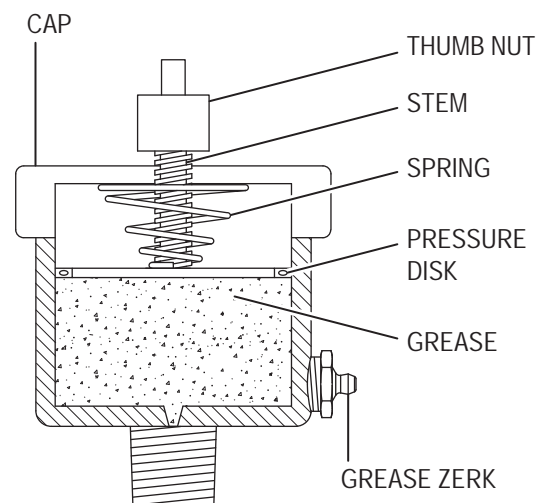


Figure 3 – Automatic Pressure Lubricator Components

TWO-VALVE OPERATION

This HydroSeeder® is equipped with two independently operated ball valves to control slurry flow. One is located in the recirculation line below the platform, and the other is located in the discharge line above the platform.

The valve handles should be positioned as shown in Figures 4 through 6 for the particular application required.

⚠ WARNING *Never engage (turn on) the slurry pump clutch when both valve handles are positioned as shown in Figure 4. Both valves are closed and will result in extreme heat generation. Failure to comply could result in severe personal injury or death.*

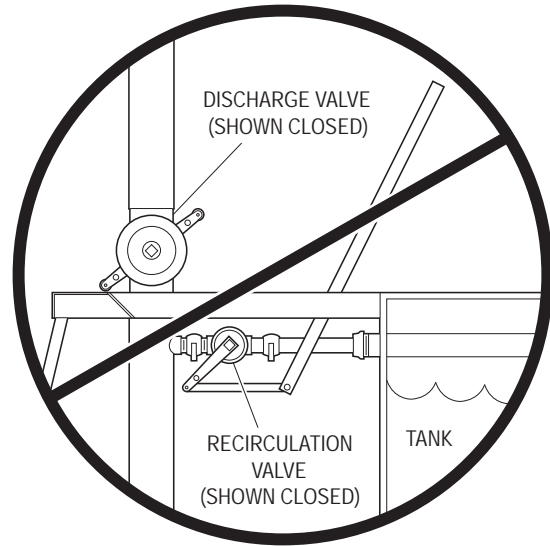


Figure 4 – DO NOT Engage (Turn On) the Slurry Pump Clutch

1. DISCHARGE THROUGH BOOM:

Flow is through the boom with no flow through the closed recirculation valve (Figure 5). The flow through the boom is started and stopped by engaging/disengaging the slurry pump clutch. To control the spray volume and distance the user must adjust the engine RPM's. Do not use the discharge valve to control spray flow and distance. The discharge valve should be either be completely open or closed.

2. EXTENSION HOSE THROUGH BOOM:

Flow is through the boom with no flow through the closed recirculation valve (Figure 5). The extension hose is connected to the boom and the flow is started and stopped by engaging/disengaging the slurry pump clutch. To control the spray volume and distance the user must adjust the engine RPMs. Do not use the discharge valve to control spray flow and distance. The discharge valve should be either completely open or closed.

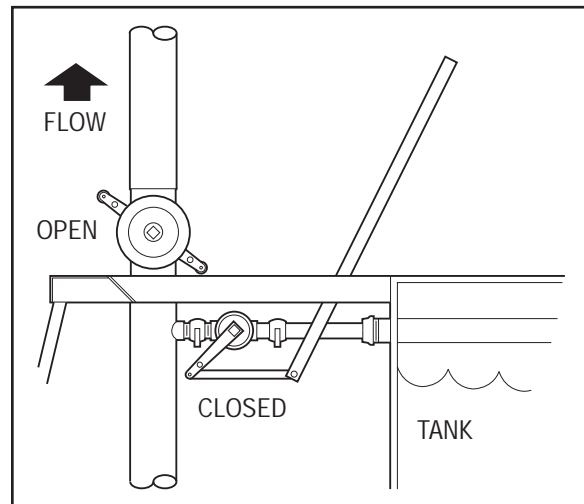


Figure 5 – Discharge Through Boom

⚠ DANGER *Do not use remote valve in this application. Failure to comply WILL result in severe personal injury or death.*

NOTE: Do not use the discharge valve to control distance. Valve should be completely open. Control the spray volume and spray distance by adjusting the engine RPM.

3. EXTENSION HOSE OR HOSE REEL THROUGH REMOTE PORT:

Flow is through the open recirculation valve with no flow through the closed boom discharge valve (Figure 6). Flow through the hoses is started and stopped by engaging or disengaging the slurry pump clutch. The operator controls the spray volume and flow by adjusting the remote ball valve attached to the end of the hose and by adjusting the engine RPMs. The open recirculation valve allows all of the excess flow and pressure to be directed back into the tank.

⚠ DANGER *Recirculation valve must be open and material should be flowing back into tank when using a remote valve. A closed or plugged recirculation line will cause extreme heat. Failure to comply WILL cause severe personal injury or death.*

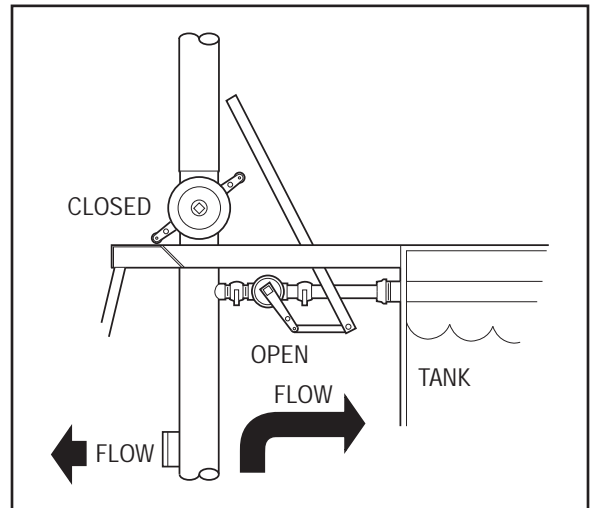


Figure 6 – Discharge Through Extension Hose or Hose Reel

CONTROL BOX

The FINN T170 HydroSeeder® control box is the operation point for the unit. The control box and corresponding control box icons are illustrated below.



Figure 3 – Control Box Assembly

	ON Symbol Toggle switch flipped up to the ON position to activate components.		RUN Symbol Key switch is in the RUN position while in operation.
	OFF Symbol Key switch is in the OFF position cutting power from the unit, or toggle switch flipped down to the OFF position.		START Symbol The key switch is turned to the START position to start the unit.
	Hydraulics Symbol This blue symbol on the control panel represents the hydraulics system of the unit. This is the switch used to turn ON and OFF the hydraulic system.		Engine Speed Control (Throttle) This switch is used to change the engine speed, toggle the throttle control switch ("Fast-Rabbit/Slow-Turtle") to the desired speed setting.

CONTROL PANEL GUIDE

NOTE: This information is to explain the function and use of the control panel when starting the unit. **DO NOT** start the unit at this point. Refer to **STARTING PROCEDURE** section for actual operation.

SYSTEM POWER UP

The control panel is powered from the engine battery connection from the engine harness connector. Make sure the engine harness is connected to the control panel before proceeding. Power up the system by turning the key switch to the **ON** “**I**” position. This will activate the control panel and apply power to the engine ECU.

If the control panel indicates a fault condition, **DO NOT** start the engine. Review the fault condition and correct the condition before starting the engine. See Fault Codes section for details on system faults.



ENGINE START

To start the engine, turn the key switch clockwise to the **START** “**⏻**” position. If a fault condition exists, the engine ECU may prevent the engine from starting. All fault conditions will be indicated by the digital display. The display will indicate the active fault(s) by presenting a pop-up graphic describing the fault condition.

ENGINE SPEED CONTROL (THROTTLE)

Once the engine is started, the control panel will set the engine speed to the minimum RPM speed setting. To change the engine speed, toggle the throttle control switch (“Fast-Rabbit/Slow-Turtle”) to the desired speed setting. The engine speed cannot be set below the minimum RPM speed setting or above the maximum RPM speed setting.

Pressing the throttle up or down increases or decreases the RPM by 10 RPM. If the throttle switch is held down in one direction for three seconds, the RPM will ramp at a faster rate.



EMERGENCY STOP

EMERGENCY STOP EQUIPMENT

A critical safety component of this equipment is the Emergency Stop (E-Stop) switch. This device is located next to the control panel, and the button is colored red to be visible and to indicate a "stop" function based on color association. The button is made increasingly visible and distinct by the bright yellow plastic enclosure that the button sits on.

The button extends outward from the enclosure's surface. The E-Stop will cut all power to the machine when pushed (engaged). E-Stop devices should NEVER be disabled under any circumstances.



EMERGENCY STOP USE

When the E-Stop button is pushed (engaged), it will override all other functions and machine operating modes. The objective of the E-Stop is to remove power as quickly as possible from the equipment without creating additional hazards.

Emergency stop devices are considered complimentary or secondary safeguarding equipment. They are not considered primary safeguarding devices because they do not prevent access to a hazard nor do they detect access to a hazard.

Remember that SAFETY is FIRST in working with any piece of equipment.

- As operating personnel change, full training and complete understanding of this equipment must be given to the personnel prior to their operation of the equipment.
- Manufacturer and its agents disclaim any liability on such equipment operating without adhering to the aforementioned safety procedures.

Once pushed or engaged, the E-Stop will prevent the operation of this unit. Until the button is turned clockwise (released) and returned to its original up position, the E-Stop will still be engaged. The E-Stop effectively turns OFF this equipment. After the E-Stop is released, follow the Starting Procedure to resume use of this equipment.

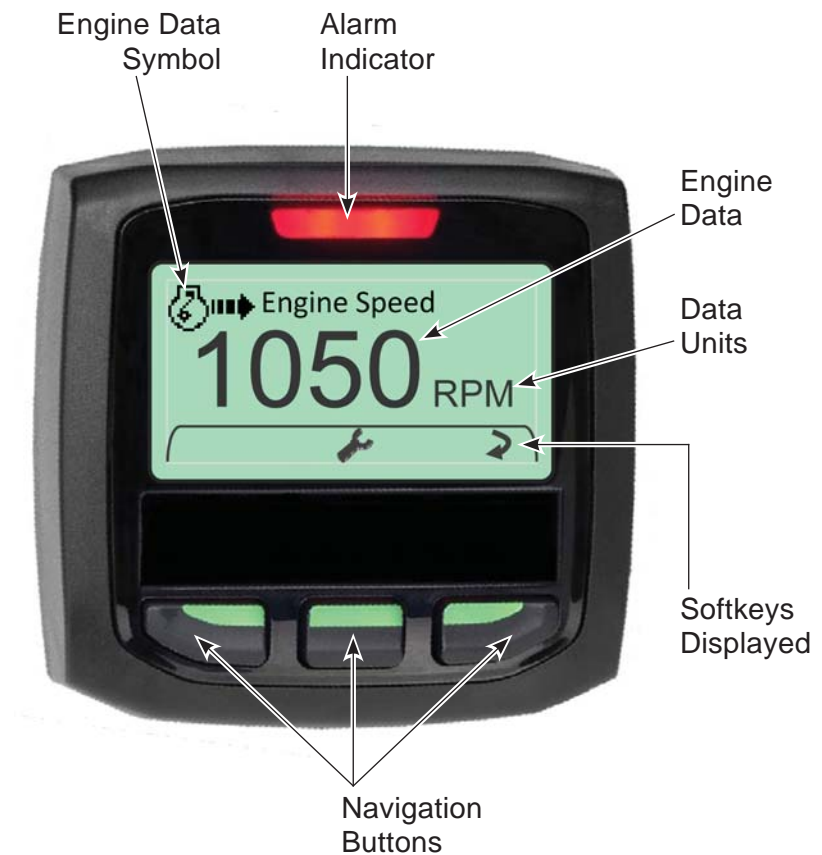
CONTROL PANEL GUIDE AND SYSTEM OPERATION

MENU NAVIGATION


The control unit has three navigation buttons which are configured as softkeys. The system softkeys are used to navigate between displays, select menu items and change data. Pressing any of the three navigation buttons will display the softkey menu that is associated with each button.

Softkeys Displayed

-  : Main Menu
-  : Exit
-  : Change
-  : Scroll Up
-  : Scroll Down
-  : Next
-  : Increase Value
-  : Decrease Value
-  : Acknowledge
-  : More Information



CHANGING DATA DISPLAYS

To change the data being displayed, press any key to activate the softkey menu. Press the Change “” softkey to access the next data display available.

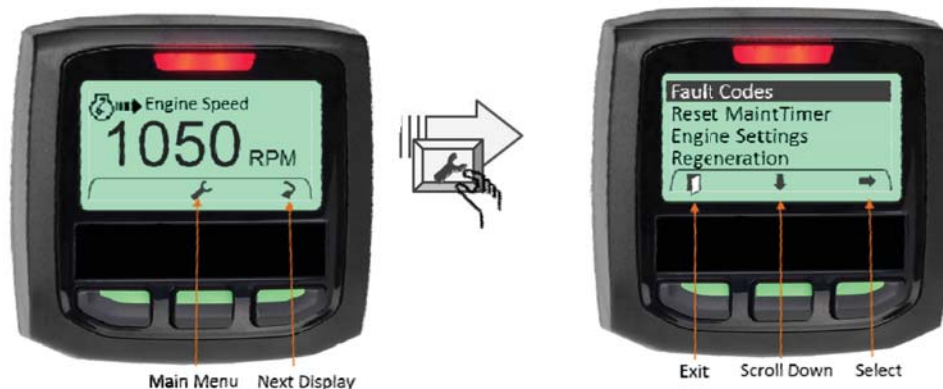
See System Display List for complete selection of data displays available.



CONTROL PANEL GUIDE AND SYSTEM OPERATION (CONTINUED)

MAIN MENU ACCESS

To access the Main Menu, press any of the three navigation buttons. The unit will display a softkey popup window defining the available navigation possibilities. Select the Main Menu using the center softkey as shown.



MAIN MENU NAVIGATION

Access the main menu using the center softkey. The main menu will be displayed along with the main menu softkey popup window. Navigate through the main menu selections by using the "↓" key. When the desired menu item is highlighted, press the "→" key to select the menu item. To exit the main menu and return to the data displays press the EXIT "⏏" softkey.



CHANGING PARAMETER SETTINGS

Parameter settings can be changed in one of two ways: using the "+" / "-" softkeys to increase or decrease a numeric value or using the Change "↔" softkey to toggle through a list of programmed settings.

FAULT CODES

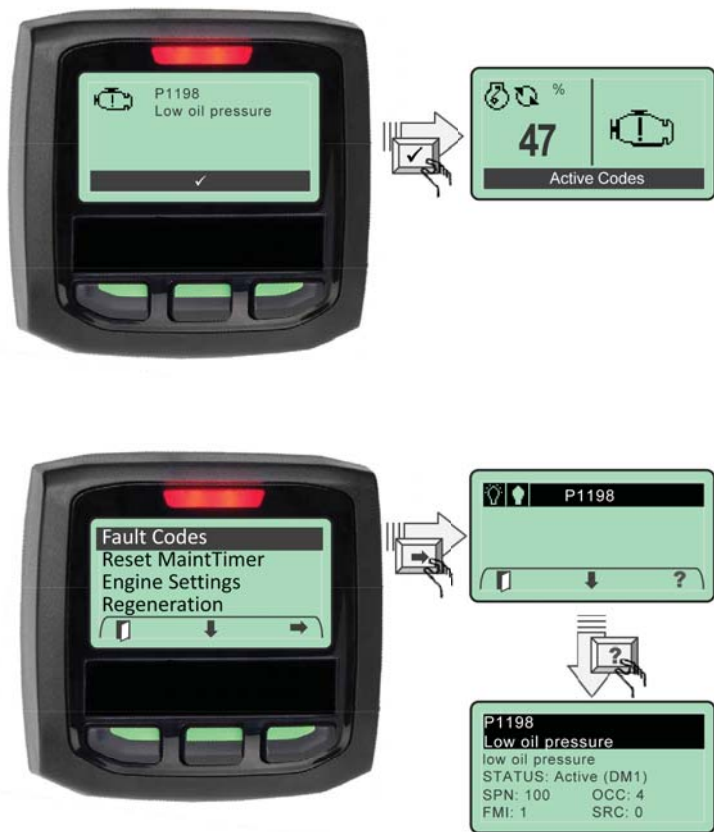
Engine fault codes (active and stored) are generated by the engine ECU and communicated to the control panel.

ACTIVE FAULT CODES

The control system reads standard messages to indicate active fault codes. When a fault is active the control system activates a popup fault display containing a check engine icon, fault code number (if applicable), a description of the active fault and an “Active Codes” alarm stripe at the bottom of the display. The control system will activate the red LED fault indicator above the digital display.

When an active fault is presented, the user must acknowledge the fault by pressing the softkey indicated. See “Acknowledging Active Faults” section.

After acknowledging a fault condition, the system will return to normal display operation. The controller will indicate that an active fault is present by displaying a “Check Engine” icon on the main data display. The system will also display an “Active Codes” alarm stripe at the bottom of the display.



ACKNOWLEDGING ACTIVE FAULTS

When the control system receives a new fault, the digital display responds by overlaying a fault pop-up graphic onto the currently active runtime display. This alerts the operator, signaling a response is needed by the operator. The display above (top) represents an unacknowledged fault for an oil pressure fault condition. To acknowledge an active fault, press the “Acknowledge” softkey (middle) button. This will remove the pop-up graphic. The control system will continue to inform the operator that a fault is active or until the fault is corrected.

Note: If the fault condition is cleared the associated pop-up will be automatically removed.

FAULT CODES (CONTINUED)

STORED FAULT CODES

The control unit allows the operator to request any stored fault codes that may be contained in the engine ECU. To view stored faults select the “Fault Codes” menu selection from the main menu. The control system will send a request to the engine ECU for any faults that the ECU may have stored. Should any faults exist, the control unit will display a list of the active and stored faults. The list will show if the fault is Active, Stored or both. The list will contain the engine manufacturer specific Fault Code (if available) for the fault condition. To view more detailed information about any of the fault conditions listed, navigate to the desired fault condition and select the “?” softkey. A more detailed description of the fault will be presented along with the current Status.

MAINTENANCE TIMER

The control system provides an engine maintenance timer feature. The maintenance timer is a countdown timer and indicates the amount of engine runtime remaining until maintenance is due. The maintenance timer is configurable and resettable by the operator. If the system is powered but the engine is not running maintenance hours will not be accumulated.

Note: Setting the timer to 0 will disable the maintenance timer operation.

The Maintenance Timer is factory-set to 250 hours.

MAINTENANCE TIMER ALERT

When the maintenance timer expires the system will activate an “Engine Maintenance Due” alert popup window. If the maintenance due alert is acknowledged but the timer is not reset the alert popup will re-initiate for each key “ON” cycle.

ACKNOWLEDGING MAINTENANCE TIMER

Acknowledge the maintenance alert by selecting the acknowledge “✓” softkey.



RESETTING MAINTENANCE TIMER

The maintenance timer is operator configurable and can be accessed through the engine settings menu. See “Reset MaintTimer” selection in engine settings menu. When the maintenance timer has expired, a pop-up alert window indicating that “Engine Maintenance is Due” will be displayed. The operator must acknowledge this pop-up to return the control unit to normal display operation.

To reset the maintenance timer enter the Main Menu and then scroll to the “Reset MaintTimer” entry using the “↓” softkey. Press the “→” softkey to select the reset maintenance timer menu item.

Press the “→” softkey to reset the timer.

Acknowledge the timer was reset by pressing the Acknowledge “✓” softkey.

Note: The maintenance hours data display will indicate 0 hrs when the timer has expired and the operator has not yet reset the timer.

Reset Maintenance Timer Menu Selection



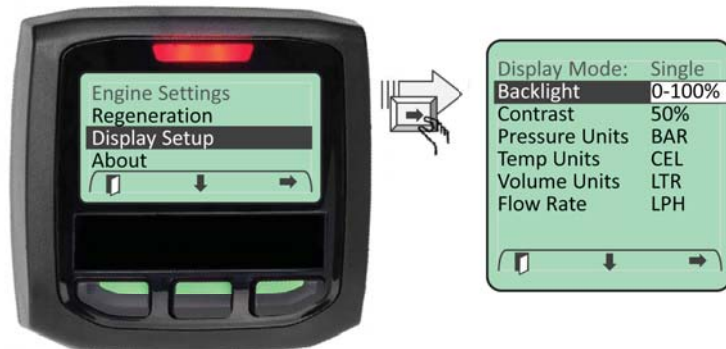
BACKLIGHT SETTING

The LCD backlight is adjustable from 0 to 100%. To adjust the LCD backlight enter the Main Menu and navigate to the “Display Setup” menu using the “↓” softkey.

When highlighted enter the Display Setup menu by selecting the “→” softkey. Navigate through the “Display Setup” menu using “↓” softkey until the “Backlight” entry is highlighted.

Press the “→” softkey to select the backlight parameter setting.

Use the “+” / “-” softkeys to set the backlight value.



CONTRAST SETTING

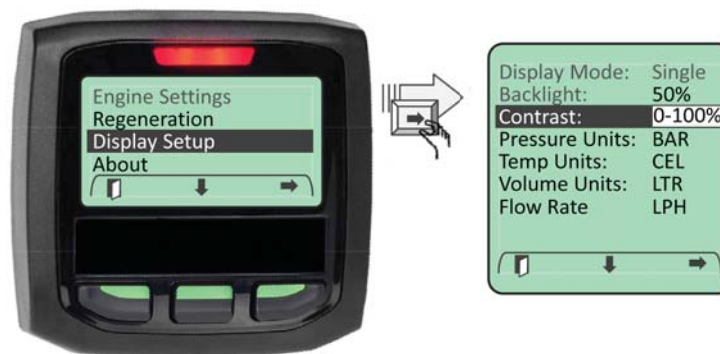
The LCD contrast is adjustable from 0 to 100%. To adjust the LCD contrast enter the Main Menu and navigate to the “Display Setup” menu using the “↓” softkey.

When highlighted enter the Display Setup menu by selecting the “→” softkey. Navigate through the “Display Setup” menu using “↓” softkey until the “Contrast” entry is highlighted.

Press the “→” softkey to select the contrast parameter setting.

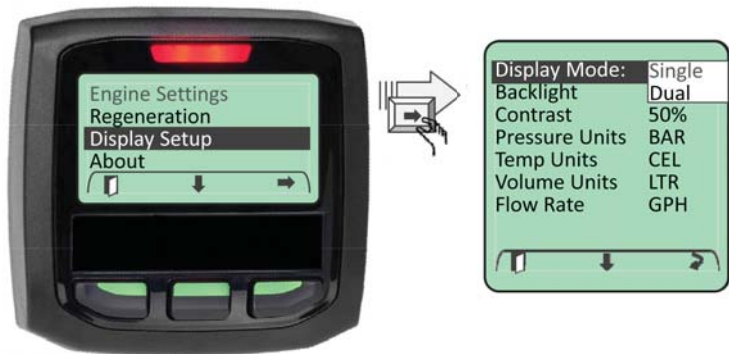
Use the “+” / “-” softkeys to set the contrast value.

Note: Setting the contrast value below 30 may render the display to be unreadable.



DISPLAY MODE SETTING

Two display formats are available: “Single” display and “Dual” display formats. To access the display format setting, enter the Main Menu. Navigate to the “Display Setup” menu entry using “↓” softkey. When highlighted, enter the Display Setup menu by selecting the “→” softkey. Navigate through the “Display Setup” menu using “↓” softkey until the “Display Mode” entry is highlighted.



Choose the desired display mode setting by cycling through the list of choices using the Change “↔” softkey.

DEFAULT DISPLAY

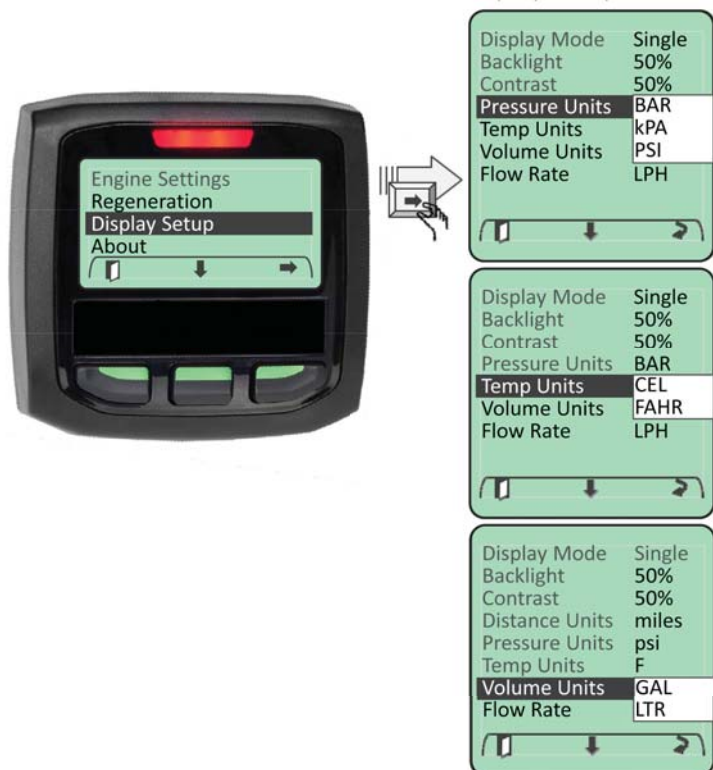
To configure a particular display as the default startup display, access the desired display and leave active for 5 minutes. The system will automatically set this display as the default startup display.

ENGINEERING UNITS

Displayed engineering units can be configured for Pressure, Temperature and Volume. To access the engineering unit’s settings, enter the Main Menu. Navigate to the “Display Setup” menu entry using “↓” softkey.

