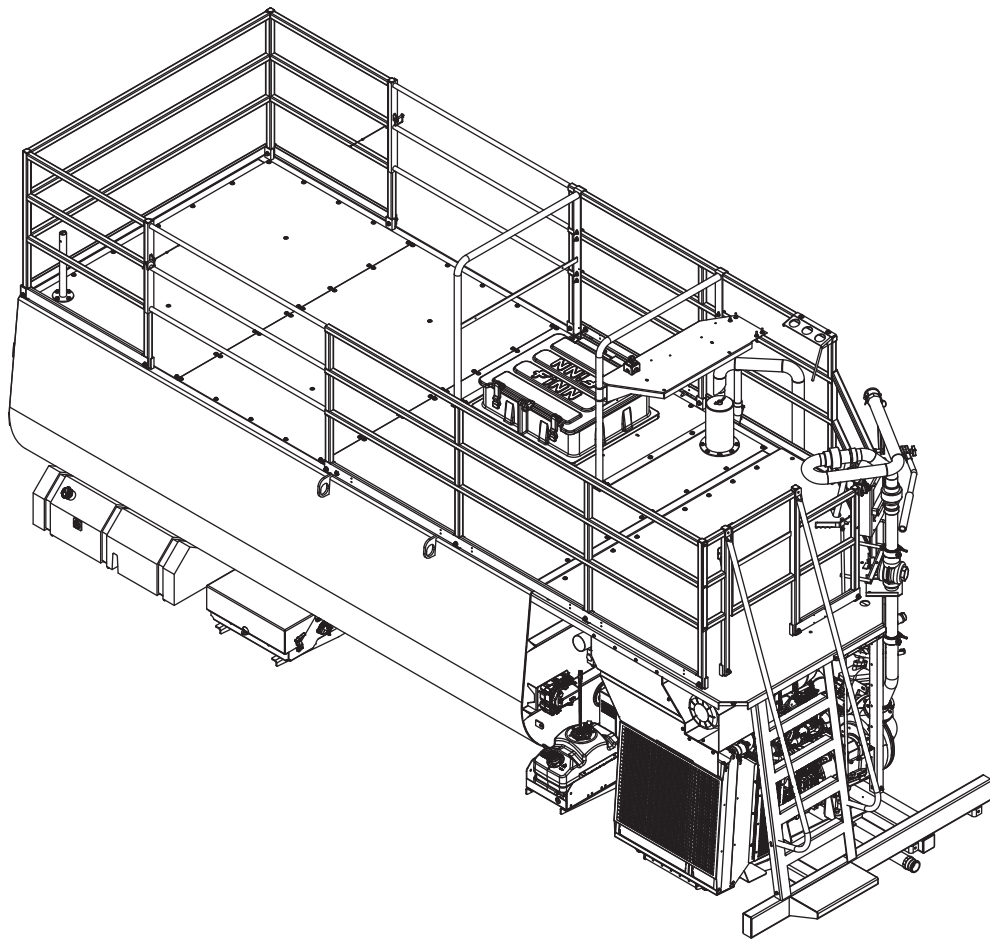




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T330 HydroSeeder[®]

Operator Instructions and Parts Manual


Model **OS** Serial No. _____

FOR OFFICE USE ONLY

DATE	UPDATE DESCRIPTION	CODE
04/24/20	Initial release	OS0424
07/31/20	Revision A: Parts Manual Section Added to Manual	OS0731
12/21/20	Revision B: Hydraulic system update (pump and attachments);	OS1221
	Recirculation Pipe Weldment improvement	
02/19/21	Revision C: Pump and fittings update	OS2021



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

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

WARNING

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

CAUTION

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

NOTICE

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

NOTE: This is helpful information.

The **DANGER**, **WARNING**, **CAUTION** and **NOTICE** notifications and instructions in this manual *cannot* cover all possible conditions and situations that may occur.

It must be understood by the operator that caution is a factor which *cannot* be built into this product; caution must be supplied by the operator.

CALIFORNIA PROPOSITION 65

WARNING

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.



WARNING

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 all 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.



The FINN 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.

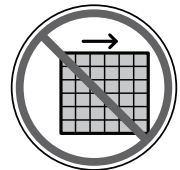
I. PRE-START EQUIPMENT CHECK (equipment check is to be made with the engine off)

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


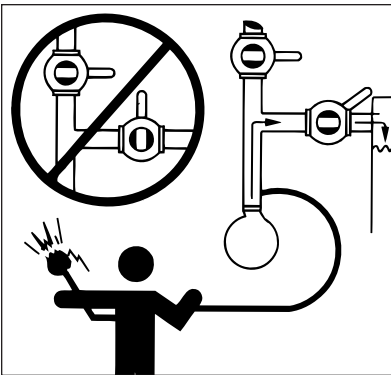
1. Always wear safety goggles when operating the machine. Other safety attire such as safety shoes, ear protection, gloves, hard hats, dust masks, etc. should be worn as required by warning decals on machine, operator's manuals, or job site requirements. Remove rings, watches, etc. Avoid wearing loose-fitting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

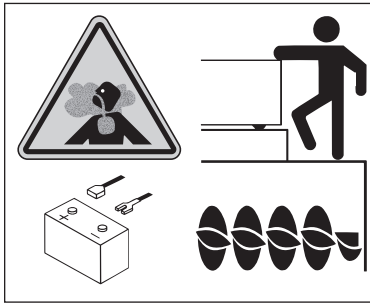
IV. MAINTENANCE

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:

- Drain, flush, and ventilate tank interior.
- Turn off engine, disconnect battery cables, and perform lockout/tagout procedures (29 CFR 1910.147).
- Provide continuous ventilation or proper breathing apparatus.
- If tank must be entered, personnel entering the tank must be tethered to a lifeline.
- 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.

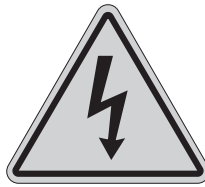
13. Do not pressure wash this unit. Do not pressure wash around any control boxes, radio remotes or control panels. Pressure washing this unit can cause damage to the electrical systems and components and also cause the unit to not function. Pressure washing injects water into sensitive electrical components. 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



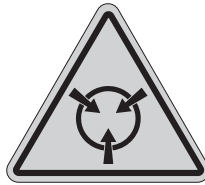
Electrostatic
Discharge
Hazard



Fumes/Dust
Hazard



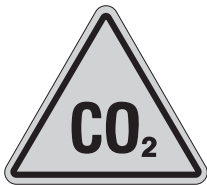
Burn Hazard



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



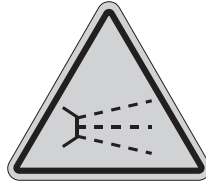
Skin Puncture Hazard



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

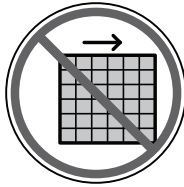


Lift Point

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

SAFETY DECAL EXAMPLES

⚠ 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.

PIN 41392-04

⚠ WARNING

BURN HAZARD!
 Cooling system is under pressure.
 Allow system to cool before handling.
 Remove radiator cap slowly.
 Wear appropriate safety gear (safety glasses, safety gloves, etc.).
 Failure to comply could result in death or serious injury.

RADIATOR HANDLING INSTRUCTIONS
 1. Use a 50/50 solution of water and antifreeze. Using 100% antifreeze will result in engine damage.
 2. Check and replenish water prior to use. More water will be consumed when operating in hot conditions.
 3. If overflow pipe begins emitting vapor, check and replenish water.
 4. Remove and clean screen when dirty.
 5. Check and clean fins periodically. Clogged fins will increase water consumption.
 6. Protect radiator from fertilizer corrosion by washing radiator core with water.

A4152-001

⚠ 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.

PIN 41385

⚠ DANGER

FIRE HAZARD!
 Handle fuel with care: it is highly flammable. Do not refuel the engine while smoking or when near open flame or sparks.

Always stop engine before refueling machine. Fill fuel tank outdoors.

Prevent fires by keeping engine clean of accumulated trash, grease, and debris. Always clean up spilled fuel.

PIN A1688-001

⚠ WARNING

Wear proper eye protection when operating machine.
 Failure to comply could result in death or serious injury.

A4151-001

⚠ CAUTION

Wait ten (10) minutes after key-off before disconnecting battery power.

Disconnecting battery power sooner can result in damage to machine DEF system.

A4657-001

⚠ WARNING

FALL HAZARD!
 All gates must be closed during operation.
 Failure to comply could result in death or serious injury.

PIN 41427

OPERATION AND MAINTENANCE MANUAL FOR THE FINN T330 HYDROSEEDER®

This manual gives you step-by-step instructions for the operation and maintenance of the FINN 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 mechanical process and recirculation of slurry, 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 T330 HYDROSEEDER®

A spring mounting kit is provided and shipped loose with the unit. You will need six (6) 3/8 in. x 6 x 9-3/4 in. steel plates noted in Detail B on page 7. There is an option for two other mounting points on the unit that would require two (2) additional steel plates of the same measurements listed above (although the additional steel plates are optional, their installation is highly recommended by FINN).

The Mounting Instruction Guide is intended to serve as a resource during the truck selection process. The guide contains all information that should be required for a safe and reliable installation of the Finn T330 HydroSeeder® onto a suitable chassis.

The beginning of the guide contains center of gravity (**CG**) information for some of the most common loading scenarios for the Finn T330 HydroSeeder®, as well as the respective **CG** locations in three planes:

1. From the front of the unit backwards = **X** (in INCHES)
2. From the centerline of the machine to the side = **Y** (in INCHES)
3. From the truck frame rails up = **Z** (in INCHES)

The **CG** of the Finn T330 HydroSeeder® is on the left/driver-side of the vehicle for the loading conditions shown (**Y**).

In addition to the **CG** information, clearance zones have been outlined for easier mounting considerations. Clearance zones are areas on the truck frame or around the HydroSeeder® that should remain otherwise unoccupied to provide room for the truck mounting brackets or air flow around the diesel engine of the HydroSeeder®.

Hole layout and more detailed mount considerations are provided in the pages following the **CG** information.

The final page of the guide contains an illustrated parts list of the truck mounting kit for component identification.

MOUNTING THE T330 HYDROSEEDER® (CONTINUED)

Before selecting a chassis for the HydroSeeder®, carefully review this manual and consider the following:

- A. In ALL circumstances, installer should ALWAYS follow the truck chassis' body-builder guidelines available from the manufacturer. Never exceed either the Gross Axle Weight Rating (GAWR) or the Gross Vehicle Weight Rating (GVWR) for the chassis.
- B. Only install the HydroSeeder® onto a vehicle with an end of frame dimension sufficient to fully support the HydroSeeder® frame length.
- C. Position the HydroSeeder® onto the vehicle chassis so that the clearance zones mentioned in the guide are maintained.

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

⚠ WARNING *The FINN HydroSeeder® should be mounted by a qualified truck body installer. Failure to comply could result in personal injury. Failure to comply could also result in product or property damage.*

⚠ WARNING *Install/Mount the FINN HydroSeeder® in compliance with the vehicle ratings, machine mounting requirements and applicable laws. Failure to do so could result in personal or property damage.*

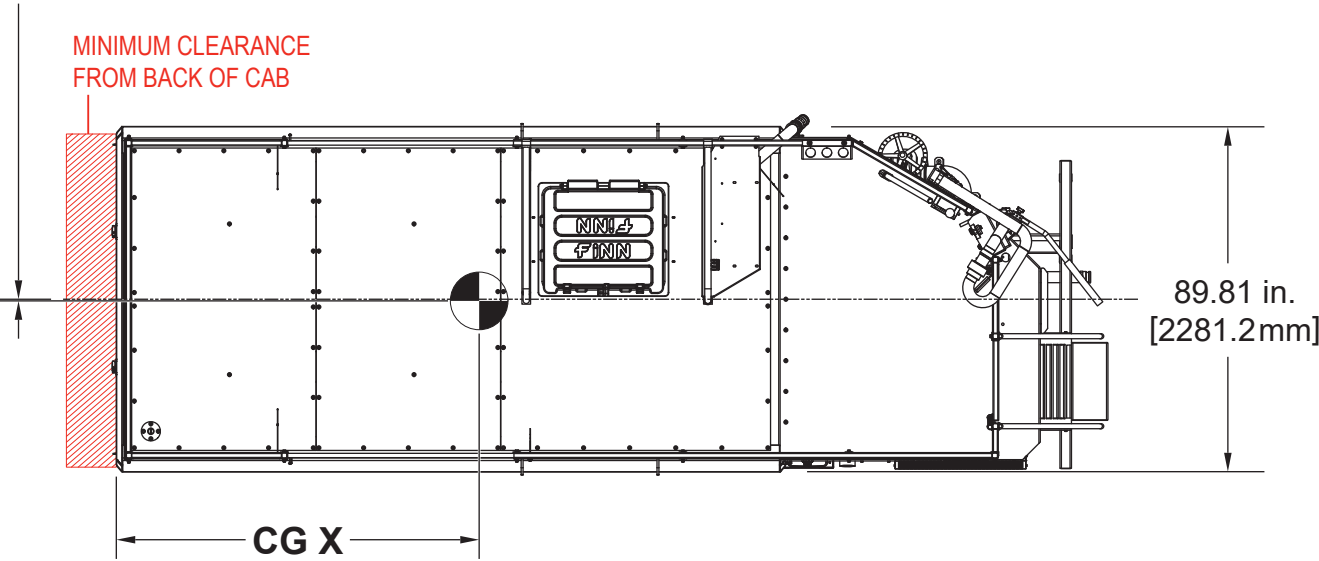
NOTICE

The mounting of the HydroSeeder® to the truck must allow for tire clearance as well as frame twist.

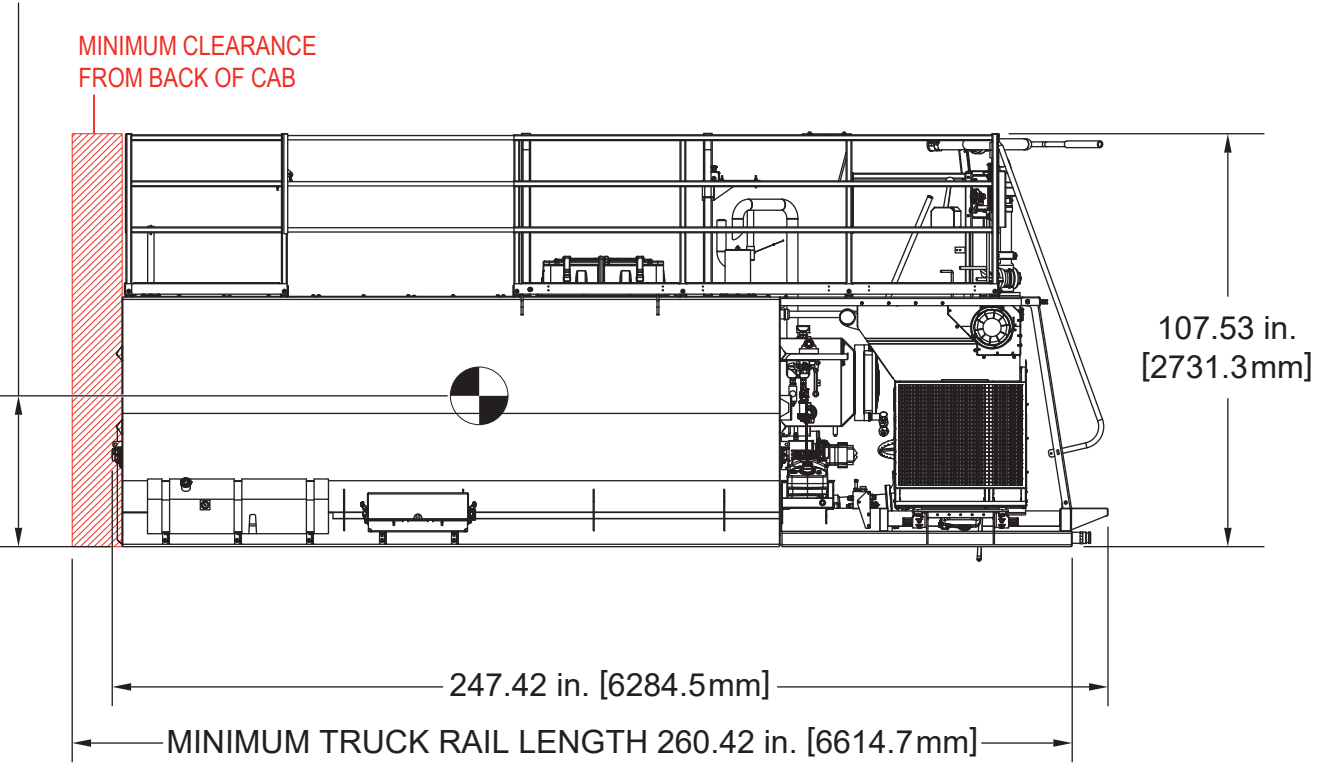
Follow mounting instructions given in the Truck Mounting/Loading Information section. Consult truck manufacturer for proper truck sizing and mounting recommendations. If the included truck mounting guidelines are unable to be met and/or the provided mount kit doesn't work for your needs, consult the factory.

T330 CG/LOADING INFORMATION

CG Y



CG Z



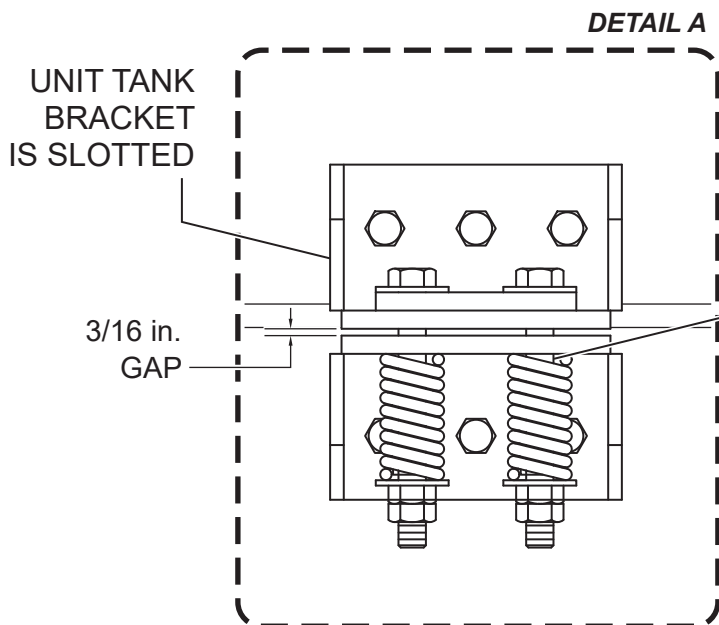
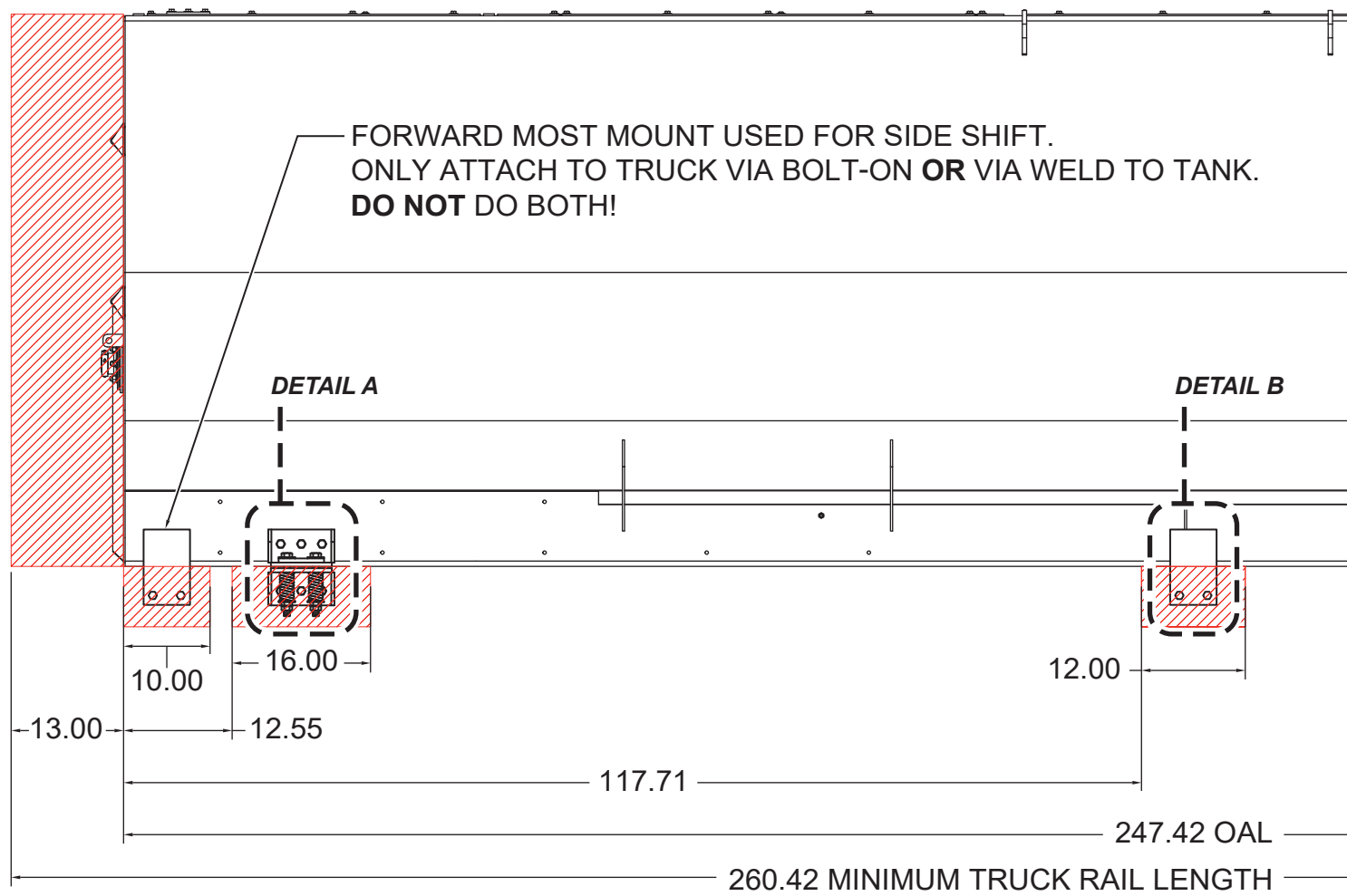
T330 CG/LOADING INFORMATION (CONTINUED)

DESCRIPTION	CG X	CG Y	CG Z	WEIGHT
T330 MACHINE ONLY*	145.6 in.	3.2 in.	34.8 in.	12,314 lbs.
T330 + WATER ONLY (MAX FILL)	103.8 in.	1.1 in.	38.3 in.	39,869 lbs.
T330 + WATER/GRAN SOLIDS	101.5 in.	0.9 in.	38.5 in.	45,694 lbs.
T330 + WATER/WOOD MULCH	104.3 in.	1.1 in.	38.3 in.	38,864 lbs.

* MACHINE FLUIDS AT CAPACITY (HYDRAULIC OIL, FUEL, COOLANT, ETC.)

NO AUXILIARY EQUIPMENT OR LOADS INCLUDED.

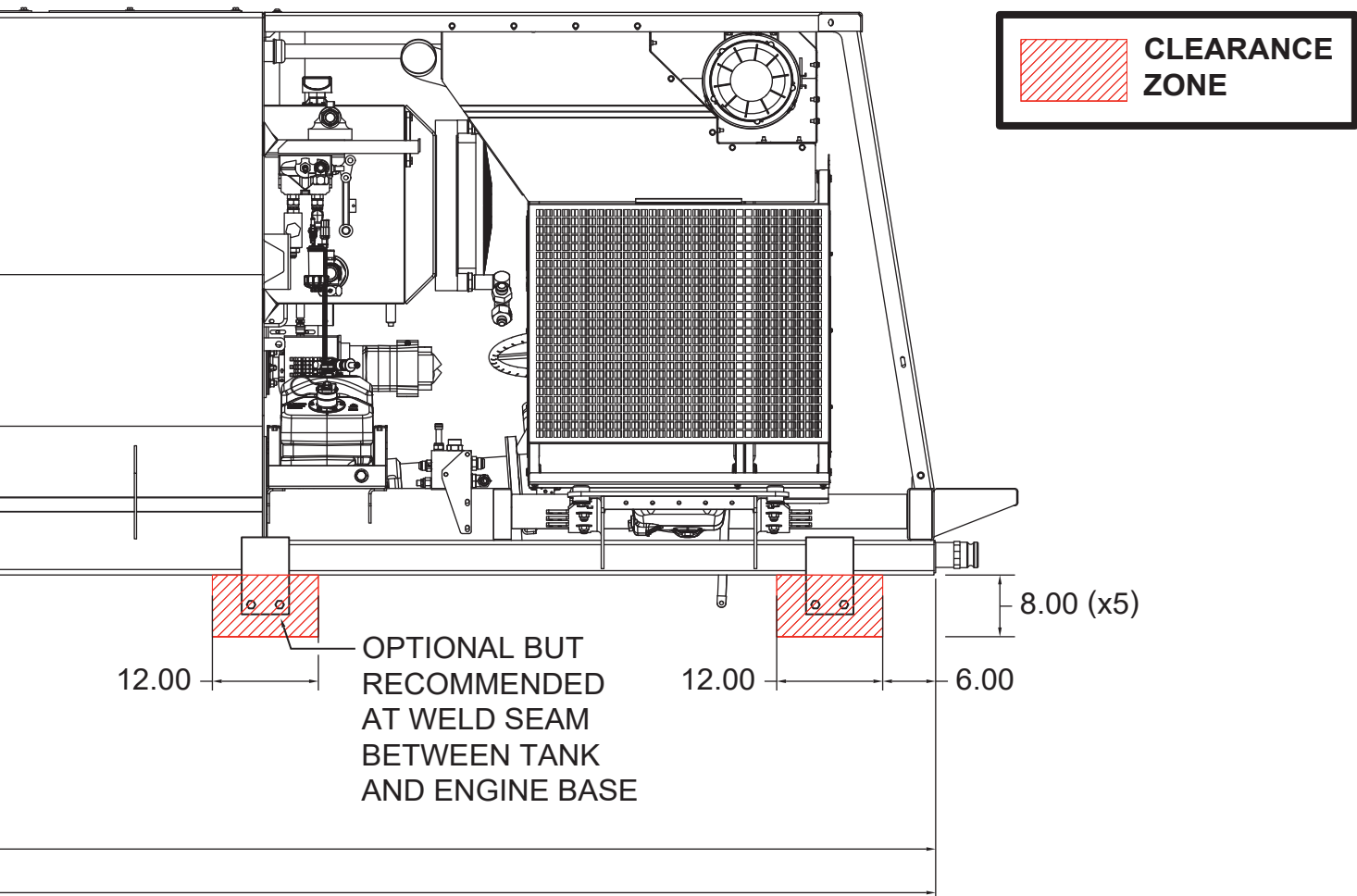
TRUCK MOUNTING/LOADING INFORMATION



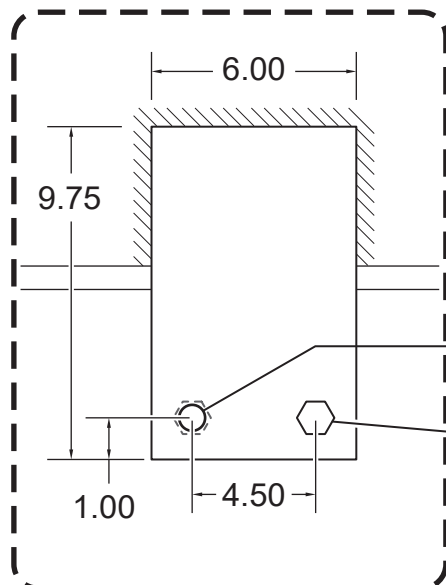
NOTE: ENSURE THAT TUBES ARE INSERTED TO PREVENT FULL COMPRESSION OF SPRINGS WHEN BOLTS ARE TIGHTENED.