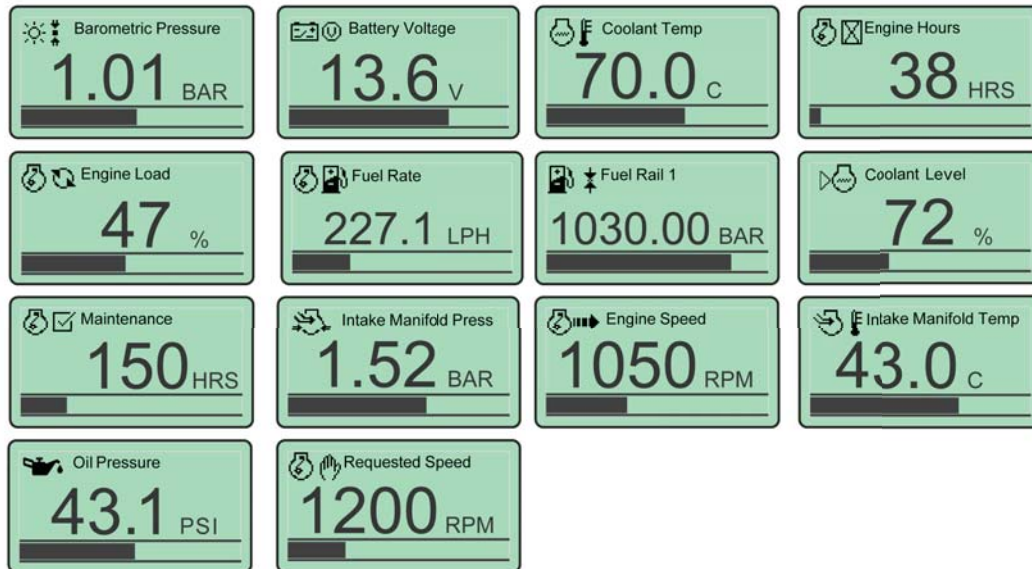
When highlighted enter the Display Setup menu by selecting the “→” softkey. Navigate through the “Display Setup” menu using “↓” softkey until the desired engineering unit’s parameter is highlighted.

Choose the desired parameter setting by cycling through the list of choices using the change soft key.

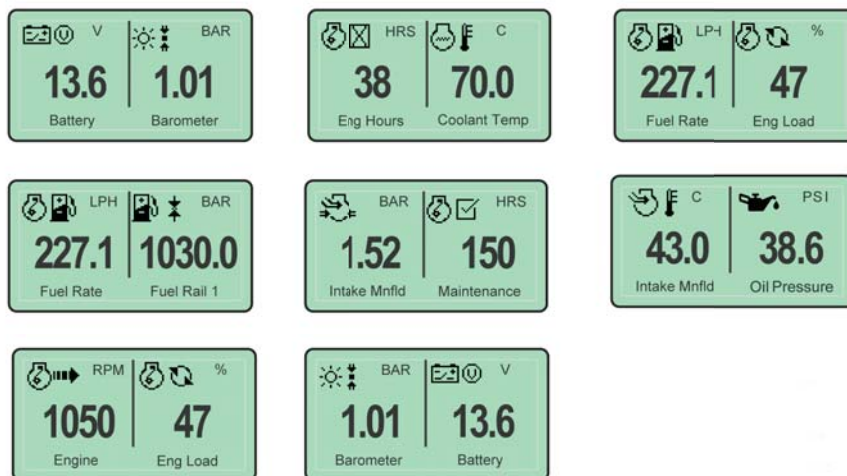


DISPLAY LIST

SINGLE DATA FORMAT



DUAL DATA FORMAT



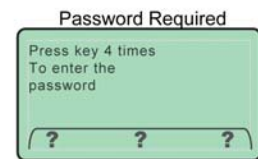
ABOUT MENU

The About Menu indicates the software information used for programming the control unit.



ENGINE SETTINGS

The Engine Settings are factory-specified. This feature is password-protected to ensure the correct use of the engine in this unit.



STARTING PROCEDURE

⚠ WARNING

See **HYDROSEEDER® SAFETY SUMMARY SECTION** before operating the machine. Failure to comply could result in death or serious injury. Failure to comply could also result in product or property damage.

Before starting, open recirculation valve, close discharge valve, disengage (turn off) the slurry pump clutch, place agitator control in the **NEUTRAL** position and turn the hydraulic switch to the **HYDRAULICS OFF** (down) position.

1. Turn key clockwise to the **ON** “**I**” position. This will activate the control panel and apply power to the engine ECU. Check the digital display of the control panel for any fault codes.

If there are fault codes, determine and fix the fault problem before moving on. If a fault condition exists, the engine ECU may prevent the engine from starting.

2. Turn the key clockwise to the **START** “**⏻**” position until the starter engages and the engine starts.
3. Allow engine to warm up for 3 to 5 minutes before operation.
4. After engine has warmed up, turn on the hydraulics system by flipping the hydraulics toggle switch to the **HYDRAULICS ON** position (all the way up). The switch will automatically center itself, which is the **ON** position.



AREA COVERAGE - MATERIAL CAPACITY

To determine the coverage per load for any HydroSeeder®, three questions must be answered prior to the application. First, is the job to be done a one-step process (which is when the seed, fertilizer and mulch are applied proportionally per load) or a two-step process (which is when the seed and fertilizer are applied alone and then covered by mulch as a second operation)? Second, at what rates (usually in pounds per 1,000 square feet, or pounds per acre) are the seeding materials to be applied? Finally, what are the loading capacities of the HydroSeeder®?

Application rates vary for different geographic locations, but in general, seed is applied at 6 to 10 pounds per 1,000 square feet; fertilizer is applied at a rate of approximately 400 pounds per acre; and fiber mulch is applied at 1,500–2,000 pounds per acre. (There are 43,560 square feet in an acre.) Local agronomists, agricultural extension agents, or soil and water conservation officials should be contacted for more specific information on application rates for a given area.

The following tables show loading versus coverage rates for the FINN T170 HydroSeeder®. Table A shows rates for one-step applications. The coverage area is determined by the fiber mulch capacity of the HydroSeeder® and the rate at which it is applied.

Table B shows the area coverage when seeding only, where little or no mulch is applied. The coverage area is determined by the granular solids capacity of the HydroSeeder® and the rate at which the solids are applied.

TABLE A**Using Seed, Fertilizer, and Mulch**

<u>Unit</u>	<u>Amount of Material in Tank in pounds (kilograms)</u>			<u>Coverage Area</u>
	<u>Seed</u>	<u>Fertilizer</u>	<u>Mulch</u>	<u>sq. ft. (sq. m)</u>
T170	172 (78)	200 (91)	750 (340)	21,780 (2,023)

Table is based on 1,500 lbs. (680 kg) of mulch, 400 lbs. (181 kg) of fertilizer and 345 lbs. (156 kg) of seed at 8 lb (3.6 kg) / 1,000 sq. ft.. per acre.

TABLE A EXAMPLE:

$$\frac{400 \text{ lbs. (181 kg) Mulch per Tank}}{1,500 \text{ lbs. (680 kg) Mulch per Acre}} = 0.267 \text{ Acre per Load}$$

$$400 \text{ lbs. (181 kg) Fertilizer per Acre} \times 0.267 \text{ Acre} = 107 \text{ lbs. (49 kg) Fertilizer per Load}$$

$$345 \text{ lbs. (156 kg) Seed per Acre} \times 0.267 \text{ Acre} = 92 \text{ lbs. (42 kg) Seed per Load}$$

TABLE B**Seed and Fertilizer Only**

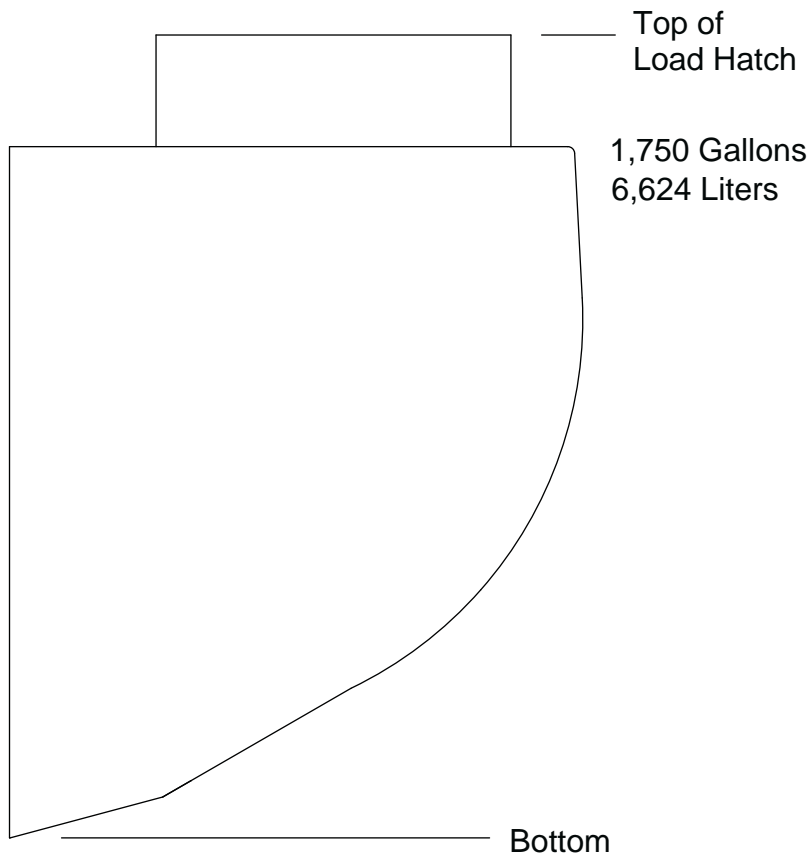
<u>Unit</u>	<u>Amount of Material in Tank in pounds (kilograms)</u>			<u>Coverage Area</u>	
	<u>Seed</u>	<u>Fertilizer</u>	<u>Total</u>	<u>sq. ft. (sq. m)</u>	<u>Acreage (Hectare)</u>
T170	1,742 (790)	2,000 (907)	3,742 (1,697)	217,800 (20,234)	5 (2.02)

Table is based on rates of 8 lbs. (3.6 kg) seed and 9.2 lbs. (4.2 kg) fertilizer per 1,000 sq. ft..

TABLE B EXAMPLE:

$$\frac{3,742 \text{ lbs. (1697 kg) Tank Capacity (Solids)}}{8 \text{ lbs. (3.6 kg) of Seed} + 9.2 \text{ lbs. (4.2 kg) of Fertilizer per 1,000 sq. ft.}} = 217,800 \text{ sq. ft. per Load}$$

$$\frac{8 \text{ lbs. (3.6 kg) of Seed}}{1,000 \text{ sq. ft.}} \times 217,800 \text{ sq. ft.} = 1,742 \text{ lbs. (790 kg) of Seed per Tank}$$



T170		
Gallons (Liters)	in. (cm) From Top of Load Hatch	in. (cm) From Bottom
1,700 (6,435)	9.5 (24.1)	49.25 (125.1)
1,600 (6,057)	12 (30.5)	46.75 (118.7)
1,500 (5,678)	14.25 (36.2)	44.5 (113)
1,400 (5,300)	16.5 (42)	42.25 (107.3)
1,300 (4,921)	18.75 (47.6)	40 (101.6)
1,200 (4,542)	21.25 (54)	37.5 (95.3)
1,100 (4,164)	23.5 (59.7)	35.25 (89.5)
1,000 (3,785)	25.75 (65.4)	33 (83.8)
900 (3,407)	28 (71.1)	30.75 (78.1)
800 (3,028)	30 (76.2)	28.75 (73)
700 (2,650)	32.5 (82.5)	26.25 (66.7)
600 (2,271)	35.25 (89.5)	23.5 (59.7)
500 (1,893)	37.75 (95.9)	21 (53.3)
400 (1,514)	40.25 (102.2)	18.5 (47)
300 (1,136)	43.25 (110)	15.5 (39.4)
200 (757)	46.75 (118.7)	12 (30.5)
100 (379)	50.25 (127.6)	8.5 (21.6)

Figure 7 – Tank Capacity

LOADING (FOR WOOD FIBER MULCH, IF LIMING SEE LIMING WITH THE HYDROSEEDER® SECTION)

DANGER

Keep hands and arms away from tank interior and agitator. Failure to comply will result in serious injury or death.

CAUTION

Take care not to lose pens, lighters, etc. from shirt pockets, or drop pieces of paper or plastic bags into the tank, as these might plug the slurry system. Failure to comply could result in death or serious injury. Failure to comply could also result in product or property damage.

1. With the slurry pump clutch disengaged (turned off), agitator control in the NEUTRAL position and hydraulic system off, start engine and allow it to warm up. See STARTING PROCEDURE.
2. After engine has warmed up, turn on the hydraulic system by flipping the hydraulic toggle switch to the **HYDRAULICS ON** position (all the way up). The switch will automatically center itself, which is the **ON** position.
3. Start filling unit with water. When water reaches the top of the agitator shaft, move agitator control to full **REVERSE** position.

Fill tank using one of the sources of water as follows:

- A. Water from any stream or pond using a fill pump. When filling from a pond or stream, be sure to use a suction strainer to filter out contaminants that could damage the pump and unit.
 - B. Any pressure source, e.g. fire hydrant. This unit is supplied with a 6 in. (15.2cm) air gap fill port. Consult with local authorities before using water main in order to abide by all local ordinances.
 - C. Water tanker.
4. Piping System Cleanout Procedure (Purging Line):
 - A. Remove discharge nozzle and gasket from discharge boom.
 - B. Aim discharge boom assembly into an open area away from any persons, obstructions, or high voltage power lines.
 - C. Open discharge valve and close recirculation valve.
 - D. With the engine at low idle, engage (turn on) the slurry pump clutch with a firm snap. Do NOT allow clutch to slip.

CAUTION

Do NOT engage the slurry pump above 1,000 RPM's or damage to the slurry pump clutch will occur.

- E. Increase engine speed to approximately 1/2 to 3/4 throttle.
 - F. When discharge stream is clear, flush out hose on reel (if applicable), open recirculation valve, and close discharge valve. After recirculation stream is clear, disengage (turn off) the slurry pump clutch.
 - G. Replace nozzle and gasket in discharge boom.
5. Continue filling tank with water.
 6. Increase engine speed to full RPM. Governed speed of the engine on the FINN T170 HydroSeeder® should be 2,500 RPM under load.

LOADING (FOR WOOD FIBER MULCH, IF LIMING SEE LIMING WITH THE HYDROSEEDER® SECTION) - CONTINUED

7. Start loading dry material, loading the lightest material first. Agitator control should be in full **REVERSE** for mixing.
 - A. Seed – Cut open the seed bag open and dump contents into slurry tank. (When using inoculant, add it in the tank along with the seed.) When using quick swelling seeds, load them just prior to application.
 - B. Wood Fiber Mulch – Empty the entire bag at once, or cut bag open and drop in the sections of fiber. The amount of mulch to be used should be loaded by the time the water level is at 3/4 full. If agitator stalls or a high pitch squeal comes from the hydraulic system, reverse agitation to **FORWARD** for a moment to clear the obstruction, then return agitation to **REVERSE**.



CAUTION *Hydraulic system will overheat if agitator shaft is jammed for extended period. This will damage hydraulic oil and system components. Failure to comply could result in minor personal injury, or damage to product or personal property.*

- C. Fertilizer – Stand over hatch opening and drop the bag onto the bag cutter. Grasp both ends of the bag and dump material.
 - D. All other additives – Consult with manufacturer for proper loading technique.
8. When all materials are loaded and in suspension, and the tank is full, move the agitator to NEUTRAL, then full speed FORWARD to ensure all material is mixed. It may be necessary to change the agitator direction more than once to ensure a thorough mixture.
9. After material is thoroughly mixed, slow agitator control lever in the forward direction to 1/4 speed or just enough to create movement in all of the corners of the tank. Do not over-agitate the slurry. Always discharge the material with the agitator control in **FORWARD** position.
10. Close the hatch lid on the slurry tank.

NOTE: The slurry should not be recirculated for more than 15 minutes prior to discharge to reduce pump wear and keep seed from swelling.

NOTE: If foaming occurs, reduce agitator speed.

LOADING AND MIXING BFM, FGM, SMM AND OTHER HIGHLY VISCOUS SLURRIES

1. With the slurry pump clutch disengaged (turned off), agitator control in the NEUTRAL position and hydraulic system off, start engine and allow it to warm up. See STARTING PROCEDURE.
2. After engine has warmed up, turn on the hydraulics system by flipping the hydraulics toggle switch to the **HYDRAULICS ON** position (all the way up). The switch will automatically center itself, which is the **ON** position.
3. Start filling unit with water from one of the water sources as listed below. When water reaches the top of agitator shaft, move agitator control to full REVERSE position.

Tank can be filled by using one of the sources of water as follows:

- A. Water from any stream or pond using a fill pump. When filling from a pond or stream, be sure to use a suction strainer to filter out contaminants that could damage the pump and unit.
 - B. Any pressure source, e.g. fire hydrant. An optional air gap fill port is available for this unit but it is necessary to consult with local authorities before using a water main, in order to abide by all local ordinances.
 - C. Water tanker.
4. Piping System Cleanout Procedure:
 - A. Remove discharge nozzle and coupler gasket from the remote valve coupler at the end of the discharge hose or from the boom.
 - B. Aim discharge hose or boom into an open area away from any persons, obstructions, or high voltage power lines.
 - C. Open discharge and remote valves and close recirculation valve.
 - D. With the engine at low idle, engage (turn on) the slurry pump clutch with a firm snap. Do NOT allow clutch to slip.

CAUTION

Do NOT engage the slurry pump clutch above 1,000 RPM's or damage to the slurry pump clutch will occur.

- E. Increase engine speed to approximately 1/2 to 3/4 throttle.
 - F. When discharge stream is clear, open recirculation valve and close discharge valve. After recirculation stream is clear, disengage (turn off) the slurry pump clutch.
 - G. Replace coupler gasket in the remote valve coupler or in boom.
5. Continue filling tank with water.
 6. Increase engine speed to full RPM. Governed speed of the engine on the FINN T170 HydroSeeder® should be 2,500 RPM under load.

LOADING AND MIXING BFM, FGM, SMM AND OTHER HIGHLY VISCOUS SLURRIES (CONTINUED)

7. Start loading dry material, loading the lightest materials first. Agitator control should be in full REVERSE for mixing.

Seed - Cut open the seed bag and dump contents into slurry tank. (When using inoculant, add it in the tank along with the seed.) When using quick-swelling seeds, load them just prior to application.

BFM, FGM, SMM, and other highly viscous slurries - When the water level is above the top of the agitator blades, begin adding the entire bag of material into the tank. It may become necessary to slow the rate of water being added to the tank. Add all bales before the tank is 3/4 full. If agitator stalls or a high-pitch squeal comes from the hydraulic system, reverse agitation to FORWARD for a moment to clear obstruction, then return agitator to REVERSE.

NOTE: BFM, FGM, and other viscous slurries will entrain air if proper mixing procedures are not followed. Ensure that the agitator blades are completely submerged prior to the addition of this material. This will prevent air from entering the slurry. Follow manufacturers suggested rates of materials as indicated on the packaging. Generally, this recommendation is 50 pounds of material to 125 gallons of water.

Fertilizer – Cut open the fertilizer bag and dump contents into slurry tank.

All other additives - Consult with manufacturer for proper loading technique.

8. When all materials are loaded and in suspension, and the tank is full, move the agitator to NEUTRAL then full speed FORWARD to ensure all material is mixed. It may be necessary to change the agitator direction more than once to ensure a thorough mixture.
9. Agitate per the manufacturer's recommendations. Generally, the agitation time is 10 minutes to allow the proper viscosity to be generated. Follow manufacturer's recommendations.
10. Once material is thoroughly mixed, place the agitator control lever in the FORWARD direction to 1/4 speed, or just enough to create movement in all corners of the tank. DO NOT OVER-AGITATE the slurry. Always discharge the material with the agitator control in FORWARD and at a slow speed.

NOTE: As the application process commences and the slurry level is decreased, which will expose the agitator blades, it is extremely important to ensure that the speed of the agitators is slow.

NOTE: Use of recirculation should be kept to a minimum.

NOTE: If foaming occurs, reduce agitator speed.

NOTE: When mixing multiple loads of BFM, FGM, SMM, and other viscous slurries, make sure to purge the lines with clear water before mixing the next load.

PRIOR TO APPLICATION

1. Operator(s) should familiarize themselves with the area to be seeded and develop a plan to ensure uniform application.
2. Develop a plan for communication between operator and driver of the carrying or towing vehicle to signal for start, stop, turn, etc., through the use of the signal horn.
3. Operator takes up position on the platform. From this point, application will be controlled by the use of the slurry pump clutch, valve, discharge assembly, and throttle.

DISCHARGE NOZZLE SELECTION

Nozzles are stored in the tool box. This HydroSeeder® is equipped with six nozzles – two long distance and four fan nozzles. The smaller, long-distance nozzle is generally better suited for seed, fertilizer, and/or lime application, while the large, long-distance nozzle is better for wood fiber mulch application. All of the fan nozzles are generally suited for both types of application.

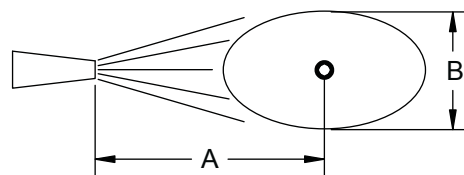


Figure 8 – Nozzle Spray Dimensions

Nozzle	Part Number	Distance (A)	Width (B)	Discharge Time
Lg. Long Distance	008465	Up to 200 ft. (61 m)	-	7.5 min.
Sm. Long Distance	011703	Up to 150 ft. (46 m)	-	30 min.
Sm. Narrow Fan	011707	Up to 75 ft. (23 m)	15 ft. (4.6 m)	30 min.
Sm. Wide Fan	011706	Up to 45 ft. (14 m)	25 ft. (7.6 m)	30 min.
Lg. Narrow Fan	011891	Up to 90 ft. (28 m)	23 ft. (7 m)	10.6 min.
Lg. Wide Fan	011890	Up to 50 ft. (15 m)	35 ft. (10.7 m)	10.6 min.

APPLICATION OF SLURRY

I. GENERAL APPLICATION TECHNIQUES

⚠ DANGER

Do not spray toward power lines, transformers or other high voltage conductors. Failure to comply WILL result in severe personal injury or death.

⚠ CAUTION

The driver of the carrying vehicle should remain alert for hazards to the operator, such as low power lines, hanging branches, etc. Driver should never start or stop abruptly. Failure to comply could result in minor personal injury, or product or property damage.



1. Determine which nozzle would best suit the application needs according to the DISCHARGE NOZZLE SELECTION table.
2. Application of seed, fertilizer, and lime: Elevate discharge nozzle no less than 10 degrees above the area to be sprayed, allowing the slurry to gently rain onto the seed bed.

APPLICATION OF SLURRY (CONTINUED)

3. Application of wood and paper fiber: Whenever possible, aim the stream towards the ground to create a surface with small pockmarks which will help get seed in contact with ground. Do not allow the stream to blast away the surface of the seed bed.
4. Generally, the most remote area of the seed bed should be covered first. Distance is controlled by engine speed and nozzle selection.

⚠ CAUTION *Do NOT partially close the boom discharge valve to control the distance. Failure to comply could result in minor personal injury, or product or property damage.*

5. While moving along area to be seeded, the operator should move the nozzle back and forth in a slow, even arc.
6. If application is to be interrupted for a short period of time, disengage (turn off) the slurry pump clutch. If shutdown is going to be for an extended period of time (i.e., lunch break, reloading, etc.), close the valves to prevent slurry from dewatering. Re-engage (turn on) the slurry pump clutch to continue application.
7. It may be necessary to slow the agitator as the tank empties to reduce foaming.

II. DISCHARGE THROUGH THE BOOM

1. Move the discharge valve foot pedal to the **OPEN** position, the recirculation valve handle to the **CLOSED** position, and with the engine at low idle engage (turn on) the slurry pump clutch. At this time, should the operator want to stop spraying for a short period, disengage (turn off) the slurry pump clutch. When ready to resume spraying, simply re-engage (turn on) the slurry pump clutch.

⚠ CAUTION *Do NOT engage the slurry pump clutch above 1,000 RPM's or damage to the slurry pump clutch will occur.*

2. When the tank is empty, or when discontinuing discharge for an extended period of time, disengage (turn off) the slurry pump clutch, then immediately move the discharge valve to the **CLOSED** position, and idle the engine. This will maintain moisture in the discharge piping and help prevent plugging. Move the agitator control to the **NEUTRAL** position.

III. PROCEDURES WHEN USING HOSES

Always pump clear water through the hose before pumping mulch. If the inside hose liner is dry, it will dewater the mulch, causing the hose to plug.

A. PUMP TAKE-OFF SYSTEM OR HOSE REEL WITH REMOTE VALVE

1. Open recirculation valve, close discharge valve, and close remote valve at the end of the hose.
2. With the engine at low idle, engage (turn on) the slurry pump clutch. When stream is flowing freely through the recirculation line, open the pump take-off valve.

⚠ CAUTION *The high pressure on the hose can exert strong forces, causing the potential for the hose operator to lose control of hose or footing. The hose will require additional hose holders when this operation occurs on slopes. Open the pump take-off valve and the remote valve slowly and only after the hose operator is firmly positioned and has firm control of hose. Failure to comply could result in minor personal injury, or product or property damage.*

3. With the engine running at approximately 3/4 speed, open the remote valve at the end of the hose to discharge the load.

APPLICATION OF SLURRY (CONTINUED)

4. When finished spraying, close the remote valve, disengage (turn off) the slurry pump clutch, and stop the engine. If using fiber mulch, retain as much water as possible in the hose by elevating the hose ends or by coupling the hose ends together.
5. If another load is to be done, see RELOADING PROCEDURE. If finished for the day, follow the clean-up procedure and flush out the hose.

DANGER

The recirculation valve must be open when using a remote valve. Failure to comply will result in serious injury or death.

B. EXTENSION HOSE SYSTEM - WITHOUT REMOTE VALVE

1. Connect the extension hose into the end of the discharge boom.
2. A person controlling the end of the hose directs a second operator at the machine to control the slurry pump clutch and to adjust the engine speed.

CAUTION

Since the extension hose will be seeing the full output of the pump with the recirculation closed, the equipment operator and individual at the end of the hose should exercise extreme care when operating the unit on high pressure. The high pressure on the hose can exert strong forces, causing potential for the hose operator to lose control of hose or footing. The hose will require additional hose holders when operation occurs on slopes. Engage the pump clutch only after the hose operator is firmly positioned and has firm control of hose. Failure to comply could result in minor personal injury, or product or property damage.

3. When hose operator is ready and the engine is at low idle, signal the second operator to engage the slurry pump clutch and slowly increase the engine RPM until the desired discharge pressure is reached.
4. When finished spraying, disengage the slurry pump clutch, stop the engine, and close the discharge valve. If using fiber mulch, retain as much water as possible in the hose by elevating the hose ends or by coupling the hose ends together.
5. If another load is to be done, see RELOADING PROCEDURE. If finished for the day, follow clean-up procedure and flush out the hose.

RELOADING PROCEDURE

1. Start at step 2 in LOADING.
2. After last load of the day, refer to CLEANING AND MAINTENANCE section.
3. If the unit is equipped with an Air Flush System, refer to the Air Flush System Parts and OPERATOR'S MANUAL.

LIMING WITH THE HYDROSEEDER®

When using large concentrations of granular solids through the HydroSeeder®, it is advisable to keep the slurry moving through the pump at all times. This keeps the solids from settling in the lines, and creating a clog. This unit was designed for the application of agricultural-grade lime or FINN-HLL liquid lime only.

PROCEDURE

1. With the slurry pump clutch disengaged (turned off), agitator control in the NEUTRAL position and hydraulic system off, start engine and allow it to warm up. See STARTING PROCEDURE.
2. After engine has warmed up, turn on the hydraulics system by flipping the hydraulics toggle switch to the **HYDRAULICS ON** position (all the way up). The switch will automatically center itself, which is the **ON** position.
3. Start filling the unit with water. When water reaches the top of the agitator shaft, move agitator control to approximately 1/2 speed in REVERSE.
4. Open both the recirculation and discharge valves.
5. Remove discharge nozzle and gasket from discharge boom.
6. Aim discharge boom assembly into an open area away from any persons, obstructions, or high voltage power lines.
7. With the engine at low idle, engage (turn on) the slurry pump clutch, and increase engine speed until you have reached maximum engine speed. A stream of water should be coming from the end of the recirculation pipe beside the hatch opening as well as from the boom.

CAUTION

Do NOT engage the slurry pump clutch above 1,000 RPM's or damage to the slurry pump clutch will occur.

8. As soon as both streams are clear, close discharge valve and make sure water is being recirculated back to the tank.
9. Decrease throttle to 3/4 speed. Increase agitator speed to full REVERSE.

NOTICE

Do not disengage (turn off) the slurry clutch.

10. Twenty (20) lbs (9 kg) of granular solids displaces approximately 1 gallon (3.8 L) of water. When filling the tank with water, the volume of granular solids must be accounted.

Use this method to determine how many gallons will be displaced by the granular solids.

$$\frac{X \text{ (number of lbs of granular solids being used)}}{20} = \text{number of gallons displaced}$$

For example:

If using the maximum recommended capacity of 5,000 lbs (2,268 kg) of granular solids, then 5,000 divided by 20 equals 250, so 250 gallons (946 L) would have to be subtracted from the total tank capacity. If the total tank capacity is 1750 gallons (6,624 L) minus 250 gallons (946 L) equals 1500 gallons (5,678 L). If 1000 pounds (454 kg) of solids were used, 50 gallons (189 L) would have to be subtracted, thus 1750 gallons (6,624 L) minus 50 gallons (189 L) equals 1700 gallons (6,435 L).

11. Fill the tank to the required capacity for the rate of granular solids to be applied.
12. Load the material (see LOADING section, steps 5 through 8).
13. When ready to apply slurry, install gasket and nozzle into boom.
14. Move agitator control to 3/4 speed, forward.

LIMING WITH THE HYDROSEEDER® (CONTINUED)

15. With the slurry pump clutch still engaged (turned on), re-open discharge valve to commence application.

CAUTION

To decrease pump wear and increase discharge distance, it may, at this point be desirable to close the recirculation valve. However, the recirculation valve must be open BEFORE closing the discharge valve if the application of slurry is to be interrupted. Extreme heat, which will cause damage and/or bodily injury, will occur if both valves are closed.

16. Apply the slurry. See APPLICATION OF SLURRY section.
17. If another load is to be applied, start again at step 1. If finished, follow the clean-up procedure.

TROUBLESHOOTING YOUR HYDROSEEDER®

Because of the tremendous work load usually placed upon the HydroSeeder®, minor malfunctions will occur from time to time. If these are not remedied immediately, they could lead to poor performance and damage to the equipment. This section describes symptoms, possible causes, and the corrective action(s) to take.

1. Foam in the tank and air entrainment.

The mixture of dry materials with water will sometimes cause excessive foaming while other dry materials-with-water mixes will cause air entrainment. These situations will reveal themselves with the occurrences of an erratic slurry discharge, a drop in the pressure of the discharge, and a drop off in distance of slurry discharge.

Some solutions are:

- A. As slurry level drops in the tank, slow the agitator speed.
- B. Add 2 to 3 oz (6 to 9 cl) of an antifoaming agent to tank.
- C. If you can determine which additive is causing the air problem, either add it last or not at all – unless it's the water.
- D. Limit recirculation time as much as possible.
- E. Open pump suction bleed valve to exhaust air trapped in the pump or suction line. Close valve as soon as the air stops.

2. Plugging or clogging:

DANGER

Turn off engine and disconnect battery cables before working on equipment. Failure to comply WILL result in severe personal injury or death.

Sometimes, when a stoppage occurs, you will not be able to find anything in the line. When this happens, it means that the system became airborne instead of plugged. To remedy this, see FOAM IN THE TANK AND AIR ENTRAINMENT section. Plugging can occur in any one of four places: the valve and recirculation nozzle, the discharge nozzle, the slurry pump area, and the sump area. The plugging is caused by either foreign objects or dewatered mulch.

- A. Obstruction in the discharge nozzle is determined by a change in or stoppage of the spray pattern.
 - a) Disengage (turn off) the slurry pump clutch and shut down the engine.
 - b) Make certain that pump has stopped rotating.
 - c) Slowly and carefully remove nozzle.
 - d) Using the nozzle cleaning rod attached to the underside of the guard rail, clear the nozzle.

TROUBLESHOOTING YOUR HYDROSEEDER® (CONTINUED)

DANGER

Before loosening any clamps, determine if the pipe is hot. If so, let it cool before attempting to perform repair. Failure to comply WILL result in severe personal injury or death.

- B. If the recirculation system is not working:
 - a) Disengage (turn off) the slurry pump clutch and shut down engine.
 - b) Remove two clamps on each side of the recirculation valve.
 - c) Slide rubber seals back and remove valve assembly.
 - d) Check valve assembly, recirculation nozzle in the discharge pipe, and the recirculation pipe going into tank. Clear any obstructions.
 - e) Replace valve assembly and slide the seals back into place. Lubricate the outside of the seals with grease.
 - f) Re-install the clamps.
3. Obstruction in the pump, which can be determined by a drop in pressure. If the drop in pressure is accompanied by a frothy or whitish discharge stream, the blockage is in the suction line or sump area. To clear the pump:
 - A. Disengage (turn off) the slurry pump clutch and stop the engine.
 - B. Loosen the suction pipe clamps. If there is material in the tank, shut off the suction line valve.
 - C. Remove the clamp closest to the pump.

NOTE: If no water comes out, obstruction is in sump area.
 - E. Reach into the pump and remove the obstruction. If jammed, the pump suction cover may need to be removed.
 - F. Reassemble all removed components.
 - G. Open suction line valve.
4. Obstruction in sump area, which is located at the bottom of the tank on the inside where the suction pipe is attached.

Three methods to remove an obstruction in the sump area are as follows:

 - A. Clear the sump by backflushing through the discharge plumbing with the water supply hose.
 - B. Remove the drain plug and run a long pole through the opening and into the sump area. Remove the obstruction and replace the drain cap.
 - C. Use a pipe or pole through the loading hatch opening to dislodge the obstruction.

CAUTION

Do not turn the pump shaft backward with a pipe wrench. This will unscrew pump impeller from pump shaft. Consequently, when the slurry pump clutch is engaged (turned on), the pump impeller will screw onto pump shaft with a force great enough to break pump impeller. Failure to comply could result in minor or moderate personal injury. Failure to comply could also result in product or property damage.

Troubleshooting Chart		
Symptom	Probable Cause	Suggested Solutions
LEAKS		
Tank Bearing	Lack of lubrication - seal worn.	Replace seal and follow lube schedule.
	Bolts not tightened.	Tighten uniformly to 25 lb-ft (34 N•m).
Pressure Pipe Clamps	Rubber seal cracked, pinched, torn or missing.	Replace, always grease seal before clamping shut.
Suction Pipe Clamps	Rubber seal cracked, pinched, torn or missing.	Replace, always grease seal before clamping shut.
Discharge Swivels	Not greased often enough.	Rebuild swivels with repair kit (part number 012397, qty. 2 required).
Pump Shaft	Pressure lubricator not serviced.	Replace pump seal. Service automatic pressure lubricator daily. See EQUIPMENT CHECK section.
Pump Suction Cover	O-ring cracked, pinched, torn or missing.	Replace O-ring; use grease when replacing.
Discharge Boom or Nozzle Camlock Fittings	Worn or no gasket.	Replace gasket.
MACHINE JUMPS DURING OPERATION		
Agitator	Agitator shaft bent by heavy object falling on it.	Straighten agitator shaft or shim so it runs true.
Bent Paddles	Loading wood fiber mulch into tank before tank is half full.	Straighten agitator paddle; realign agitator to run true.
FOAMING OF SOLUTION AND LACK OF DISTANCE		
Pump loses prime - lacks distance - leaves excessive amount in tank - 100 gal (378 L) or more	Sucking air in suction lines.	Check all suction connections to ensure that rubber seals are in good shape. Grease seals before replacing clamps.
	Air entrainment.	See TROUBLESHOOTING YOUR HYDROSEEDER®.
	Low engine RPM (Below 2,500 RPM - No load).	See authorized engine dealer.
	Soft water.	Slow the agitator.
	Too much agitation.	Slow the agitator.
	Pump worn.	Reset pump tolerance. See CLUMP MAINTENANCE section.
	Suction partially plugged.	Clean out machine. See CLEANING AND MAINTENANCE section.
	Nozzle worn or plugged.	Clean nozzles; replace if necessary.
	Fertilizer	Change type.
	Clutch slipping due to wear.	Readjust clutch; See CLUTCH MAINTENANCE section.

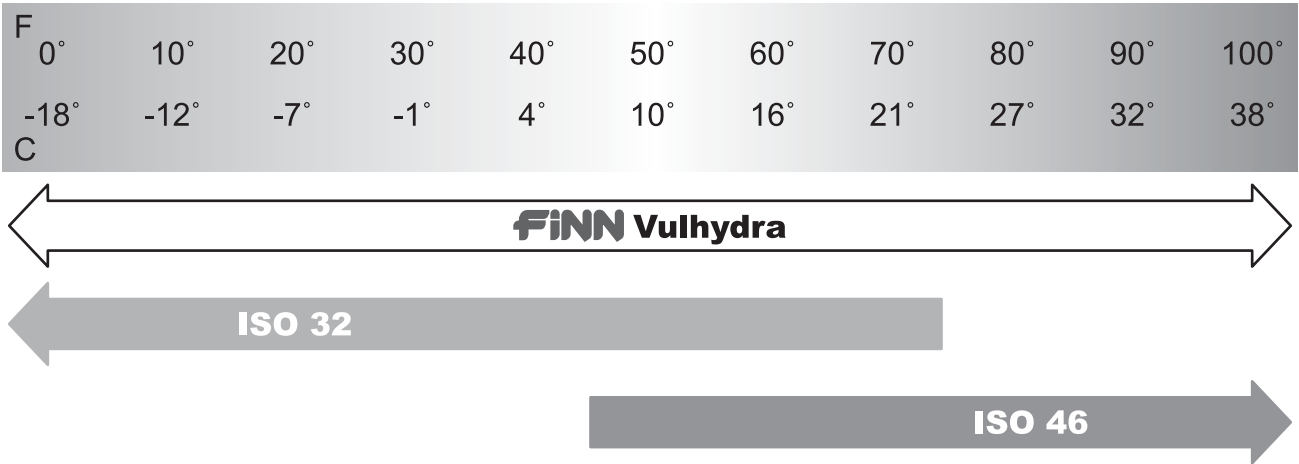
Troubleshooting Chart		
Symptom	Probable Cause	Suggested Solutions
VALVE		
Valve stuck	Frozen	Thaw out ice and lubricate valves; leave valves in the open position during storage.
Constant plugging during operation	Foreign material in slurry.	Drain and clean out tank; check sump area for foreign materials.
Constant plugging during loading and discharging	Loading HydroSeeder® before tank is half full of water.	Reinstruct your operator. See LOADING section.
	Incorrect loading procedure.	See LOADING section.
	Improper operation by operator.	Reinstruct your operator. Review OPERATOR'S MANUAL.
	Clutch slipping.	Readjust clutch. See CLUTCH MAINTENANCE section.
	Restricted material flow by partially closed discharge valve.	Valve should be fully open.
	Machine not being flushed out prior to reloading.	See LOADING section.
	Machine not being run at correct RPM during loading.	Reinstruct your operator. See LOADING section.
Extension hose plugs after use	Letting water run out, leaving wood fiber mulch to dry out.	If hose has to be uncoupled, seal ends, to keep water in hose and prevent wood fiber mulch from drying out.
CLUTCH		
Does not pull load or overheats	Out of adjustment.	Readjust clutch. See CLUTCH MAINTENANCE section.
Jumps out of engagement	Too loose or too tight.	Readjust clutch. See CLUTCH MAINTENANCE section.
PUMP		
Excessive wear	Fertilizer with highly abrasive fillers.	Change fertilizer – avoid abrasive fillers.
	Overloading machine with dry material.	Load machine to recommended capacities.
	Too much time allowed between loading and discharging.	After loading and mixing has been completed, set agitator at 1/4 speed in reverse and disengage the slurry pump.
	Recirculating all the time.	Close recirculation valve when discharging through the boom.
Will not turn	Frozen	Warm housing to melt ice.
	Jammed with fertilizer or lime.	Remove cover and clean interior.
	Impeller rusted to suction cover plate.	Pull cover and remove rust.

HYDRAULIC SYSTEM

The hydraulic system on your FINN HydroSeeder® is designed to give trouble-free service, if maintained as required. The most important areas of maintenance are the hydraulic oil and filtration. The reservoir holds 22 gallons (83 L) of hydraulic oil. The hydraulic oil should be replaced per the lubrication schedule or if the oil becomes milky or gives off a burnt odor. The hydraulic oil filter must be replaced on schedule with a 5 micron absolute filter (FINN part number 008703). The hydraulic system relief is factory-set at 2,650 psi (18,271 kPa).

At time of manufacture, this unit contains Finn Vulhydra hydraulic oil. The chart below illustrates the operating temperature range of the Finn Vulhydra hydraulic oil as well as the closest ISO equivalents.

NOTE: The Finn Vulhydra hydraulic oil may be substituted for either of the two ISO oils listed below. Please use the temperature chart to determine what oil works best in your situation.



CLEANING AND MAINTENANCE

AFTER FIRST 4 TO 8 HOURS OF OPERATION

Check and adjust clutch. See CLUTCH MAINTENANCE section.

DAILY

1. Cleaning the HydroSeeder®

- A. Fill slurry tank to center of agitator shaft with clean water.
- B. Move agitator lever to full speed (**FORWARD** and **REVERSE**) to flush off inside of tank top and walls.
- C. Remove discharge nozzle and gasket from discharge boom.
- D. With the engine at low idle and while pointing discharge toward an open area, move discharge valve foot pedal to **DISCHARGE OPEN** position and engage (turn on) the slurry pump clutch. Allow to discharge until clear water is coming out.



Do NOT engage the slurry pump clutch above 1,000 RPM's or damage the slurry pump clutch will occur.

- E. Move recirculation valve handle to **RECIRCULATION OPEN** and allow to run until clear water is coming out.
- F. Disengage (turn off) the slurry pump clutch, idle the engine, move valve foot pedal to **DISCHARGE OPEN** position, move agitator handle to **NEUTRAL**, and turn off engine.
- G. Always remove drain plug and allow the tank to drain.
- H. In freezing weather, leave main tank drain plug out and remove pump drain plugs. Move all slurry valves to **OPEN** position.
- I. Wash the outside of the HydroSeeder®, including the radiator, to remove any corrosive materials.
NOTE: Do NOT use pressurized washer to clean radiator fins or damage to radiator fins will occur.
- J. If using lime, daily maintenance should be performed after every load.
- K. Clean out extension hoses.
- L. Make sure all tank vents are clean and open. Do not plug or cap.

2. Lubricating the HydroSeeder® - See LUBRICATION AND FLUIDS CHART.



Lubrication should be performed IMMEDIATELY AFTER cleaning of the equipment, making sure the engine is not running. Failure to comply could result in minor or moderate personal injury. Failure to comply could also result in product or property damage.

- A. Lubricate the agitator shaft bearings located on the outside front and rear of slurry tank.
- B. Service the automatic pressure lubricator on pump as needed. See EQUIPMENT CHECK section.
- C. Check the engine oil and replenish when necessary. Change oil and filter after first 100 hours, then 500 hours thereafter. Consult the engine operator's manual for the correct grade of oil and the engine break-in procedure.

CLEANING AND MAINTENANCE (CONTINUED)

- D. Lubricate the swivel on the discharge boom assembly and the swivel on the hose reel.
- E. If equipped with the Air Flush Option, refer to the Air Flush System Manual.
- F. Check the level in the hydraulic oil reservoir; maintain level with the sight gauge.

WEEKLY OR EVERY 40 HOURS OF OPERATION

1. Clean the air cleaner following the instructions in the engine operator's manual.
2. Lubricate all the points on the HydroSeeder® as outlined in DAILY section of the CLEANING AND MAINTENANCE section and the LUBRICATION AND FLUIDS CHART section. Additionally, lubricate the four grease fittings on the clutch/pump.
3. Check the slurry pump clutch adjustment to ensure that it "snaps" in and out of engagement. Adjust the clutch with the engine off.
4. Check the anti freeze in the radiator.
5. Inspect the slurry tank for build-up of residue in the suction area and clear if necessary.
6. Check and clean engine radiator fins. Flush with clear, low-pressure water and blow dry with compressed air. Do NOT use high-pressure water spray or damage to the radiator fins will occur.
7. Check pivoting hose reel swivel bolt and replace bolts if any show signs of wear.

SEASONAL AND WINTER STORAGE MAINTENANCE

1. Drain the slurry tank of all water, prior to storage, and leave the drain plug uninstalled.
2. If possible, cover machine with tarp or park inside of an enclosure.
3. Store the HydroSeeder® with all slurry valve handles in the open position. To prevent damage from freezing, it is advisable to remove all slurry valves and store in a heated area.
4. Pour 1 quart (0.95 L) of mineral oil or environmentally safe lubricant into the pump housing and spin pump by hand to prevent rust in the pump. Remove drain plug.
5. Chip and steel brush any interior rust spots in the slurry-tank and touch up with paint. See Number 3 in IV. MAINTENANCE of the HYDROSEEDER® SAFETY SUMMARY SECTION.
6. Lubricate all fittings.
7. Check anti freeze in radiator.
8. Lubricate equipment again just prior to putting into operation after having been in storage.
10. Change hydraulic oil and filter. (500 hours)
11. Disconnect battery cables. In cold weather, remove battery and store it in a safe, warm place.
12. Add fuel stabilizer to fuel tank.

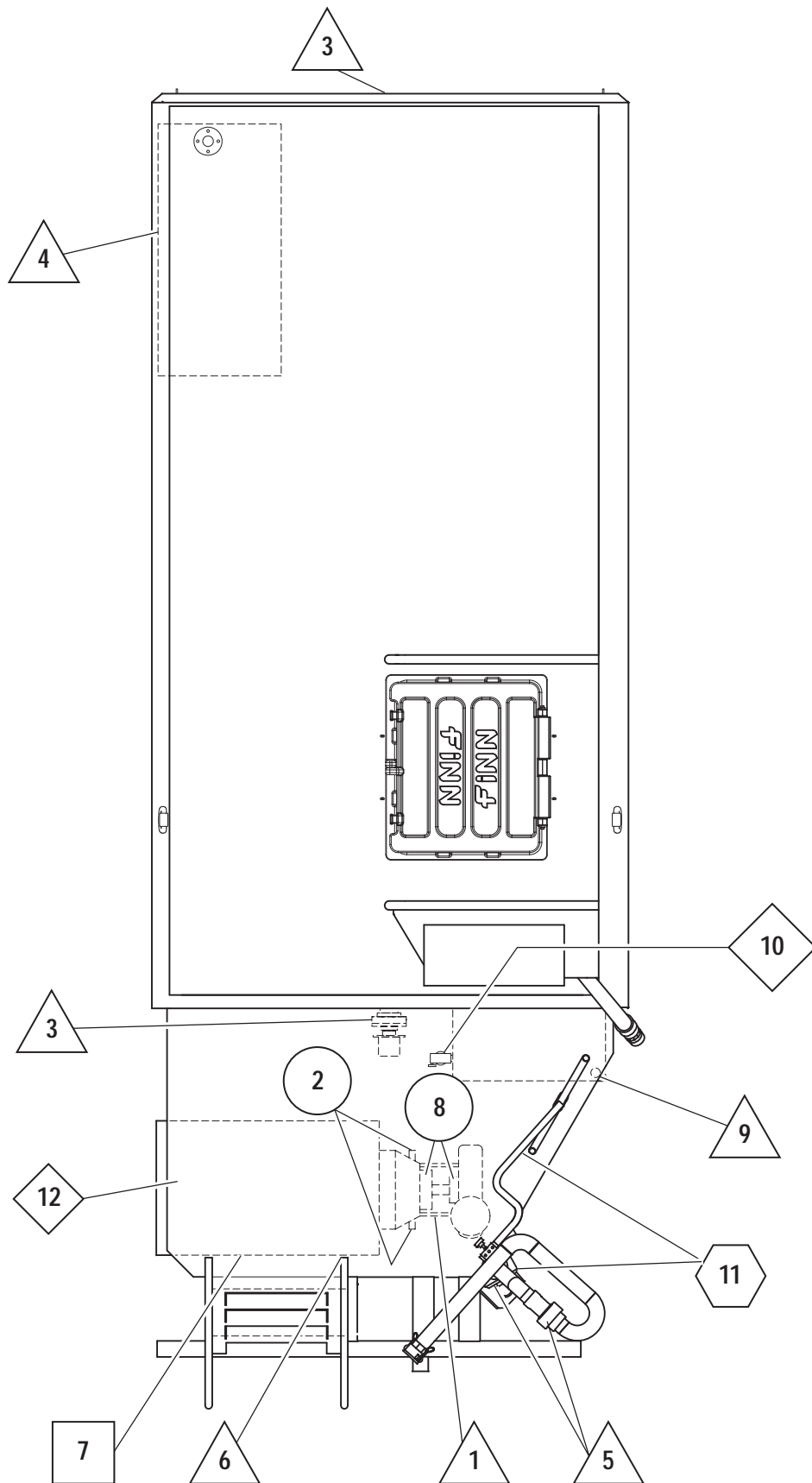


Figure 9 – Lubrication and Adjustment Points

LUBRICATION AND FLUIDS CHARTS






LUBERICATION CHART

Ref. No.	Location	Lubricant	Frequency	Number
1	Check Grease Level in Pressure Lubricator	BL	Daily	1
2	Grease Clutch Lever Bearings	CL	Weekly	2
3	Grease Agitator Shaft Bearings	CL	Daily	2
4	Check Fuel Level	DF	Daily	1
5	Grease Discharge Boom Swivels	CL	Daily	2
6	Check Engine Oil Level	MO	Daily	1
7	Change Engine Oil and Filter	MO	See Engine Manual	1
8	Grease Pump Bearings	CL	Weekly	2
9	Check Hydraulic Fluid Level	HO	Daily	1
10	Change Hydraulic Fluid and Filter	HO	Seasonally	1
11	Grease Discharge and Recirculation Valves	SL	Each Load	2
12	Change Engine Coolant	AF	Seasonally	1
13	Check Hose Reel Swivel (Not Shown)	CL	Daily	1
14	Hose Reel Crank Shaft (Not Shown)	CL	Daily	1

LUBRICANT OR FLUID USED

BL Bearing Lube (Sodium-Based)
 CL Chassis Lubricant
 MO Motor Oil – See Engine Manual
 HO Hydraulic Oil, Finn Vulhydra or equivalent
 ISO grade oil (See Hydraulic System section
 for ISO grade oil selection)
 SL Special Stick Lubricant
 AF 50/50 Anti Freeze and Water Mixture
 DF Diesel Fuel

TIME KEY

 DAILY (8 Hours)
 WEEKLY (40 Hours)
 EACH LOAD
 SEASONALLY (500 Hours)
 SEE ENGINE MANUAL

FLUID CAPACITIES

Fuel - 38 gallons (144 L)
 Hydraulic Oil - 22 gallons (83 L)
 Engine Coolant - 3.27 gallons (12.38 L) 50/50 Mix Only
 Engine Oil - See Engine Manual

CLUTCH/PUMP COMBINATION (CLUMP) MAINTENANCE

NOTE: Refer to Figures 10 for all in-text callouts mentioned.

CAUTION

Clump maintenance should be done only while engine is not running and battery cables are disconnected. Failure to comply could result in minor or moderate personal injury. Failure to comply could also result in product or property damage.

PUMP MAINTENANCE SECTION

CAUTION

Pump maintenance should be done only while engine is not running and battery cables are disconnected. Failure to comply could result in minor or moderate personal injury. Failure to comply could also result in product or property damage.

A. FACTORY TOLERANCES

1. To check pump tolerances, loosen the two clamps on pump suction piping and remove the inlet elbow. Through the pump suction hole, insert a feeler gauge between the pump impeller (3) and the pump suction cover (1). This measurement on a new pump is between 0.040 to 0.045 in. (1.00 mm to 1.15 mm).