NOTE: SHIMS MAY BE REQUIRED FOR PROPER ALIGNMENT OF GUIDE PLATE TO WEAR PLATE.

TRUCK MOUNTING/LOADING INFORMATION (CONTINUED)



DETAIL B – Used three times shown above per side with an optional fourth mount location.



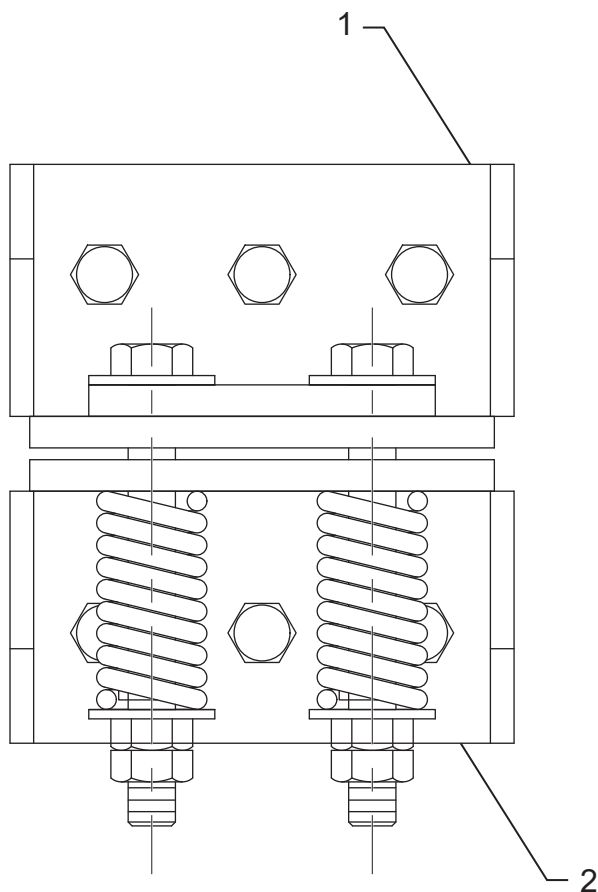
NOTICE

OBEY TRUCK MANUFACTURER'S BODY BUILDER GUIDE FOR ACCEPTABLE DRILLING/WELDING PRACTICES ON TRUCK FRAME. WELD PLATE SECURELY TO HYDROSEEDER®. BOLT TO TRUCK CHASSIS.

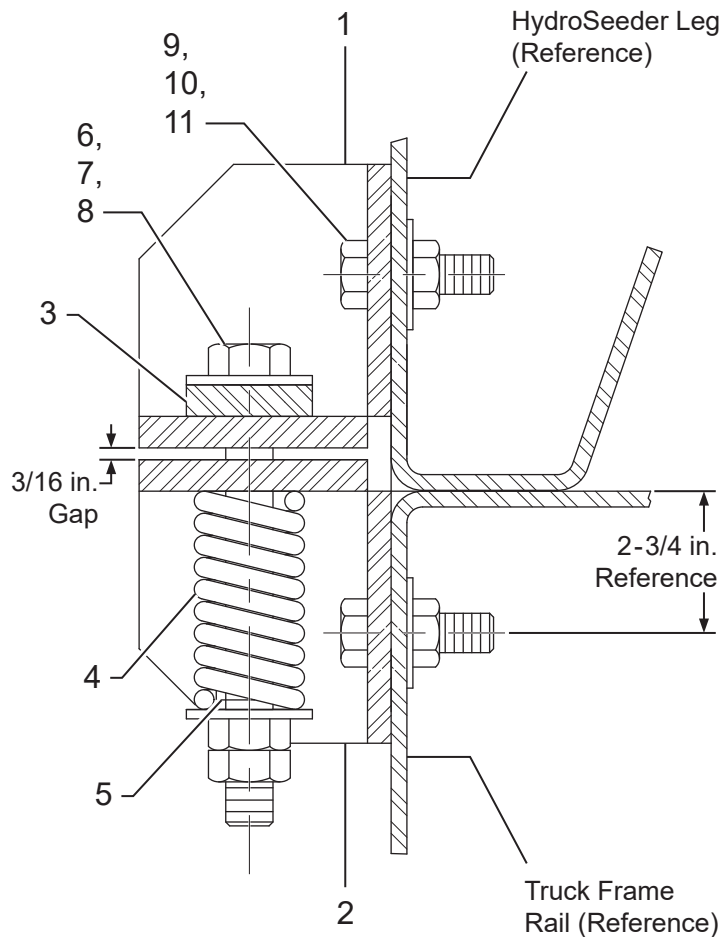
2x Ø21/32 in. [BOLT REMOVED FOR CLARITY]

5/8 in. GRADE 8 BOLT AND NUTS. ALL PLACES. MATCH DRILL PLATE HOLES TO TRUCK FRAME.

TRUCK MOUNTING KIT



FRONT VIEW



SIDE CUTAWAY VIEW

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	012432-02	Bracket, Unit Tank	2
2	▲	012432-01	Bracket, Truck Frame	2
3	▲	012431-03	Spacer	2
4	▲	011563	1-3/4 OD - 5/16 Wire - 10 Coils Flattened Each End - Free Length 4-1/2	4
5	▲	011562-05	3/4 Sch.40 Pipe x 5-1/8 in. Long	4
6	▲	●	3/4-16 UNF Hex Head Bolt x 7 in. Long, Grade 8	4
7	▲	●	3/4 Flat Washer	8
8	▲	●	3/4-16 UNF Hex Locknut	8
9	▲	●	5/8-11 UNC HHCS x 2-1/2 in. Long, Grade 8	30
10	▲	●	5/8 Flatwasher, Grade 8	30
11	▲	●	5/8-11 UNC Locknut, Grade 8	30

KITS AND MARKERS

- ▲ 011562 T330 Truck Mount Kit
- Standard Hardware Item

GENERAL MACHINE INFORMATION

PRIOR TO OPERATION

Safety check 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 ON, verify that the amber safety lights, under the operator's platform, are flashing.

EQUIPMENT CHECK

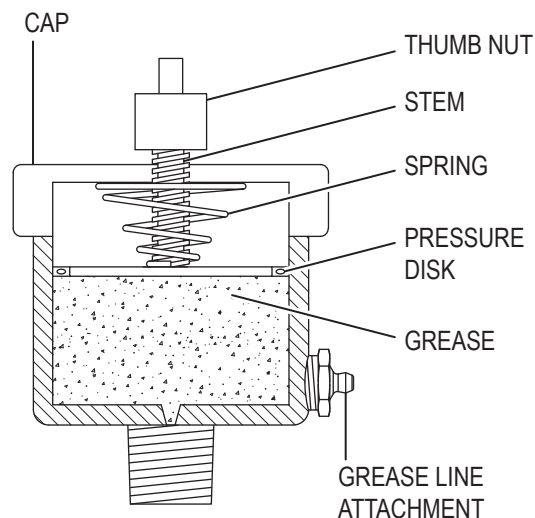


WARNING

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

1. See that tool kit contains all the prescribed items. See TOOL KIT.
2. Inspect slurry tank for foreign objects. See MAINTENANCE of the HYDROSEEDER® SAFETY SUMMARY SECTION.
3. Check fuel level.
4. Check the hydraulic oil level. See HYDRAULIC SYSTEM for oil specifications.
5. Check engine oil level. For oil type refer to engine manual.
6. Check engine coolant level.
7. Inspect air cleaner for dust and dirt, replace if necessary.
8. Secure drain plug on the slurry tank drain pipe.
9. Check to be certain pump drain plug is in place.
10. Lubricate equipment. See LUBRICATION AND FLUIDS CHART.

- A. Each lubrication point on the machine is marked with a decal.
- 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 illustration):
 1. Insert the 14 oz tube (A2401-001) into a manual or pneumatic grease gun.
 2. Attach the grease gun to the grease button on the centralized grease mount. 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.



Automatic Pressure Lubricator Components

Monitor the red indicator for level of grease.

11. Check nozzle(s) for any obstructions and clean if required.
12. Check pump discharge and recirculation valve handles for free movement.
13. Engage (turn on) and disengage (turn off) the clutch to determine if it snaps in and out.
14. Make sure all tank vents are clean and open. Do not plug or cap.

GENERAL MACHINE INFORMATION (CONTINUED)

TWO VALVE OPERATION

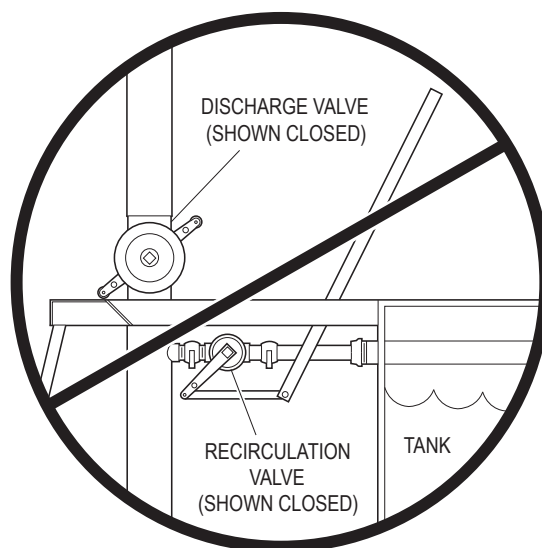
This HydroSeeder® is equipped with two independently operated ball valves to control slurry flow. One is located in the recirculation line below the platform, and the other is located in the discharge line above the platform.

The valve handles should be positioned as shown as illustrated below for the particular application required.

1. DISCHARGE THROUGH BOOM

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

Flow is through boom with no flow through closed recirculation valve (see illustration). Flow through boom is controlled by engaging and disengaging slurry pump clutch. 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.



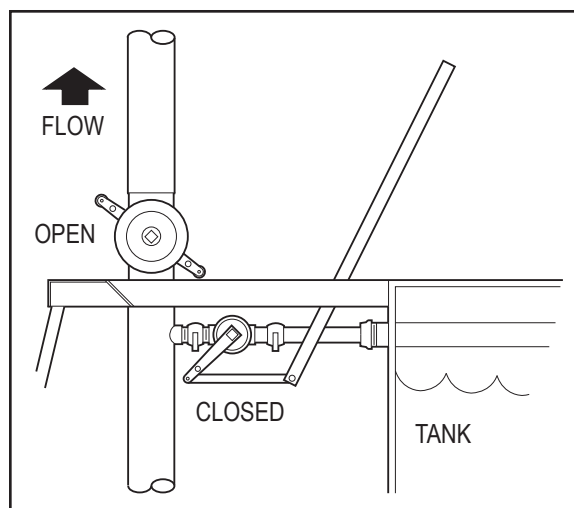
DO NOT Engage (Turn On) the Slurry Pump Clutch

2. EXTENSION HOSE THROUGH BOOM

Flow is through boom with no flow through closed recirculation valve. Extension hose is connected to boom and flow is controlled by engaging and disengaging the pump clutch, or by controlling the speed of the engine.

⚠ 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.



Discharge Through Boom

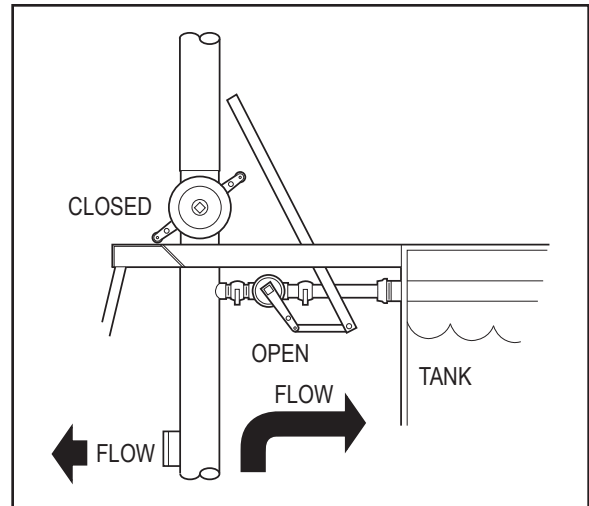
GENERAL MACHINE INFORMATION (CONTINUED)

TWO VALVE OPERATION (CONTINUED)

3. EXTENSION HOSE OR HOSE REEL THROUGH REMOTE PORT

Flow is through recirculation with no flow through closed discharge valve. Flow through hose is controlled by engaging and disengaging slurry pump clutch, or by use of the remote valve at end of hose. Opening the recirculation valve allows flow back into tank when the remote valve is closed.

⚠ 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.*



Discharge Through Extension Hose or Hose Reel

GENERAL MACHINE INFORMATION (CONTINUED)

AFTERTREATMENT SYSTEM

To comply with national and local emission requirements, this engine series contains an aftertreatment system. A component in the aftertreatment system is Diesel Exhaust Fluid (DEF). For a more detailed overview of the system, refer to the engine manual provided with the unit.

Diesel exhaust fluid (DEF) is a high purity liquid that is injected into the exhaust system of engines equipped with selective catalytic reduction systems. Maintaining the purity of DEF is important to avoid malfunctions in the aftertreatment system. Engines requiring DEF shall use a product that meets the requirements for aqueous urea solution 32 (AUS 32) according to ISO 22241-1.

Water vapor is a normal by-product of engine operation. During low temperature operation, this water vapor can condense and resemble white smoke from the exhaust system. The white smoke will dissipate as operating temperature increases, and the water is turned back into vapor. This water vapor emission is considered normal.

DEF solution begins to crystallize and freeze at 12 °F (-11 °C). When climate temperatures are much colder than this, DEF is expected to freeze in the DEF tank. For this reason, the DEF tank contains a heating element that provides rapid thawing of DEF fluid upon start-up of the unit engine. The heating element cycles, as needed, to maintain fluidity during operation. DEF is not dosed upon initial start-up, therefore it is not necessary to have liquid DEF during a cold start-up.

NOTE: Do not remove battery leads or turn off battery disconnect switch for at least 4 minutes after engine stops. The aftertreatment system automatically purges itself of Diesel Exhaust Fluid (DEF) immediately after the engine is stopped. If adequate time is not allowed for lines to be purged, residual DEF can freeze and possibly damage components of the aftertreatment system during cold-weather exposure.

If DEF quality deteriorates and it is no longer within specifications, the power rating of the engine will decrease. DEF should be clear with a slight ammonia smell. If DEF has a colored tint, has a profound ammonia smell, or is cloudy, it is likely not within specification. Drain DEF tank and replace fluid immediately.

AFTERTREATMENT SYSTEM INDICATORS OVERVIEW

The following explains the symbols used in the Diesel Exhaust Fluid (DEF) system; see the next page for symbol combinations quick reference.

The DEF indicator illuminates when the DEF is low. Fill DEF tank. Check the fluid level regularly as part of the daily maintenance done on the HydroSeeder® unit.

When the DEF indicator is combined with the warning indicator or stop engine indicator, engine performance is reduced by the Engine Control Unit (ECU) because the DEF is below a measurable level. Fill DEF tank. Check the fluid level regularly as part of the daily maintenance done on the HydroSeeder® unit.



When engine emissions temperature indicator illuminates, the exhaust gas temperature is high, elevated idle is active or exhaust filter cleaning is in process. The HydroSeeder® unit can be operated as normal as long as the HydroSeeder® is not in an unsafe location for high exhaust temperatures and the operator disables auto cleaning.



When engine emissions temperature indicator is combined with the warning indicator or stop engine indicator, engine performance will be reduced by the ECU because the exhaust gas temperature is higher than expected. Follow the Diagnostic Trouble Code (DTC) procedure or see your authorized servicing dealer.



GENERAL MACHINE INFORMATION (CONTINUED)

AFTERTREATMENT SYSTEM INDICATORS OVERVIEW (CONTINUED)

When the exhaust filter indicator illuminates, the exhaust filter cleaning is in process, the aftertreatment system has a fault or the exhaust filter is in need of cleaning and the operator has disabled auto exhaust filter cleaning. If conditions are safe, the operator should enable the auto exhaust filter clean setting or perform manual service regeneration or follow DTC procedure.



When the exhaust filter indicator is combined with the warning indicator engine performance is reduced by the ECU because there is an aftertreatment system fault or the soot level of the exhaust filter is moderately high. If conditions are safe, the operator should enable the auto exhaust filter clean function. If conditions are not safe, the operator should move the machine to a safe location and engage the auto exhaust filter cleaning mode. Perform manual service regeneration or follow DTC procedure.



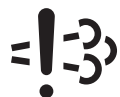
When the exhaust filter indicator is combined with the stop engine indicator, engine performance is further reduced by the ECU because there is an aftertreatment system fault or the soot level of the exhaust filter is extremely high. If this combination is present, shut down the HydroSeeder® unit and see your authorized servicing dealer.



The auto cleaning disabled indicator illuminates when the operator has disabled the auto exhaust filter cleaning function. This icon remains illuminated until the operator reengages automatic exhaust filter cleaning from the diagnostic gauge. Disabling auto mode is not recommended for any situation unless it is safety related or if the fuel tank lacks the required fuel to complete the cleaning process.



The emissions system malfunction indicator will illuminate when engine emissions are outside of normal operating parameter range or if there is an engine emissions system fault. Follow DTC procedure or see your authorized servicing dealer.



When the engine emissions system malfunction indicator is combined with the warning indicator, engine performance is reduced by the ECU because the engine emissions are outside of normal operating parameter range or there is an engine emissions system fault. Follow DTC procedure or see your authorized servicing dealer.



Warning notifications as they may appear:

OR	DEF level is low and engine performance is reduced; DEF is below a measurable level. Fill DEF tank.
OR	Engine performance is reduced; exhaust gas temperature is higher than expected. Follow the Diagnostic Trouble Code (DTC) procedure or see your authorized servicing dealer.
	There is an aftertreatment system fault or the soot level of the exhaust filter is moderately high. Perform manual service regeneration or follow DTC procedure.
	There is an aftertreatment system fault or the soot level of the exhaust filter is extremely high. Shut down the HydroSeeder® and see your authorized servicing dealer.
	The engine emissions are outside of normal operating parameter range or there is an engine emissions system fault. Follow DTC procedure or see your authorized servicing dealer.

GENERAL MACHINE INFORMATION (CONTINUED)

STORING DIESEL EXHAUST FLUID (DEF)

CAUTION *Avoid contact with eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Reference the DEF's Materials Safety Data Sheet (MSDS) for additional information. Do not ingest DEF. In the event DEF is ingested, contact a physician immediately. Reference the DEF's Materials Safety Data Sheet (MSDS) for additional information.*



NOTICE *It is unlawful to tamper with or remove any component of the aftertreatment system. Do not use DEF that does not meet the required specifications. Never operate the engine without DEF.*

NOTICE *Never attempt to create a DEF solution by mixing agricultural grade urea with water. Agricultural grade urea does not meet specifications and can damage the aftertreatment system and void the engine warranty.*

NOTICE *Do not add any chemicals or additives to DEF in an effort to prevent freezing. Any chemicals or additives added to DEF can damage the aftertreatment system.*

NOTICE *Never add water or any other fluid in place of, or in addition to DEF. Operating with a modified DEF or using an unapproved DEF can damage the aftertreatment system.*

The following storage information is provided for reference and is to be used as a guideline only. It is recommended to store DEF out of extreme temperatures. DEF will freeze at 12° F (-11° C). Exposure to temperatures greater than 86° F (30° C) will degrade DEF over time.

Dedicated DEF storage containers must be sealed between uses to prevent evaporation and contamination. Containers made of polyethylene, polypropylene, or stainless steel are recommended to transport and store DEF.

The ideal conditions for storage of DEF are in a storage area where temperatures remain between 23° F and 86° F (-5° C and 30° C) and in dedicated containers that are sealed to avoid contamination and evaporation. Under these conditions, DEF is expected to remain usable for a minimum of 18 months. Storing DEF at higher temperatures can reduce its useful life by approximately 6 months for every 9° F (5° C) temperature above 86° F (30° C).

If unsure how long or under what conditions DEF has been stored, test DEF. See Testing Diesel Exhaust Fluid (DEF). Long-term storage in the DEF tank (over 12 months) is not recommended. If long-term storage is necessary, test DEF prior to operating engine [see Testing Diesel Exhaust Fluid (DEF) section]. It is recommended to purchase DEF in quantities that will be consumed within 12 months.

REFILLING DIESEL EXHAUST FLUID (DEF) TANK

CAUTION *Avoid contact with eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Reference the DEF's Materials Safety Data Sheet (MSDS) for additional information. Do not ingest DEF. In the event DEF is ingested, contact a physician immediately. Reference the DEF's Materials Safety Data Sheet (MSDS) for additional information.*



NOTICE *Avoid using tap water to rinse components of the DEF system. Tap water can contaminate the DEF by seeping into the system. Rinse components that are used to deliver DEF with distilled water. If distilled water is absolutely not available, rinse with clean tap water, then thoroughly rinse with ample amounts of DEF to flush any contaminants left behind by the tap water.*

GENERAL MACHINE INFORMATION (CONTINUED)

REFILLING DIESEL EXHAUST FLUID (DEF) TANK (CONTINUED)

NOTICE

Carefully fill the DEF storage tank. If DEF is spilled or contacts any surface other than the storage tank, immediately clean the surface with clear water. DEF is corrosive to painted and unpainted metallic surfaces and can distort some plastic and rubber components.

NOTICE

If DEF is accidentally placed into engine fuel tank or other fluid compartment, DO NOT operate engine until the system is properly purged of DEF.

Reasonable care should be taken when refilling the DEF tank. Ensure that the DEF tank cap area is free of debris before removing the cap. Avoid splashing DEF and do not allow DEF to come into contact with skin, eyes, or mouth. Avoid prolonged contact with skin. In case of accidental contact, immediately wash skin with soap and water.

DEF is not harmful to handle, but DEF can be corrosive to materials such as steel, iron, zinc, nickel, copper, aluminum, and magnesium. Use suitable containers (made of polyethylene, polypropylene, or stainless steel) to transport and store DEF. Seal containers of DEF between use to prevent contamination and evaporation. Keep anything used to store or dispense DEF clean of dirt and dust. Wash and rinse containers or funnels thoroughly with distilled water to remove contaminants.

If water has been added to the DEF tank, a tank cleaning is necessary. After refilling the tank, check the DEF concentration. See Testing Diesel Exhaust Fluid (DEF).

The operator must maintain appropriate DEF levels at all times. Check the DEF level daily and refill the tank as needed.

TESTING DIESEL EXHAUST FLUID (DEF)

NOTICE

The correct concentration of DEF is critical to engine and aftertreatment system performance. Extended storage and other conditions can adversely alter the DEF concentration.

If the quality of the DEF is questionable, draw a sample out of the DEF tank or storage tank into a clear container. Suitable DEF is crystal clear with a light ammonia smell. If the DEF sample appears cloudy, has a colored tint or has a profound ammonia smell, it is not within specification for use. All DEF in any condition that is not within specification should not be used. Drain the DEF tank, flush the tank with distilled water and refill the tank with new DEF (or DEF that has passed specification testing). After refilling the tank, check the DEF concentration.

If the DEF passes the visual and smell test, check the DEF concentration with a handheld refractometer (not included) calibrated to measure DEF. The DEF concentration should be checked when the engine has been stored for extended periods or if there is suspicion that the engine or packaged DEF fluid has been contaminated with water. Follow the instructions included with the refractometer tool to obtain the measurement.

The correct DEF concentration is 31.8% to 33.2% urea. If the DEF concentration is not within specification, drain the DEF tank, flush the tank with distilled water and fill the tank with new DEF (or DEF that has passed specification testing). If packaged DEF is not within specification, dispose of DEF packages and replace with new DEF (or DEF that has passed specification testing).

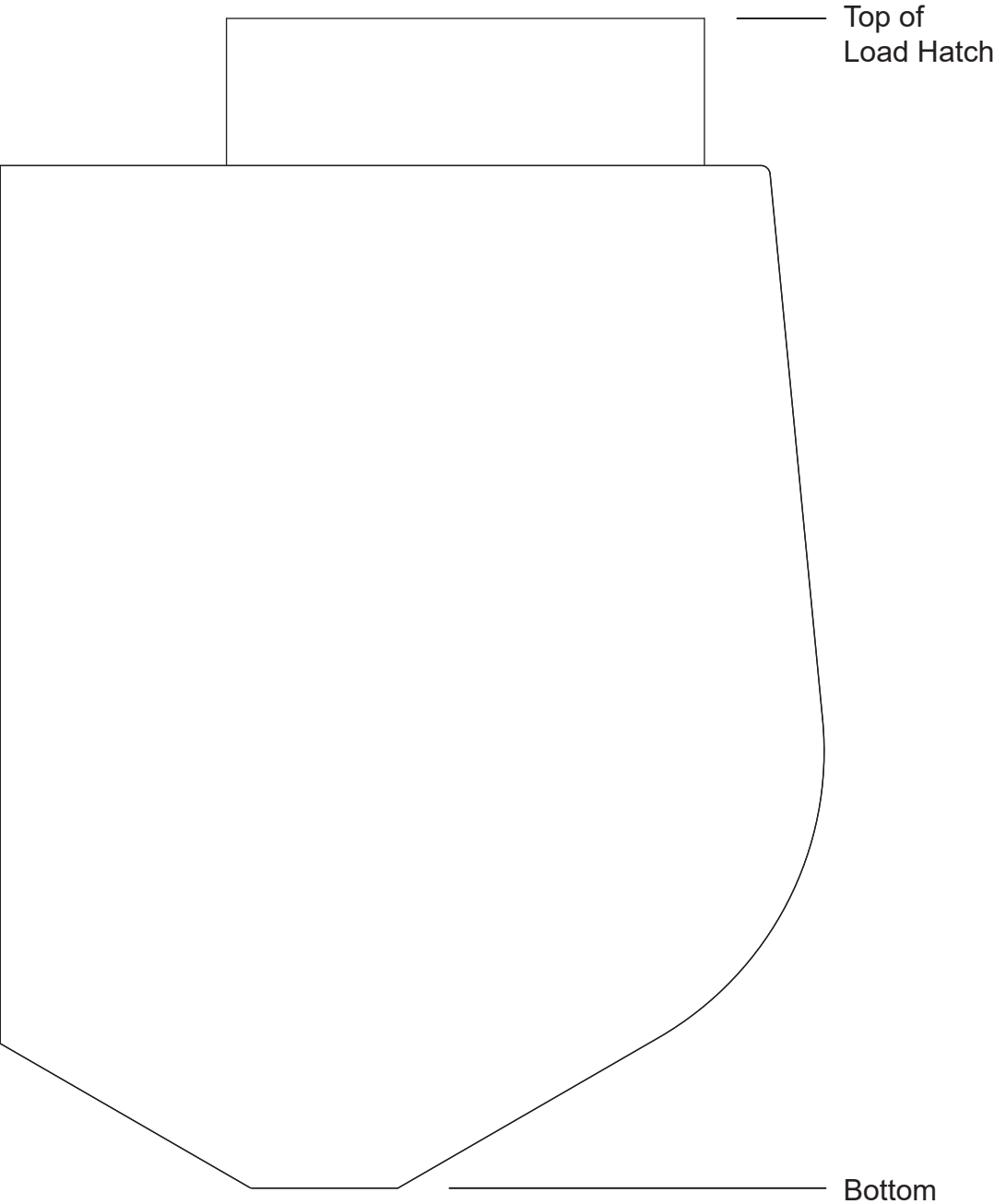
DISPOSAL OF DIESEL EXHAUST FLUID (DEF)

Although there is little issue with minor spillage of DEF on the ground, large amounts of DEF should be contained. If large spills occur, contact local environmental authorities for assistance with clean-up. Contact the DEF supplier for assistance with disposal. Do not dump DEF onto the ground or send DEF to wastewater treatment facilities.