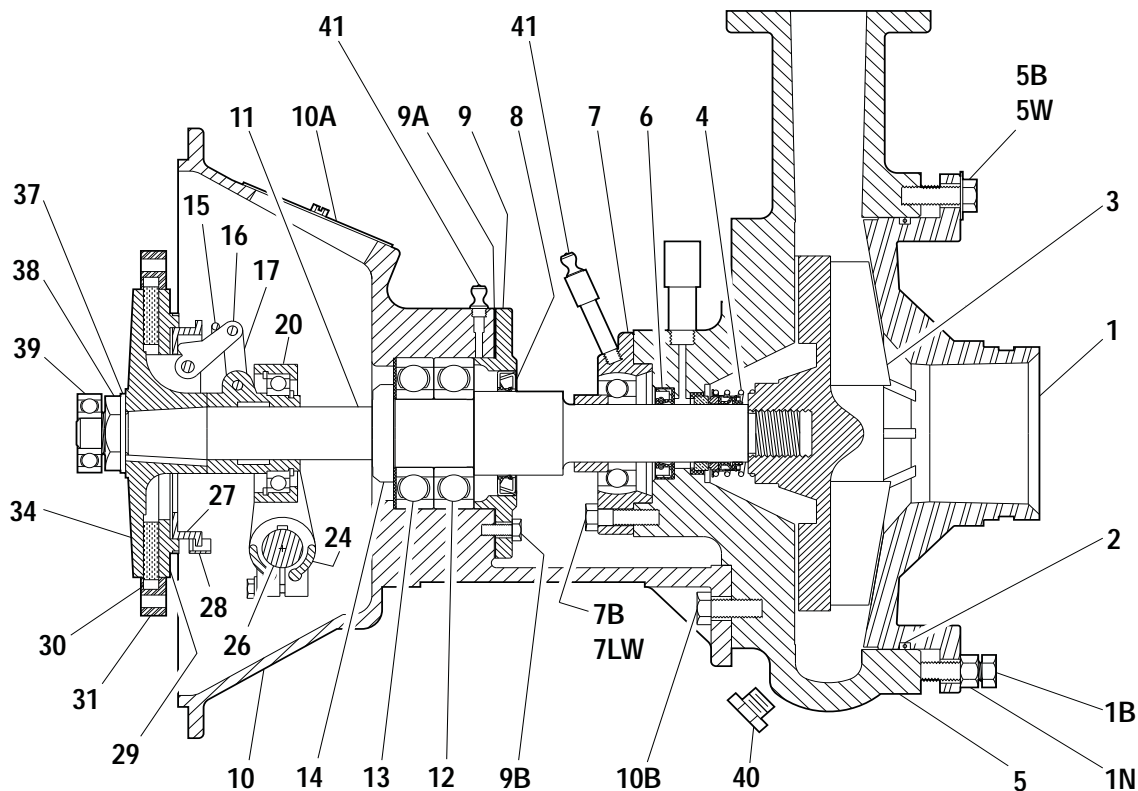


Figure 10 – Cross-Section Through Clutch/Pump Assembly (Clump)

NOTICE

Tightening of the bolts should be performed in a criss-cross pattern. DO NOT TIGHTEN OVER 15 lb-ft (20 N•m). Overtightening will crack the flange of the pump suction cover.

PUMP MAINTENANCE SECTION (CONTINUED)

B. IMPELLER CLEARANCE – To bring the pump back to proper tolerance, proceed as follows:

1. Loosen four bolts (1B), and push pump suction cover (1) into pump casing (5) until pump suction cover touches the pump impeller (3). Pump impeller should be in full contact with pump suction cover.
2. Tighten eight bolts (5B) finger-tight. Pump impeller should rub the pump suction cover and not turn easily through one revolution.
3. Tighten four bolts (1B) hand tight until they touch the pump casing (5).
4. Back off eight bolts (5B) 1-1/2 turn.
5. Tighten four bolts (1B) 1-1/2 turn and tighten four nuts (1N) to 15 lb-ft (20 N•m).
6. Tighten eight bolts (5B) to 15 lb-ft (20 N•m). Clearance gap should be about 0.040 in. (1.00 mm). Check to make sure if pump impeller turns freely through one revolution.

C. CLEANING

1. To clean pump impeller (3), loosen the two victaulic pipe clamps and remove suction pipe assembly. The eye of the pump impeller can then be seen through the pump suction cover (1) and is readily accessible for cleaning.
2. To further access pump impeller, remove eight bolts (5B) holding pump suction cover (1) in place. Remove pump suction cover, being careful not to damage O-ring (2).
3. To remove pump impeller, take the pump impeller wrench, which is stored in the toolbox, and position it so that the hole is aligned with any of the eight tapped holes in the front of the pump casing (5). The 90 degree leg of the wrench should face inward toward the pump impeller and be positioned between any two of the pump impeller fins. Bolt wrench securely in place with one of the pump suction cover bolts (5B). Using a pipe wrench on the clump shaft (11), unscrew pump impeller by turning clump shaft in a clockwise direction. Be careful not to unscrew pump impeller too far before removing the pump impeller wrench.

⚠ CAUTION *Do not turn the shaft backward with a pipe wrench. This will unscrew pump impeller from pump shaft. Consequently, when clutch is engaged (turned on), the pump impeller will screw onto pump shaft with a force great enough to break pump impeller. Failure to comply could result in minor or moderate personal injury. Failure to comply could also result in product or property damage.*

D. INSTALLING NEW SEAL ASSEMBLY

NOTICE *Do NOT unwrap new seal assembly until you are ready to install. All parts of seal assembly are packed in sequence of installation.*

1. To replace seal assembly (4), perform above steps in CLEANING, and remove pump casing (5) by removing three bolts (10B) that hold casing to the clutch/pump drive housing (10).
2. After cleaning all parts, including pump shaft, begin reassembly of pump. Install seal grease retainer (6) with the cavity portion of the seal facing outward. Rebolt the pump casing onto the clutch drive housing using three bolts (10B). Using a light oil lubricant (such as 3-in-1 oil), install the ceramic seat with its neoprene holder into the seal recess, making sure it is square with the pump shaft. Lubricate the inside of the bellows assembly with a light oil lubricant and check to make sure the steel ring is stuck (glued) to the end of the assembly. Slide the bellows assembly onto pump shaft and push till the steel ring is against the ceramic seat.

PUMP MAINTENANCE SECTION (CONTINUED)

3. Install the seal spring on the hub of pump impeller. After coating the threads on pump shaft with an anti-seize compound, install pump impeller and seat it securely.
4. Utilizing O-ring (2), reinstall suction cover using eight bolts (5B). At this time, check to see that pump runs freely. If pump impeller rubs suction cover, you do not have pump impeller tight on pump shaft or the suction cover needs to be readjusted. See IMPELLER CLEARANCE SECTION. Tighten bolts uniformly using 15 lb-ft. (20 N•m) on the torque wrench.
5. After reinstalling suction pipe assembly, lubricate, and tighten victaulic clamps. Service the automatic pressure lubricator. See EQUIPMENT CHECK SECTION.

CLUTCH MAINTENANCE SECTION

This is an outline of the clutch adjustment and lubrication procedure. When you perform maintenance beyond this outline, refer to the power take-off clutch manufacturer's service manual. In order to properly identify parts when ordering replacement parts, always refer to the unit and specification number stamped on the nameplate located on the top center of the clump housing.

⚠ CAUTION *Clutch maintenance should be done only while engine is not running and battery cables are disconnected. Failure to comply could result in minor or moderate personal injury. Failure to comply could also result in product or property damage.*

A. ADJUSTMENT

The clutch described in this manual does not automatically adjust to compensate for wear of the clutch facing(s), and must be manually adjusted. Maintaining the correct engagement pressure is the responsibility of the owner/operator. The owner/operator must periodically adjust the clutch to ensure correct clutch operation.

The clutch should be adjusted if the force to engage the clutch drops by 10-15% of the specified engagement force. Destructive damage may have already occurred if engagement force is allowed to diminish to the point where the clutch fails to carry the load (slippage), or if facing(s) has (have) overheated.

NOTICE *Do not adjust clutch too tightly. Overtightening can cause component failure.*

If the clutch does not pull, overheats, or the clutch operating lever pops out, the clutch must be adjusted. Proceed as follows:

1. Remove clump nameplate (10A) in the drive housing (10), and rotate clutch until adjusting lock collar and lock screw (28) can be reached. To avoid dropping the adjusting lock (28) into the housing, use caution when removing or disengaging.
2. With a flat blade screwdriver or 7/16 inch wrench, loosen the adjustment lock bolt and loosen or remove the adjustment lock.
3. Turn adjusting ring (27) counterclockwise to obtain recommended operating lever pressure. Rotating the adjustment ring clockwise will loosen the clutch. Adjust to obtain the proper handle engagement force. Lever engagement force should be measured with a spring scale at the end of the lever and pulling perpendicular to the lever.
4. When clutch is properly adjusted, reposition the adjustment lock (28) in the notches. Install and tighten the adjustment lock bolt. Rotate clutch and re-engage. Reinstall the nameplate (10A).

CLUTCH MAINTENANCE SECTION (CONTINUED)

HANDLE PRESSURE

Variation in handle length directly affects the required handle pressure needed for clutch adjustment. See the table below to determine the correct handle pressure.

Clutch Size	Reference Lever Length	Pressure at Lever
10 in.	7-5/8 in.	220 - 236 lbs.

NOTICE

A new clutch generally requires several adjustments until the friction surfaces are worn in. Do not let clutch slip, as this will glaze the friction plates and may ruin them.

B. LUBRICATION

The operating shaft bearings should be lubricated every one (1) to three (3) months, depending on usage. The clutch cross shaft should be lubricated weekly. The clutch release bearing, accessible by removing the clutch nameplate, should be lubricated daily using a hand operated grease gun only.

1. Lubricant – Use any high grade, lithium-based number 2, short-fiber grease having an operating temperature of 200°F (93°C) that is recommended for roller bearings.

NOTICE

Do not mix sodium- or calcium-based grease with lithium-based grease. Lubricate sparingly to avoid oil seepage onto clutch facings.

2. Anti-Friction Bearings – Shaft bearings should be lubricated after every 50 hours of operation. Shaft bearings can be lubricated through the fittings (41) with a short-fiber, high-grade, high-temperature, lithium-based number 2 lubricant that has an operating temperature of 200°F (93°C).
On occasion, use the same lubricant to lubricate the two fittings at the cross-shaft (26).
3. Clutch Lever and Linkage – Clutch levers and linkage should be lubricated with engine oil after every 500 hours of operation.

C. REMOVAL OF CLUTCH/PUMP ASSEMBLY (CLUMP) FROM ENGINE

1. Remove clamps and piping from the suction and discharge side of slurry pump.
2. Place a jack under bell housing of engine to support the rear of the engine after clump has been removed.
3. Place slurry pump clutch control lever in the ENGAGE position to hold clutch facings in place when removing clutch from engine. Unbolt the rod that connects the slurry pump clutch operating lever to operator's platform clutch handle
4. Attach a suitable lifting device to clump drive housing (10). Remove bolts that secure the drive housing to the engine flywheel housing and the two bolts holding the drive housing to the HydroSeeder® frame.

CAUTION

Caution should be exercised when removing clutch/pump housing from the engine so that the facings and pilot bearing are not damaged.

5. Support the housing assembly on blocks, making sure the output end of the shaft is facing downward.
6. Remove the clump nameplate (10A) from the housing for improved access to internal parts.

CLUTCH MAINTENANCE SECTION (CONTINUED)

D. CLUTCH FACING PLATES (ITEM 30) REPLACEMENT

A common indication that the facing's friction surface is worn out is that the adjusting ring cannot be turned any tighter. To replace the facing plates, remove the slurry clutch pump from the engine as described above and proceed as follows:

1. Disengage (turn off) clutch operating lever, and remove the old facing plates (30).
2. Insert the new facing plates (three segments) in between clutch body (34) and pressure plate (29), and center facings as close as possible.
3. Lock clutch facings between pressure plates as follows:
 - A. Remove drive ring (31) from engine flywheel so that it can be used to center the facings.
 - B. With clutch assembly resting on a workbench, turn clutch adjusting ring counterclockwise until pressure plate (29) almost contacts clutch facing (30).
 - C. Place clutch driving ring over clutch facings with teeth in driving ring in mesh with teeth of clutch facings, and locate driving ring centrally relative to the pressure plate and clutch body.

NOTICE

If driving ring is not properly located relative to the pressure plate and clutch body, the clutch cannot be assembled to the flywheel, as the teeth of clutch facings will not enter the teeth of driving ring, even though the clutch drive shaft enters the pilot bearing.

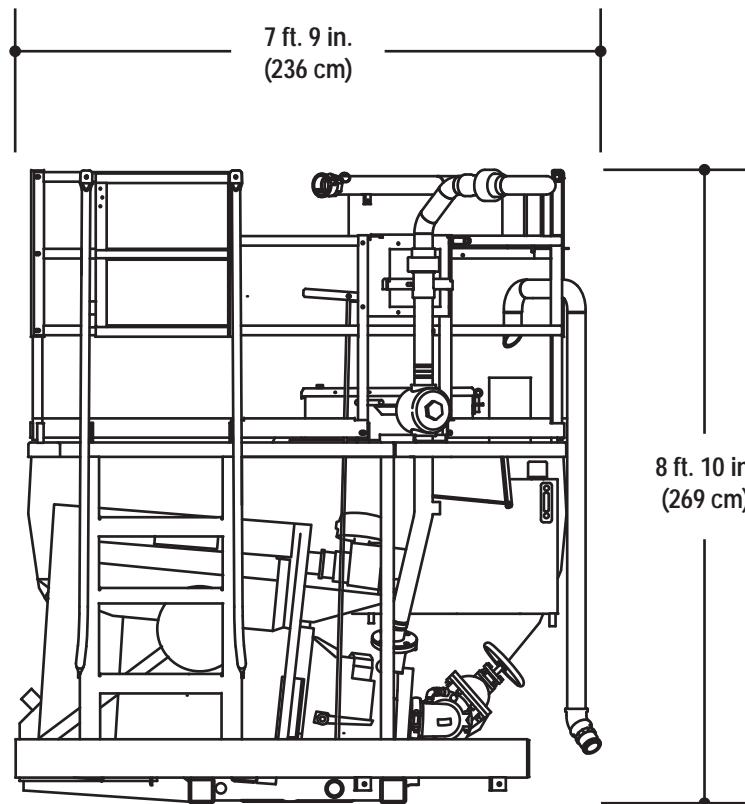
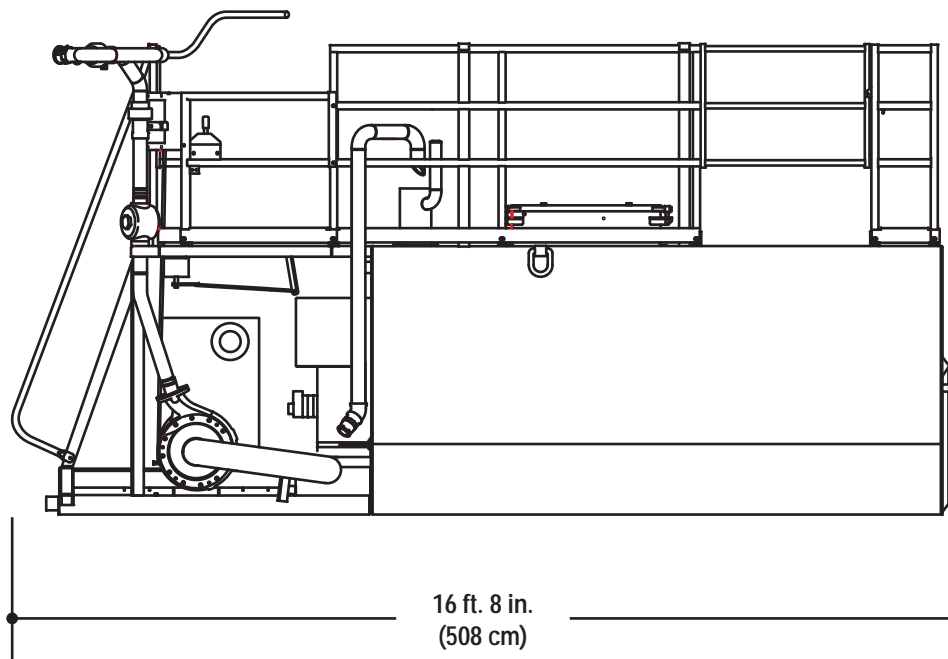
- D. Engage (turn on) clutch by applying pressure on top of release sleeve and collar assembly (20), and lock clutch facings between pressure plate and clutch body. If clutch facings are still free to move, disengage (turn off) clutch, and turn adjusting ring counterclockwise just enough to lock the clutch facings in place when clutch is engaged (turned on).

NOTICE

Engage clutch (turn on) until the clutch assembly is attached to the engine.

4. Remove clutch driving ring (31) from clutch facings and attach it to the flywheel with the specified bolts and lock washers.
5. Before reinstalling clutch onto engine, lubricate release sleeve (21) through the grease fitting mounted on its side.
6. To reinstall the clutch/pump assembly onto the engine, reverse the procedure outlined under REMOVAL OF CLUTCH/PUMP ASSEMBLY (CLUMP) FROM ENGINE SECTION.
7. When clutch/pump are reinstalled, check handle, engage pressure, and adjust if necessary.

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FINN T170 HYDROSEEDER® TECHNICAL SPECIFICATIONS

POWER	Cummins QSF 2.8 L Diesel, Tier 4F, 65 hp (48kW) with Vibration isolation. Controls include: over-center clutch, agitator direction and speed, discharge boom and recirculation control valves, engine throttle, safety horn and engine start/stop
ENGINE SAFETY SYSTEM	Low oil pressure, Electronic Engine Control and Monitoring
TANK SIZE.....	1,750 gallon (6,625 L) liquid capacity 1,500 gallon (5,678 L) working capacity
FUEL TANK CAPACITY	38 gallon (144 L)
PUMP.....	Centrifugal 4 in. x 2 in. (10.2 cm x 5 cm) 320 GPM @ 115 psi (1,211 LPM @ 793 kPa), 1 in. (2.54 cm) solid clearance
PUMP DRIVE.....	Direct drive with over center clutch, pump drive is independent of agitator operation
AGITATION	Mechanical paddle agitation and liquid recirculation
AGITATOR DRIVE	Reversible, variable speed hydraulic motor drive (0–130 RPM)
DISCHARGE DISTANCE.....	Up to 200 ft. (61 m) from discharge tower
MATERIAL CAPACITY.....	5,000 lbs. (2,268 kg) granular solids 750 lbs. (340 kg) fiber mulch
NOZZLES	(2) narrow fan, (2) wide fan, (2) long distance
EMPTY WEIGHT	6,770 lbs (3,071 kg)
WORKING WEIGHT*.....	24,300 lbs (11,022 kg)

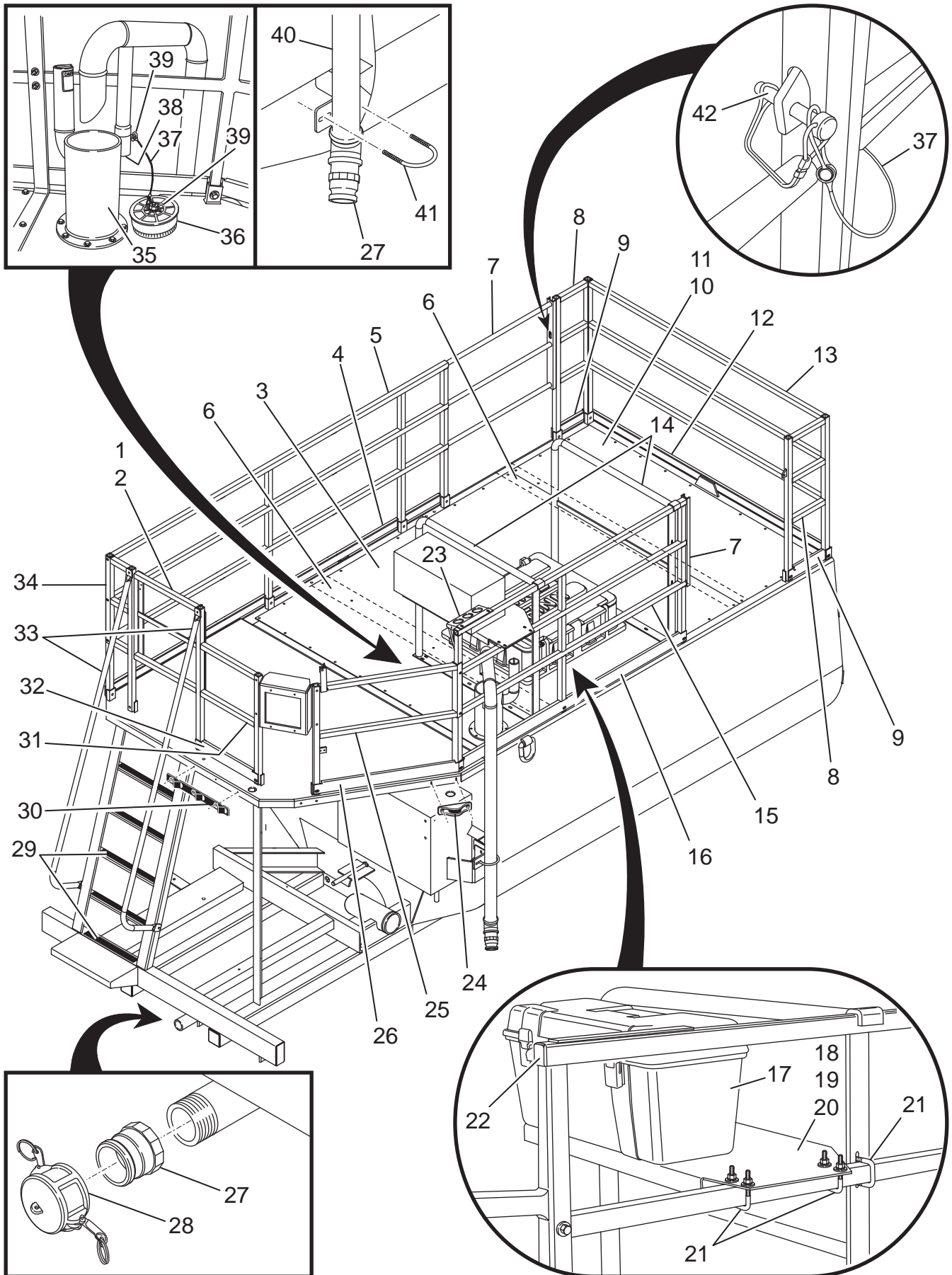
** Working weights are approximate and do not include options or stored materials.
Working weights are based on material at 750 lbs./cu. yd.*

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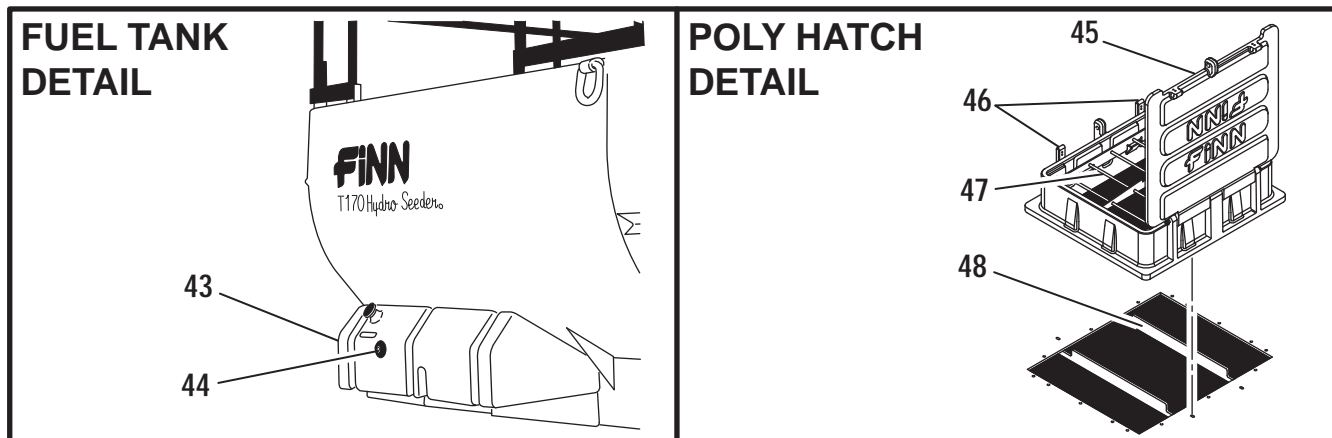
T170 HydroSeeder[®]

Parts Section

Model **MB**



**WHEN ORDERING PARTS, BE SURE TO STATE
SERIAL NUMBER OF MACHINE**



STRUCTURE AND RAILING

Ref. No.	Part Number	Description	No. Req'd
1	013149	Swing Gate	1
2	013122	Gate Spring	1
3	F330-0108	Main Tank Top	1
4	F170-0015	Left Side Toe Rail	1
5	008639	Left Side Guard Rail	1
6	F330-0120	Front Tank Top Support	2
7	012703	Slide Gate	2
8	012737	Front Side Rail	2
9	F280-0005	Front Side Toe Rail	2
10	F330-0109	Small Tank Top	1
11	190047	Foam Gasket for Tank Top	33 ft.
12	F330-0082	Front Toe Rail	1
13	012705	Front Guard Rail	1
14	012708	Hatch Guard Rail	2
15	012702	Right Rear Guard Rail	1
16	F330-0086	Right Rear Toe Rail	1
17	012669	Toolbox	1
18	F330-0078	Tool Box Mount	1
19	085152	Rubber Stud Mount	2
20	005619	U-Bolt For 1-1/4 in. Pipe	2
21	012514	Square U-Bolt For 1-1/2 in. Square Pipe	6
22	005613	Square Tubing Plug	25
23	F330-0075	Nozzle Holder	1
24	002290	Rear Marker Light - Red	2
25	012736	Rear Corner Guard Rail	1

Continued to next page.