GENERAL MACHINE INFORMATION (CONTINUED)

T330 HYDROSEEDER TANK VOLUME			
GALLONS	LITERS	INCHES (cm) FROM TOP OF LOAD HATCH	INCHES (cm) FROM BOTTOM
3,300	12,490	9 (29.9)	58.5 (148.6)
3,200	12,115	13.25 (33.7)	54.25 (137.8)
3,100	11,735	14.75 (37.5)	52.75 (134.0)
3,000	11,360	16.5 (41.9)	51.0 (129.5)
2,900	10,975	18.0 (45.7)	49.5 (125.7)
2,800	10,600	19.75 (50.2)	47.75 (121.3)
2,700	10,220	21.25 (54.0)	46.25 (117.5)
2,600	9,840	22.75 (57.8)	44.75 (113.7)
2,500	9,464	24.5 (62.2)	43.0 (109.2)
2,400	9,085	26.0 (66.0)	41.5 (105.4)
2,300	8,705	27.5 (69.9)	40.0 (101.6)
2,200	8,325	29.0 (73.7)	38.5 (97.8)
2,100	7,950	30.75 (78.1)	36.75 (93.3)
2,000	7,570	32.25 (81.9)	35.25 (89.5)
1,900	7,190	33.75 (85.7)	33.75 (85.7)
1,800	6,815	35.25 (89.5)	32.25 (81.9)
1,700	6,435	36.75 (93.3)	30.75 (78.1)
1,600	6,055	38.25 (97.2)	29.25 (74.3)
1,500	5,675	39.75 (101.0)	27.75 (70.5)
1,400	5,300	41.25 (104.8)	26.25 (66.7)
1,300	4,925	42.75 (108.6)	24.75 (62.9)
1,200	4,545	44.25 (112.4)	23.25 (59.1)
1,100	4,165	45.75 (116.2)	21.75 (55.2)
1,000	3,785	47.75 (121.3)	19.75 (50.2)
900	3,405	49.0 (124.5)	18.5 (47.0)
800	3,025	50.25 (127.6)	17.25 (43.8)
700	2,650	52.0 (132.1)	15.5 (39.4)
600	2,270	53.5 (135.9)	14.0 (35.6)
500	1,890	55.25 (140.3)	12.25 (31.1)
400	1,515	57.0 (144.8)	10.5 (26.7)
300	1,135	58.75 (149.2)	8.75 (22.2)
200	755	60.5 (153.7)	7.0 (17.8)
100	375	63.0 (160.0)	4.5 (11.4)

GENERAL MACHINE INFORMATION (CONTINUED)



Tank Capacity Charts

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 lb (2.7 to 4.5 kg) per 1,000 square feet. Fertilizer is applied at a rate of approximately 400 lb (181 kg) per acre, and fiber mulch is applied at 1,500 to 2,000 lb (680 to 907 kg) per acre. (Note: 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 tables on page 17 show loading-versus-coverage rates for the FINN 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 lbs (kilograms)</u>			<u>Coverage Area in sq ft (sq m)</u>
	<u>Seed</u>	<u>Fertilizer</u>	<u>Mulch</u>	
T280	287 (130)	333 (151)	1,250 (567)	36,300 (3,372)
T330	345 (156)	400 (181)	1,500 (680)	43,560 (4,046)
T400	414 (187)	480 (218)	1,800 (816)	52,272 (4,856)

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

Table A Example: For T330

$$\frac{1,500 \text{ lb (680 kg) Mulch per Tank}}{1,500 \text{ lb (680 kg) Mulch per Acre}} = 1 \text{ Acre per Load}$$

400 lb (181 kg) Fertilizer per Acre x 1 Acre = 400 lb (181 kg) Fertilizer per Load

345 lb (156 kg) Seed per Acre x 1 Acre = 345 lb (156 kg) Seed per Load

TABLE B – Seed and Fertilizer Only

<u>Unit</u>	<u>Amount of Material in Tank in lbs (kilograms)</u>			<u>Coverage Area in sq ft (sq m)</u>	
	<u>Seed</u>	<u>Fertilizer</u>	<u>Total</u>	<u>sq ft (sq. m)</u>	<u>Acerage (Hectare)</u>
T280	3,136 (1,422)	3,600 (1,633)	6,736 (3,055)	392,040 (36,420)	9 (3.64)
T300	3,485 (1,580)	4,000 (1,814)	7,485 (3,395)	435,600 (40,467)	10 (4.04)
T400	4,140 (1,878)	4,800 (2,177)	8,940 (4,055)	522,720 (48,562)	12 (4.86)

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

Table B Example: For T330

$$\frac{7,485 \text{ lb (3,395 kg) Tank Capacity (Solids)}}{8 \text{ lb (3.6 kg) Seed} + 9.2 \text{ lb (4.2 kg) Fertilizer per 1,000 sq ft}} = 435,600 \text{ sq ft per Load}$$

$$\frac{8 \text{ lb (3.6 kg) Seed}}{1,000 \text{ sq ft}} \times 435,600 \text{ sq ft} = 3,485 \text{ lb (1,581 kg) Seed per Tank}$$

ATTACHMENTS

1. Extension hoses for reaching remote areas are available in 50 ft. (15m) 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, i.e. around buildings, the remote valve attachment can be used. The attachment includes semi-rigid hose with quick-disconnect fittings along with a handheld valve which 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 and material is applied where desired.

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. It is hydraulically connected to the HydroSeeder[®]. The entire hose reel is protected by a UV-protective canopy.
4. Hardened Pump Parts: Pump casing, impeller, and suction cover are treated with special material designed to resist wear.
5. Rear Spray Bar: The spray bar option is not designed for slurry application but for the dispersion of liquids for dust control, watering, feeding, and washing applications. Rear spray bar is arranged so that operation is remotely controlled from the truck cab.
6. Remote Transmitter: The Remote Transmitter option provides the operator with pump on/off control, throttle control, and engine shutdown at the end of the hose. With control of the engine throttle, the operator can precisely adjust the pump flow to whatever output the situation requires (i.e., for close-up work around buildings). The ability to remotely shut off the pump allows the operator to close the recirculation valve for increased performance during hose work. Carrying the remote valve at the end of the hose becomes unnecessary.

NOTE: For remote pump on/off control, clutch cylinder must be connected to an air supply.

7. 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.

STARTING PROCEDURE



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.

Ensure that all hydraulic shutoff valves are open and there is adequate hydraulic fluid in the reservoir (must be visible on the sight gauge on the side of the tank).

Inspect the battery disconnect switch, and ensure that the battery disconnect switch is in the **ON** position.

Check the diesel fuel and DEF (Diesel Exhaust Fluid) levels, and ensure that they are adequate for the anticipated run-time.

Before starting, open the recirculation valve, close discharge valve and recirculation valve (if applicable), disengage clutch, and place the agitator control in the NEUTRAL position.

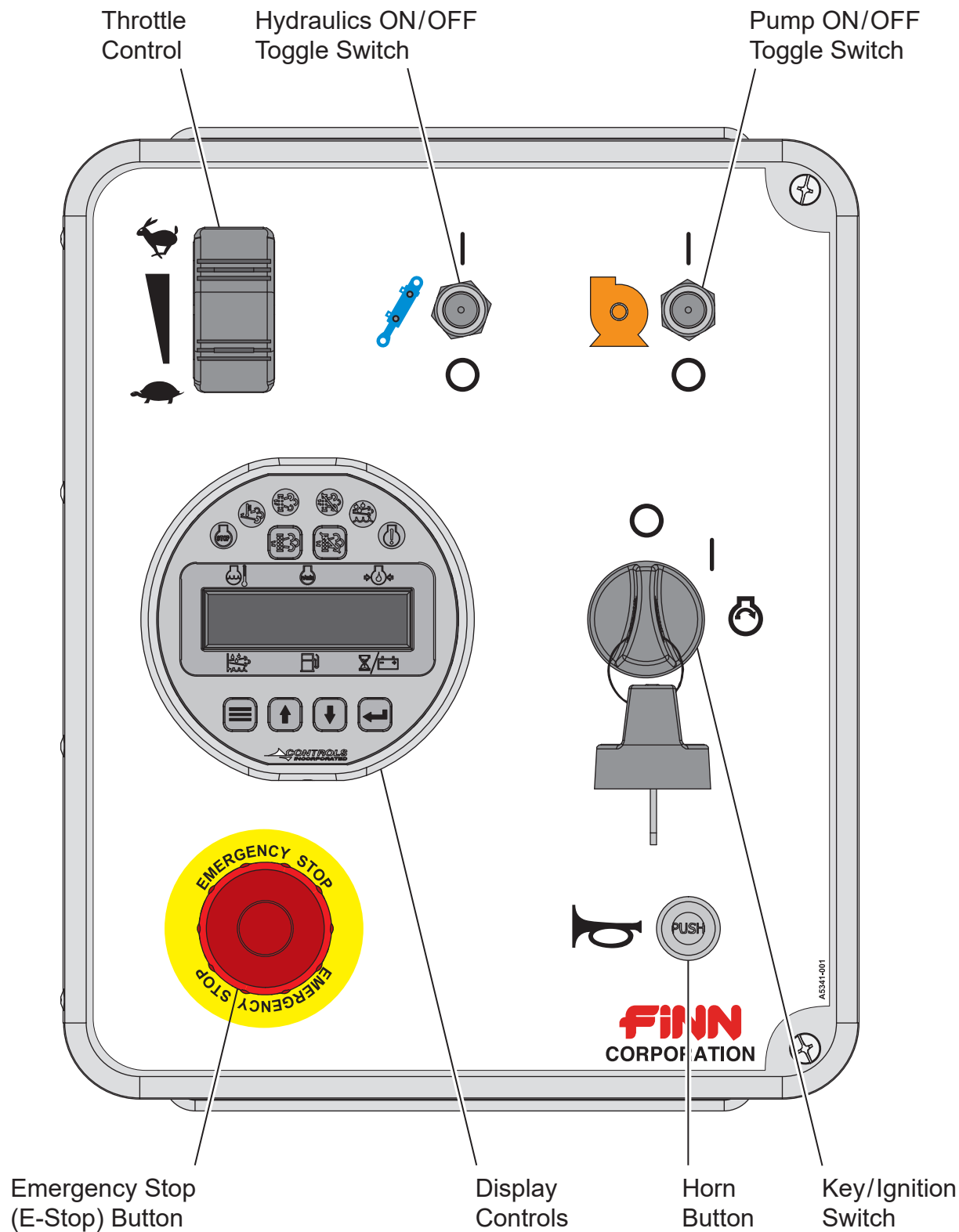
1. Set throttle about 1/4 open.
2. Turn the key clockwise until the starter engages, and the engine starts.
3. Allow engine to warm up for 3 to 5 minutes.

NOTE: This engine has a safety system that will shut the engine off if the engine oil pressure drops below 7 psi (48 kPa) or if the water temperature reaches 230°F (110°C).




PLATFORM CONTROL BOX INFORMATION

⚠ 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.

The control box of the HydroSeeder® is shown below. The operator of the HydroSeeder® should be familiar with the controls before operation.



PLATFORM CONTROL BOX INFORMATION (CONTINUED)

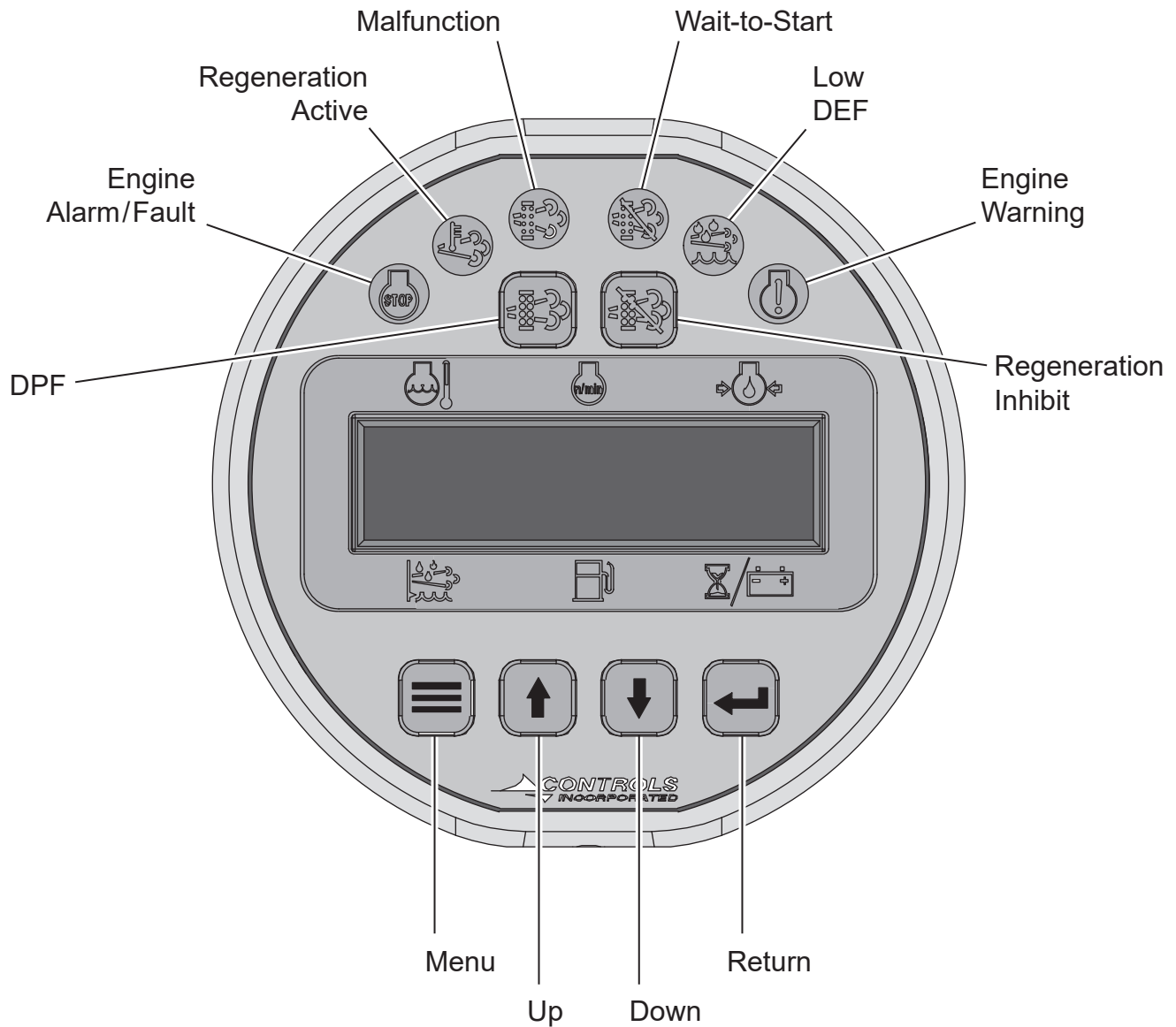
Emergency Stop (E-Stop)	<p>The Emergency Stop (E-Stop) is a critical safety component. The button is colored red to be visible and to indicate a "stop" function. The button is made increasingly visible by the bright yellow that surrounds it.</p> <p>The E-Stop will cut all power to the machine when pushed (engaged). E-Stop devices should NEVER be disabled under any circumstances.</p>
Display Controls	Control interface for the unit which displays various functions of the unit. The digital display shows information about the machine.
Pump ON/OFF Toggle Switch	This toggle switch used to turn the hydraulic system ON and OFF.
Hydraulics ON/OFF Toggle Switch	This toggle switch used to turn the pump ON and OFF.
Horn	<p>The horn button on this unit is used as a signal for start, stop, turn, etc. while the unit is in use. The horn can be used as a form of communication between operator and driver of the carrying vehicle.</p> <p>The horn is also useful in alerting bystanders in the area that HydroSeeding will soon begin.</p>
Engine Start/Stop	Press and hold this button to start and stop the engine. The key switch must be in the ON/RUN position to start the engine.
Key	Ignition switch which turns on the unit for operation. It has three settings: an OFF position, an ON/RUN position (which will activate the electronics of the unit without starting the unit) and a START position (which will start the engine).
 OFF Symbol	Key switch is in the OFF position, turning machine off.
 ON/RUN Symbol	Key switch is in the ON/RUN position while in operation.
 Start Symbol	The key switch is turned to the START position to start the unit.

PLATFORM CONTROL BOX DISPLAY CONTROLS

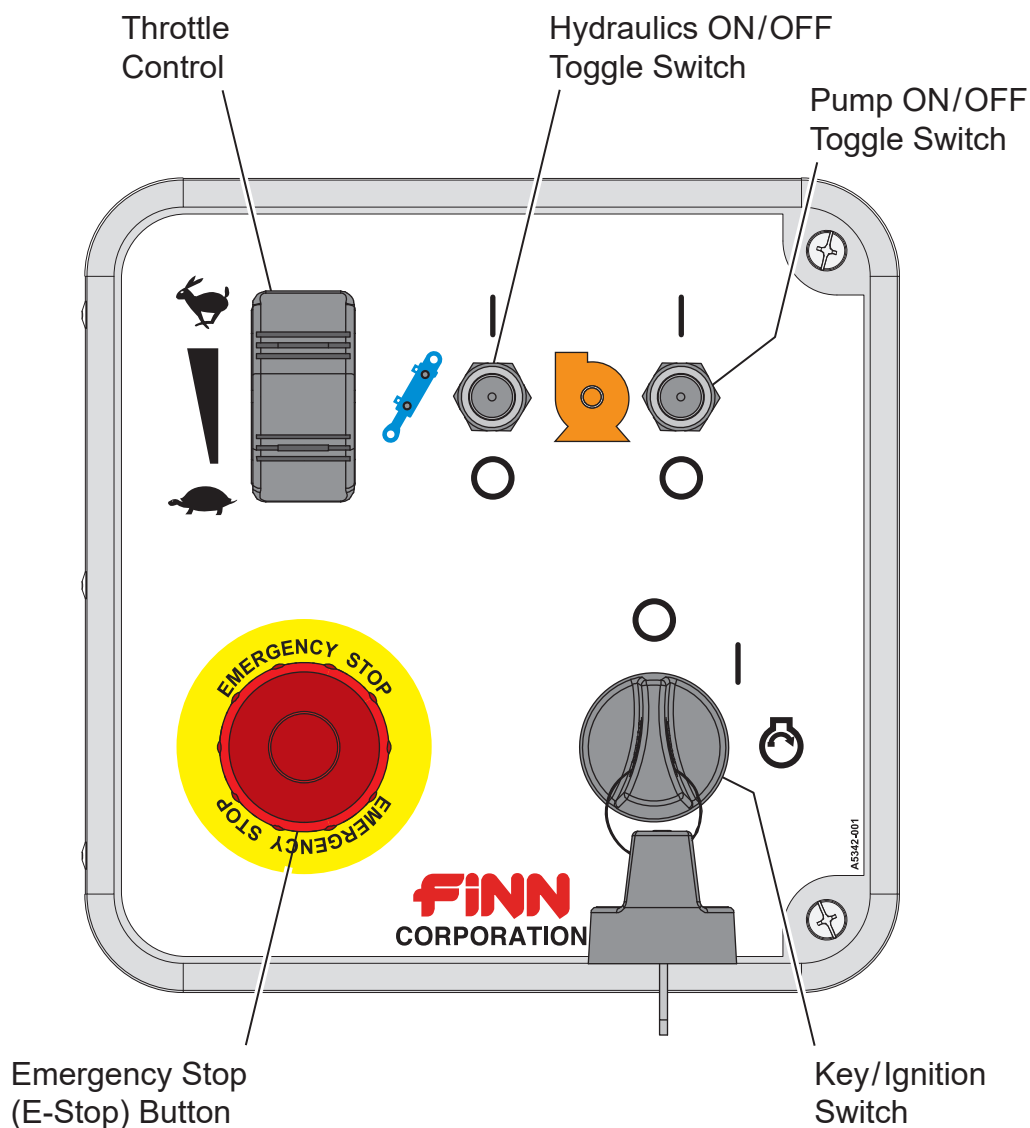
The display controls on the control box of the HydroSeeder® is shown below. The operator of the HydroSeeder® should be familiar with the display controls before operation.

The panel provides the ability the engine ECU for all active and stored engine ECU codes. These codes can be viewed via the Active Codes and Stored Codes menus.

See engine manual for fault code definitions.



GROUND LEVEL CONTROL BOX



Emergency Stop (E-Stop)	<p>The Emergency Stop (E-Stop) is a critical safety component. The button is colored red to be visible and to indicate a "stop" function. The button is made increasingly visible by the bright yellow that surrounds it.</p> <p>The E-Stop will cut all power to the machine when pushed (engaged). E-Stop devices should NEVER be disabled under any circumstances.</p>
Pump ON/OFF Toggle Switch	This toggle switch used to turn the hydraulic system ON and OFF.
Hydraulics ON/OFF Toggle Switch	This toggle switch used to turn the pump ON and OFF.
Engine Start/Stop	Press and hold this button to start and stop the engine. The key switch must be in the ON/RUN position to start the engine.
Key	Ignition switch which turns on the unit for operation. It has three settings: an OFF position, an ON/RUN position (which will activate the electronics of the unit without starting the unit) and a START position (which will start the engine).

LOADING PROCEDURE

⚠ WARNING *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 minor or moderate personal injury. Failure to comply could also result in product or property damage.*

1. With clutch disengaged (turned off) and agitator control in the NEUTRAL position, start engine and allow it to warm up. See STARTING PROCEDURE.
2. Start filling unit with water using one of the sources of water. When water reaches the top of agitator shaft, move agitator control to full REVERSE position.

Acceptable Water Sources

- A. Water from any stream or pond using a fill pump. When filling from a pond or stream, make sure to use a suction strainer to filter out contaminants that could damage the pump and unit.
 - B. Any pressure source, eg. fire hydrant. This unit is supplied with an air gap fill port. Consult with local authorities before using a water main in order to abide by all local ordinances.
 - C. Water tanker.
3. 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. Increase engine speed to approximately 1/2 to 3/4.
 - E. Engage (turn on) clutch with a firm snap. Do NOT allow clutch to slip.
 - F. When discharge stream is clear, flush the hose on the reel (if applicable), open recirculation valve, and close discharge valve. After recirculation stream is clear, disengage (turn off) clutch.
 - G. Replace nozzle and gasket in discharge boom.
 4. Continue filling tank with water.
 5. Increase engine speed to full rpm. Governed speed of the engine on the FINN HydroSeeder® should be 2,550 to 2,600 Rpm under load.

LOADING PROCEDURE (CONTINUED)

6. 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 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 in or cut open bag 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.

DANGER

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

- 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.
7. 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.
8. After material is thoroughly mixed, slow agitator in forward direction to 1/2 to 3/4 speed or 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.
9. Close hatch lid on slurry tank.

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

NOTE: If foaming occurs, reduce agitator speed.

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

WARNING

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 minor or moderate personal injury. Failure to comply could also result in product or property damage.

1. With clutch disengaged (turned off) and agitator control in the NEUTRAL position, start engine and allow it to warm up. See STARTING PROCEDURE.
2. Start filling unit with water using one of the sources of water. When water reaches the top of agitator shaft, move agitator control to full REVERSE position.

Acceptable Water Sources

- A. Water from any stream or pond using a fill pump. When filling from a pond or stream, make sure to use a suction strainer to filter out contaminants that could damage the pump and unit.
 - B. Any pressure source, eg. fire hydrant. This unit is supplied with an air gap fill port. Consult with local authorities before using a water main in order to abide by all local ordinances.
 - C. Water tanker.
3. 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 boom on the platform option).
 - B. Aim discharge hose (or boom on the platform option) 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. Open throttle to approximately 1/2 to 3/4 full.
 - E. Engage (turn on) clutch with a firm snap. Do NOT allow clutch to slip.
 - F. When discharge stream is clear, open recirculation valve and close discharge valve. After recirculation stream is clear, disengage (turn off) clutch.
 - G. Replace coupler gasket in the remote valve coupler (or in boom on the platform option).
 4. Continue filling tank with water.
 5. Increase throttle to 3/4 of full throttle.

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

6. 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.

7. 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.
8. 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.
9. Once material is thoroughly mixed, place the agitator in 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.

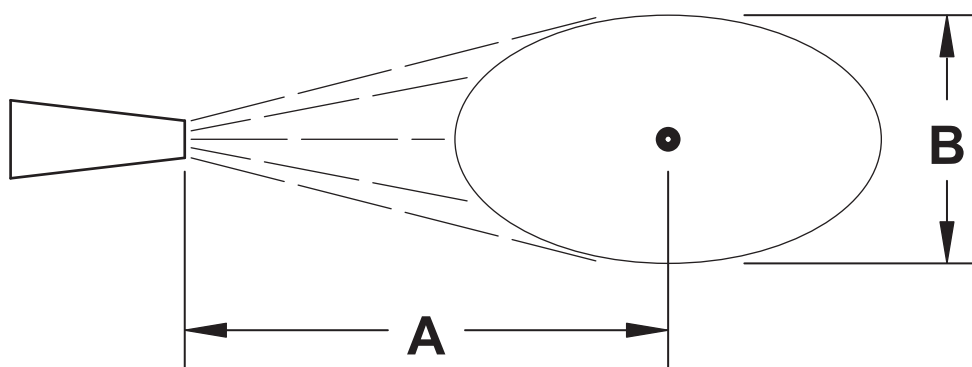
PRIOR TO APPLICATION

1. Operator 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 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.

Nozzle	Part Number	Distance (A)	Width (B)	T330 Discharge Time
Lg. Long Distance	011775	Up to 230 ft (70 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 (10.5 m)	10.6 min.



Nozzle Spray Dimensions

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.
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.

APPLICATION OF SLURRY (CONTINUED)

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.
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.

APPLICATION OF SLURRY (CONTINUED)

III. PROCEDURES WHEN USING HOSES (CONTINUED)

C. HOSE WORK WITH REMOTE TRANSMITTER

1. Begin with the engine around 1/4 throttle (1,400 rpm).
2. Close recirculation valve. If using an extension hose connected to the discharge boom, open discharge valve. If using the hose reel, close discharge valve and open pump take off valve to the hose reel.
3. Switch Remote On/Off switch on the control panel to the ON position.
4. When the operator is in position, engage the pump using the remote transmitter and increase throttle to the desired output.

NOTE: To quickly shut off engine at any time, press the red Emergency Stop button on the transmitter. To restart engine, the key switch on the control panel must be returned to the OFF position and then restarted.

5. When finished spraying, turn pump off and decrease engine throttle to idle.

⚠ CAUTION *When using the remote transmitter option, the secondary operator(s) must be aware that the machine can be activated remotely at any time after the Remote On/Off switch on the control panel is switched ON. If any maintenance or troubleshooting needs to be performed while the engine is running, the Remote On/Off switch must be in the off position. Failure to comply could result in minor or moderate personal injury. Failure to comply could also result in product or property damage.*

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)

PROCEDURE (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.

CLEANING AND MAINTENANCE

AFTER FIRST 4 TO 8 HOURS OF OPERATION

Check and adjust clutch – see clutch manual.

DAILY

1. Cleaning the HydroSeeder®

- A. Fill slurry tank to center of agitator shaft with clean water.
- B. Move agitator lever to full speed to flush off inside of tank top and walls.
- C. Remove discharge nozzle and gasket from discharge boom.
- D. While aiming discharge hose or boom toward an open area, move discharge valve handle to discharge position and engage (turn on) clutch. Allow to discharge until clear water is coming out.
- E. Move recirculation valve handle to recirculation and allow to run momentarily.
- F. Disengage (turn off) clutch, idle the engine, move valve handle to DISCHARGE position, move agitator handle to NEUTRAL, and turn off the engine.
- G. Remove drain plug and allow tank to drain.
- H. In freezing weather, leave main tank drain plug out and remove pump drain plug. Move all slurry valves to open position.
- I. Wash the outside of HydroSeeder®, including radiator, to remove any corrosive materials.
- J. If using lime, DAILY maintenance should be performed after every load.
- K. Clean out extension hoses.
- L. Replace coupler gasket before reinstalling discharge nozzle onto remote valve coupler

2. Lubricating the HydroSeeder (See LUBRICATION AND FLUIDS CHART):

NOTE: Lubrication should be performed IMMEDIATELY AFTER cleaning of the equipment with the engine not running.

- 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.
- C. Check the engine oil and replenish when necessary. Change oil and filter after first 100 hours, then every 250 hours thereafter. Consult the engine operator's manual for the correct grade of oil and the engine break-in procedure.
- D. Lubricate the swivel on the discharge assembly and the swivel on the hose reel.
- E. If equipped with the Air Flush Option, refer to the Air Flush System Manual.

CLEANING AND MAINTENANCE (CONTINUED)

WEEKLY OR EVERY 40 HOURS OF OPERATING TIME

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. Additionally, lubricate the four grease fittings on the clutch/pump.
3. Check the level in the hydraulic oil reservoir. Maintain level at sight gauge.
4. Check the clutch adjustment to ensure that it snaps in and out of engagement. Adjust the clutch with the engine off.
5. Check the antifreeze in the radiator.
6. Inspect the slurry tank for buildup of residue in the suction area and clear if necessary.
7. Check and clean engine radiator. Flush with clear low pressure water and blow dry with compressed air. Do NOT use high pressure water spray.
8. Check pivoting hose reel swivel bolt. Ensure proper torque. Replace bolts if any show signs of wear.

SEASONAL AND WINTER STORAGE MAINTENANCE

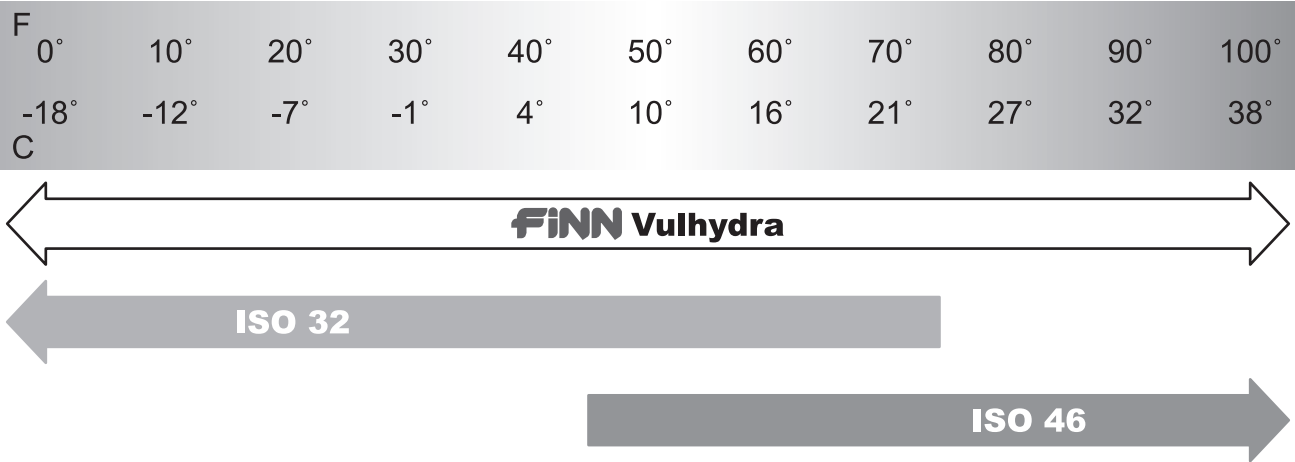
1. Remove drain plug and drain the slurry tank of all water prior to storage. Leave drain plug removed.
2. If possible, cover machine with tarp or park inside of an enclosure.
3. Store the HydroSeeder® with all slurry valve handles in the open position. To prevent damage from freezing, it is advisable to remove all slurry valves and store in a heated area.
4. 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.
5. 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.
6. Chip and steel-brush any interior rust spots in the slurry tank and touch up with paint. See steps 2 and 3 in IV. MAINTENANCE of the HYDROSEEDER® SAFETY SUMMARY SECTION.
7. Lubricate all fittings.
8. Check antifreeze in radiator.
9. 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.

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.



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CLUMP MAINTENANCE SECTION

NOTE: Refer to clump illustration 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.*

A. FACTORY TOLERANCES

1. To check clump tolerances, loosen the two clamps on the pump suction piping and remove the inlet elbow. Through the pump suction hole, insert a feeler gauge between impeller (7) and suction cover (1). This measurement on a new clump is between .040 to .045 in. (1.00 to 1.15 mm).

B. IMPELLER CLEARANCE

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.*

TO BRING THE CLUMP BACK TO PROPER TOLERANCE, PROCEED AS FOLLOWS:

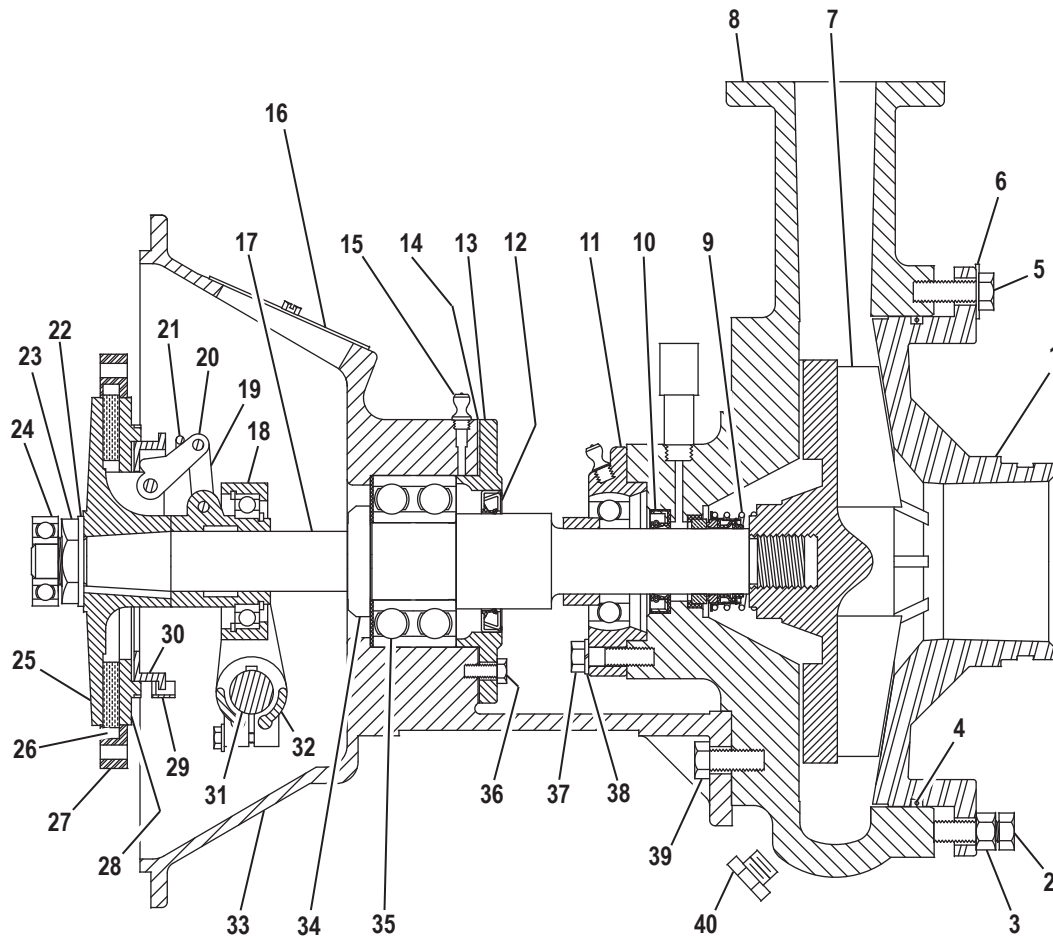
1. Loosen four bolts (2) and push suction cover (1) into casing (8) until suction cover touches impeller (7). Impeller should be in full contact with suction cover.
2. Tighten bolts (5) finger tight. Impeller (7) should rub the suction cover (1) and not turn easily through one revolution.
3. Tighten bolts (2) to 15 lb-ft (20 N•m). Impeller (7) should turn freely through one revolution.
4. Back off bolts (5) 3/4 turn.
5. Tighten bolts (2) 3/4 turn and tighten nuts (3) to 15 lb-ft (20 N•m).
6. Tighten bolts (5) to 15 lb-ft (20 N•m). Clearance gap should be about 0.040 in. (1.00 mm). Check to make sure if impeller (7) turns freely through one revolution.

C. CLEANING

1. To clean impeller (7), loosen the two victaulic pipe clamps and remove the suction pipe assembly. The eye of the impeller (7) can then be seen through the suction cover (1) and is readily accessible for cleaning.
2. To remove impeller (7), remove eight bolts (5) holding suction cover (1) in place. Remove suction cover (1), being careful not to damage O-ring (4).
3. Take 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 clump casing (8). The 90-degree leg of the wrench should face in toward the impeller and be positioned between any two of the impeller fins. Bolt the wrench securely in place with one of the suction cover bolts (5). Using a pipe wrench on clump shaft (17), unscrew impeller (7) turning shaft in a clockwise direction. Be careful not to unscrew impeller too far before removing puller 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.*

CLUMP MAINTENANCE SECTION (CONTINUED)



Cross-Section Through Clump

Ref. No.	Description	No. Req.	Ref. No.	Description	No. Req.
1	Suction Cover	1	21	Lever Spring	1
2	Suction Cover Bolt	4	22	Lockwasher	1
3	Suction Cover Nut	4	23	Drive Shaft Nut	1
4	O-ring	1	24	Pilot Bearing	1
5	Suction Cover Bolt	8	25	Clutch Body	1
6	Suction Cover Washer	8	26	Clutch Facing	1
7	Impeller	1	27	Driving Ring	1
8	Clump Casing	1	28	Pressure Plate	1
9	Mechanical Shaft Seal	1	29	Adjusting Ring	1
10	Grease Retainer	1	30	Adjusting Ring Plate	1
11	Flange Pilot Bearing	1	31	Cross Shaft	1
12	Grease Retainer	1	32	Clutch Yoke	1
13	Bearing Retainer Ring	1	33	Clump Housing	1
14	Sealing Gasket	1	34	SN-11 Nut	1
15	Grease Fitting	2	35	Bearing	1
16	Clump Nameplate	1	36	Thrust Bearing Retainer Bolt	6
17	Clump Shaft	1	37	Flange Bearing Bolt	4
18	Release Bearing	1	38	Flange Bearing Lockwasher	4
19	Connecting Link	6	39	Bolt	3
20	Release Lever	6	40	Pipe Plug	2

CLUMP MAINTENANCE SECTION (CONTINUED)

D. INSTALLING NEW SEAL ASSEMBLY (9) (Do not unwrap the new seal assembly until you are ready to install. All parts of the assembly are packed in sequence of installation.)

1. To replace seal assembly (9), perform the operations under **CLEANING**, and remove clump casing (8) by removing three bolts (39) that hold the clump casing to the clump housing (33).
2. After cleaning all parts, including clump shaft (17), begin reassembly of clump. Install grease retainer (10) with the cavity portion of the seal facing outward. Rebolt casing onto clump frame using three bolts (39). 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 shaft. Lubricate inside of the bellows assembly with a light oil lubricant and check to make sure the steel ring is stuck (glued) to end of assembly. Slide bellows assembly onto the shaft and push until steel ring is against ceramic seat.
3. Install the seal spring on the hub of impeller. After coating the threads on the clump shaft (18) with an antiseize compound, install impeller (7), seating it securely.
4. Utilizing O-ring (4), reinstall suction cover (1) using eight bolts (5). At this time, check to see that the clump runs freely. If impeller (7) rubs cover plate, you do not have impeller tight on clump shaft (17) or suction cover needs to be readjusted. See **IMPELLER CLEARANCE**. Tighten bolts uniformly using 15 lb-ft (20 N•m) on the torque wrench.
5. After reinstalling the suction pipe assembly, lubricate, and tighten the victaulic clamps. Service the automatic lubricator.

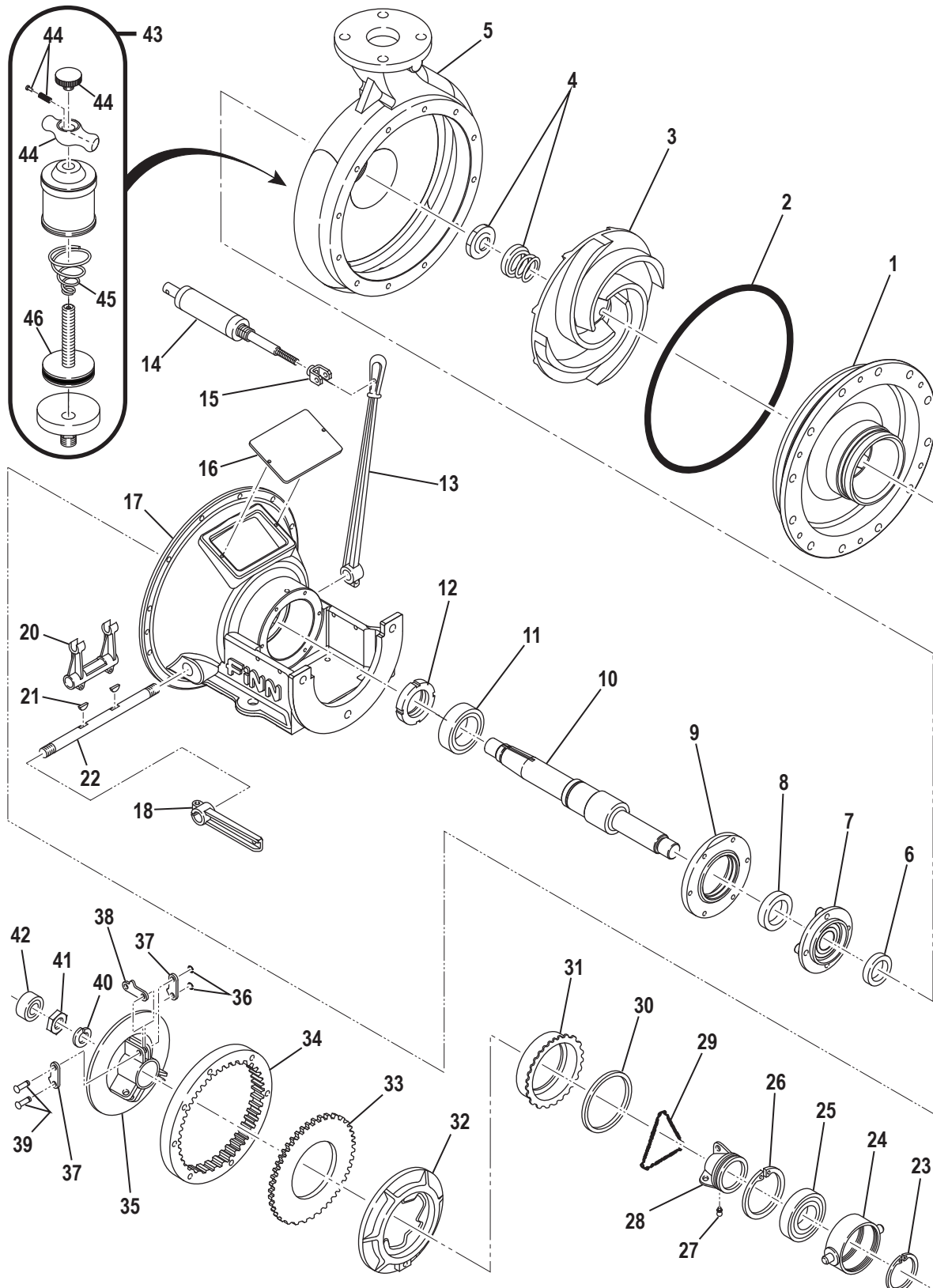
CLUMP ASSEMBLY VIEW

NOTE: Refer to Figure 17 for an illustration of the clump disassembled. Callouts for Figure 17 are listed below.

Ref. No.	Description	No. Req.	Ref. No.	Description	No. Req.
1	Suction Cover	1	24	Bearing Carrier	1
2	O-ring	1	25	Release Bearing	1
3	Impeller	1	26	Internal Snap Ring	1
4	Mechanical Shaft Seal	1	27	Lube Fitting	1
5	Clump Casing	1	28	Release	1
6	Grease Retainer	1	29	Lever Spring	1
7	Flange Pilot Bearing	1	30	Adjusting Ring Plate	1
8	Seal	1	31	Adjusting Ring	1
9	Bearing Retainer Ring	1	32	Pressure Plate	1
10	Clump Shaft	1	33	10 in. Clutch Disc	1
11	Bearing	1	34	Driving Ring	1
12	SN-11 Nut	1	35	Clutch Body	1
13	Clutch Lever	1	36	Retaining Ring	6
14	1-1/2 in. Bore x 4 in. Stroke Cylinder	1	37	Connecting Link	6
15	Air Clutch Cylinder Clevis	1	38	Release Lever	6
16	Clump Nameplate	1	39	Clevis Pin	6
17	Clump Housing	1	40	Lockwasher	1
18	Clutch Yoke	1	41	Drive Shaft Nut	1
19	Woodruff Key	2	42	Pilot Bearing	1
20	Yoke Shaft	1	43	Pressure Lubricator Assembly	1
21	Modified Clutch Lever	1	44	Screw, Nut, Follower, and Spring	1
22	10 in. Clutch Assembly Kit	1	45	Spring	1
23	External Snap Ring	1	46	Plunger	1

CLUMP ASSEMBLY VIEW (CONTINUED)

NOTE: This is for reference use -- a parts list for the clump assembly can be found in the parts section of this manual. These numbers DO NOT match the numbers called out in the Clump Maintenance Section.



Clump Assembly

CLUTCH MAINTENANCE SECTION

NOTE: Refer to clump illustration for all in-text callouts mentioned.

⚠ 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 – 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 (16) in the drive housing (33), and rotate clutch until adjusting lock collar and lock screw can be reached. To avoid dropping the adjusting lock into the housing, use caution when removing or disengaging.
2. Turn adjusting ring (29) counterclockwise to obtain recommended operating lever pressure.

HANDLE PRESSURE

Clutch Size	Reference Handle Length	Pressure at Lever
7-1/2"	7-5/8"	110–130 lb

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

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

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

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 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.

IMPORTANT: Lubricate sparingly to avoid oil seepage onto clutch facings.

CLUTCH MAINTENANCE SECTION (CONTINUED)

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

1. Remove clamps and piping from the suction and discharge side of pump.
2. Place a jack under bell housing of engine to support the rear of the engine after clump has been removed.
3. Place clutch control in the ENGAGE position to hold clutch facings in place when removing clutch from engine. Unbolt the rod which connects the clutch operating lever to operator's platform clutch handle
4. Attach a suitable lifting device to clutch/pump drive housing (33). Remove bolts that secure the drive housing to the engine flywheel housing and the two bolts that hold 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 with the output end of the shaft down.
6. Remove the clump nameplate (16) from the housing for improved access to internal parts.

D. CLUTCH FACING PLATES 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 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.
2. Insert the new facing plates (three segments) in between clutch body (25) and pressure plate (28), and center the facings as close as possible.
3. Lock clutch facings between pressure plates as follows:
 - A. Remove drive ring (27) 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 (28) almost contacts clutch facing (26).
 - 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 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 counter-clockwise 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.

CLUTCH MAINTENANCE SECTION (CONTINUED)

D. CLUTCH FACING PLATES REPLACEMENT (CONTINUED)

4. Remove clutch driving ring (27) 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 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 FROM ENGINE.
7. When clutch/pump are reinstalled, check handle, engage pressure, and adjust if necessary.
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. To remedy this, see FOAMING OF SOLUTION AND LACK OF DISTANCE. Plugging is caused by either foreign objects or dewatered fiber. Plugging can occur in any of four places: the valve and recirculation nozzle, the discharge nozzle, the pump area, and the sump area. If plugging does occur, perform any of the following tasks to clear the obstruction:

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 (59 to 89 ml) 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:



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.

TROUBLESHOOTING YOUR HYDROSEEDER® (CONTINUED)

- A. Obstruction in discharge nozzle is determined by a change in or stoppage of the spray pattern. To clear an obstruction, perform the following steps:
1. Disengage (turn off) clutch.
 2. Remove nozzle.
 3. Ensure that pump has stopped turning.
 4. Clean the discharge nozzle. To clean the discharge nozzle, use the nozzle cleaning rod attached to the underside of the guard rail. Insert the nozzle cleaning rod into nozzle to push and buildup out of the nozzle. Repeat procedure until nozzle is completely cleaned. (Platform Option only.)

⚠ 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:
1. Disengage (turn off) clutch and stop engine.
 2. Remove clamp that attaches recirculation valve.
 3. Slide rubber seal back and remove valve assembly.
 4. Check valve assembly, recirculation nozzle in discharge pipe, and recirculation pipe going into tank. Clear any obstructions.
 5. Replace valve assembly and slide seal back into place. Lubricate outside of seal.
 6. Replace clamp.
- C. Obstruction in pump can be indicated by a drop in pressure. If a drop in pressure is accompanied by a frothy or whitish discharge stream, blockage is in the suction line or sump area. To clear the pump:
1. Disengage (turn off) clutch and stop engine. Close suction shutoff valve if applicable.
 2. Loosen suction pipe clamps. If there is material in tank, stuff a rag into the suction piping.
 3. Remove suction pipe clamp closest to pump.
 4. Remove elbow and slowly open suction shutoff valve.
- NOTE:** If no water comes out, the obstruction is in sump area.
5. Reach into pump and remove obstruction. If it is jammed, the pump suction cover may have to be removed.
 6. Reassemble, removing pipe plug in process.
- D. 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:
1. Clear the sump by backflushing through the discharge plumbing with the water supply hose. This is the easiest method.
 2. 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.
 3. Use a pipe or pole through the loading hatch opening to dislodge the obstruction.

TROUBLESHOOTING YOUR HYDROSEEDER® (CONTINUED)

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 airbound 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.

⚠ 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.

TROUBLESHOOTING YOUR HYDROSEEDER® (CONTINUED)

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.

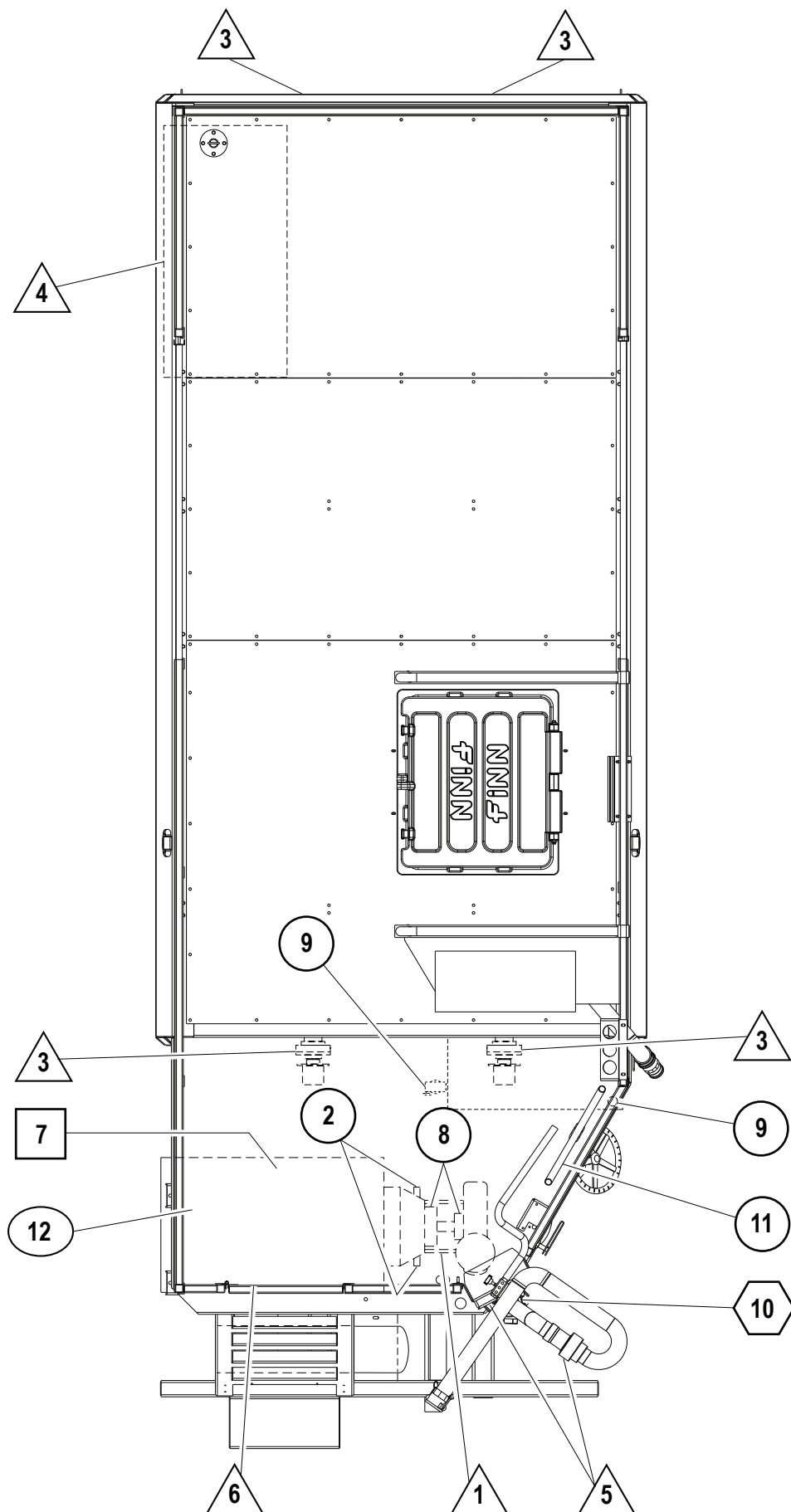
Three methods to remove an obstruction in the sump area are as follows:

- 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.