**WHEN ORDERING PARTS, BE SURE TO STATE
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STRUCTURE AND RAILING

Ref. No.	Part Number	Description	No. Req'd
26	F330-0084	Rear Corner Toe Rail	1
27	002191	2-1/2 in. Male Brass Adapter	2
28	002190	Dust Cap with Gasket - Main Tank Drain	1
	006513	Dust Cap Gasket	1
29	190018	2 in. Wide Conformable Safety Walk	6 ft.
30	005944	LED Identification Light	1
	005945	Wire Sleeve	1
31	012701	Long Rear Guard Rail	1
32	F330-0089	Long Rear Toe Rail	1
33	012771	Ladder Hand Rail	2
34	013151	Short Rear Guard Rail	1
35	012750	Fill Stack Extension	1
36	008470	Fill Port Plug	1
37	005700	Nylon Lanyard	3
38	012515	1-1/4 in. Pipe Plug	1
39	012296	Closed "S"-Hook	2
40	012829	Fill Port	1
41	085148	2-1/2 in. U-Bolt	1
42	FW71225	Snapper Pin	2
43	012693	Poly Fuel Tank	1
	012693-V	Drain Valve	1
	012693-G	Grommet for Drain Valve	1
	005726	Fuel Cap (Diesel)	1
	012693-GR	Fuel Line Fitting Frommet	2
44	012694	Fuel Gauge	1
45	012833	Poly Hatch Assembly	1
	190047	Foam Gasket	10 ft.
46	005433	Soft Latch	2
47	012834	Bag Cutter - Stainless Steel	1
48	F120-0006	Hatch Safety Rail	1

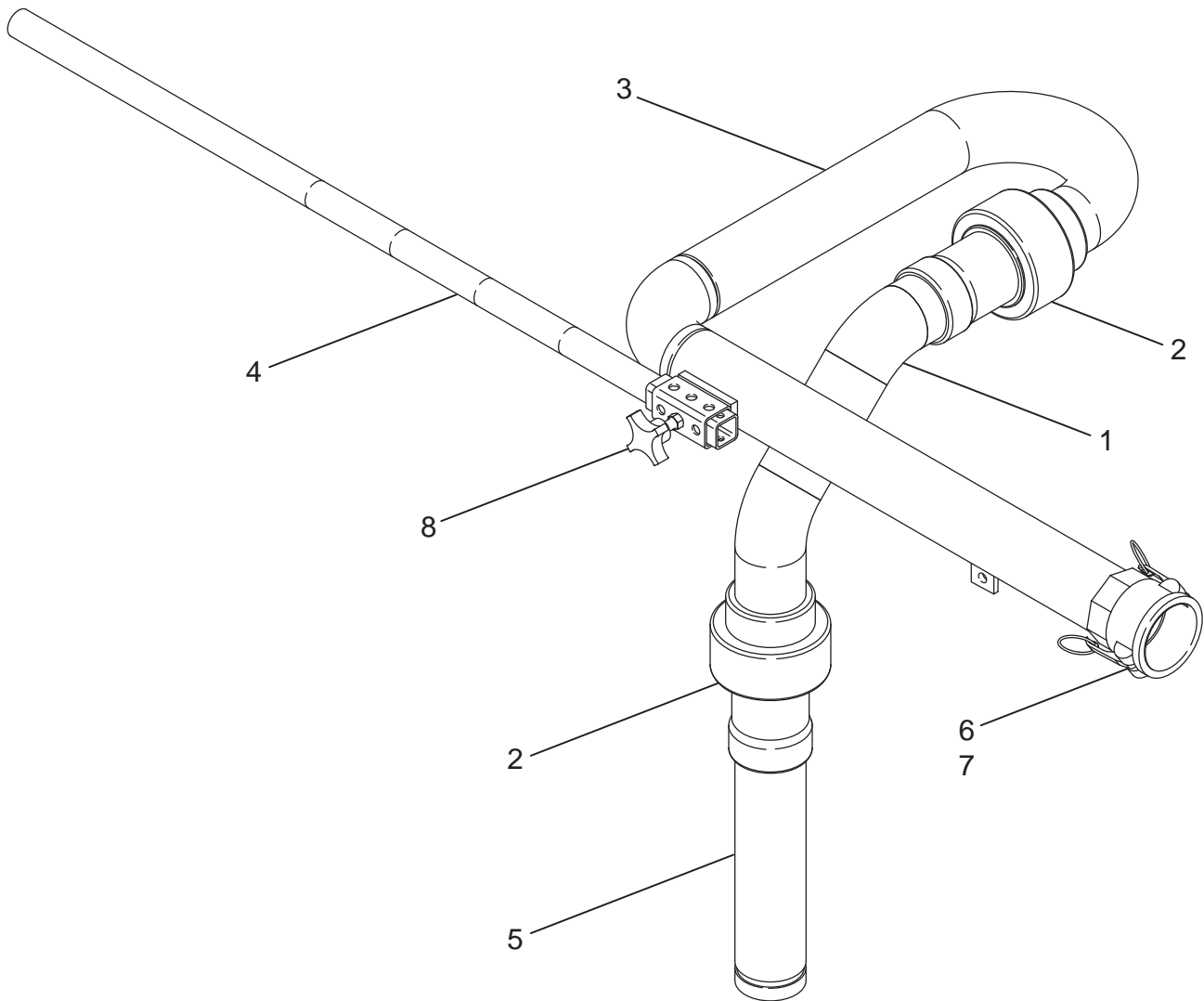
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A1096-001	Manual Canister	1
F330-0054	Battery Box	1
F330-0092	Battery Box Hold Down	1
011851	12 Volt Battery	1

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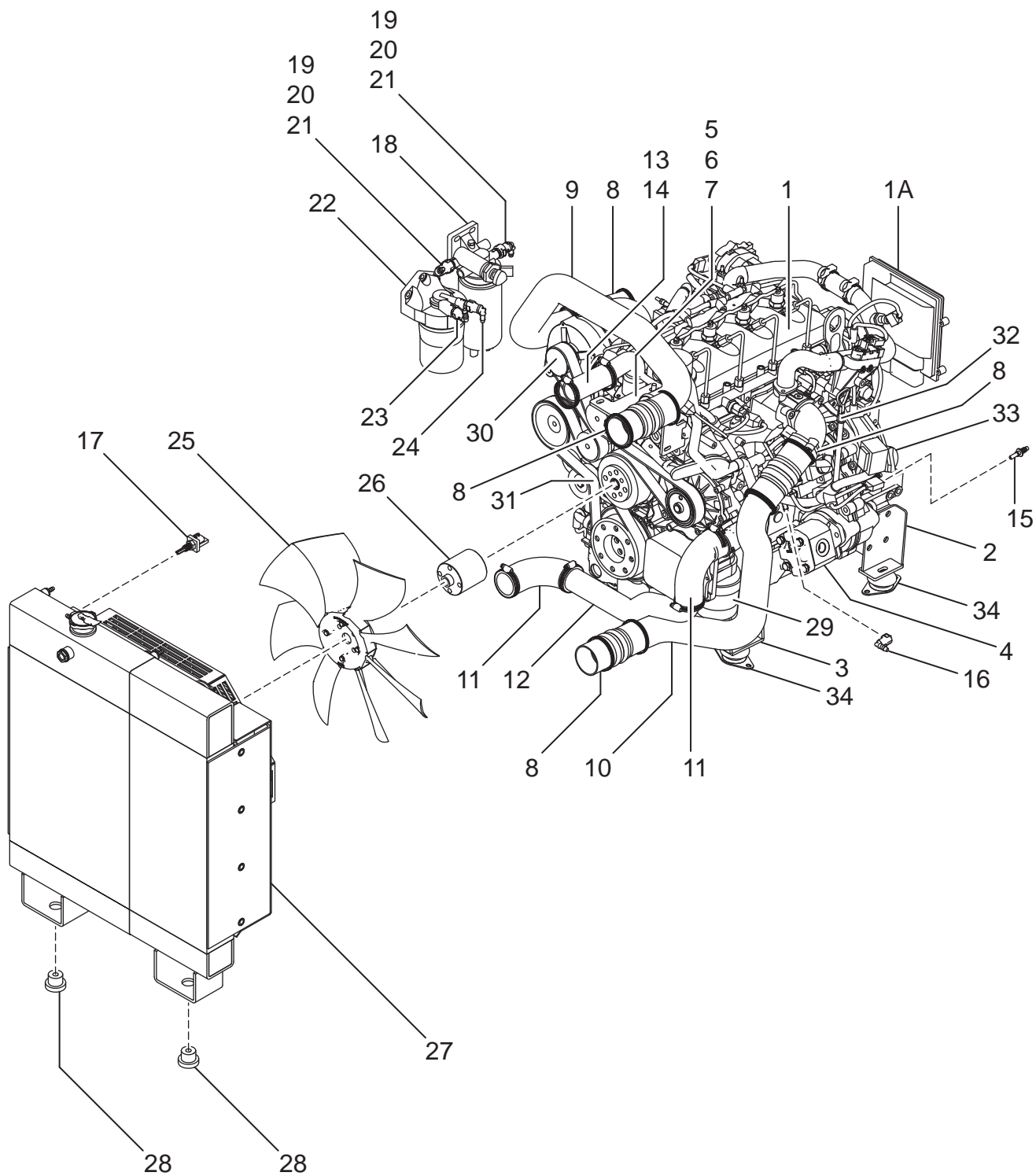


**WHEN ORDERING PARTS, BE SURE TO STATE
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DISCHARGE BOOM ASSEMBLY

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	012763	Lower Boom Discharge Weldment	1
2	▲	012283	2-1/2 in. Straight Swivel	2
3	▲	012762	Upper Boom Discharge Weldment	1
4		013159	Boom Discharge Handle Weldment	1
5	▲	012726-01	Boom Stand Pipe	1
6	▲	010544	2-1/2 in. Female Coupler	1
7	▲	006513	2-1/2 in. Coupler Gasket	1
8		011914	Black Hand Knob	1
KITS AND MARKERS				
	▲	012764	2-1/2 in. Discharge Boom Assembly	
		012397	Swivel Repair Kit	

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**WHEN ORDERING PARTS, BE SURE TO STATE
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ENGINE

Ref. No.	Part Number	Description	No. Req'd
1	075880	QSF 2.8 Engine	1
1A	-----	Engine ECM (Supplied with Engine)	1
	008768	ECM Mounting Isolators	4
2	008735	Rear Left Engine Foot	1
3	008737	Front Left Engine Foot	1
4	008762	Hydraulic Pump	1
5	008758	Upper Radiator Support	1
6	023438	Radiator Isolator	1
7	008757	Upper Radiator Support Bracket	1
8	CUM50000600	Air Intake Hose	4
	007391	Air Intake Hose Clamp	8
9	008819	CAC Inlet Tube	1
10	008822	CAC Outlet Tube	1
11	008823	Coolant Elbow	2
	022450	Coolant Elbow Clamp	4
12	008820	Coolant Tube Inlet	1
13	008817	Coolant Hump Hose	1
	022450	Coolant Hump Hose Clamp	2
14	008821	Coolant Outlet Pipe	1
15	008835	Male Quick Conector	1
16	008828	Female Quick Connector	1
17	008824	Coolant Level Sensor	1
18	075884	Stage 1 Fuel Filter Assembly	1
	075884-01	Stage 1 Fuel Filter Upper Housing with Pump	1
	075884-02	Stage 1 Fuel Filter Heater	1
	075884-04	Stage 1 Fuel Filter Spin-on Element	1
19	008813	Sealing Washer	2
20	008814	Male Quick Connector	2
21	008815	Female Quick Connector	2
22	075886	Stage 2 Fuel Filter Assembly	1
	075886-01	Stage 2 Fuel Filter Upper Housing Assembly	1
	075886-02	Stage 2 Spin On Housing Cup	1
	075886-03	Stage 2 Fuel Filter Element	1
	075886-04	Stage 2 Fuel Filter Housing O-ring	1
23	008816	Female Quick Connector	1
24	008812	Female Quick Connector	1
25	008754	Radiator Fan	1

Continued to next page.

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ENGINE

Ref. No.	Part Number	Description	No. Req'd
26	008755	Radiator Fan Spacer	1
	●	M10 x 110 Gr. 10.9 Hex Head Bolts	4
27	008763	Radiator	1
28	075205	Radiator Isolators	2
	055505	Snubbing Washer	2
29	008809	Engine Oil Canister Element	1
30	008808	120 V Alternator	1
31	008830	QSF 2.8 Fan Belt	1
32	008854	Oil Dipstick and Guide Assembly	1
	008854-01	Oil Dipstick	1
	008854-02	Oil Dipstick Guide Tube	1
33	008855	Oil Fill Cap Assembly	2
34	085303-18	Engine Isolators	4

NOT SHOWN

	008736	Rear Right Engine Foot	1
	008738	Front Right Engine Foot	1
	008810	12 V/3kW Starter	1
	008831	QSF 2.8 Thermostat	1
	008832	QSF 2.8 Thermostat Seal	1
	Cum 8100273	#10 Hose Clamp	2
	Cum 80000044	#6 Hose Clamp	4
	Cum 5000049	3/8 Heater Hose	3 ft.
	075915	5/8 Heater Hose	2.25 ft.

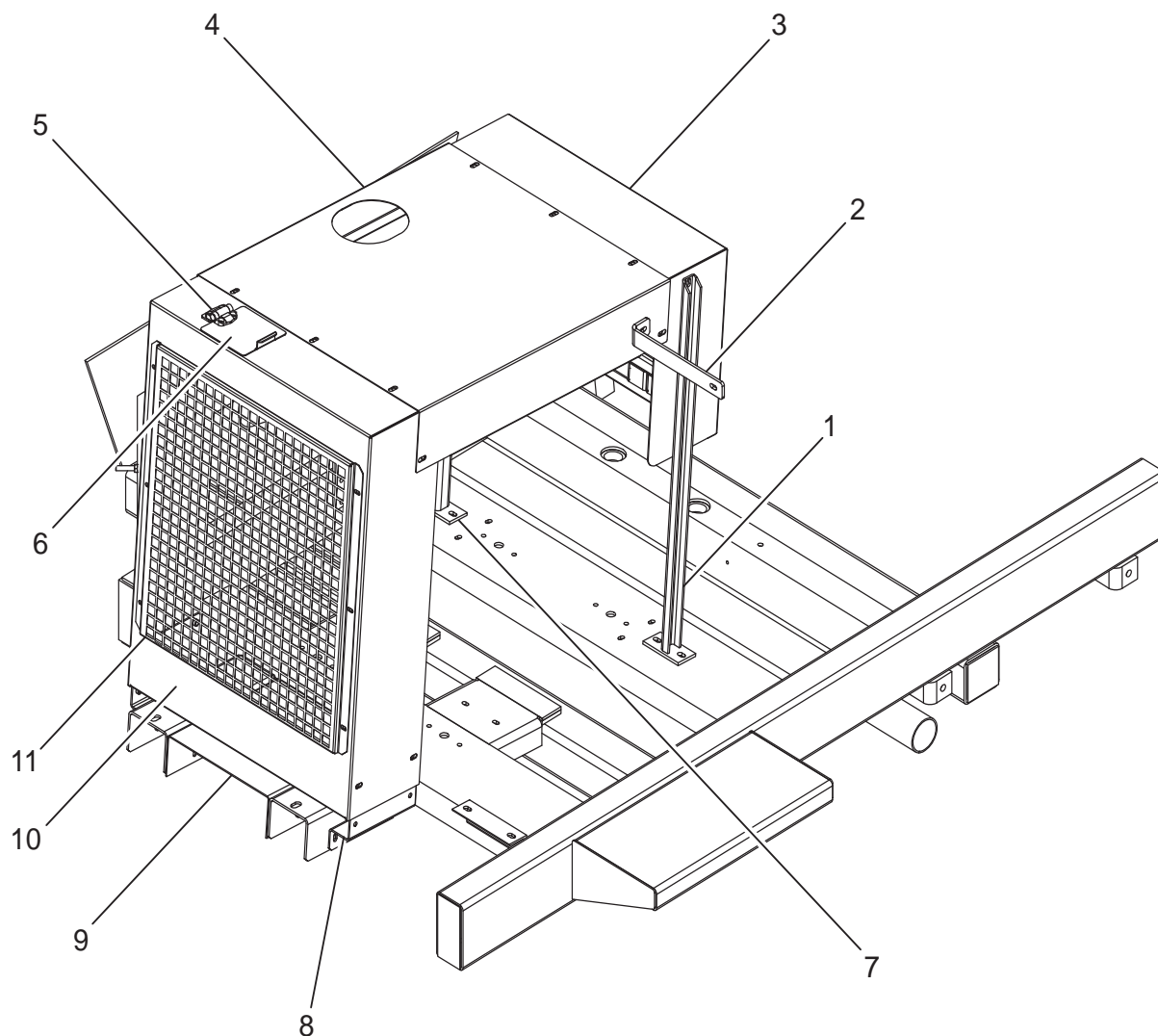
KITS AND MARKERS

- Standard Hardware Item - Available at your local hardware store.

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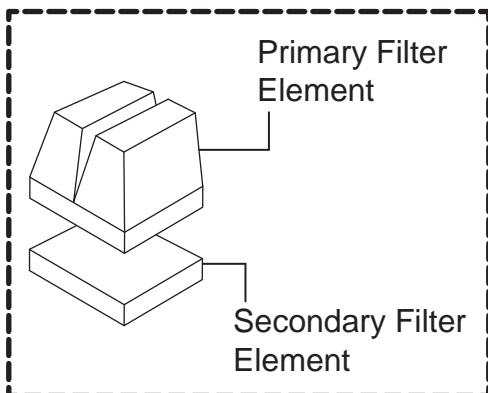
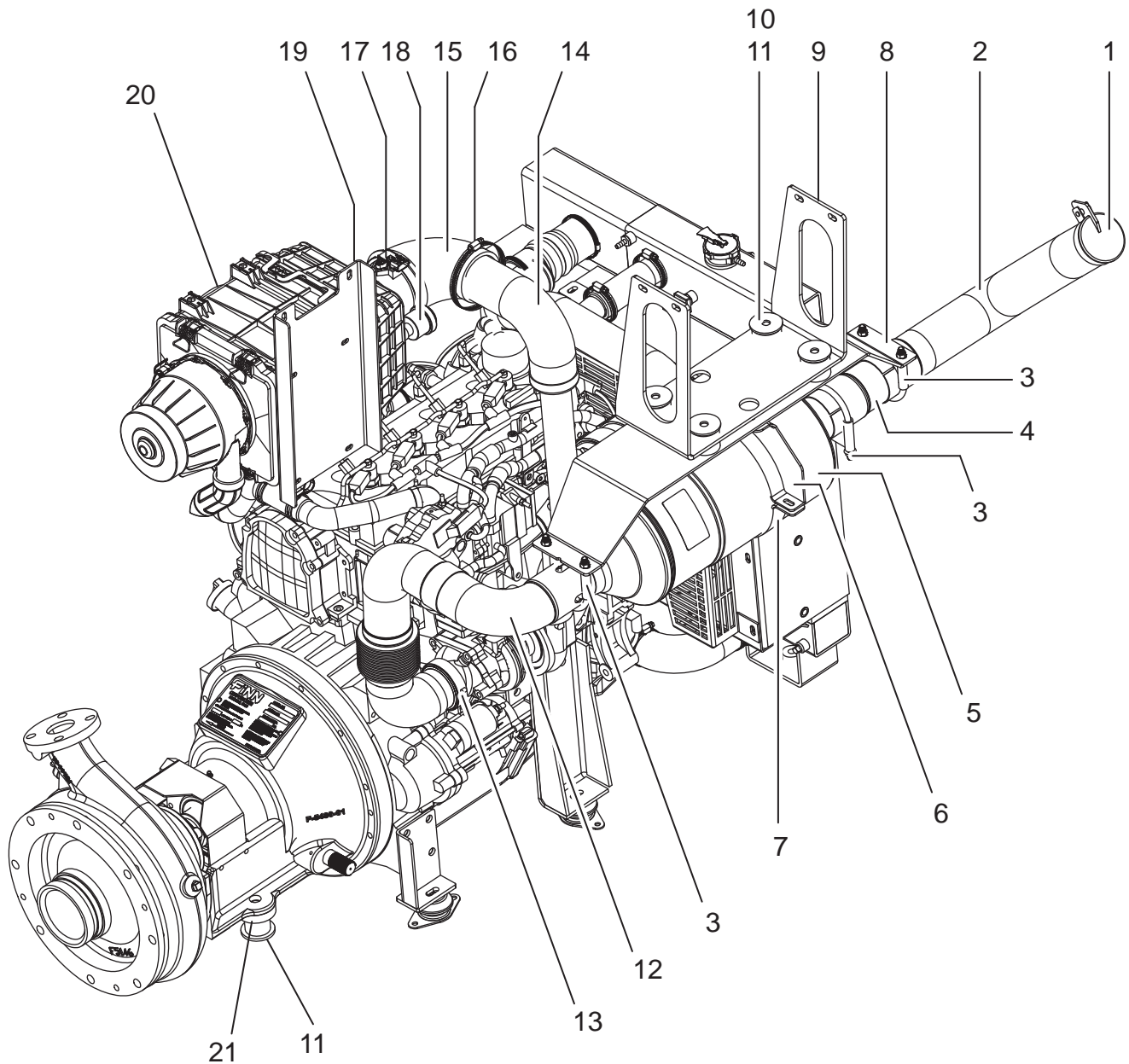


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ENGINE SHEET METAL

Ref. No.	Part Number	Description	No. Req'd
1	008664	Rear Sheetmetal Mount Leg (Long)	1
2	008784	Sheetmetal Support Bracket	1
3	008740	Rear Sheetmetal Cover	1
4	008742	Top Sheetmetal Cover	1
5	055669	Door Positioning Hinge	1
	F260-0006-03	Hinge Spacer	1
6	F260-0006-02	Radiator Cap Cover	1
7	008745	Rear Sheetmetal Mount Leg (Short)	1
8	F170-0026	Radiator Cover Mount Bracket	2
9	F170-0020	Radiator Pan	1
10	008743	Radiator Cover	1
11	075562-01	Radiator Screen	1

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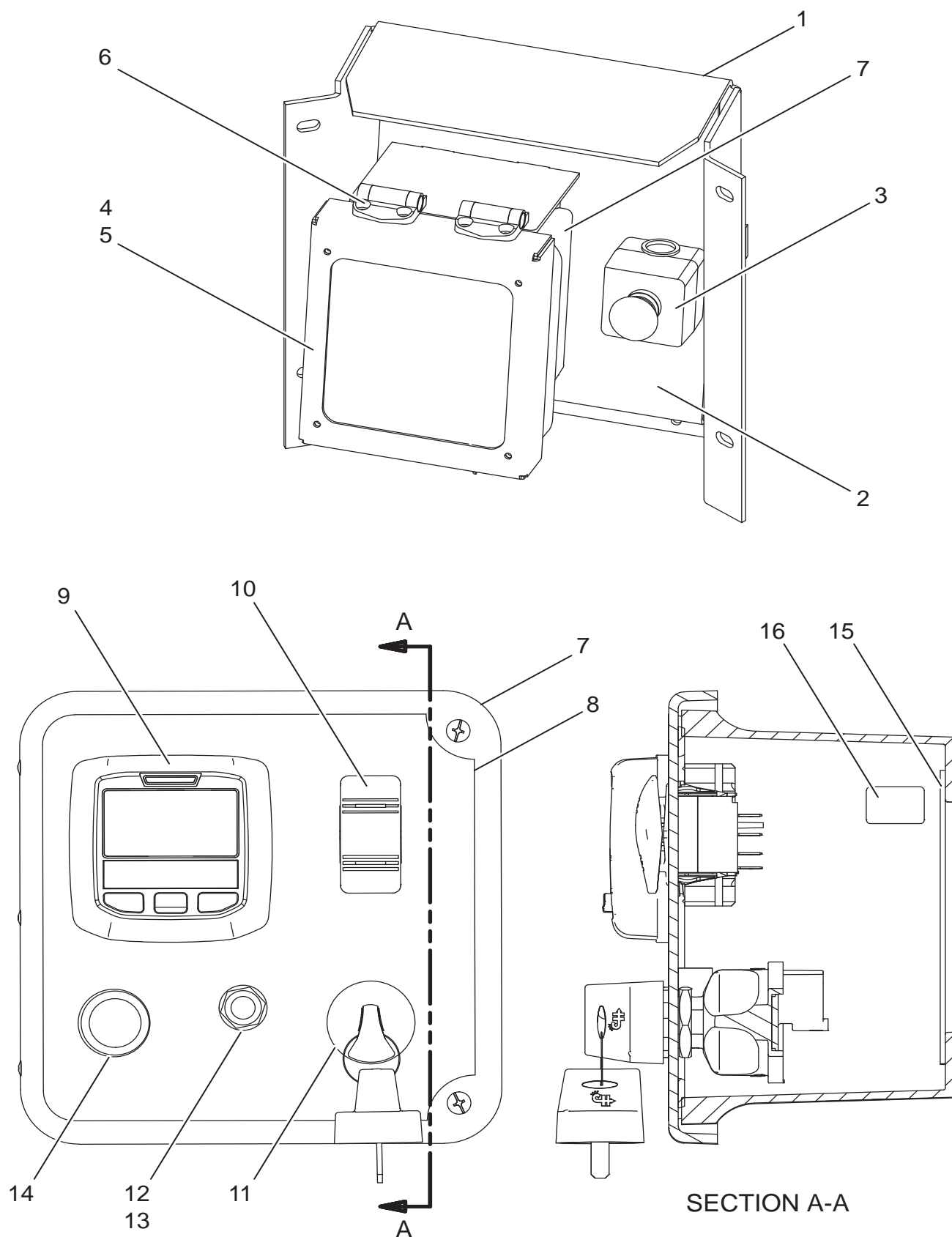


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AIR INTAKE AND EXHAUST SYSTEM

Ref. No.	Part Number	Description	No. Req'd
1	012991	Rain Cap Assembly	1
2	023471	Exhaust Elbow	1
3	055501	Muffler Clamp	3
4	008752	Exhaust Pipe Extension	1
5	008759	DOC Muffler	1
6	008796	Muffler Mounting Bracket	1
7	008829	Muffler Mounting Bracket Band	1
8	008798	DOC Mounting Plate	1
9	008797	DOC Hanger	1
10	008804	DOC Isolator	4
11	055505	DOC Snubbing Washer	6
12	008746	DOC Exhaust Pipe	1
13	008825	DOC V-band Clamp	1
14	008756	Air Intake Tube	1
15	325075	Reducer Elbow	1
16	055496	3 in. T-clamp	1
17	055335	4 in. T-clamp	1
18	008826	Restrict Indicator	1
19	008751	Air Cleaner Mount	1
20	008807	Air Cleaner Assembly	1
	008807-01	Filter Housing	1 per
	008807-02	Primary Air Cleaner Element	1 per
	008807-03	Secondary Air Cleaner Element	1 per
21	007433	Clump Mounting Isolator	2
NOT SHOWN			
	008827	Air Intake Elbow	1
	007391	Worm Gear Clamp	2

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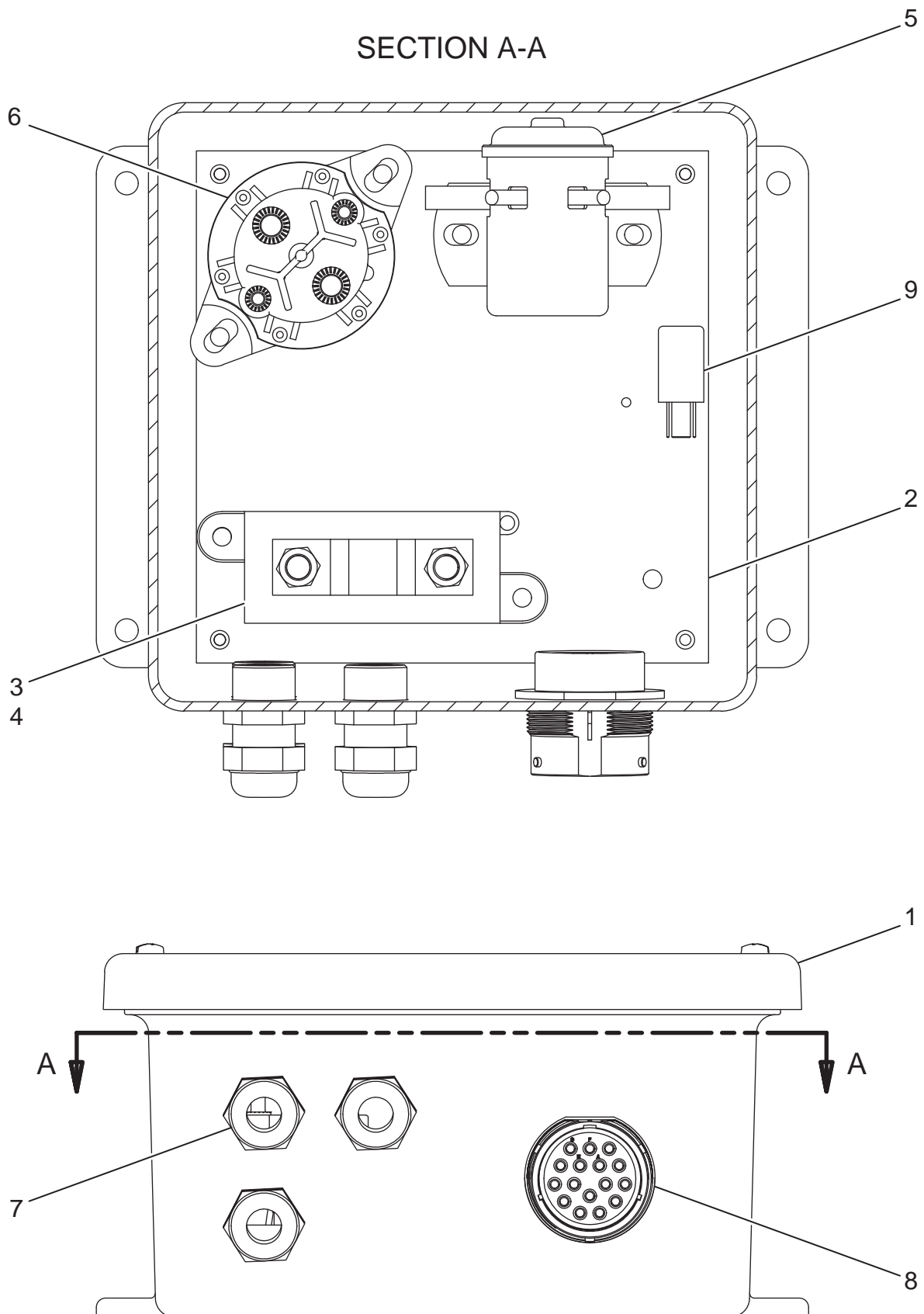
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CONTROL STATION AND CONTROL BOX

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1		F170-0029	Guard Rail Control Box Mounting Bracket	1
2		008800	Control Box Mounting Plate	1
3		012970	Emergency Stop (E-stop) with Enclosure	1
4		008801	Control Box Cover	1
5		008802	Control Box Cover Plexiglass	1
6		055669	Door Positioning Hinge	2
7	▲	031583	Control Box	1
8	▲	008865	Control Box Decal	1
9	▲	008795	Engine Controller/Display	1
10	▲	031507	Rocker Switch	1
11	▲	031506	Key Switch	1
		031506-01	Keys	2 per
12	▲	008793	Toggle Switch	1
13	▲	080526	Toggle Switch Boot	1
14	▲	020886	Horn Button	1
15	▲	031571	Control Box Back Panel	1
16	▲	031578	Micro Relay (12V, SPDT, 35A NO, 25A NC, Sealed	1
NOT SHOWN				
	▲	008858	Control Box Harness	1
		008803	Engine Harness	1
KITS AND MARKERS				
	▲	008864	Control Box Assembly	

NOTE: All items marked with this symbol (▲) are included when ordering the Control Box Assembly.