LUBRICATION AND FLUIDS CHART

Ref. No.	Location	Lubricant	Frequency	Number
1	Check Grease Level in Pressure Lubricator	BL	Daily	1
2	Check Clutch Lever Bearings	CL	Weekly	2
3	Grease Agitator Shaft Bearings	CL	Daily	4
4	Check Fuel Level	DF	Daily	1
5	Grease Discharge Swivels	CL	Daily	2
6	Check Engine Oil Level	MO	Daily	1
7	Check Engine Oil and Filter	MO	See Engine Manual	1
8	Grease Pump Bearings	BL	Weekly	2
9	Check Hydraulic Fluid Level	HO	Weekly	1
	Change Hydraulic Fluid and Filter	HO	Seasonally or 500 Hours	1
10	Grease Discharge and Recirculation Valves	SL	Each Load	2
11	Grease Valve Arm Lever	CL	Weekly	1
12	Change Engine Coolant	AF	Seasonally	1

LUBRICANT OR FLUID USED

BL	Bearing Lube (Sodium-Based)
CL	Chassis Lubricant
MO	See Engine Manual
HO	Mobil DTE-13M or Equivalent Hydraulic Oil
SL	Special Stick Lubricant
AF	50/50 Anti Freeze and Water Mixture
DF	Diesel Fuel






FLUID CAPACITIES

Fuel – 38 gal (144 L)

Hydraulic Oil – 50 gal (189 L)

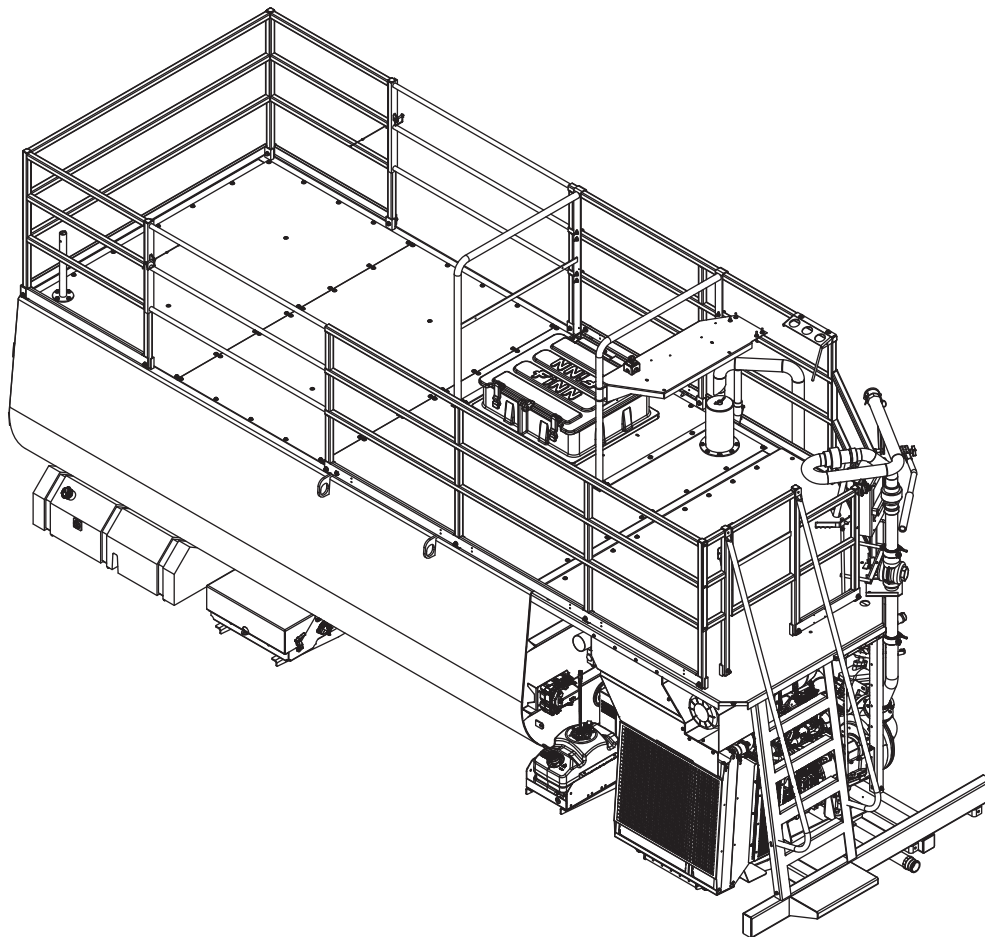
Engine Coolant – 51 gal (193 L) 50/50 Mix Only

Engine Oil – See Engine Manual

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

NOTES

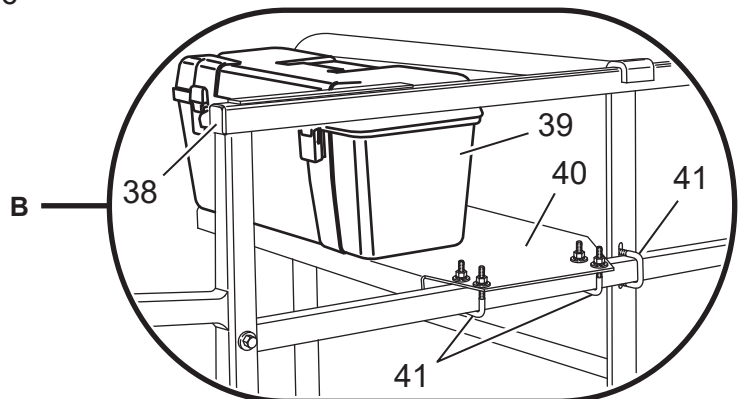
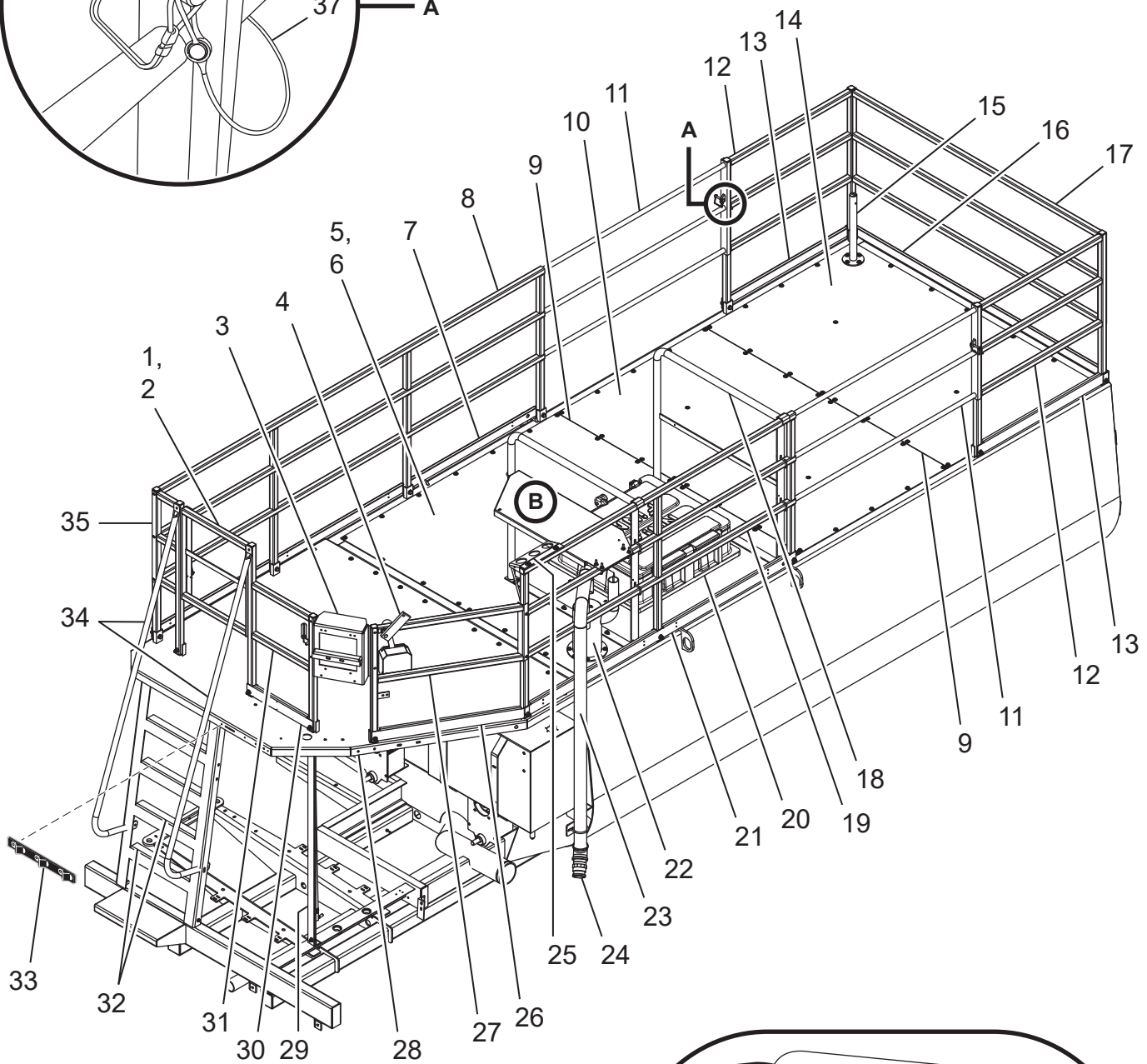
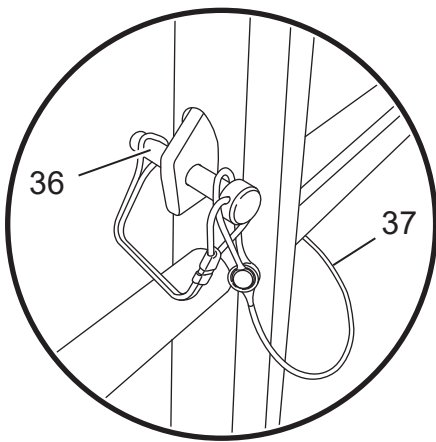
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T330 HydroSeeder[®]

Parts Manual

Model OS

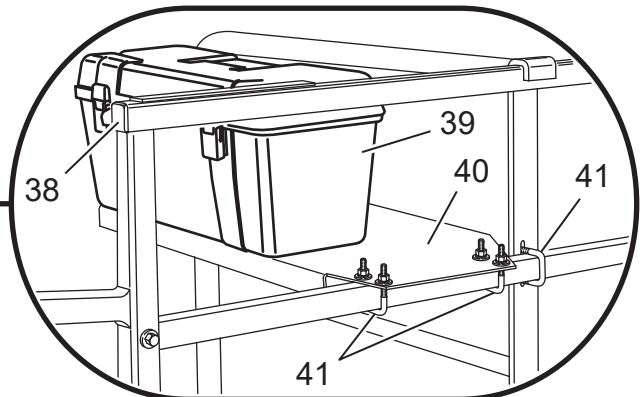
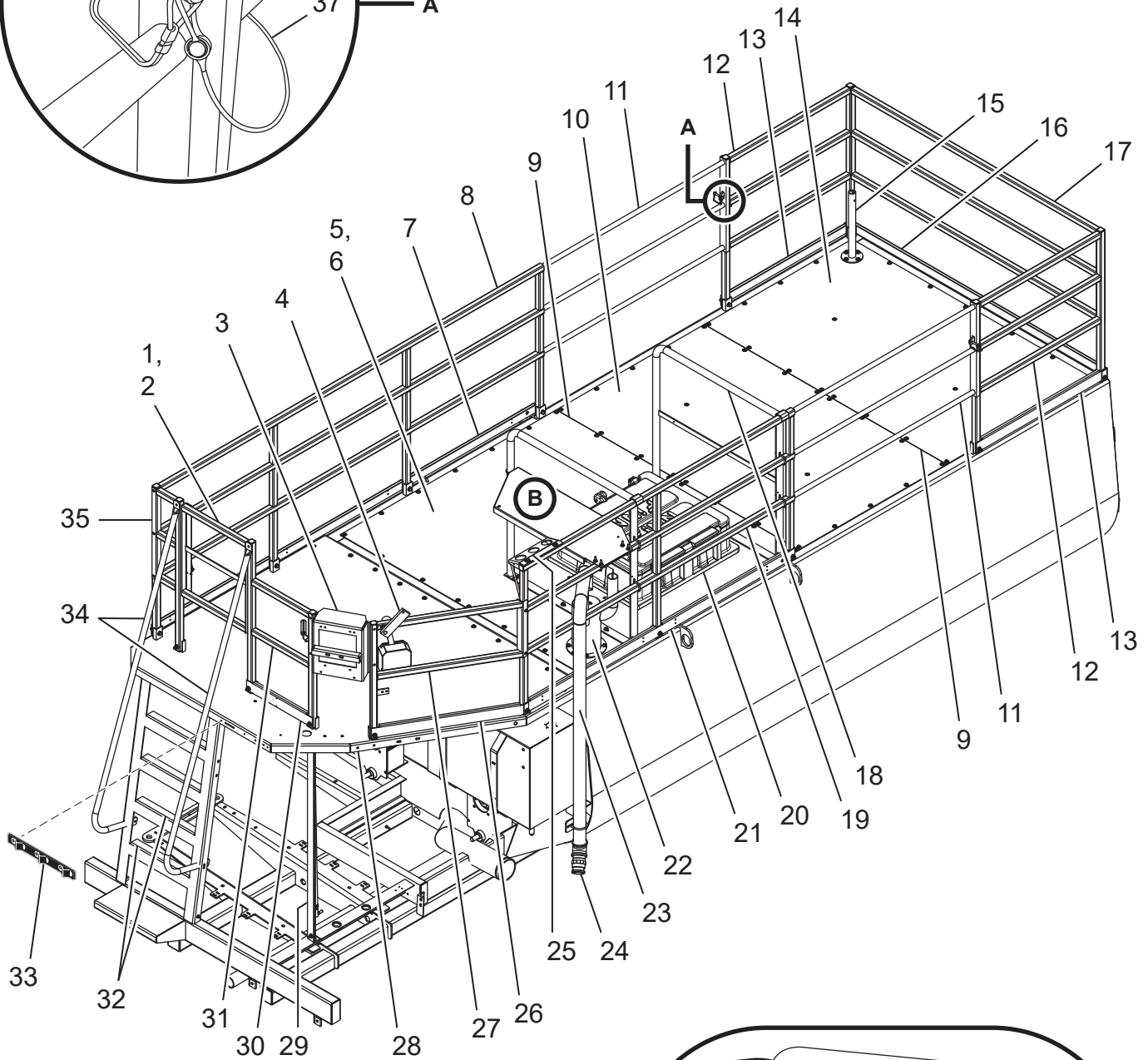
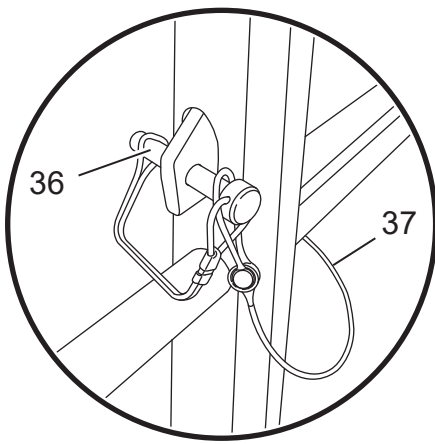


STRUCTURE AND RAILING

Ref. No.	Part Number	Description	No. Req'd
1	013149	Swing Gate	1
2	013122	Spring Hinge	1
3	F330-0074	Control Box Mount	1
4	F330-0081	Boom Hold Down	1
5	A5084-001	Tank Lid, Hatch Section, Steel	1
	A5084-002	Tank Lid, Hatch Section, Stainless Steel	1
6	190047	Foam Gasket (sold by the foot, length)	A/R
7	A5310-001	Left Rear Toe Rail	1
8	A5074-001	Left Rear Guard Rail	1
	005613	Square Tubing Plug	25
9	F400-0009-03	Narrow Top Support	4
9A	F400-0009-04	Wide Top Support	4
10	A5307-001	Tank Lid, Center Section, Steel	1
	A5307-002	Tank Lid, Center Section, Stainless Steel	1
11	012703	Slide Gate	2
12	012704	Front Side Guard Rail	2
13	F330-0083	Front Side Toe Rail	2
14	A5085-001	Tank Lid, Vent Section, Steel	1
	A5085-002	Tank Lid, Vent Section, Stainless Steel	1
15	005714-01	Vent Port	1
16	F330-0082	Front Toe Rail	1
17	012705	Front Guard Rail	1
18	012708	Hatch Guard Rail	2
19	A5078-001	Right Rear Guard Rail	1
20	012833	Poly Hatch Assembly	1
21	A5311-001	Right Rear Toe Rail	1
22	012750	Fill Stack Extension	1
23	012829	2-1/2 in. Fill Port	1
24	002191	2-1/2 in. Male Brass Adapter	1
25	F330-0075	Nozzle Holder	1
26	012736	Rear Corner Guard Rail	1
27	F330-0084	Rear Corner Toe Rail	1
28	A4733-001	Platform Weldment	1
29	A4736-001	Platform Support	1
30	012701	Long Rear Guard Rail	1
31	F330-0089	Long Rear Toe Rail	1
32	190018	2 in. Wide Safety Walk (sold by the foot, length)	A/R

Continued to next page.

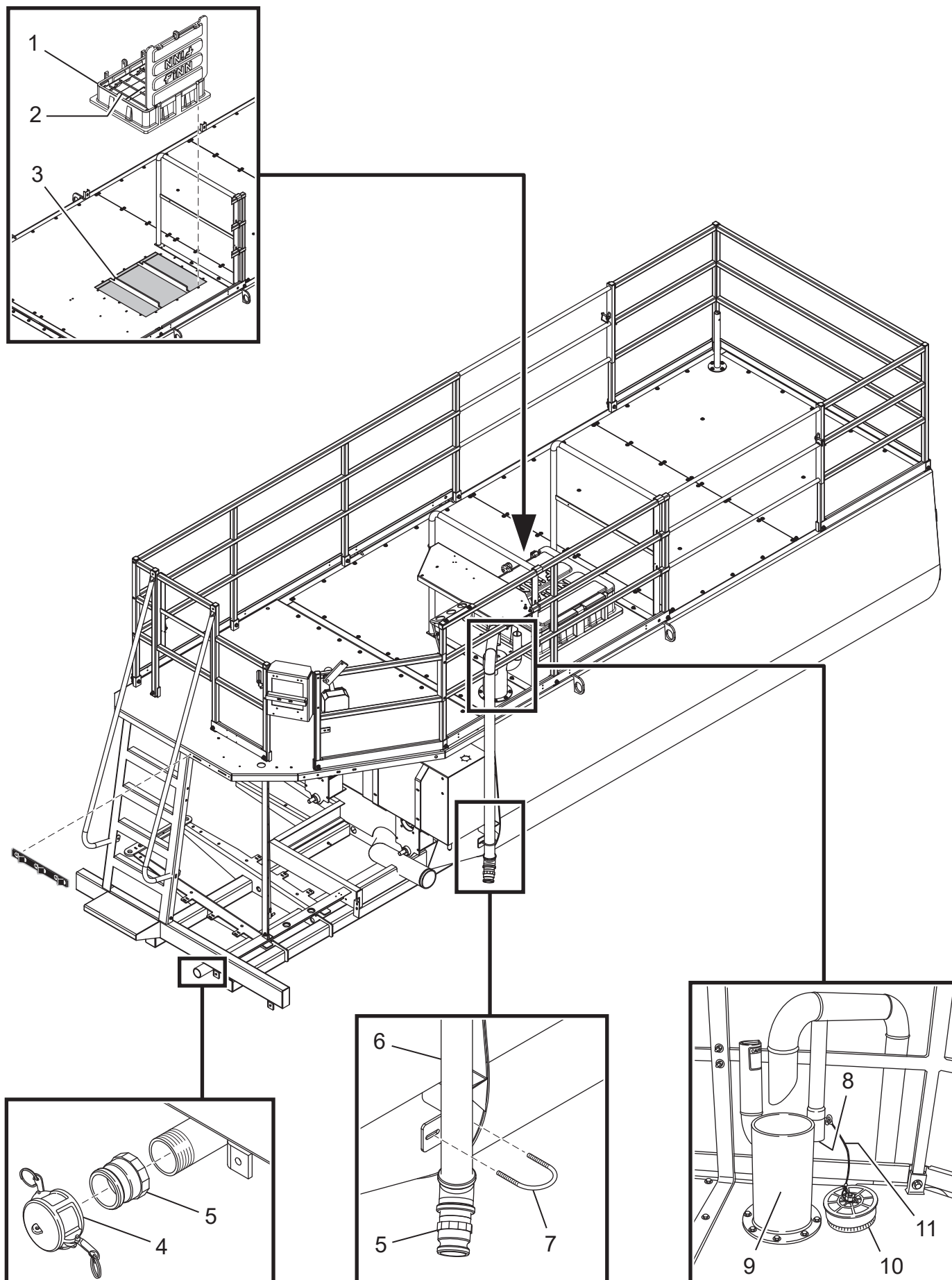
**WHEN ORDERING PARTS, BE SURE TO STATE
SERIAL NUMBER OF MACHINE**



STRUCTURE AND RAILING

Ref. No.	Part Number	Description	No. Req'd
33	005944	LED Identification Light	1
	005945	Wire Sleeve (for LED Identification Light)	1
34	012771	Ladder Hand Rail	2
35	013151	Left Rear Guard Rail	1
36	FW71225	3/8 x 2-1/2 in. Quick Pin	2
37	005700	Nylon Lanyard	2
38	005613	Square Tubing Plug	10
39	012669	Toolbox	1
40	F330-0078	Tool Box Mount	1
41	012514	Square U-Bolt For 1-1/2 in. Square Pipe	6
NOT SHOWN			
	F330-0128	Hatch Safety Rail	1
	A1096-001	Manual Canister	1
	005619	U-Bolt For 1-1/4 in. Round Pipe (to mount Tool Box in place)	2

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

Ref. No.	Part Number	Description	No. Req'd
1	012833	Poly Hatch Assembly	1
2	005433	Soft Latch	2
3	012834	Bag Cutter – Stainless Steel	1
4	002190	Dust Cap with Gasket – Main Tank Drain	1
5	002191	2-1/2 in. Male Brass Adapter	2
6	012829	2-1/2 in. Fill Port	1
7	085148	U-Bolt	1
8	012515	1-1/4 in. Pipe Plug	1
9	012750	Fill Stack Extension	1
10	008470	Fill Port Plug	1
11	005700	Nylon Lanyard	1
NOT SHOWN			
	F330-0128	Hatch Safety Rail	1

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DISCHARGE BOOM ASSEMBLY

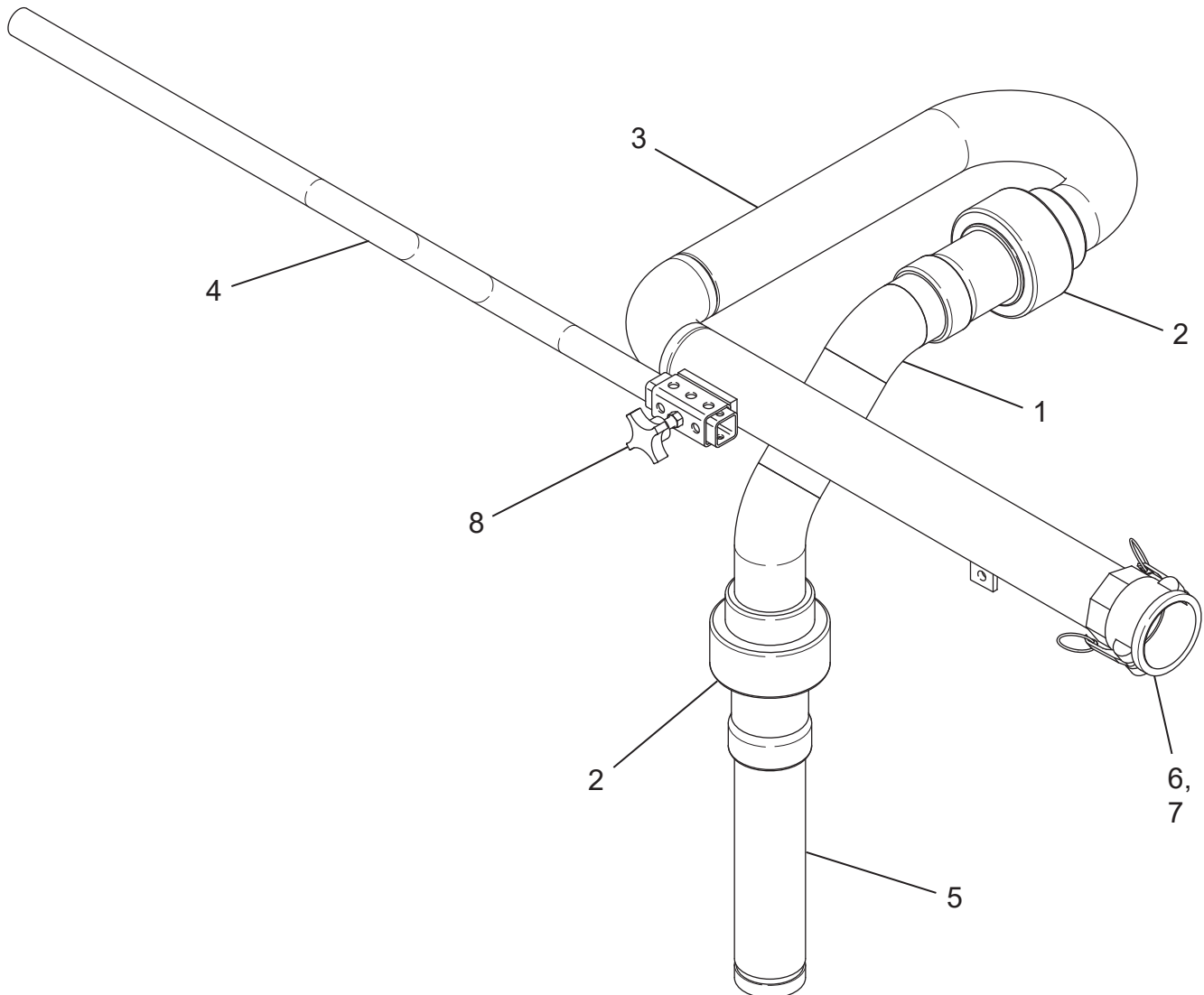
Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	012763	Lower Boom Discharge Weldment	1
2	▲	012283	2- 1/2 in. Straight Swivel	2
3	▲	012762	Upper Boom Discharge Weldment	1
4	▲	013159	Boom Discharge Handle	1
5	▲	012726-01	Boom Stand Pipe	1
6	▲	010544	2- 1/2 in. Female Coupler	1
7	▲	006513	2- 1/2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

NOT SHOWN

		012397	Swivel Repair Kit	2
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KITS AND MARKERS

▲	012764	Discharge Boom Assembly
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FUEL SYSTEM ASSEMBLY

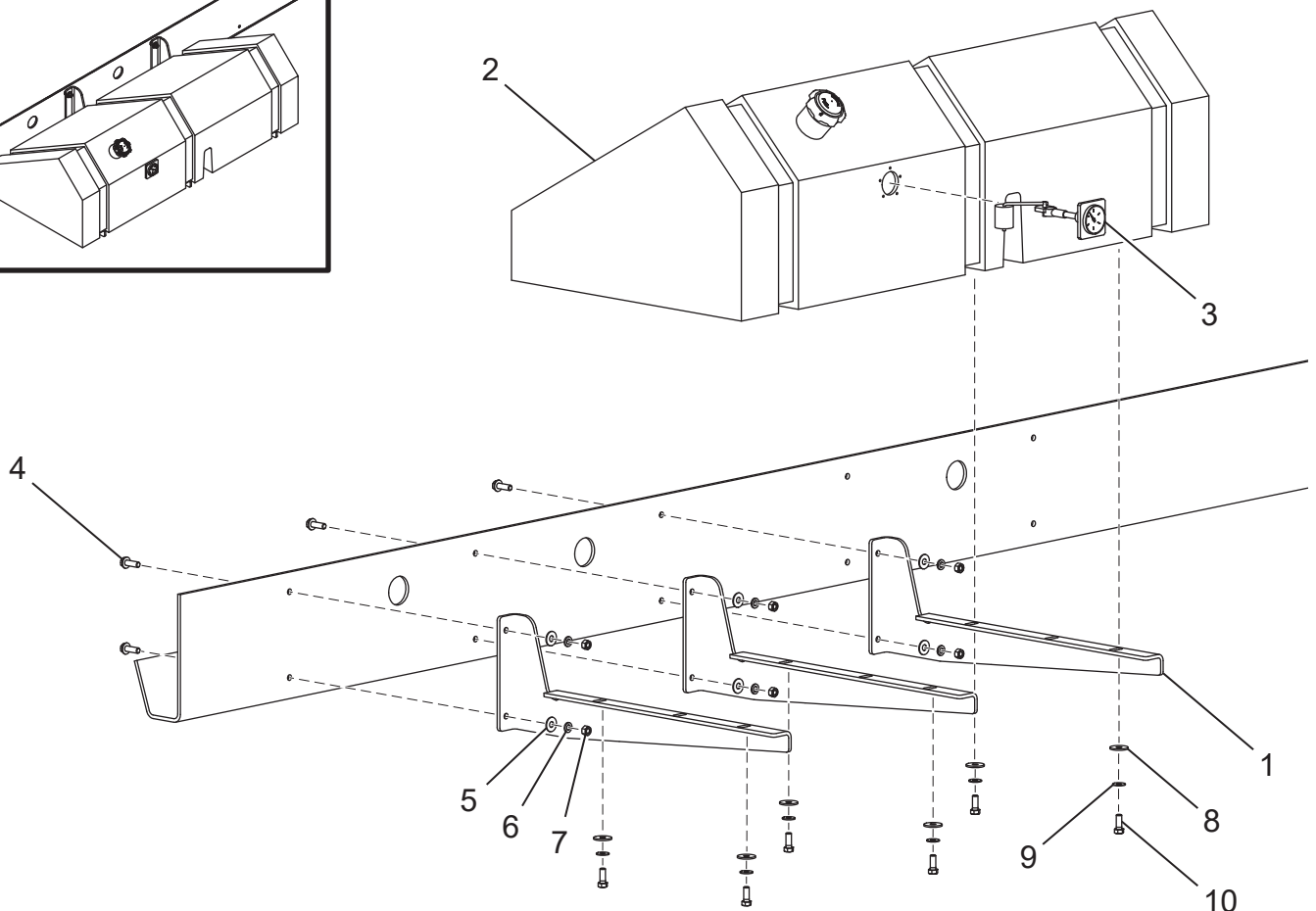
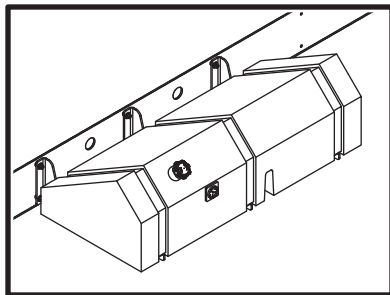
Ref. No.	Part Number	Description	No. Req'd
1	A5032-001	Fuel Tank Bracket	3
2	012693	T330 Poly Fuel Tank	1
3	012694	Rochester Fuel Gauge	1
4	●	3/8-16 UNC x 1.125 Hex Head Screw	6
5	●	3/8 Type B Plain Washer, Regular	6
6	●	3/8 Regular Helical Spring Lock Washers	6
7	●	3/8-16 Hex Nut	6
8	●	3/8 in. Type B Plain Washer, Wide	6
9	●	5/16 in. Type B Plain Washer, Regular	6
10	●	3/8-16 UNC x 1 Hex Bolt - UNC Regular Thread	6

NOT SHOWN

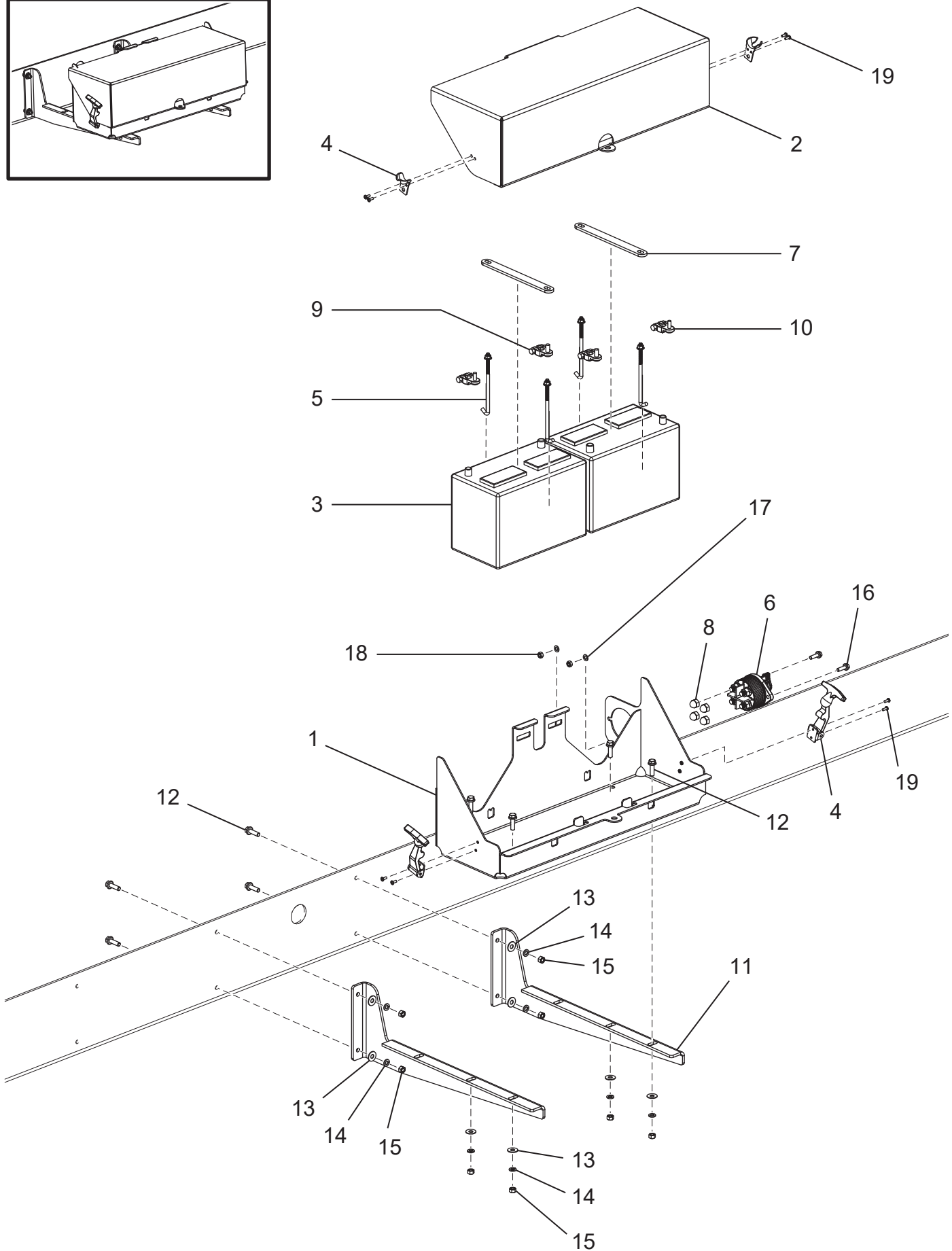
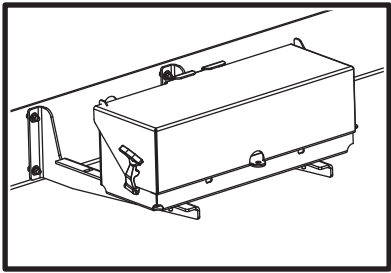
010321	5/8 in. Clamp Worm Gear	4
190034	1/4 in. ID Hose Braid	1
190013	Fuel Line 5/16 in. ID	1

KITS AND MARKERS

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



**WHEN ORDERING PARTS, BE SURE TO STATE
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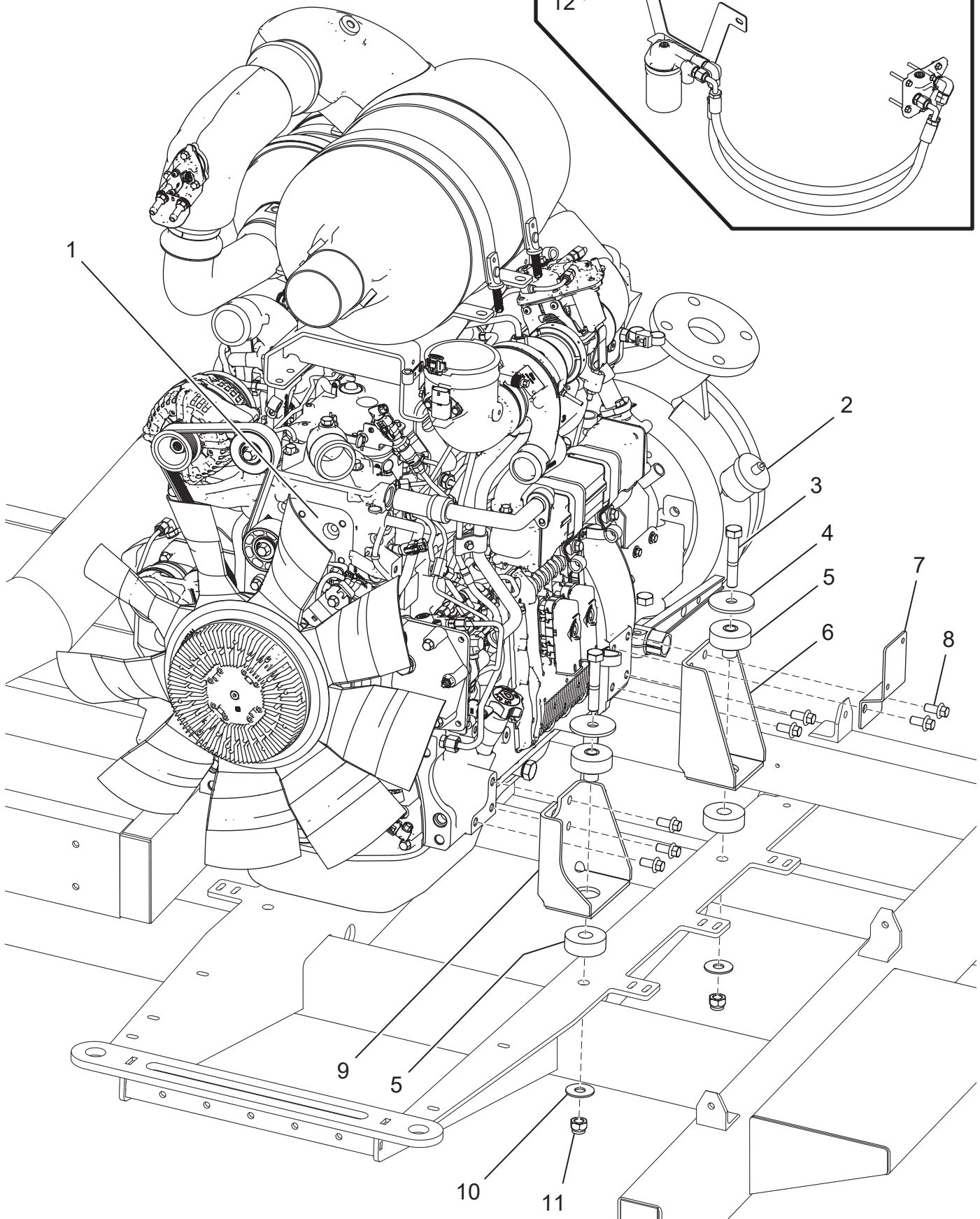
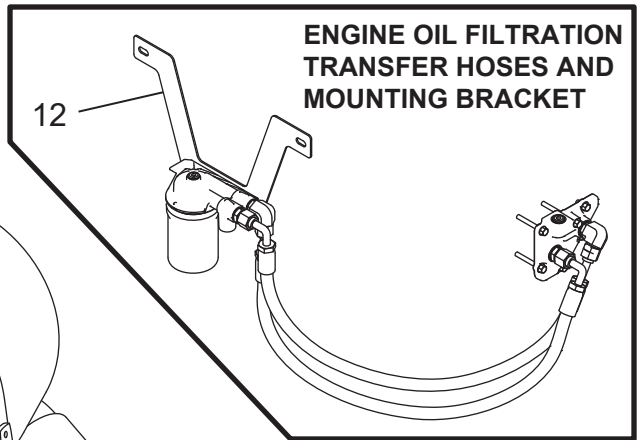
BATTERY BOX ASSEMBLY

Ref. No.	Part Number	Description	No. Req'd
1	A5337-001	T330 Battery Tray	1
2	A5338-001	T330 Battery Lid	1
3	011851	Battery, 12V	2
4	A3040-001	Latch, T-Handle	2
5	A3024-001	J-Bolt, 0.3125 in. - 18 UNC x 5.75 OAL	4
6	013250	Battery Disconnect Switch	1
7	A5335-001	Strap, Battery Hold-Down	2
8	013284	Hex Cap Nut, M12 x 1.75, Black Nylon	4
9	085185	Marine Type Positive Battery Lug, 3/8 Stud	2
10	085186	Marine Type Negative Battery Lug, 5/16 Stud	2
11	A5032-001	Battery Bracket	2
12	●	3/8- 16 UNC x 1.25 Hex Flange Screw, Regular Thread	8
13	●	3/8 in. Type B Plain Washer, Regular	8
14	●	3/8 Regular Helical Spring Lock Washers	8
15	●	3/8- 16 Hex Nut	8
16	●	5/16- 18 UNC x 1 Hex Flange Screw - Regular Thread	2
17	●	5/16 in. Type B Plain Washer, Narrow	2
18	●	5/16- 18 Hex Nut	2
19	●	No. 10-24 x 1/2 Cross Recessed Pan Head Machine Screw	8

KITS AND MARKERS

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

**WHEN ORDERING PARTS, BE SURE TO STATE
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ENGINE, COMPONENTS AND MOUNTING

Ref. No.	Part Number	Description	No. Req'd
1	A5225-001	Engine, Diesel, 134 HP	1
2	002383	Pressure Lubicator	1
3	●	5/8- 11 UNC x 3.5 Hex Bolt - Regular Thread	4
4	005861	Zinc Plated Steel Snubbing Washer	4
5	005860-03	Engine Isolator with Wear Plate	8
6	A2681-001	Engine Mounting Foot, Rear	2
7	A3428-001	Starter Relay Bracket Assembly	1
8	●	M12 x 1.75 x 25 Metric Hex Flange Screw	14
9	A2680-001	Engine Mounting Foot, Front	2
10	●	5/8 in. Type B Plain Washer, Regular	4
11	●	5/8- 11 Metal Prevailing Torque Type Hex Nut	4
12	A5215-001	Oil Filter Bracket	1

NOT SHOWN

A2021-001	Fuel Filter Element, Primary With Water Separator	1
A2022-001	Fuel Filter Element, Secondary	1
A1927-001	Oil Filter	1
A1924-001	31AQ Alternator, 12V, 120A	1
A1926-001	3075 Starter Motor Kit	1
A1929-001	Filter Element, CCV	1
A1928-001	Engine V-Belt	1

KITS AND MARKERS

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

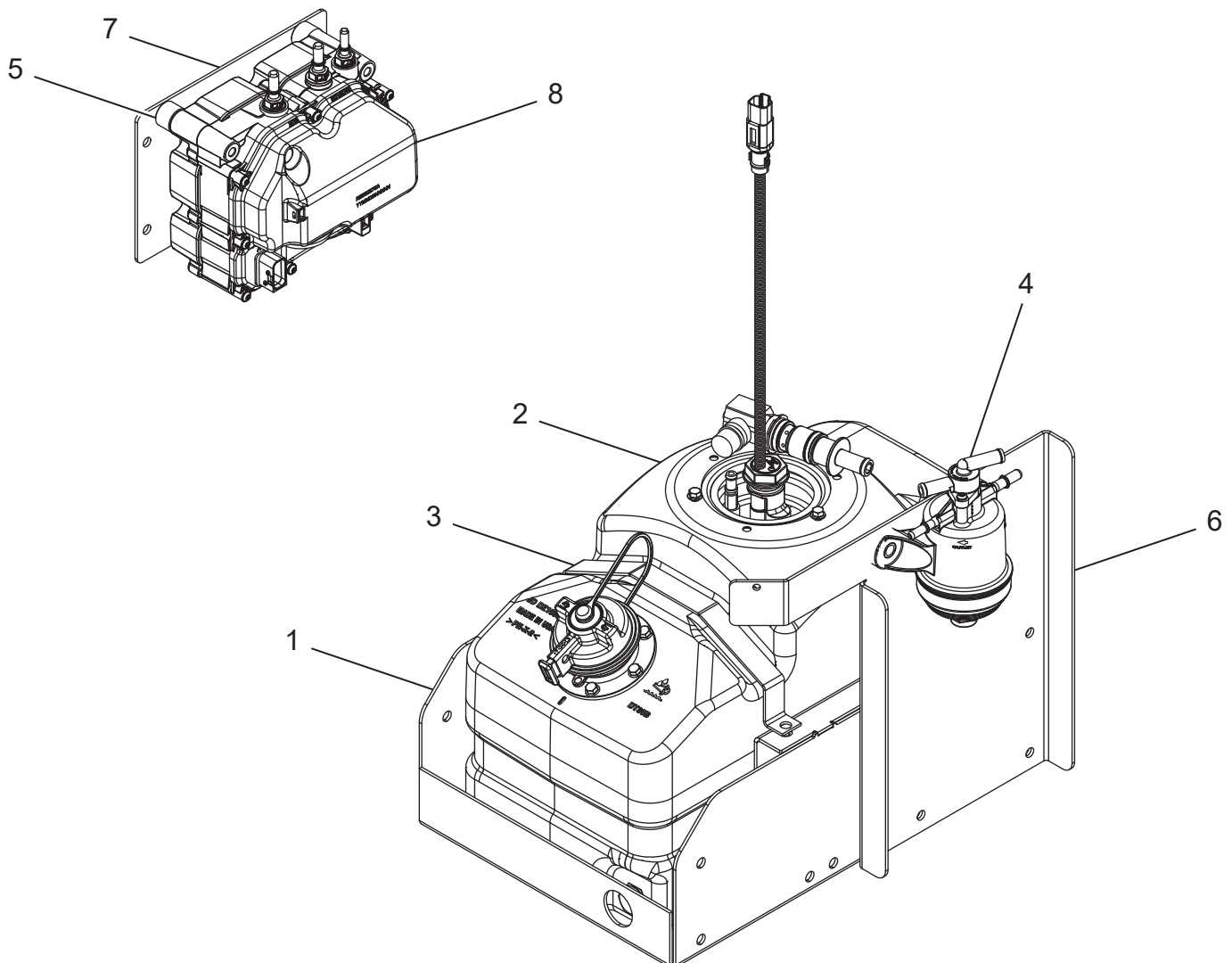
**WHEN ORDERING PARTS, BE SURE TO STATE
SERIAL NUMBER OF MACHINE**

DEF SYSTEM

Ref. No.	Part Number	Description	No. Req'd
1	A4889-001	DEF Tank Bracket	1
2	A5950-001	DEF Tank Header Assembly	1
3	A5972-001	DEF Tank Strap	1
4	A5962-001	DEF Filter Assembly	1
5	A5973-001	Isolator	3
6	A5949-001	Inline DEF Filter Mount Bracket	1
7	A5051-001	DEF Control Bracket	1
8	A5956-001	DEF Dosing Unit	1

NOT SHOWN

	A1999-001	DEF Filter	1
	A5960-001	DEF Inline Filter	1

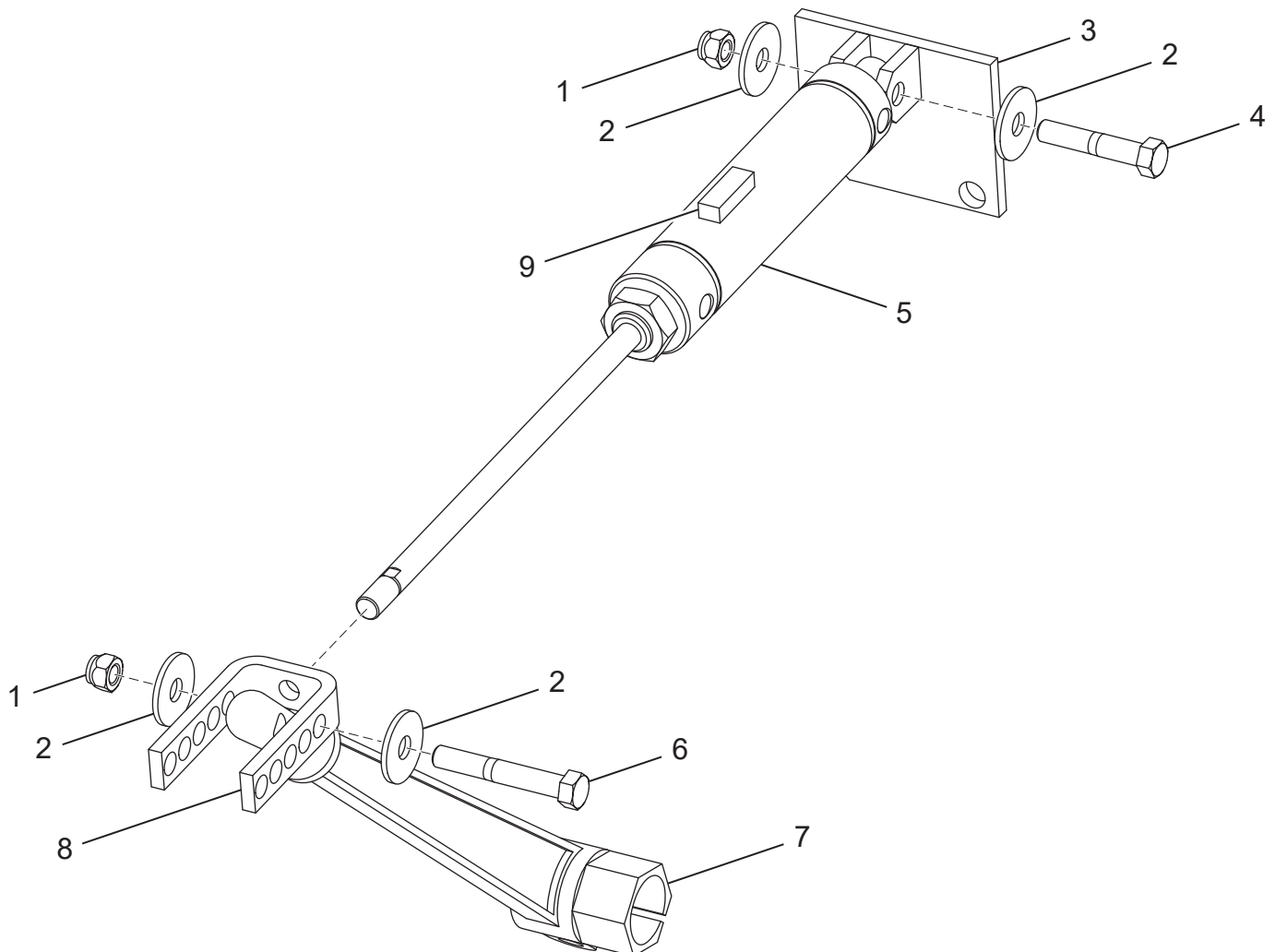


AIR CLUTCH CYLINDER AND HANDLE

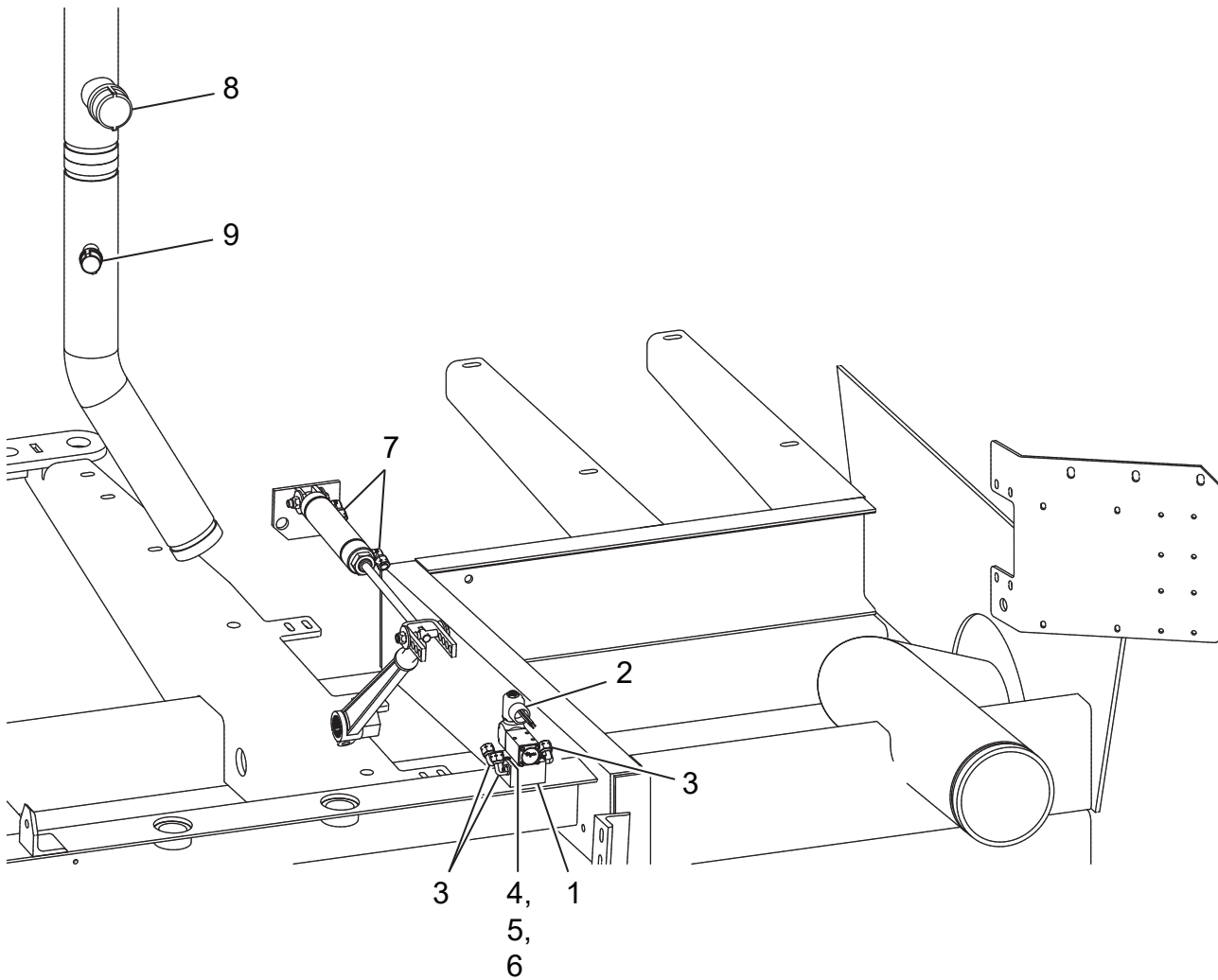
Ref. No.	Part Number	Description	No. Req'd
1	●	3/8-16 Metal Prevailing Torque Type Hex Nut	2
2	●	3/8 in. Type B Plain Washer, Wide	4
3	011549-02	Cylinder Pivot Bracket Weldment	1
4	●	3/8-16 UNC x 2 Hex Bolt - Regular Thread	1
5	013233	Air Cylinder, 1.5 Bore x 4 Stroke, with Magnet	1
6	●	3/8-16 UNC x 2.5 Hex Bolt - Regular Thread	1
7	012802	Modified Clutch Handle	1
8	F400-0046	Clevis, Air Cylinder	1
9	013237	Clutch Position Sensor	1

KITS AND MARKERS

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



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



AIR CLUTCH SYSTEM

Ref. No.	Part Number	Description	No. Req'd
1	012342	Valve Sub Plate	1
2	012341	Clutch Solenoid	1
3	012803	Brass Elbow	3
4	●	No. 10-32 x 1-3/4 Cross Recessed Binding Head Machine Screw	3
5	●	No. 10 Type A Plain Washer	3
6	●	1/4-20 Prevailing Torque Type Hex Nut	3
7	012648	Brass Elbow	2
8	160263	Pipe Cap, 1-1/2	1
9	160259	Pipe Cap, 1/2	1