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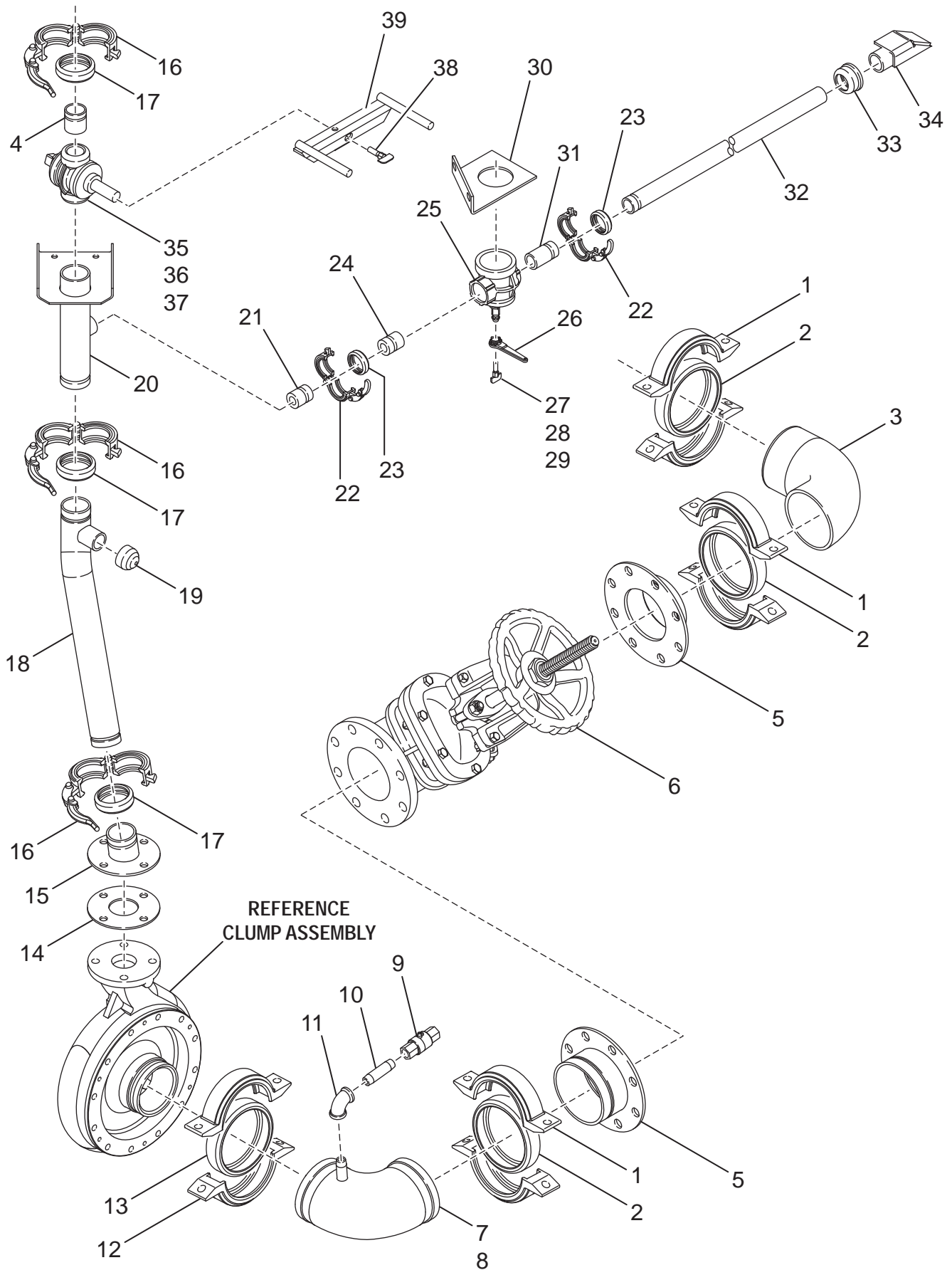
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ENGINE RELAY BOX

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	075888-01	Relay Box Enclosure	1
2	▲	075892	Relay Box Back Panel	1
3	▲	008838	Fuse Box	1
4	▲	008839	Mega 250A Fuse	1
5	▲	008840	Ametek Switch	1
6	▲	075893	Starter Relay	1
7	▲	080303	Cord Grip	3
	▲	170088	1/2 in. NPT Conduit Locknut	1 per
8	▲	008857	Relay Box Harness	1
9	▲	031578	Micro Relay	1
NOT SHOWN				
		021198	Flasher and Bracket	1
		008859-01	Positive Battery Cable	1
		008859-02	Negative Battery Cable	1
		008859-03	Ground Cable	1
KITS AND MARKERS				
	▲	008856	Relay Box Assembly	

NOTE: All items marked with this symbol (▲) are included when ordering the Relay Box Assembly.

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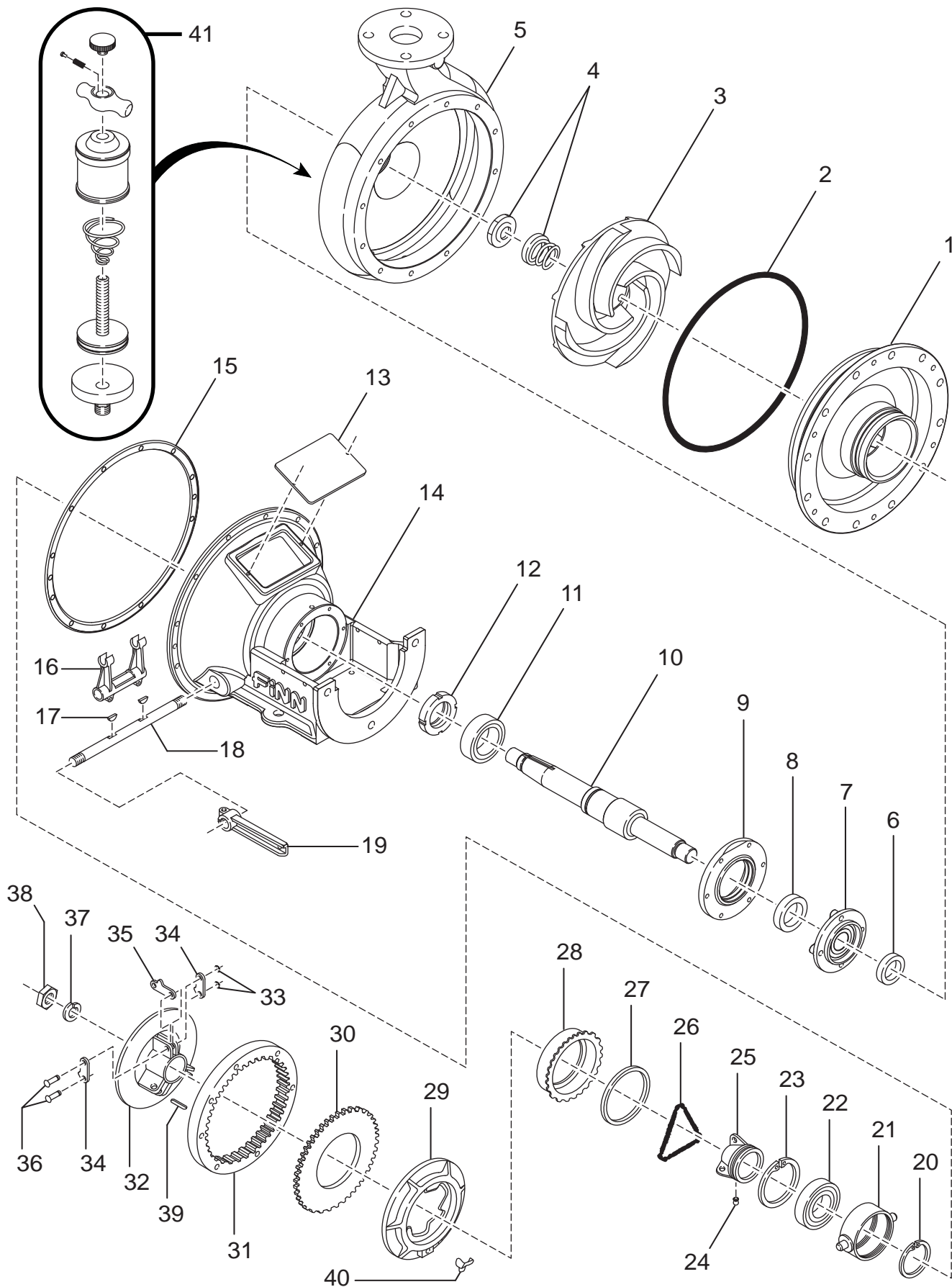


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CLUMP, PIPING AND DISCHARGE ASSEMBLY

Ref. No.	Part Number	Description	No. Req'd
1	011736	5 in. Victaulic Pipe Clamp	3
2	011919	5 in. Victaulic Pipe Clamp Seal	1 per
3	008259	5 in. 90° Pipe Elbow	1
4	011882	2-1/2 in. Toe-Goe Pipe	1
5	012722	Suction Valve Flange Weldment	2
6	012058	5 in. Flanged Suction Gate Valve	1
	F330-0056	Suction Valve Mount Bracket (Not Shown)	1
7	012491	Suction Valve Bleeder Valve Assembly	1
8	012491-02	Suction Elbow Weldment	1 per
9	012457	Stainless Steel Ball Valve	1 per
10	160428	1/2" Dia. x 4" Lg. SCH 40 Nipple	1 per
11	160006	90° Elbow	1 per
12	008471	5 in. x 4 in. Reducing Pipe Clamp	1
13	008472	5 in. x 4 in. Reducing Pipe Clamp Seal	1
14	008469	Pump Discharge Gasket	1
15	008645	Pump Discharge Flange Weldment	1
16	002771	2-1/2 in. Victaulic Pipe Clamp	3
17	002820	2-1/2 in. Victaulic Pipe Clamp Seal	1 per
18	008647	Lower Discharge Pipe Weldment	1
19	160263	1-1/2 in. Pipe Cap	1
20	008646	Discharge Valve Stand Pipe	1
21	011727-11	Recirculation Nozzle	1
22	006721	1-1/4 in. Victaulic Pipe Clamp	2
23	006722	1-1/4 in. Victaulic Pipe Clamp Seal	1 per
24	011727-10	Recirculation Nozzle	1
25	011776	Round Port 2-Way Valve	1
26	012786	Recirculation Lever	1 per
27	011950	Gasket	1 per
28	011951	Spring	1 per
29	004962	Lube Screw	1
30	F330-0090	Recirculation Valve Stabilizer	1
31	011727-09	Recirculation Nozzle	1
32	012726-03	Recirculation Pipe	1
33	012462-05	Guardian Coupling	1
34	005703-02	Coupling Deflector	1
35	011777	Round Port 2-Way Valve	1
36	011953	Spring	1
37	008487	Gasket	1
38	004962	Lube Screw	1
39	012758	Valve Foot Pedal	1

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CLUTCH/PUMP (CLUMP) ASSEMBLY

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	●	005146	Pump Suction Cover	1
2	●	005150	O-ring	1
3	●	005145	Pump Impeller	1
4	●	006443	Mechanical Shaft Seal	1
5	●	005144	Pump Casing	1
6	●	006444	Grease Retainer	1
7	●	005446	Flange Pilot Bearing	1
8	●	012733	Grease Retainer Seal	1
9	●	012734	Bearing Retainer Ring	1
10	●	012729	Clump Shaft	1
11	●	012731	Bearing	1
12	●	012732	SN-11 Nut	1
13	●	005570	Clump Name Plate	1
14	●	012695	Clump Housing	1
15		008811	Clump Mounting Ring Spacer	1
16	■●	100323	Clutch Yoke	1
17	■●	100042	Woodruff Key	2
18	■●	100040	Yoke Shaft	1
19	■●	031219	Modified Clutch Lever	1
20	■●	X	External Snap Ring	1
21	■●	X	Bearing Carrier	1
22	■●	X	Release Bearing	1
23	■●	X	Internal Snap Ring	1
24	■●	X	Lube Fitting	1
25	■●	X	Release Sleeve	1
26	■●	100026	Lever Spring	1
27	■●	X	Adjusting Ring Plate	1
28	■●	X	Adjusting Ring	1
29	■●	X	Pressure Plate	1
30	■●	100341	10 in. Clutch Disk	1
31	■●	100003	Driving Ring	1
32	■●	X	Clutch Body	1
33	■●	X	Retaining ring	6
34	■●	X	Connecting Link	6
35	■●	X	Release Lever	3
36	■●	X	Clevis Pin	6

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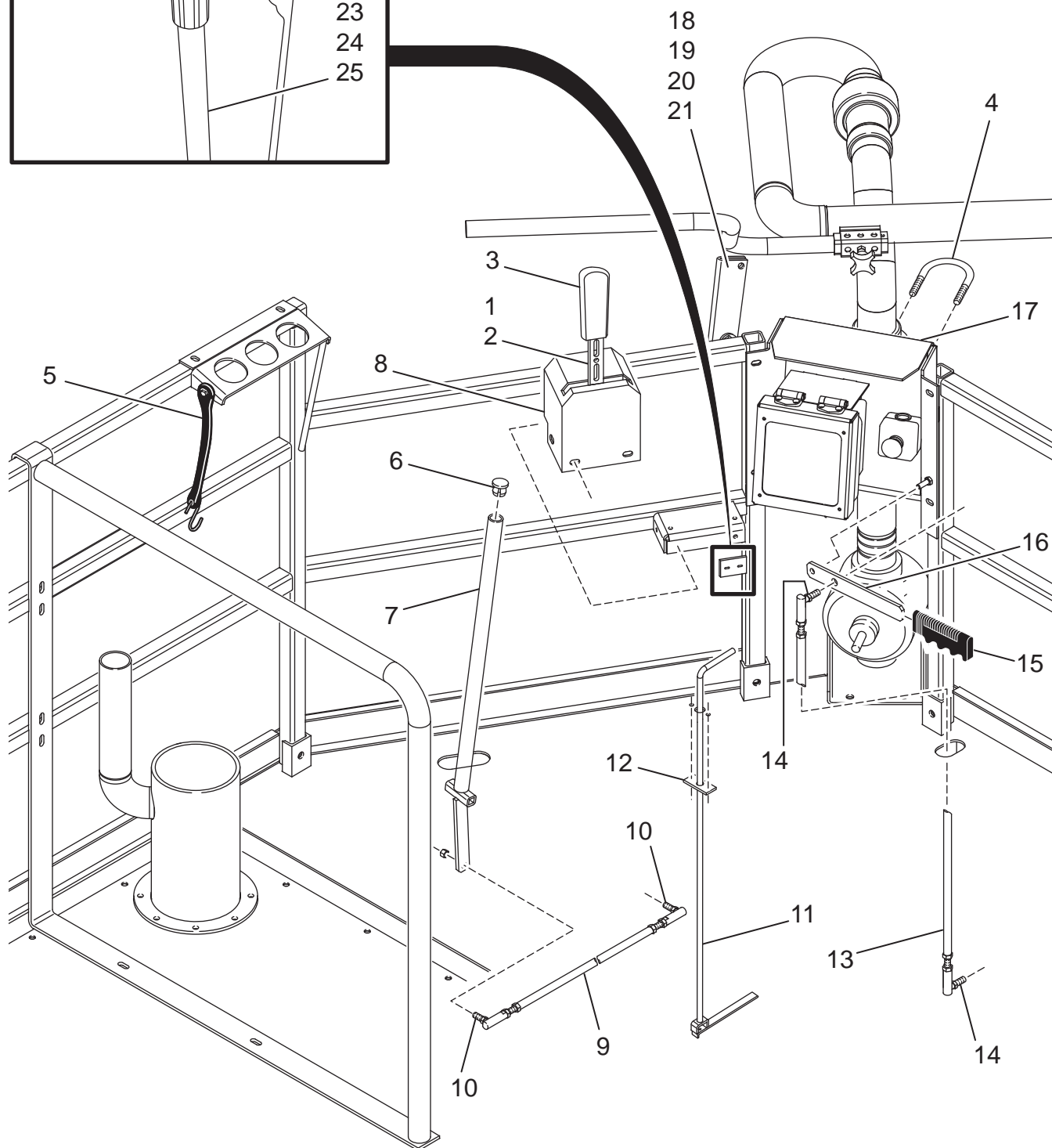
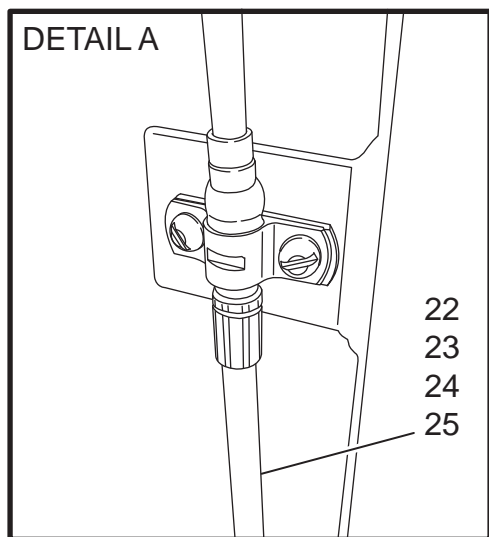
CLUTCH/PUMP (CLUMP) ASSEMBLY

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
37	■●	012783-02	Lock Washer	1
38	■●	012783-01	Drive Shaft Nut	1
39	■●	190123-24	Clutch Key	1
40	■●	100024	Adjusting Lock	1
41		002383	Automatic Pressure Lubricator	1
NOT SHOWN				
	■	X	Lock Bolt for Adjustment Lock	1
	■	X	Lock Washer for Adjustment Lock	1
	●	160389	3/8 in. Sch. 80 Nipple	1
	●	160234	3/8 in. Pipe Plug	2
	●	160162	3/8 in. Coupling	1
KITS AND MARKERS				
	■	012783	Total Clutch Assembly Kit	
	●	008644	Clump Assembly	
	X	Items are only available as part of assemblies listed.		

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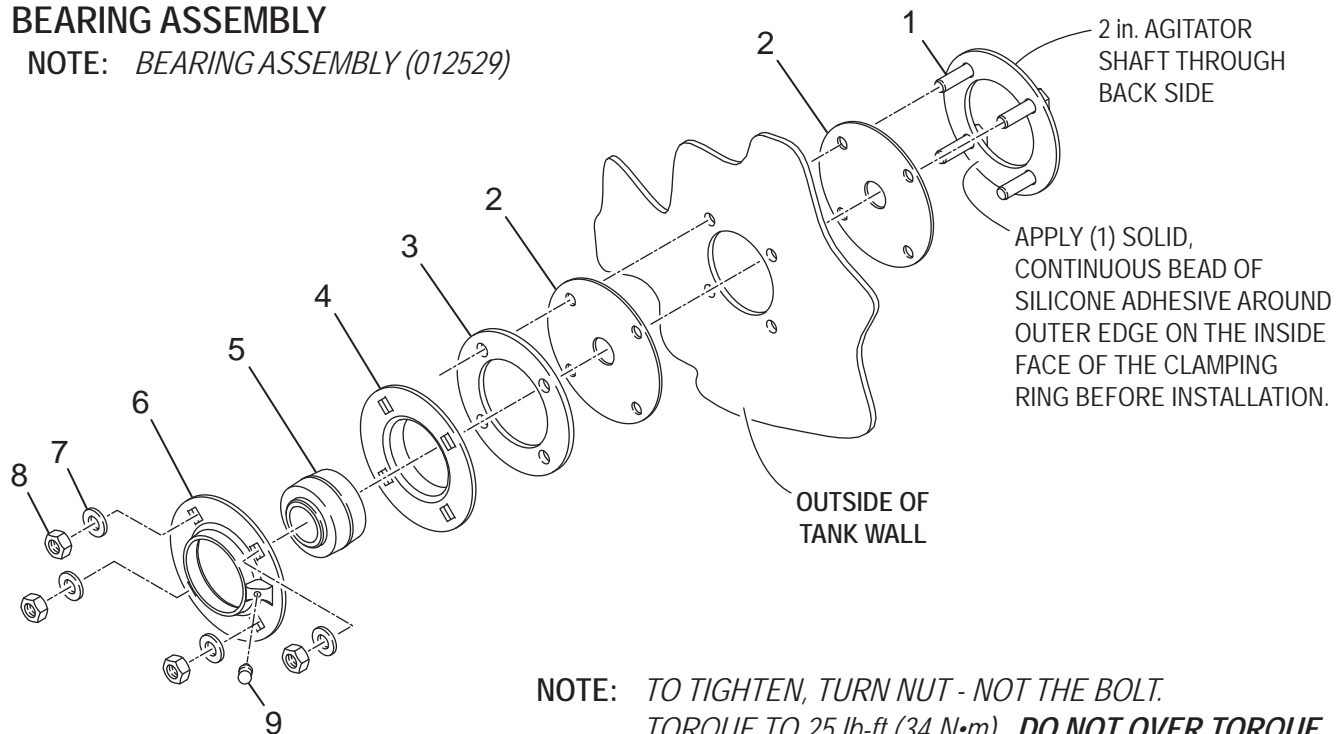
CONTROLS

Ref. No.	Part Number	Description	No. Req'd
1	008672	Agitator Control Handle	1
2	008673	Agitator Handle Pivot	1
3	022202	Black Handle Grip	1
4	085148	2-1/2 in. U-Bolt	1
5	005161	Rubber Strap with "S" Hooks	1
6	004996	Pipe Plug	1
7	012777	Recirculation Handle	1
8	F330-0102	Agitator Control Box	1
9	012780-05	Recirculation Valve Rod Weldment	1
10	006737	Ball Joint	2 Per
11	012493-01	Bleeder Valve Handle	1
12	012493-09	Bearing Pad	1
13	012780-08	Clutch Rod Weldment	1
14	006737	Ball Joint	2 Per
15	000427	Black Handle Grip	1
16	012760	Clutch Handle	1
17	F170-0029	Control Box Mount (See Control Station and Control Box Section)	1
18	005016	"S" Hook	1
19	005700	Nylon Lanyard	1
20	031245	Snapper Pin	1
21	F330-0081	Boom Hold Down	1
22	A1905-001	Agitator Control Cable (84 in.)	1
23	004983	Clamp and Shim	1
24	007675	Ball Joint	1
25	020682	Clevis	1