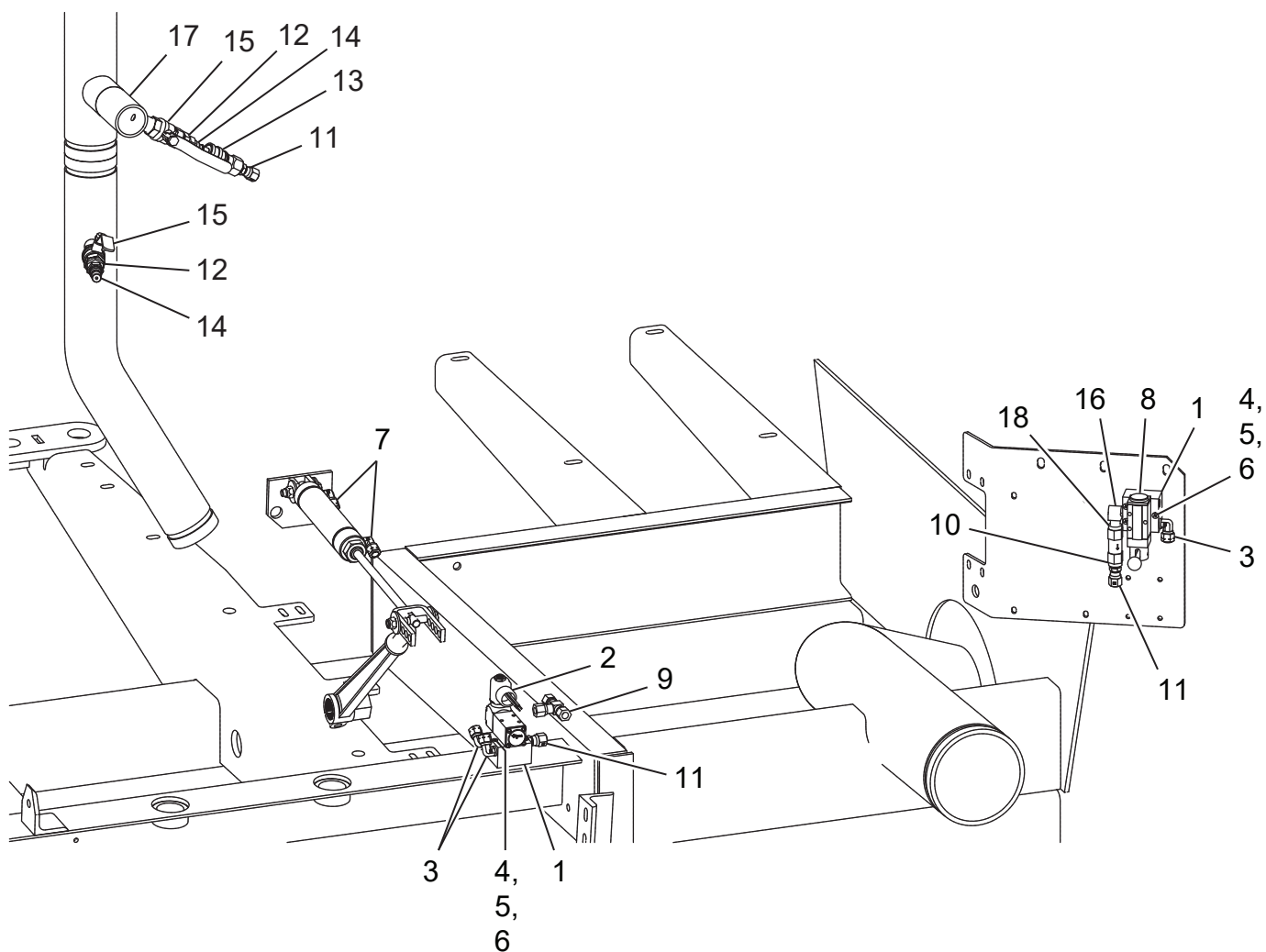
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	190096	3/8 in. Air Tubing	1
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KITS AND MARKERS

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

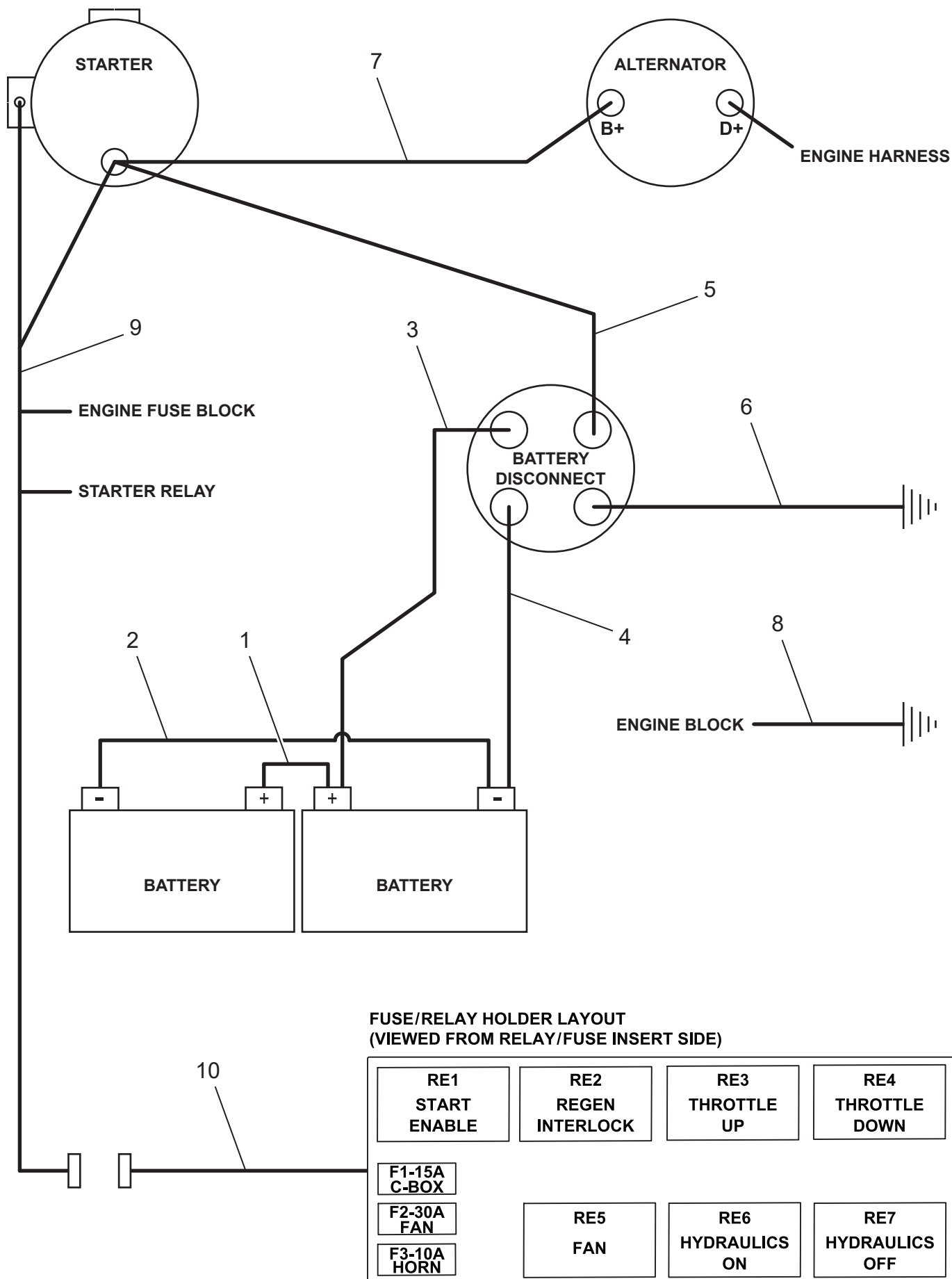
**WHEN ORDERING PARTS, BE SURE TO STATE
SERIAL NUMBER OF MACHINE**



AIR CLUTCH SYSTEM WITH OPTIONAL AIR FLUSH

Ref. No.	Part Number	Description	No. Req'd
1	012342	Valve Sub Plate	2
2	012341	Clutch Solenoid	1
3	012803	Brass Elbow	3
4	●	No. 10-32 x 1-3/4 Cross Recessed Binding Head Machine Screw	6
5	●	No. 10 Type A Plain Washer	6
6	●	1/4-20 Prevailing Torque Type Hex Nut	6
7	012648	Brass Elbow	2
8	012800	Air Valve	1
9	041271	3/8 in. Compression Tee-Brass	1
10	075302	Check Valve, 1/4 NPT, 5 psi	1
11	041061	Male Connector, 3/8 in. Tube x 1/4 NPT	3
12	004741	1/2 in. NPT x 1/4 in. Male NPT Straight	2
13	022484	1/4 in. Quick Coupler-Female	1
14	022302	1/4 in. Quick Coupler-Male	2
15	070122	1/2 NPT Ball Valve	2
16	007470	Hydraulic Fitting 1/4 in. x 90° Street Elbow	1
17	012747-02	Air Flush H.R. Tap	1
18	160297	1/4 in. Standard Close Nipple	1
NOT SHOWN			
	190096	3/8 in. Air Tubing	1
KITS AND MARKERS			
	●	Standard Hardware Item - Available at your local hardware store.	

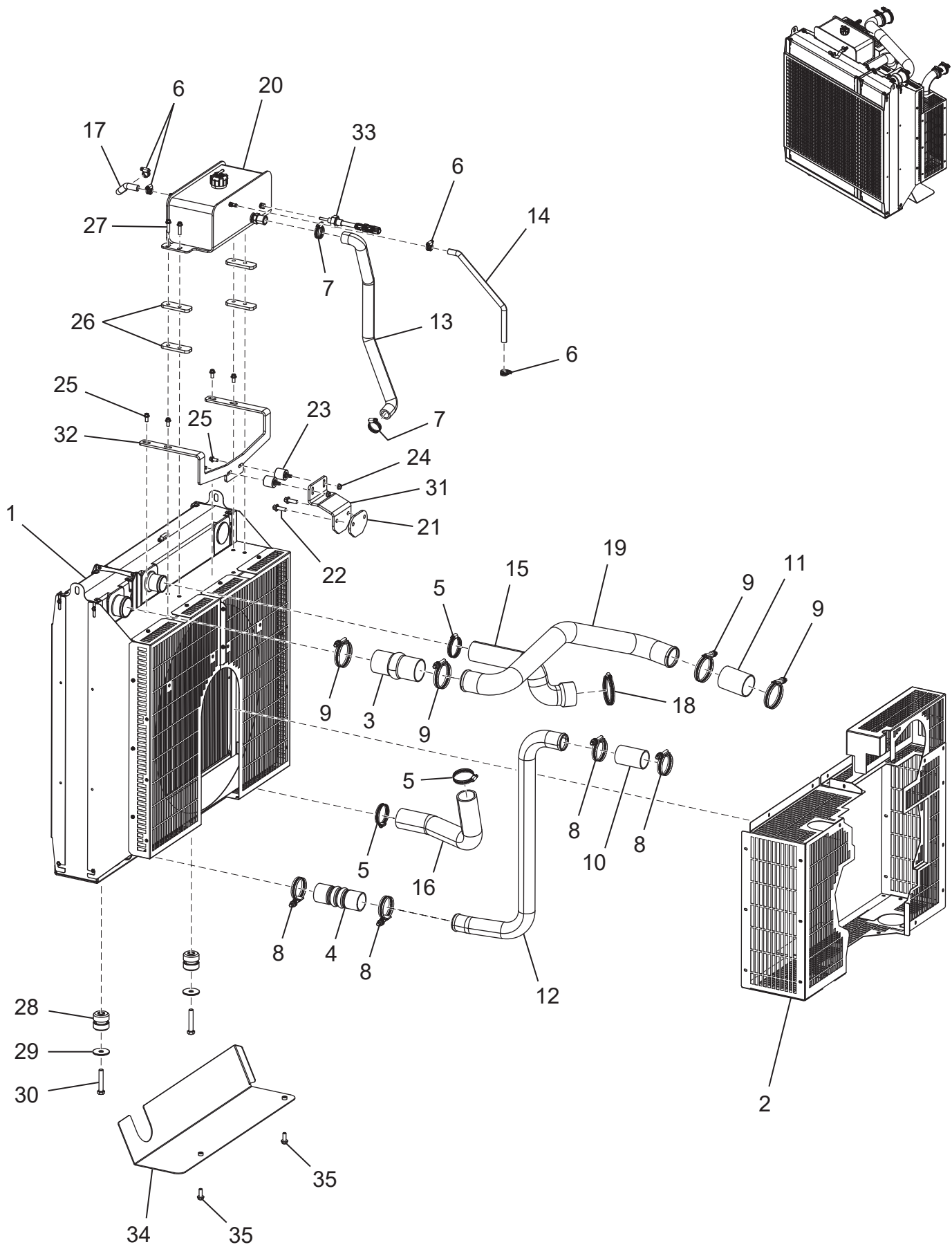
**WHEN ORDERING PARTS, BE SURE TO STATE
SERIAL NUMBER OF MACHINE**



UNIT CABLE/WIRING HARNESS OVERVIEW

Ref. No.	Part Number	Description	No. Req'd
1	A5347-001	Battery Cable, Positive Jumper	1
2	A5348-001	Battery Cable, Negative Jumper	1
3	A5349-001	Battery Cable, Battery Positive	1
4	A5350-001	Battery Cable, Battery Negative	1
5	A5351-001	Battery Cable, Starter	1
6	A5352-001	Battery Cable, Frame Ground	1
7	A4578-001	Battery Cable, Alternator	1
8	A5353-001	Battery Cable, Engine Block	1
9	A5343-001	Wiring Harness, Engine	1
10	A5346-001	Wiring Harness, Fuse/Relay Holder	1
NOT SHOWN			
	A5356-001	Wiring Harness, Platform Control Box	1
	A5357-001	Wiring Harness, Ground Level Control Box	1
	A4471-001	Electrical Harness, Coolant Level Switch	1

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



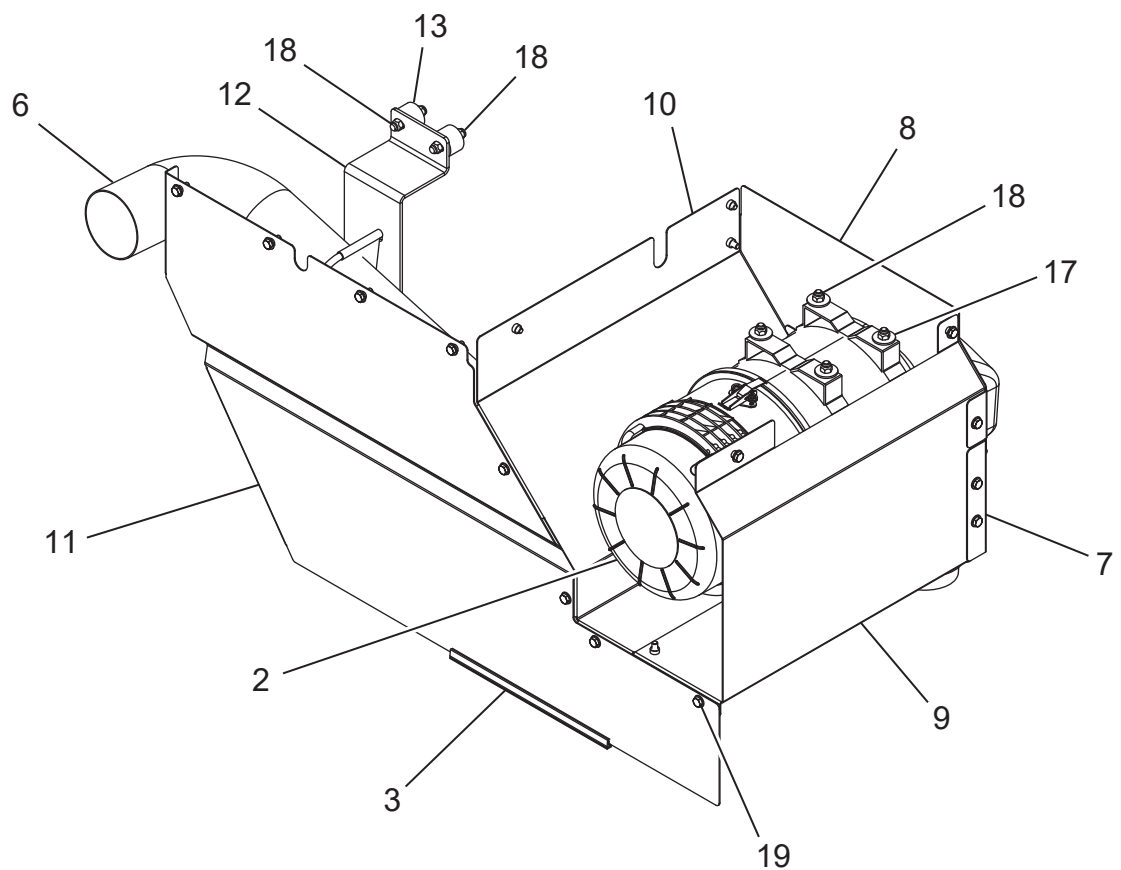
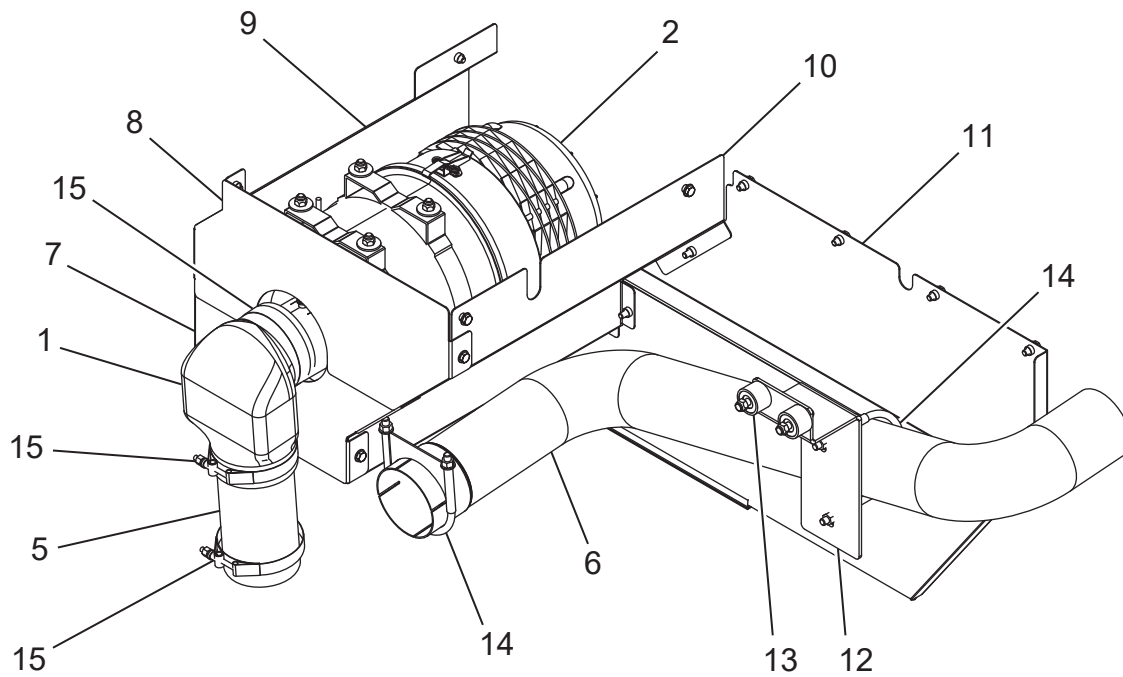
COOLING SYSTEM

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1		A5266-001	Cooling Package, CAC and Radiator	1
2		A5268-001	Belt Guard Assembly	1
3	▲	A3359-001	Pipe Coupling, Hump, CAC, Cold Side 2.5 in.	1
4	▲	A3360-001	Pipe Coupling, CAC, Hot Side 2.0 in.	1
5	▲	A2182-006	Hose Clamp, Worm Gear, SAE	3
6	▲	A2182-001	Hose Clamp, Worm Gear, SAE	4
7	▲	A2182-004	Hose Clamp, Worm Gear, SAE	2
8	▲	A2605-003	Hose Clamp, CT, SAE	4
9	▲	A2605-004	Hose Clamp, CT, SAE	4
10	▲	A2603-001	Pipe Coupling, CAC, Hot Side	1
11	▲	A2604-001	Pipe Coupling, CAC, Cold Side	1
12	▲	A2597-001	CAC Pipe, Hot Side	1
13	▲	A2600-001	Hose, Degas Return	1
14	▲	A2601-001	Hose, Degas Vent to Thermostat Housing	1
15	▲	A2598-001	Radiator Hose, Upper	1
16	▲	A2599-001	Radiator Hose, Lower	1
17	▲	A3358-001	Hose, Degas Vent to Radiator	1
18	▲	A2182-008	Hose Clamp, Worm Gear, SAE	1
19	▲	A5267-001	Piping, CAC, 63.5 OD	1
20		A3362-001	Radiator Coolant Tank Assembly	1
21	■	A2589-001	Spacer	1
22	■	●	M10 x 1.5 x 30 Indented Hex Flange Head Machine Screw	2
23	■	031538	Radiator Coolant Tank Mount Isolator	2
24	■	●	M8 x 1.25 Hex Flange Nut	2
25	■	●	M8 x 1.25 x 16 Indented Hex Flange Head Machine Screw	6
26	■	A2590-001	Coolant Tank Spacer	4
27	■	●	M8 x 1.25 x 30 Indented Hex Flange Head Machine Screw	4
28	■	A3348-001	Radiator Mount Isolator	2
29	■	031537	Plain Washer, 0.500 x 2.00 x 0.125	2
30	■	●	1/2-13 UNC - 2.75 Hex Cap Screw	2
31	■	A2587-001	Tank Mount Bracket	1
32	■	A2586-001	Radiator Coolant Tank Mount	1
33		A4470-001	Radiator Coolant Level Sensor	1
34		A3286-001	Air Dam Assembly, Cooling Package	1
35		●	3/8-16 UNC x 1 Hex Head Screw	2

KITS AND MARKERS

- ▲ A5269-001 Hose and Pipe Kit
- A2622-001 Cooling Package Bracket Kit
- Standard Hardware Item - Available at your local hardware store.

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



AIR INTAKE AND EXHAUST ASSEMBLY

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	075247	4 in. 90° Cobra Elbow	1
2	▲	A3005-001	Air Cleaner Assembly	1
3	▲	A4658-001	Trim Seal, .039-.078 Edge X .256 Bulb	1
4	▲	A4740-001	Sheet, Bent, Ladder	1
5	▲	A4850-001	Tube, 4 in. x 14 Gauge x 8 in., Air Intake	1
6	▲	A5004-001	Exhaust Pipe, T330	1
7	▲	A5258-001	Sheet, Bent, Shroud, Rear, Bottom	1
8	▲	A5259-001	Sheet, Bent, Shroud, Rear, Top	1
9	▲	A5302-001	Shroud Assembly, Ladder Side	1
10	▲	A5303-001	Shroud Assembly, Tank Side	1
11	▲	A5305-001	Shroud Assembly, Front	1
12	▲	A5315-001	Sheet, Bent, Exhaust Suppt Bracket	1
13	▲	023438	Rubber Mount	2
14	▲	055336	4 in. Muffler Clamp	2
15	▲	055335	Clamp, T-Bolt Band, 4.5 in. Nom. Dia.	3
16	▲	●	3/8-16 UNC x 1 Hexagon Head Screw	4
17	▲	●	3/8 in. Type B Plain Washer, Wide	4
18	▲	●	3/8-16 Metal Type Prevailing Torque Type Hex Nut	8
19	▲	●	5/16-18 UNC x 0.75 Hexagon Head Screw	21
NOT SHOWN				
		A3002-001	Filter Element, Primary Air, 4 in.	1
		A3284-001	Filter Element, Safety Air, 4 in.	1
KITS AND MARKERS				
	▲	A5432-001	T330 Air Intake and Exhaust Assembly	
	●	Standard Hardware Item - Available at your local hardware store.		

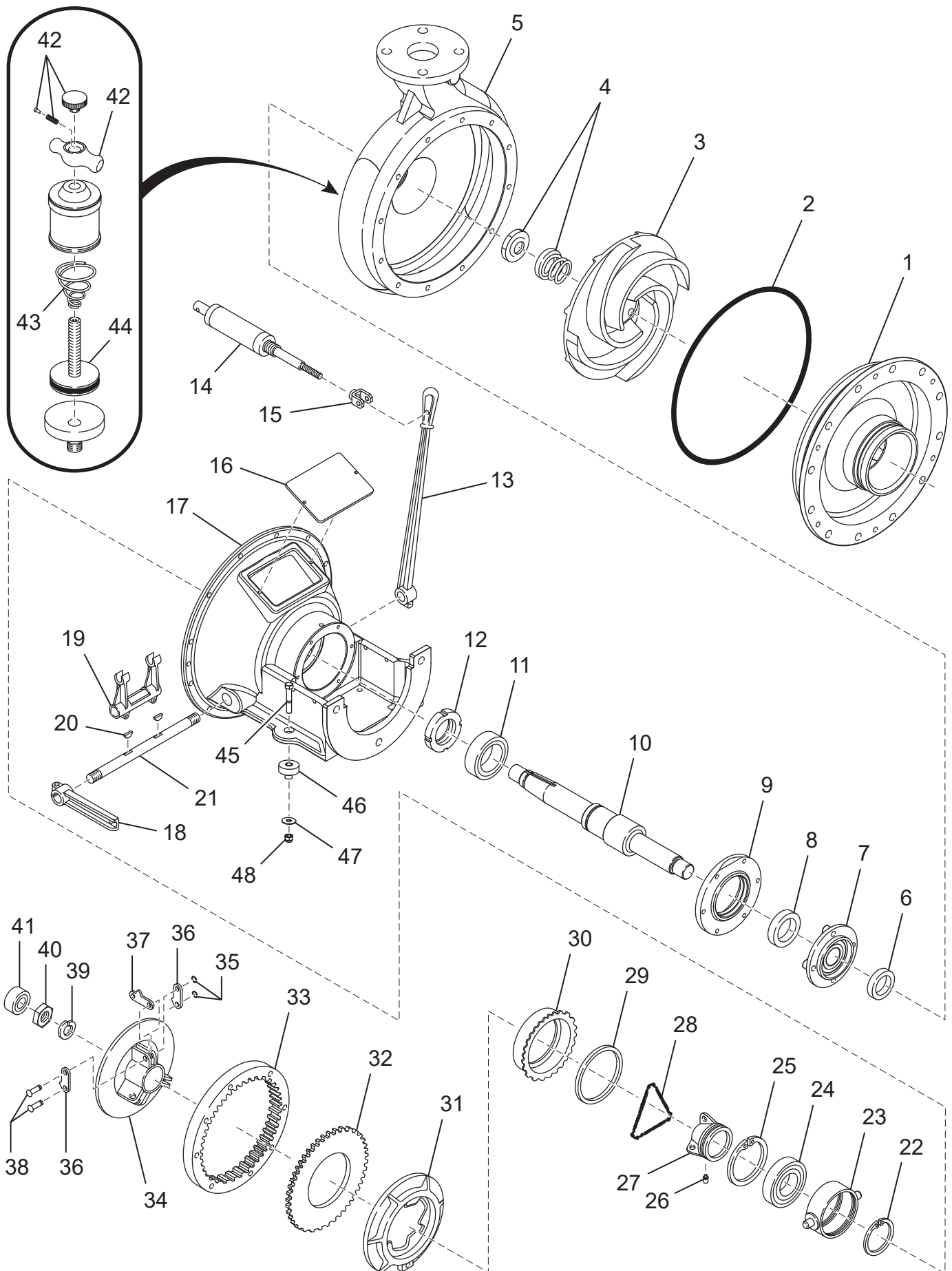
**WHEN ORDERING PARTS, BE SURE TO STATE
SERIAL NUMBER OF MACHINE**



CLUMP, PIPING AND DISCHARGE ASSEMBLY

Ref. No.	Part Number	Description	No. Req'd
1	011736	5 in. Victaulic Pipe Clamp	4
2	011919	Seal for 5 in. Victaulic Pipe Clamp	1 per
3	008259	5 in. Dia x 90° Pipe Elbow	1
4	0X1232	3/4-10 Hex Bolt	16
5	012722	Suction Valve Flange Weldment	1
6	012058	5 in. Flanged Suction Gate Valve	1
7	012491	Suction Valve Bleeder Valve Assembly	1
8	012491-02	Suction Elbow Weldment	1 per
9	012457	1/2 in. Dia. Stainless Steel Ball Valve	1 per
10	160301	1/2 in. Dia. x 4 in. Long SCH 40 Nipple	1 per
11	160006	1/2 in. Dia. x 90° Elbow	1 per
12	011787	Pump Discharge Gasket	1
13	A4872-001	Pump Flange Weldment	1
14	002771	2-1/2 in. Victaulic Pipe Clamp	3
15	002820	Seal For 2-1/2 in. Victaulic Pipe Clamp	1 per
16	A5314-001	Lower Discharge Pipe	1
17	012724	Discharge Valve Stand Pipe	1
18	160263	1-1/2 in. Dia. Pipe Cap	1
19	011727-09	Recirculation Nozzle	1
20	006721	1-1/4 in. Victaulic Pipe Clamp	3
21	006722	Seal For 1-1/4 in. Victaulic Pipe Clamp	1 per
22	011727-10	Recirculation Nozzle	1
23	011776	1-1/4 in. Round Port 2-Way Valve	1
24	012786	Recirculation Lever	1 per
25	004962	Lube Screw	1 per
26	011950	Gasket For 1-1/4 in. Valve	1 per
27	011951	Spring For 1-1/4 in. Valve	1 per
28	011727-11	Recirculation Nozzle	1
29	012462-05 Cap	Recirculation Pipe Guardian Coupling (Inner Half)	1
30	A6294-001	Recirculation Pipe Weldment	1
31	011777	2-1/2 in. Round Port 2-Way Valve	1
32	011953	Spring	1
33	008487	Gasket	1
34	004962	Lube Screw	1
35	012758	Valve Foot Pedal	1
36	011882	2-1/2 in. SCH 40 x 3 in. Toe-Goe Pipe	1
37	F330-0090	Recirculation Valve Stabilizer	1
38	A5082-001	Suction Valve Flange Weldment	1