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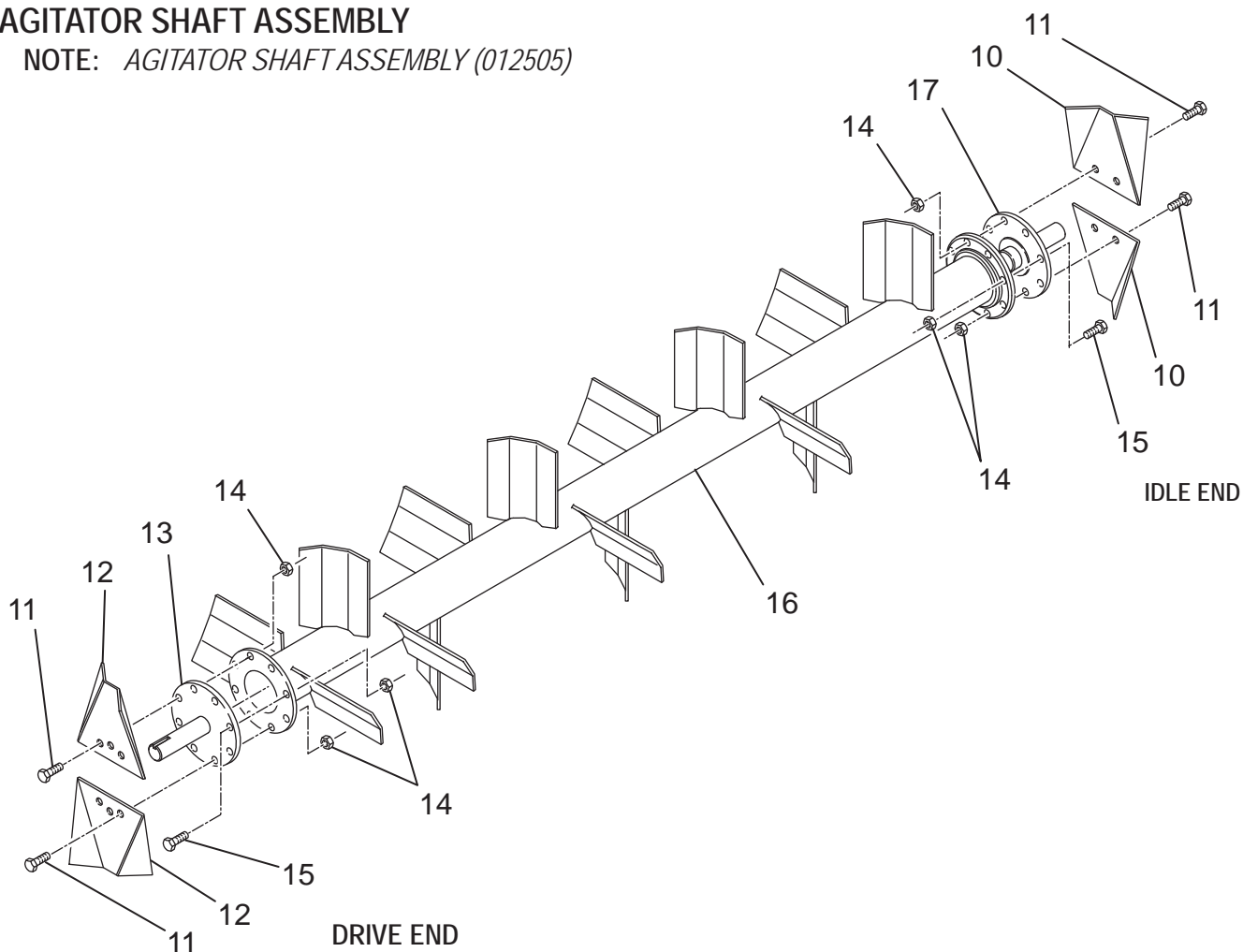
BEARING ASSEMBLY

NOTE: BEARING ASSEMBLY (012529)



AGITATOR SHAFT ASSEMBLY

NOTE: AGITATOR SHAFT ASSEMBLY (012505)



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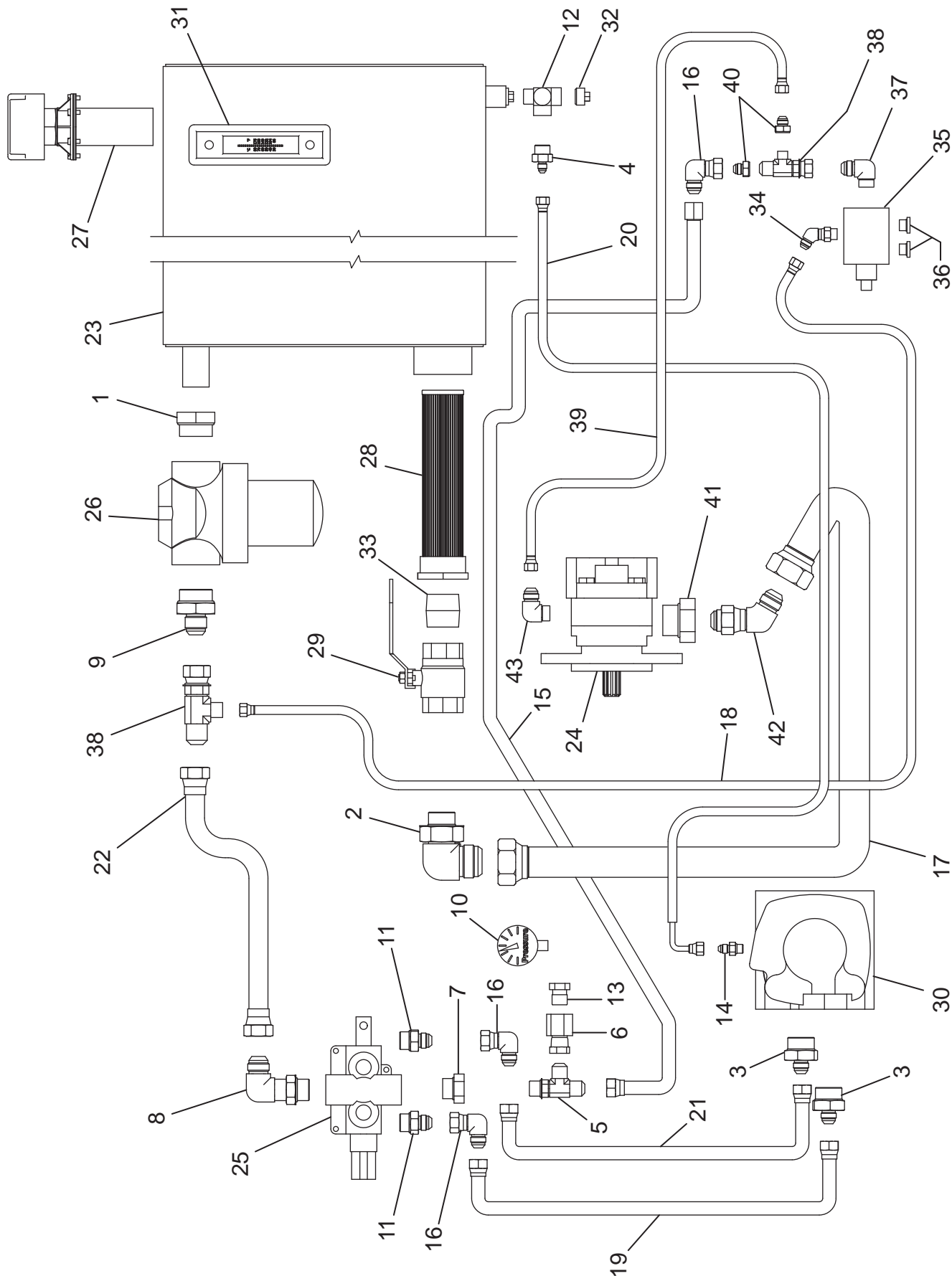
AGITATOR AND BEARING ASSEMBLIES

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	012527	Agitator Clamping Ring	1 per
2	▲	012528	Agitator Shaft Seal	2 per
3	▲	012525	Agitator Bearing Clamping Ring	1 per
4	▲	012452	Flangette	1 per
5	▲	012450	Bearing	1 per
6	▲	012451	Flangette with Lube Coupling	1 per
	▲	008154	Lube Coupling Adapter (Male to Female) (Not Shown)	1 per
7	●		Sealing Washer, 1/2 in.	4 per
8	●		Hex Nut, 1/2 - 13	4 per
9		007705	Grease Fitting	2
		022407	Grease Line Elbow	2
		012520	Bulk Head Fitting	2
		012521	Grease Line Hose	2
10	■	F170-0003-01	Bolt-On Paddle	2 per
11	■	●	Hex Head Cap Screw, 3/4 - 10 UNC x 2-1/2 in. Long	8 per
12	■	F330-0010-02	Bolt-On Paddle w/ Identification Hole	2 per
13	■	A1700-001	Drive Stub Weldment	1 per
14	■	●	Locknut, 3/4 - 10 UNC	16 per
15	■	●	Hex Head Cap Screw, 3/4 - 10 UNC x 2-1/4 in. Long	8 per
16	■	A1586-001	Agitator Weldment	1 per
17	■	A1701-001	Idler Stub Weldment	1 per

KITS AND MARKERS

▲	012529	Bearing and Seal Assembly
■	012505	Agitator Assembly
●	Standard Hardware Item - Available at your local hardware store.	

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HYDRAULIC SYSTEM

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	008545	1 in. FNPT - #20 MSAE Adapter	1
2	▲	008845	1-1/4 in. MNPT - #20 MJIC 90° Elbow Adapter	1
3	▲	008606	#16 MSAE - #8 MJIC Adapter	2
4	▲	008660	1/2 in. MNPT - #4 MJIC Adapter	1
5	▲	008689	#8 MSAE - # 8 MJIC Tee	1
6	▲	008690	1/2 in. FNPT - #8 FJIC Swivel Adapter	1
7	▲	008691	#12 x #8 SAE Reducer	1
8	▲	008692	#12 MSAE - #12 MJIC 90° Long Elbow Adapter	1
9	▲	008709	#20 MSAE - #12 MJIC Adapter	1
10	▲	012044	5000 PSI Pressure Gauge	1
11	▲	012086	#10 MSAE - #8 MJIC Adapter	2
12	▲	022592	1/2 in. Female Pipe Tee	1
13	▲	055229	1/2 in. x 1/4 in. NPT Reducer	1
14	▲	055308	#4 MSAE - #4 MJIC Adapter	1
15	▲	008841-03	1/2 in. Hydraulic Hose x 47 in.	1
16	▲	FW71870	#8 JIC Swivel Elbow	3
17	▲	008841-01	1-1/4 in. Hydraulic Hose x 76 in.	1
18	▲	008841-07	3/4 in. Hydraulic Hose x 30 in.	1
19	▲	008841-04	1/2 in. Hydraulic Hose x 49 in.	1
20	▲	008841-06	1/4 in. Hydraulic Hose x 39 in.	1
21	▲	008841-05	1/2 in. Hydraulic Hose x 46 in.	1
22	▲	008841-08	3/4 in. Hydraulic Hose x 30 in.	1
23		-----	Hydraulic Reservoir (Reference Only)	1
24		008762	Hydraulic Pump	1
25		008686	Hydraulic Valve	1
		SF310B-01	Valve Handle	1
		0SF311	Handle Knob	1
		0SF312-01	Pivot Pin	1
		023470-01	Handle Bracket	1
26		008702	Hydac Filter Assembly	1
		008703	Hydraulic Filter Element	1
27		008706	Hydraulic Filler/Breather	1
28		011648	Hydraulic Suction Strainer	1
29		012083	1-1/4 in. Ball Valve	1
30		012333	Hydraulic Motor	1

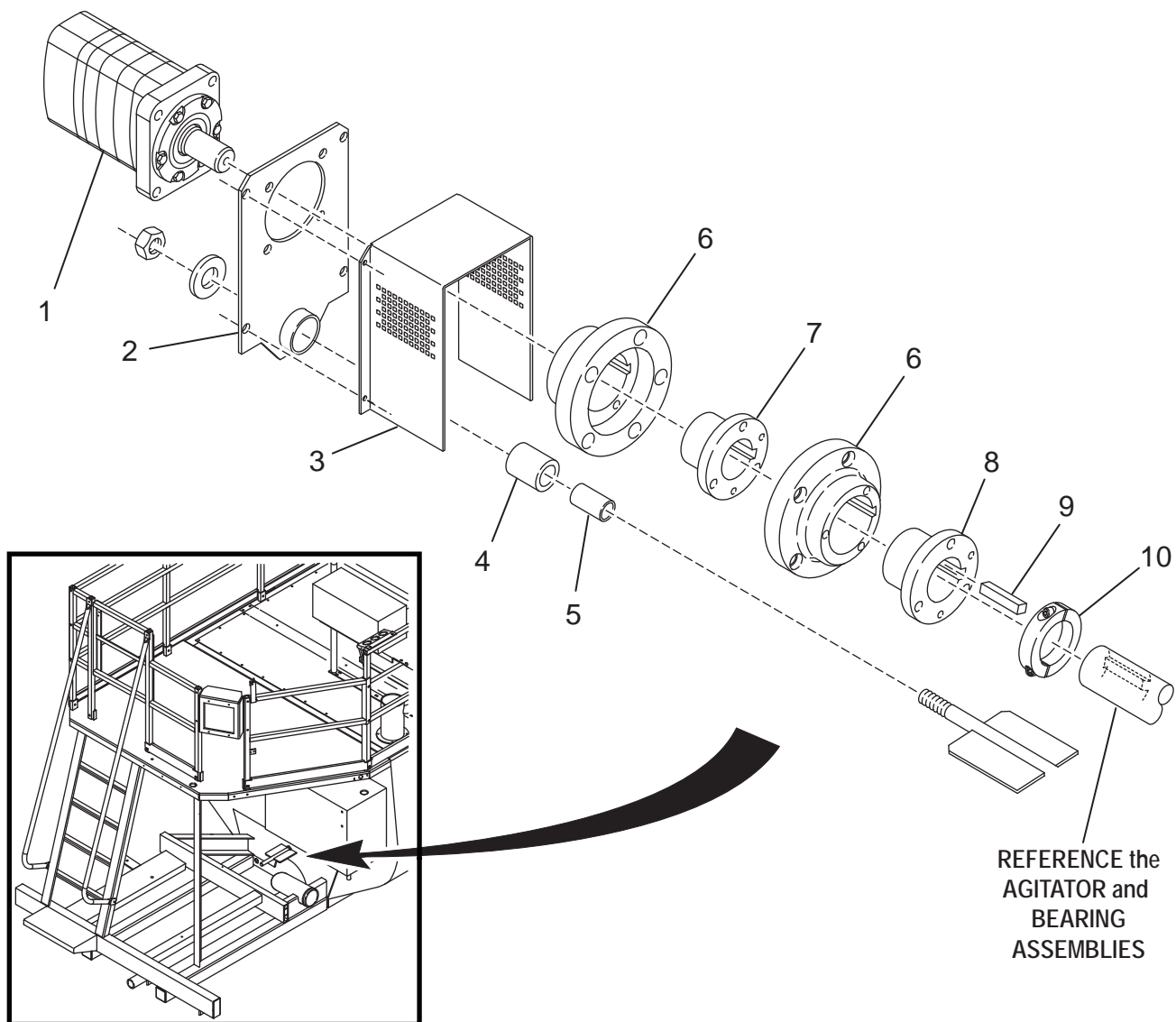
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HYDRAULIC SYSTEM

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
31		080329	Hydraulic Level Sight Gauge	1
32		160236	1/2 in. Pipe Plug	1
33		160520	1-1/4 in. Nipple x 4-1/2 in. Long	1
34	▲	085157	#12 MSAE - #12 MJIC 45° Elbow Adapter	1
35		085276	Dump Valve	1
		085276-01	Dump Valve Coil	1
		085276-02	Dump Valve Manifold Block	1
		085276-03	Dump Valve Cartridge	1
		055856-02	Dump Valve Cartridge Nut	1
36	▲	008843	#12 MSAE Plug	2
37	▲	012091	#12 MSAE - #12 MJIC 90° Elbow Adapter	1
38	▲	FW718783	#12 JIC Swivel Tee	2
39	▲	008841-02	1/2 in. Hydraulic Hose x 73 in.	1
40	▲	FW65226	#12 x #8 JIC Reducer	2
41	▲	013000	#16 x #12 SAE Reducer	1
42	▲	008846	#16 MSAE - #20 MJIC 45° Elbow Adapter	1
43	▲	023621	#10 MSAE -#8 MJIC 90° Elbow Adapter	1
KITS AND MARKERS				
	▲	008841	Hydraulic Hose and Fitting Kit	

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HYDRAULIC AGITATOR DRIVE

Ref. No.	Part Number	Description	No. Req'd
1	012333	Hydraulic Motor	1
2	012354	Hydraulic Motor Mount	1
3	F330-0029	Agitator Coupling Guard	1
4	012522-02	Rubber Bushing	1
5	012522-04	Torque Arm Insert	1
6	011780	Rigid Coupling	1
7	003055B	Motor Bushing	1
8	055103	Agitator Bushing	1
9	190127-40	1/2 in. Square Key x 2-1/2 in. Long	1
10	012625	2 in. Split Collar	2

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DISCHARGE HOSE EXTENSIONS

BOOM TAKE OFF SYSTEM

Part Number	Description	No. Req'd
007930-02	Boom Discharge Extension Hose Assembly	As Ordered
008315-05	1-1/2 in. x 50 ft. Extension Hose with Nipples	1
002191	2-1/2 in. Male Brass Adapter	1
160768	2-1/2 x 1-1/2 in. Reducer Bushing	2
010544	2-1/2 in. Female Coupler	1
006513	2-1/2 in. Quick-Coupler Gasket	1

PUMP TAKE OFF SYSTEM

Part Number	Description	No. Req'd
007930-01	Pump Remote Discharge Hose Assembly	As Ordered
008315-05	1-1/2 in. x 50 ft. Extension Hose with Nipples	1
001207	1-1/2 in. Male Brass Adapter	1
002158	1-1/2 in. Female Brass Coupler	1
006515	1-1/2 in. Coupler Gasket	1
007740	Remote Valve Assembly	1
007710	1-1/2 in. Full Port Ball Valve	1
003243	1-1/2 in. Aluminum Nipple Pipe x 8 in. Long	1
160309	1-1/2 in. Std. Close Nipple	1
160763	2 in. x 1-1/2 in. Reducer Bushing	1
006102	2 in. Female Coupler	1
001207	1-1/2 in. Male Brass Adapter	1
006621	Wide Fan Nozzle Assembly	1
006604	Wide Fan Nozzle	1
006096	2 in. Male Coupler	1
160761	2 in. x 1 in. Reducer Bushing	1
006622	Narrow Ribbon Nozzle Assembly	1
006605	Narrow Fan Nozzle	1
006096	2 in. Male Coupler	1
160761	2 in. x 1 in. Reducer Bushing	1
007711	Pump Take Off Valve Assembly	1
007710	1-1/2 in. Full Port Ball Valve	1
002158	1-1/2 in. Female Brass Coupler	1
160309	1-1/2 in. Close Nipple	1

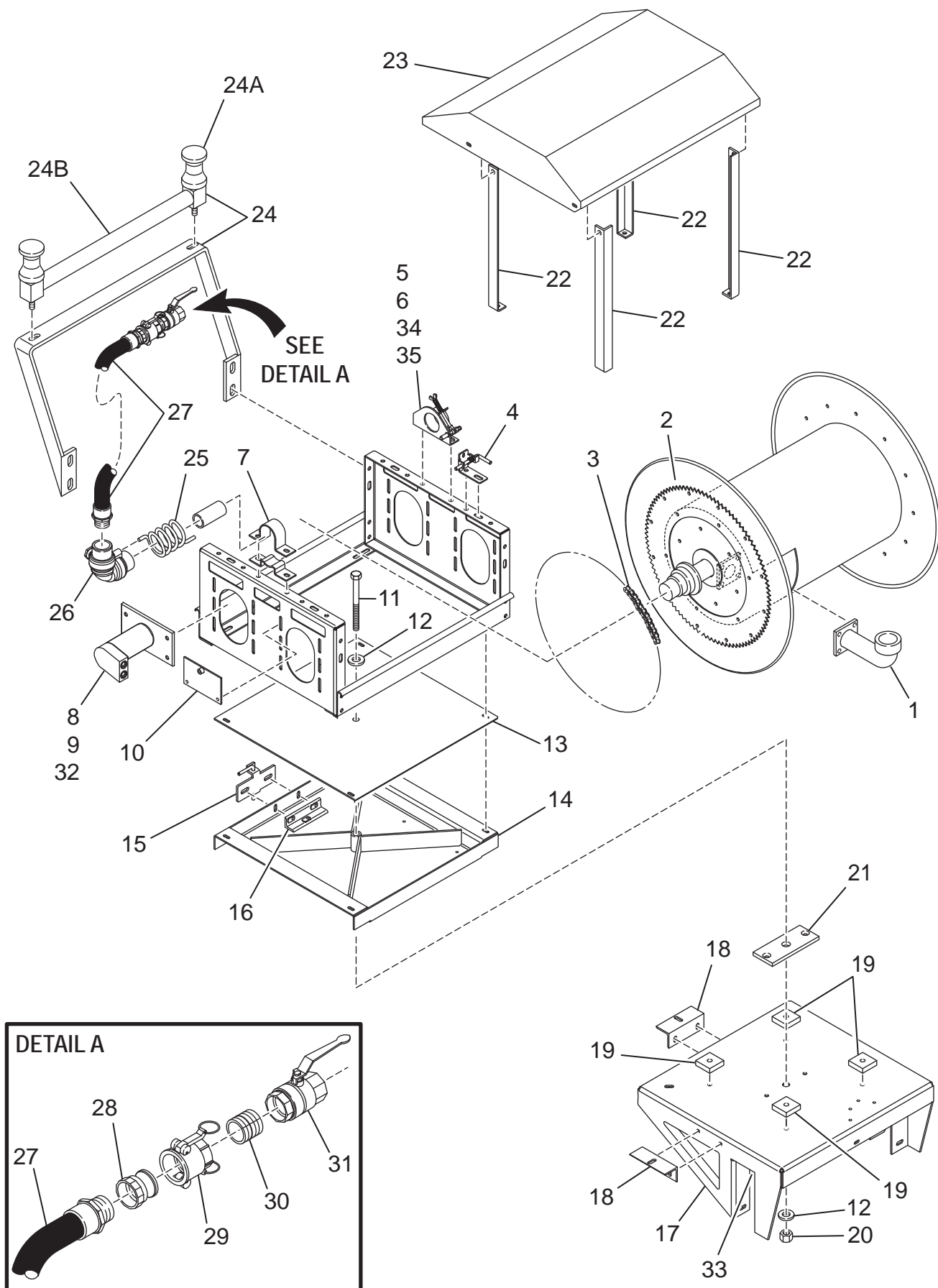
**WHEN ORDERING PARTS, BE SURE TO STATE
SERIAL NUMBER OF MACHINE**

DISCHARGE HOSE EXTENSIONS

HOSE REEL SYSTEM

Part Number	Description	No. Req'd
061359	1-1/4 in. Hose Reel Discharge Hose	As Ordered
004832-20	1-1/4 in. x 200 ft. Rubber Hose with Nipples	1
002158	1-1/2 in. Female Coupler	1
006515	1-1/2 in. Coupler Gasket	1
160756	1-1/2 x 1-1/4 in. Reducer Bushing	1
061360	1-1/2 in. Hose Reel Discharge Hose	As Ordered
008315-20	1-1/2 in. x 200 ft. Rubber Hose with Nipples	1
002158	1-1/2 in. Female Coupler	1
006515	1-1/2 in. Coupler Gasket	1

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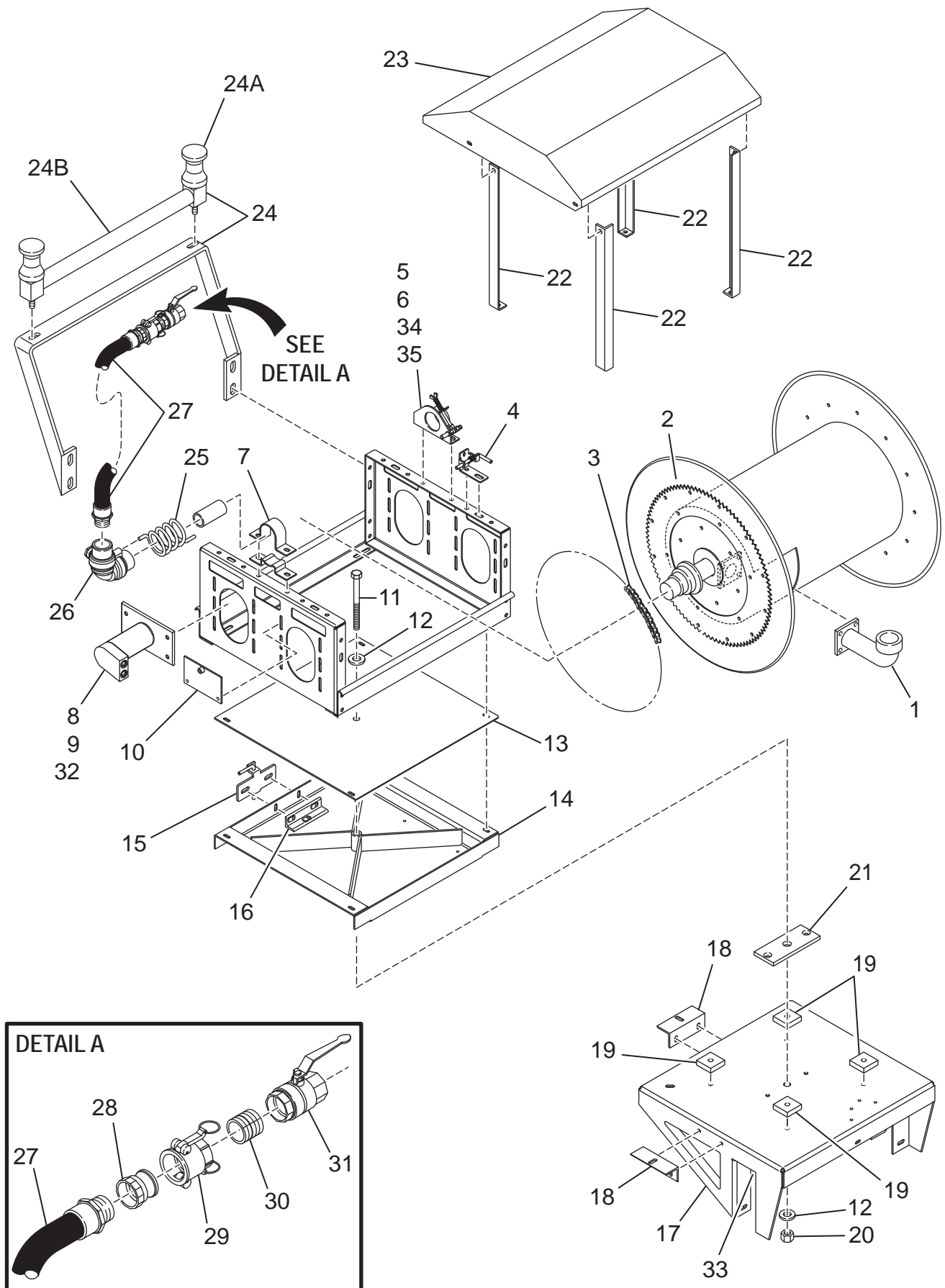
**WHEN ORDERING PARTS, BE SURE TO STATE
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HOSE REEL ASSEMBLY

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	080302	Flanged Riser	1
	▲	080302G	Hose Reel Riser Gasket	1
2	▲	008144	Hose Reel Gear	1
3	▲	008200	Hose Reel Chain (69 in.)	1
4	▲	008433	Pinlock with Brackets Assembly	1
5	▲	008313	Idle Side Bearing	1
6	▲	008111B	Brake Assembly	1
7	▲	008314	Drive Side Bearing	1
8	▲	008199	Chain Sprocket - 11 Tooth	1
9		008635	Hydraulic Motor	1
10		012757	Spring Retainer Plate	1
11	●		3/4 - 10 X 7 in. Long Grade 8 Hex Head Cap Bolt	1
12	●		3/4 in. Flat Washer	2
13		F330-0104	Hose Reel Mount Cover	1
14		F330-0117	Upper Hose Reel Support Bracket	1
15		052928	Pinlock	1
16		012860	Hose Reel Pinlock Support Weldment	1
17		F330-0116	Lower Hose Reel Support Bracket	1
18		012781	Hose Reel Lock Angle	2
19		012798	Hose Reel Bearing Block	4
20	●		3/4 - 10 Locknut	1
21		012861	Hose Reel Washer	1
22		F330-0094	Hose Reel Canopy Support	4
23		F330-0077	Hose Reel Canopy	1
24		011894	Hose Roller and Spool Guide	1
24A		011894-G	Guide Spool	2
24B		011894-R	Horizontal Roller	1
25		003299	Torsion Spring	1
26		003207	1-1/2 in. Diameter x 90° Swivel Joint	1
27		011435	1-1/2 in. Diameter x 3 ft. Long Lead-In Hose	1
28		001207	1-1/2 in. Male Brass Adapter	1
29		002158	1-1/2 in. Female Brass Coupler	1
30		160309	Standard Close Nipple	1
31		007710	1-1/2 in. Ball Valve	1
32		008634	Hose Reel Motor Mounting Plate	1
33		190079	2 in. Cotton Webbing	2.5 ft.

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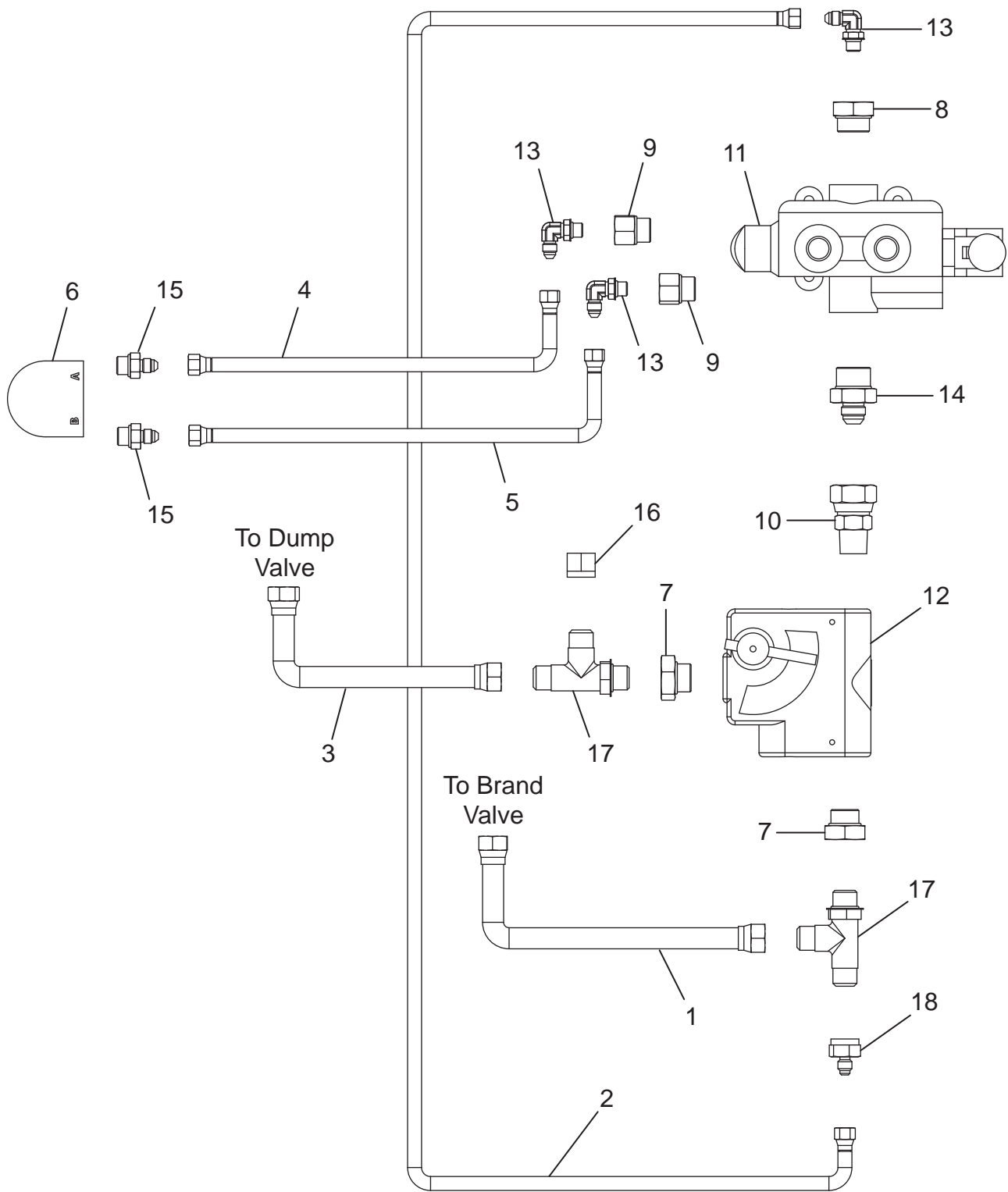


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HOSE REEL ASSEMBLY

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
34		008112	Brake Spring (Part of Hose Reel)	1
35		008109	Brake Adjustment Screw (Part of Hose Reel)	1
NOT SHOWN				
1-1/4 in. Hose Option				
		004832-20	1-1/4 in. Hose Reel Hose x 200 ft.	1
		A2073-001	Hose Protector	1
		A2071-001	1-1/2 x 1-1/4 in. NPT Swivel Adapter Fitting	1
1-1/2 in. Hose Option				
		003815-20	1-1/2 in. Hose Reel Hose x 200 ft.	1
		A2086-001	Hose Protector	1
		A2072-001	1-1/2 x 1-1/2 in. NPT Swivel Adapter Fitting	1
KITS AND MARKERS				
▲		008212A	Hose Reel Assembly	
●		Standard Hardware Item - Available at your local hardware store.		

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HOSE REEL HYDRAULIC SYSTEM

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	008693-01	1/2 in. Hydraulic Hose x 179 in.	1
2	▲	008693-02	1/4 in. Hydraulic Hose x 23 in.	1
3	▲	008693-03	1/2 in. Hydraulic Hose x 134 in.	1
4	▲	008693-04	1/4 in. Hydraulic Hose x 70 in.	1
5	▲	008639-05	1/4 in. Hydraulic Hose x 68 in.	1
6		008635	Hydraulic Motor	1
7	▲	008696	#10 x #8 SAE Reducer	2
8	▲	012871	#12 x #4 SAE Reducer	1
9	▲	012872	#10 x #4 SAE Reducer	2
10	▲	012783	#10 MSAE - #8 FJIC Adapter	1
11		012857	Control Valve	1
		SF310B-01	Hydraulic Valve Handle	1
		0SF311	Handle Knob	1
		0SE312-01	Pivot Pin	1
		023470-01	Handle Bracket	1
		008293-RC	Brand Valve Relief Cartridge	1
12		023890	Flow Divider	1
		023890-K	Indicator Knob	
		023890-L	Indicator Lever	
13	▲	055274	#4 MSAE - #4 MJIC 90° Elbow Adapter	3
14	▲	055359	#12 MSAE - #8 MJIC Adapter	1
15	▲	FW65217	#6 MSAE - #4 MJIC Adapter	2
16	▲	FW71495	#8 JIC Cap Nut	1
17	▲	FW71869	#8 SAE Tee	2
18	▲	FW71908	#8 x #4 JIC Reducer	1

KITS AND MARKERS

▲	008693	Hydraulic Hose and Fitting Kit
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NOT SHOWN

	012866	Hydraulic Hose Reel Valve Mount Plate	1
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**WHEN ORDERING PARTS, BE SURE TO STATE
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RECOMMENDED SPARE PARTS AND REPAIR KITS

RECOMMENDED SPARE PARTS

Part Number	Description	No. Req'd
A2401-001	Automatic Pressure Lubricator Grease, 14 oz. (414 mL)	2
011919	Suction Pipe Seal - 5 in.	3
008472	Suction Pipe Seal - 5 in. x 4 in. Reducer	1
002820	Discharge Pipe Seal - 2-1/2 in.	3
006722	Recirculation Pipe Seal - 1-1/4 in.	2
006513	Nozzle Coupler Gasket (Boom Discharge) - 2-1/2 in.	2
007469	Lube Sticks For Recirculation and Discharge Valves (Box of 24)	4
031245	Snapper Pin – Boom Hold Down	1
FW71225	Snapper Pin - Slide Gates	2
008703	Hydraulic Filter Element	1
006514	2 in. Nozzle Coupler Gasket (Hose Discharge)	1
008809	Engine Oil Filter Element	1
075886-03	Stage 2 Fuel Filter Canister Element	1
075884-04	Stage 1 Fuel Filter and WIF Spin-on Filter Element	1
008807-02	Primary Air Cleaner Element	1
008807-03	Secondary Air Cleaner Element	1
008830	Fan Belt	1
008831	Thermostat	1
008832	Thermostat Housing Seal	1
008824	Sensor Coolant Level	1
008826	Restrict Indicator for Air Cleaner	1
008810	12V / 3kW Starter Motor	1
008808	120V Alternator	1
031506-01	Keys	2

NOTE: Recommended spare parts are available to avoid unnecessary down time.

REPAIR KITS

Part Number	Description	No. Req'd
012397	Swivel Repair Kit	2
REF.	Pump Seal Components:	
005150	O-Ring	1
006443	Mechanical Seal Assembly	1
006444	Grease Retainer	1
012733	Grease Seal	1
012384	Agitator Motor Seal Kit for 012333	
023120	Valve Seal Kit for 008686 and 012857	
080183	Hose Reel Swivel Repair Kit	
008635-SK	Hose Reel Hydraulic Motor Seal Kit for 008635	
023890-SK	Flow Divider Seal Kit for 023890	
008190	Pressure Lubricator Seal Kit for 002383	

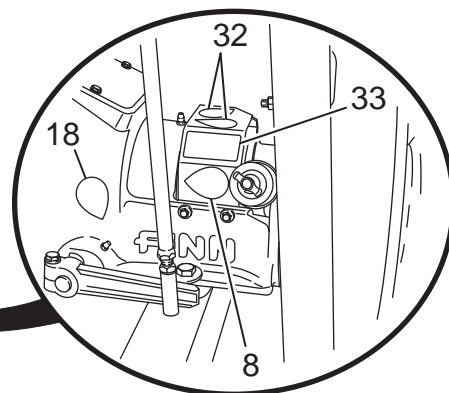
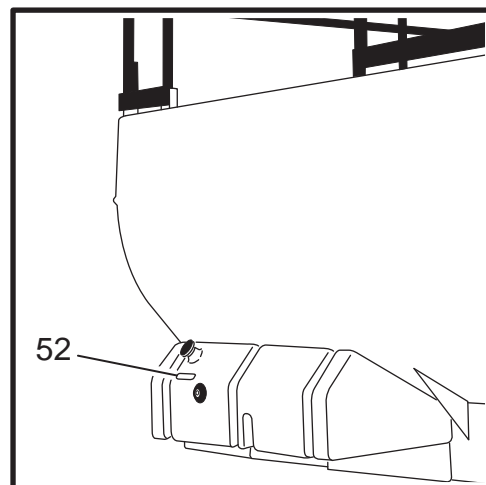
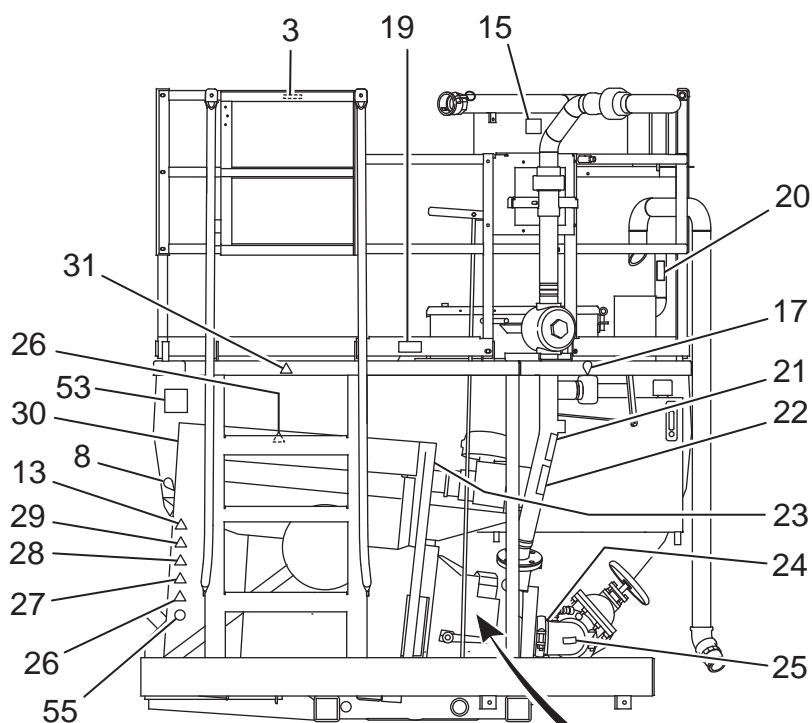
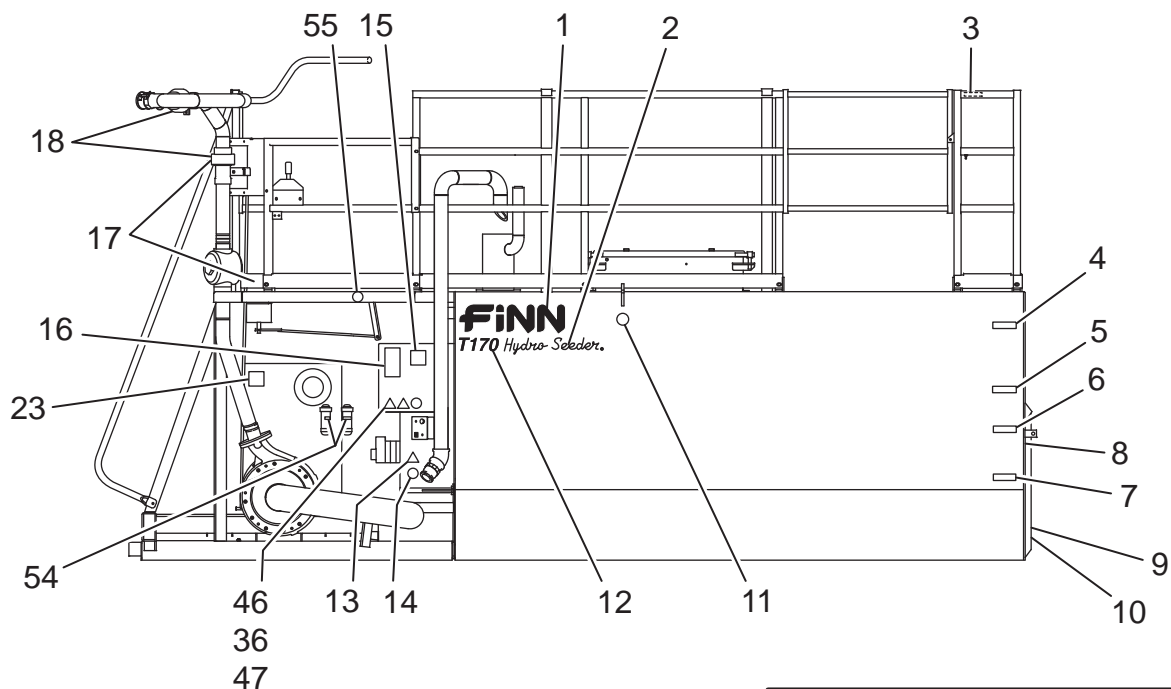
NOTE: Repair Kits are available to recondition parts, which periodically need service.

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TOOL KIT

Part Number	Description	No. Req'd
011703	Long Distance Nozzle Assembly	1
002191	2-1/2 in. Male Adapter	1
001042	Long Distance Nozzle	1
160309	1-1/2 in. Close Nipple	1
160768	2-1/2 in. x 1-1/2 in. Reducer Bushing	1
011706	Wide Fan - Small Nozzle Assembly	1
002191	2-1/2 in. Male Adapter	1
006604	Wide Fan - Small Nozzle	1
160766	2-1/2 in. x 1 in. Reducer Bushing	1
011707	Narrow Fan - Small Nozzle Assembly	1
002191	2-1/2 in. Male Adapter	1
006605	Narrow Fan - Small Nozzle	1
160766	2-1/2 in. x 1 in. Reducer Bushing	1
011890	Wide Fan - Large Nozzle Assembly	1
002191	2-1/2 in. Male Adapter	1
011861	Wide Fan - Large Nozzle	1
160769	2-1/2 in. x 2 in. Reducer Bushing	1
011891	Narrow Fan - Large Nozzle Assembly	1
002191	2-1/2 in. Male Adapter	1
011860	Narrow Fan - Large Nozzle	1
160769	2-1/2 in. x 2 in. Reducer Bushing	1
008465	2-1/2 in. Long Distance Nozzle	1
006513	2-1/2 in. Coupler Gasket	1
002190	2-1/2 in. Dust Cap	1
005220	Impeller Wrench	1
021375	Grease Gun (<i>Hose Not Included</i>)	1
021741	Whip Hose with Male Ends	1
A2401-001	Automatic Pressure Lubricator Grease, 14 oz. (414 mL)	1
020365	Multi-Purpose Grease Cartridge	1
007469	Lube Sticks For Discharge and Recirculation Valves (Box of 24)	1
012681A	Touch-Up Paint (FINN Beige - Aerosol)	1
012305	Remove Aerosol Can Adhesive Label	1
	Engine Operator's Manual	1
	HydroSeeder® Operator Instructions and Parts Manual	1
410018-24	Complete T170 Tool Kit	

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**WHEN ORDERING PARTS, BE SURE TO STATE
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DECALS

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1		023174	"FINN" Decal	2
2		011595	"HydroSeeder®" Decal	2
3	▲	-----	"WARNING! Fall Hazard" Decal	3
4	▲	-----	"1,500 Gallon" Decal	1
5	▲	-----	"1,000 Gallon" Decal	1
6	▲	-----	"800 Gallon" Decal	1
7	▲	-----	"500 Gallon" Decal	1
8	▲	-----	"Service Daily" (Up Arrow) Decal	5
9		031569	FINN Nameplate	1
10	▲	-----	"U.S. Patent No." Decal	1
11	▲	-----	Lift Point Decal	2
12		012661-03	"T170" Decal	2
13	▲	-----	Pinch Point/Moving Belt Hazard Decal	3
14	▲	-----	Do Not Remove Guard Decal	3
15	▲	-----	"Hearing Protection" Decal	2
16	▲	-----	Hydraulic System Instructions Decal	1
17	▲	-----	"Service Daily" (Down Arrow) Decal	1
18	▲	-----	"Service Weekly" (Down Arrow) Decal	4
19		012260	"IMPORTANT" Metal Plate	1
20	▲	-----	"CAUTION. Keep This Tank Vent Clean..." Decal	1
21	▲	-----	"CAUTION. This Connection Is For Remote..." Decal	1
22	▲	-----	"WARNING! Burn Hazard!" Decal	2
23	▲	-----	"CAUTION. New Clutch Information"	1
24	▲	-----	"CAUTION. To Avoid Damage To Suction Cover..." Decal	1
25	▲	-----	"BLEEDER VALVE - Open/Close" Decal	2
26	▲	-----	Hot Surface Hazard Decal	2
27	▲	-----	Vision Damage Hazard Decal	1
28	▲	-----	Sever/Reach Hazard Decal	1
29	▲	-----	Pinch Point/Entanglement Hazard Decal	1
30	▲	-----	"WARNING! Burn Hazard! ..." Decal	1
31	▲	-----	Fall Hazard Decal	3
32	▲	-----	"Service Weekly" (Up Arrow) Decal	2
33	▲	-----	"CAUTION. Seal Lubricator Must Be Kept In Operation..." Decal	1
34	▲	-----	"DANGER! Confined Space Hazard! ..." Decal	1
35	▲	-----	Body Entanglement Hazard Decal	1
36	▲	-----	Remote Start Hazard Decal	3
37	▲	-----	Splash/Spray Hazard Decal	3
38	▲	-----	"HydroSeeder® Operating Instructions..." Decal	1
39	▲	-----	"Hose Reel Rewind" Decal	1
40	▲	-----	Vision/Hearing Damage Hazard Decal	1
41	▲	-----	"RECIRCULATION VALVE - Close/Open" Decal	1
42	▲	-----	"AGITATOR OPERATION" Decal	1
43	▲	-----	"VALVE - Open/Closed" (Foot Pedal) Decal	1
44	▲	-----	"DANGER! Electrocution Hazard..." Decal	2
45	▲	-----	"CLUTCH - Engage/Disengage" Decal	1

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DECALS

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
46	▲	-----	Attention Decal	2
47	▲	-----	Read Manual Decal	2
48	▲	-----	"Throttle" Decal	1
49	▲	-----	"Pump ON/OFF" Decal	1
50	▲	-----	"Emergency Stop" Decal	1
51	▲	-----	Key Switch Decal	1
52	▲	-----	"DIESEL FUEL" Decal	1
53	▲	-----	Decibel Decal	1
54	▲	-----	"Drain Water Daily" Decal	2
55	▲	-----	DO NOT Pressure Wash Decal	3

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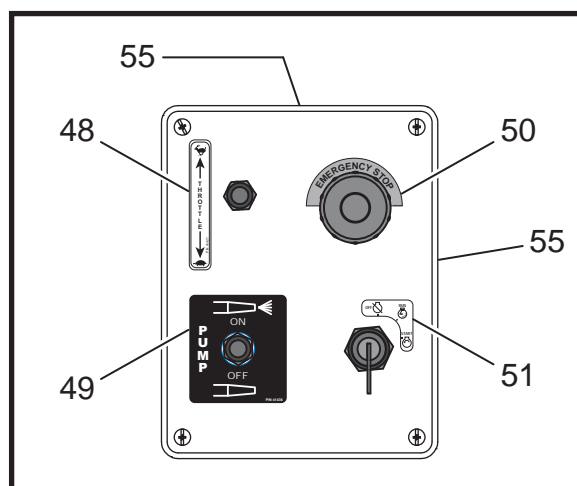
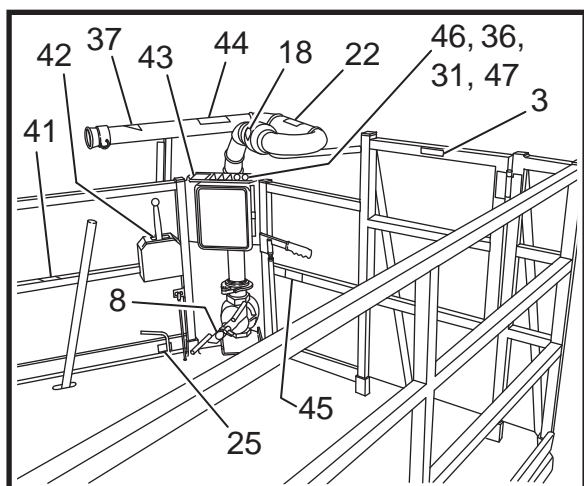
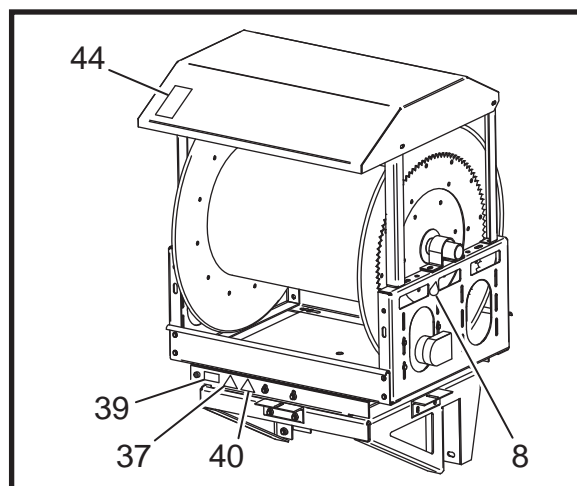
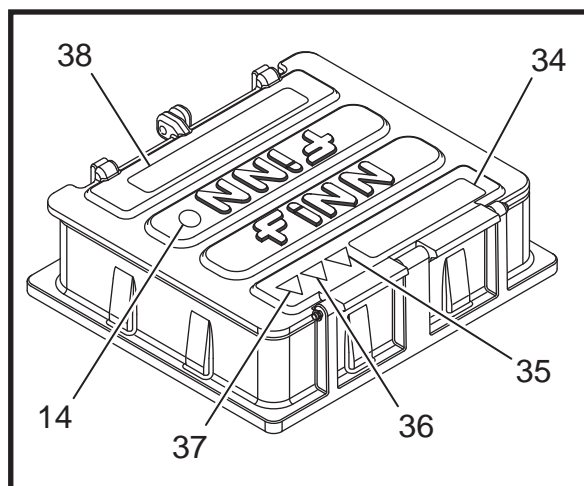
▲	-----	Automatic Pressure Lubricator Decal	1
▲	-----	Decal "Service Daily" (Automatic Pressure Lubricator)	1

KITS AND MARKERS

▲	041402-01	T170 Decal Sheet Kit	
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NOTE: Items marked by a triangle (▲) are part of decal kit # 041402-01.

These decals must be ordered by their kit number and cannot be ordered separately.



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