**WHEN ORDERING PARTS, BE SURE TO STATE
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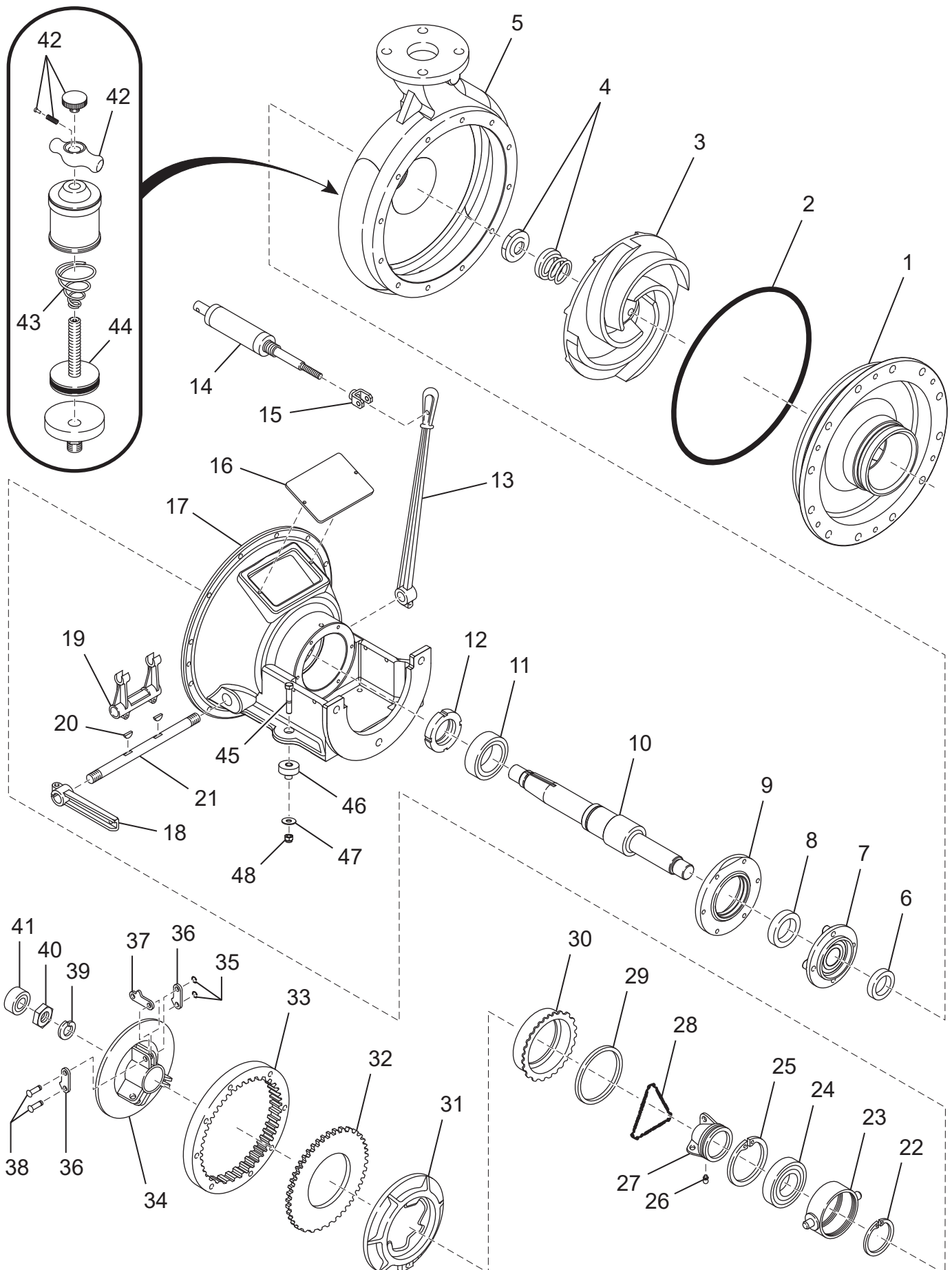


CLUMP ASSEMBLY

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▽	011759	Suction Cover	1
2	▽	011920	O-ring	1
3	▽	011758	Impeller	1
4	▽	006443	Mechanical Shaft Seal	1
5	▽	012730	Clump Casing	1
6	▽	006444	Grease Retainer	1
7	▽	005446	Flange Pilot Bearing	1
8	▽	012733	Seal	1
9	▽	012734	Bearing Retainer Ring	1
10	▽	012729	Clump Shaft	1
11	▽	012731	Bearing	1
12	▽	012732	SN-11 Nut	1
13	▽	100228	Clutch Lever	1
14	▽	012765	1-1/2 in. Bore x 4 in. Stroke Cylinder	1
15	▽	F400-0046	Air Clutch Cylinder Clevis	1
16	▽	005570	Clump Nameplate	1
17	▽	012695	Clump Housing	1
18	▽	005574-02	Modified Clutch Lever	1
19	▽	012783-017	Clutch Yoke	1
20	▽	012783-015	Woodruff Key	2
21	▽	012783-014	Yoke Shaft	1
22	▲▽	012783-06	External Snap Ring	1
23	▲▽	012783-126	Bearing Carrier	1
24	▲▽	012783-127	Release Bearing	1
25	▲▽	012783-05	Internal Snap Ring	1
26	▲▽	012783-148	Lube Fitting	1
27	▲▽	012783-04	Release	1
28	▲▽	012783-412	Lever Spring	1
29	▲▽	012783-146	Adjusting Ring Plate	1
30	▲▽	012783-113	Adjusting Ring	1
31	▲▽	012783-112	Pressure Plate	1
32	▲▽	012783-110	10 in. Clutch Disc	1
33	▲▽	012783-935	Driving Ring	1
34	▲▽	012783-03	Clutch Body	1
35	□▽	100008	Retaining Ring	6
36	□▽	100019	Connecting Link	6
37	□▽	100018	Release Lever	6
38	□▽	100009	Clevis Pin	6

Continued to next page.

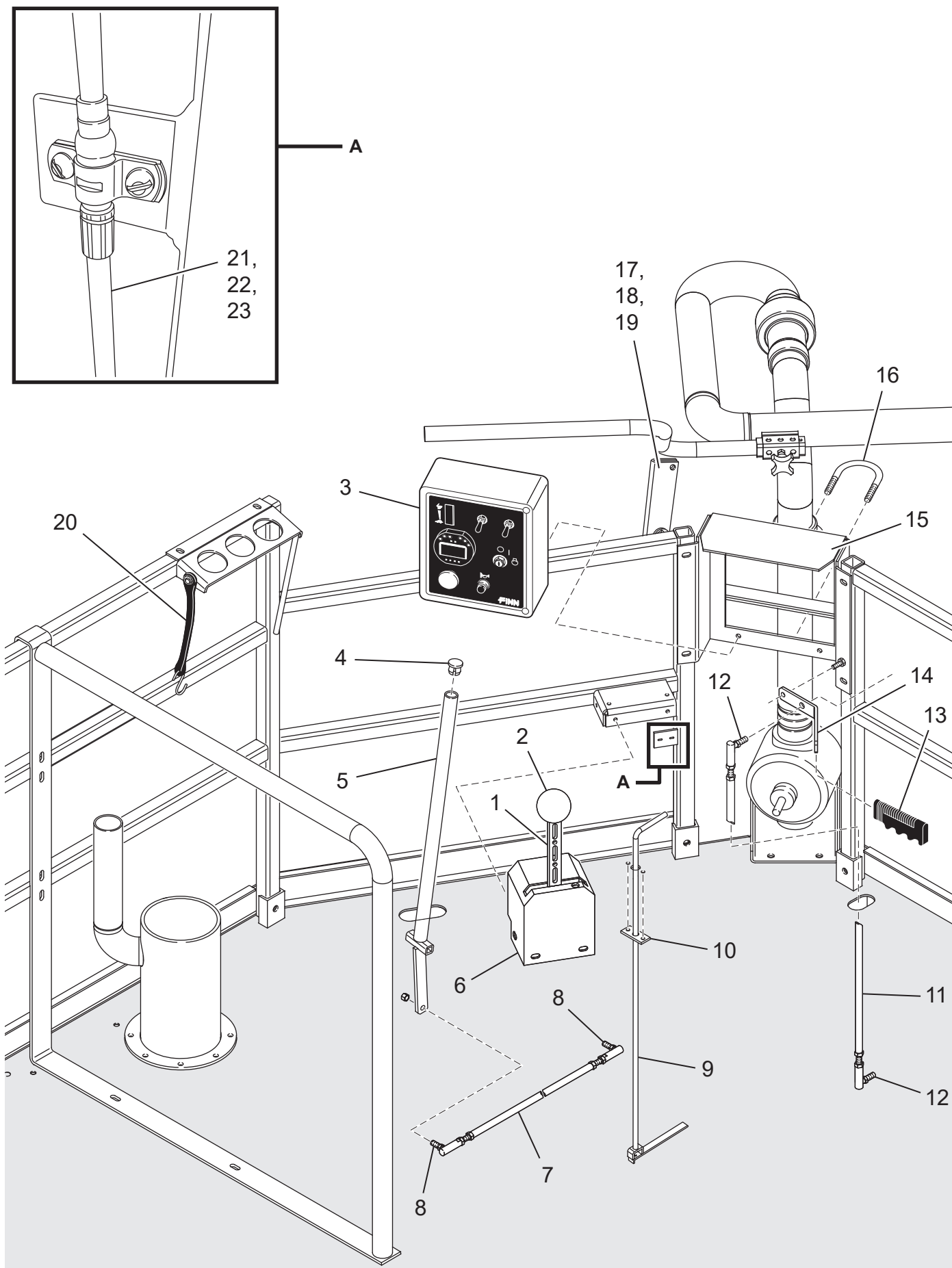
**WHEN ORDERING PARTS, BE SURE TO STATE
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CLUMP ASSEMBLY

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
39	▽	012783-02	Lockwasher	1
40	▽	012783-01	Drive Shaft Nut	1
41	▽	022314	Pilot Bearing	1
42	■	008190	Screw, Nut, Follower and Spring	1
43	■	007954	Spring	1
44	■	008189	Plunger	1
45		●	5/8-11 UNC x 3.5 Hex Bolt - Regular Thread	2
46		007433	Rubber Shock Mount	2
47		005861	Zinc Plated Steel Snubbing Washer	2
48		●	5/8-11 Metal Prevailing Torque Type Hex Nut	2
NOT SHOWN				
	▽	012341	Clutch Solenoid	1
	▽	005470	Pump Shaft Guard	1
KITS AND MARKERS				
	▽	012770	Clump Assembly	
	▲	012783	10 in. Clutch Assembly Kit	
	■	002383	Pressure Lubricator Assembly	
	□	012783-SPK	Driving Ring Lever Kit	
	●	Standard Hardware Item - Available at your local hardware store.		

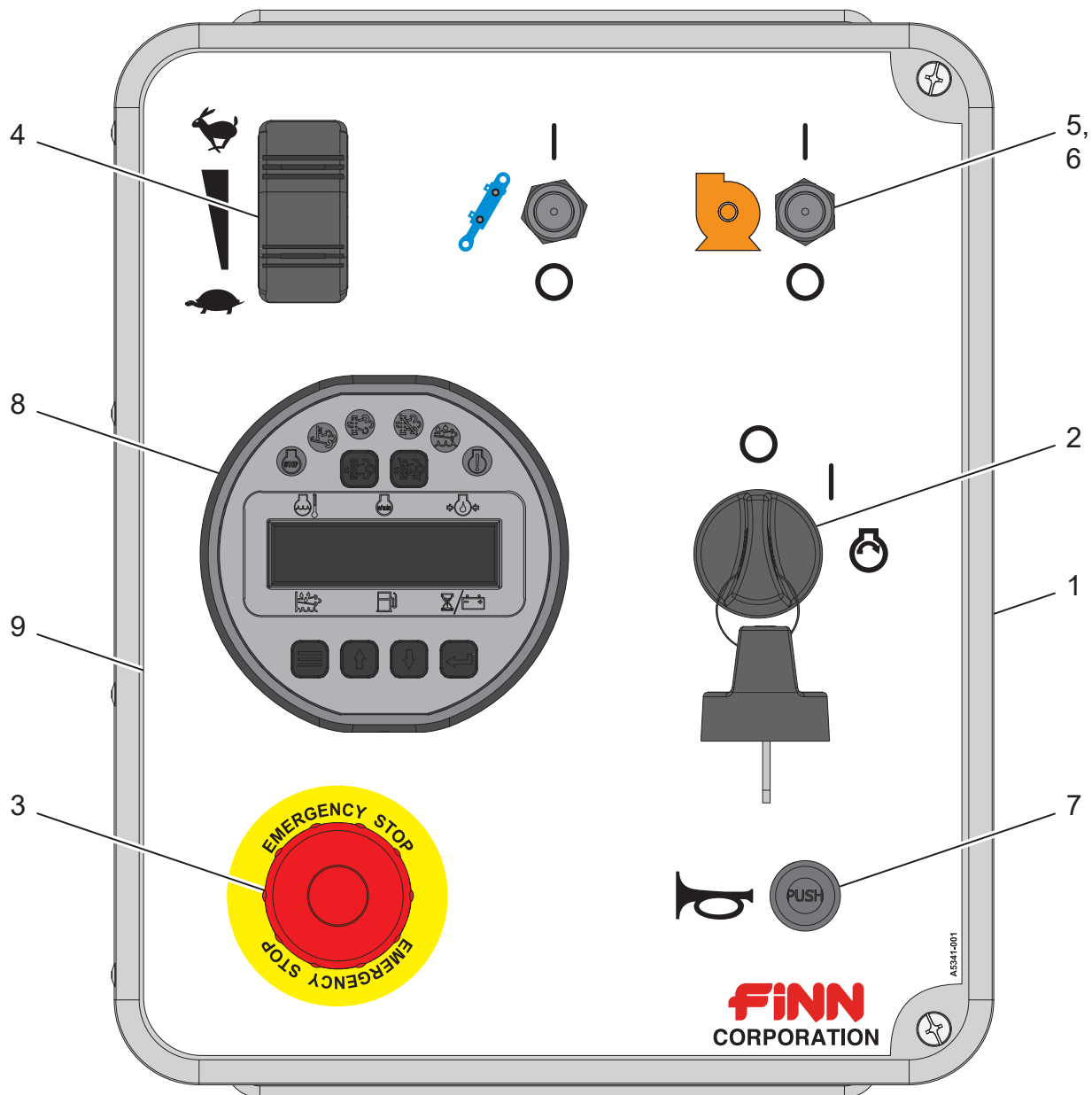
**WHEN ORDERING PARTS, BE SURE TO STATE
SERIAL NUMBER OF MACHINE**



BOOM LEVEL CONTROLS

Ref. No.	Part Number	Description	No. Req'd
1	011785	Agitator Control Assembly	1
2	011954	Black Knob, 1-3/16 in. Dia.	1 per
3	013223	Control Box Assembly	1
4	004996	1 in. Pipe Plug	1
5	012777	Recirculation Handle	1
6	F330-0102	Agitator Control Box	1
7	012780-05	Recirculation Valve Rod Assembly	1
8	006737	Ball Joint	2 per
9	012493-02	Bleeder Valve Handle	1
10	012493-09	Handle Bearing Pad	1
11	012780-02	Clutch Rod Assembly	1
12	006737	Ball Joint	2 per
13	000427	Black Handle Grip	1
14	A6114-001	Clutch Handle	1
15	F330-0095	Control Box Mount	1
16	085148	U-Bolt	1
17	031245	Snapper Pin	1
18	005700	Lanyard	1
19	F330-0081	Boom Holddown	1
20	007913	Rubber Strap with S-Hooks	1
21	023693	Agitator Control Cable	1
22	007675	Ball Joint	2
23	004983	Clamp and Shim	1

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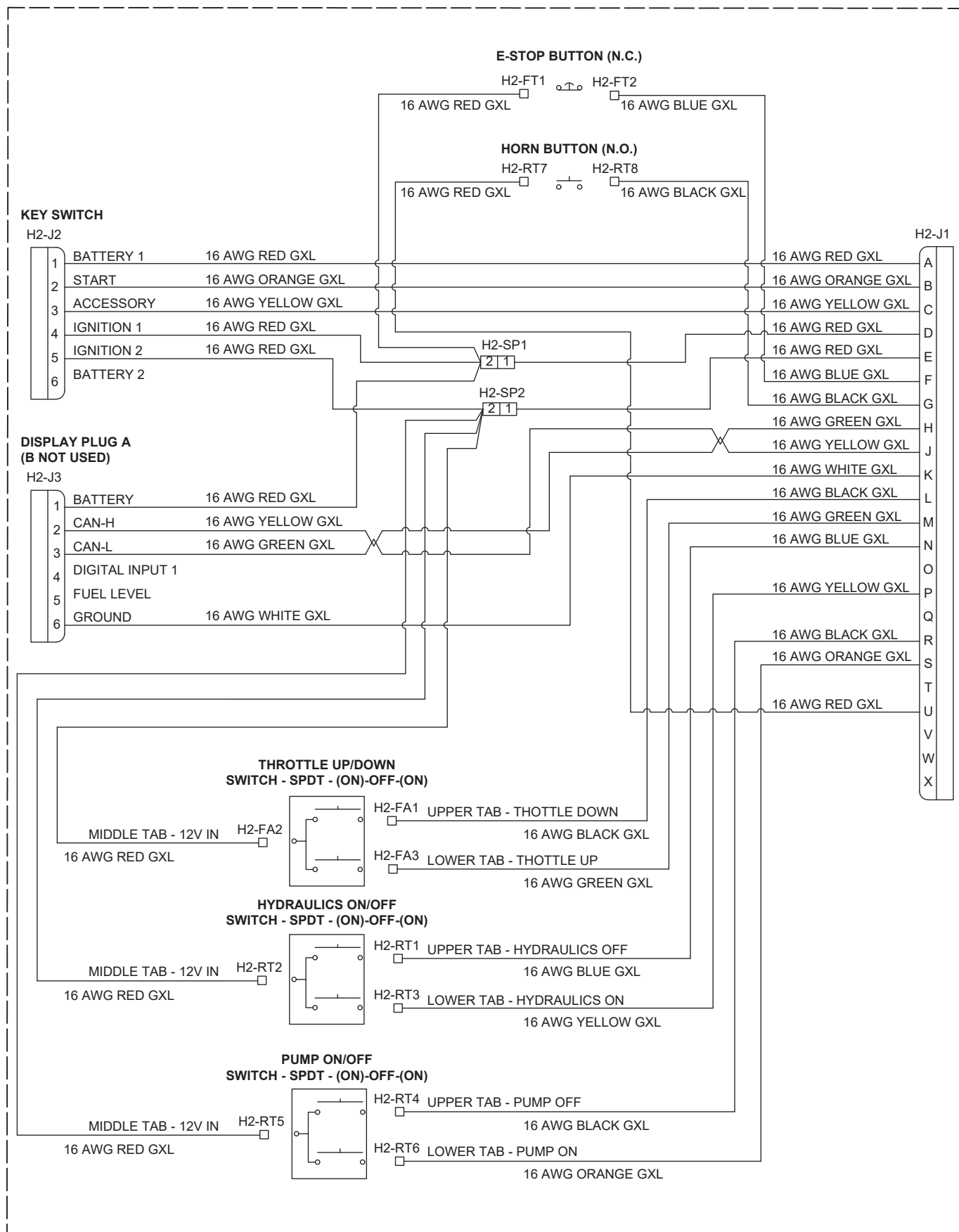


PLATFORM CONTROL BOX

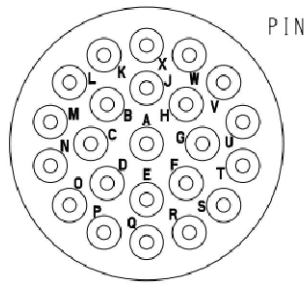
Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	A5326-001	T330 T4F Platform Control Box Enclosure, Modified	1
2	▲	031506	Ignition Switch, 3 Position with Key	1
3	▲	366164	Emergency Stop (E-Stop) Kit, 1 Yellow NC Block	1
4	▲	031507	Rocker Switch	1
5	▲	FW71555	Toggle Switch	2
6	▲	080526	Toggle Switch Boot	2
7	▲	020886	Horn Button	1
8	▲	A5339-001	Display, T330	1
9	▲	A5341-001	Platform Control Panel Decal	1
NOT SHOWN				
	▲	A5356-001	T330 T4F Platform Control Box Wiring Harness	1
KITS AND MARKERS				
	▲	A5329-001	T330 Platform Control Box Assembly	

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

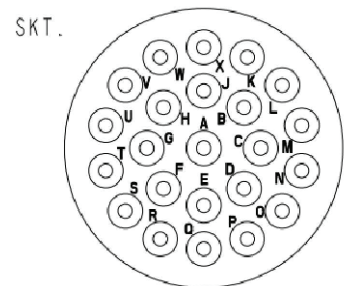
PLATFORM CONTROL BOX WIRING HARNESS A5356-001



H2-J1 VIEW FROM WIRE INSERT SIDE
CLOCKING MARK IS POINTING UP



H1-J1 VIEW FROM WIRE INSERT SIDE
CLOCKING MARK IS POINTING UP

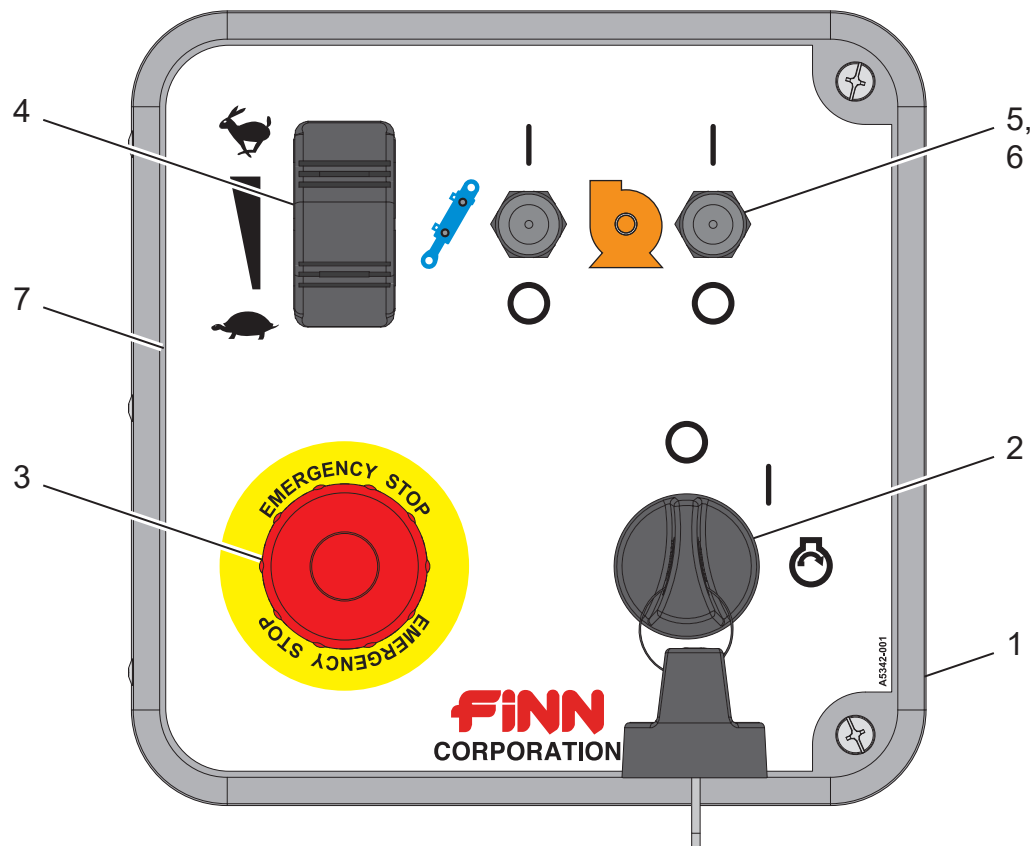


PLATFORM CONTROL BOX (23-PIN)

H1-J1

A	KEY SWITCH BATTERY	16 AWG RED GXL	→
B	KEY SWITCH START	16 AWG ORANGE GXL	→
C	KEY SWITCH ACCESSORY	16 AWG YELLOW GXL	→
D	KEY SWITCH IGNITION 1	16 AWG RED GXL	→
E	KEY SWITCH IGNITION 2	16 AWG RED GXL	→
F	E-STOP OUT	16 AWG BLUE GXL	→
G	HORN BUTTON OUT	16 AWG BLACK GXL	→
H	CAN-L	CABLE 1 - 20 AWG GREEN	→
J	CAN-H	CABLE 1 - 20 AWG YELLOW	→
K	GROUND	16 AWG WHITE GXL	→
L	THOTTLE DOWN SWITCH	16 AWG BLACK GXL	→
M	THROTTLE UP SWITCH	16 AWG GREEN GXL	→
N	HYDRAULICS OFF SWITCH	16 AWG BLUE GXL	→
O			
P	HYDRAULICS ON SWITCH	16 AWG YELLOW GXL	→
Q			
R	PUMP OFF SWITCH	16 AWG BLACK GXL	→
S	PUMP ON SWITCH	16 AWG ORANGE GXL	→
T			
U	HORN BUTTON IN	16 AWG RED GXL	→
V			
W			
X			

**WHEN ORDERING PARTS, BE SURE TO STATE
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GROUND LEVEL CONTROL BOX

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	■	A5330-001	T330 Ground Level Control Box Enclosure, Modified	1
2	■	031506	Ignition Switch, 3 Position with Key	1
3	■	366164	Emergency Stop (E-Stop) Kit, 1 Yellow NC Block	1
4	■	031507	Rocker Switch	1
5	■	FW71555	Toggle Switch	2
6	■	080526	Toggle Switch Boot	2
7	■	A5342-001	Ground Level Control Panel Decal	1

NOT SHOWN

	■	A5357-001	T330 T4F Ground Level Control Box Wiring Harness	1
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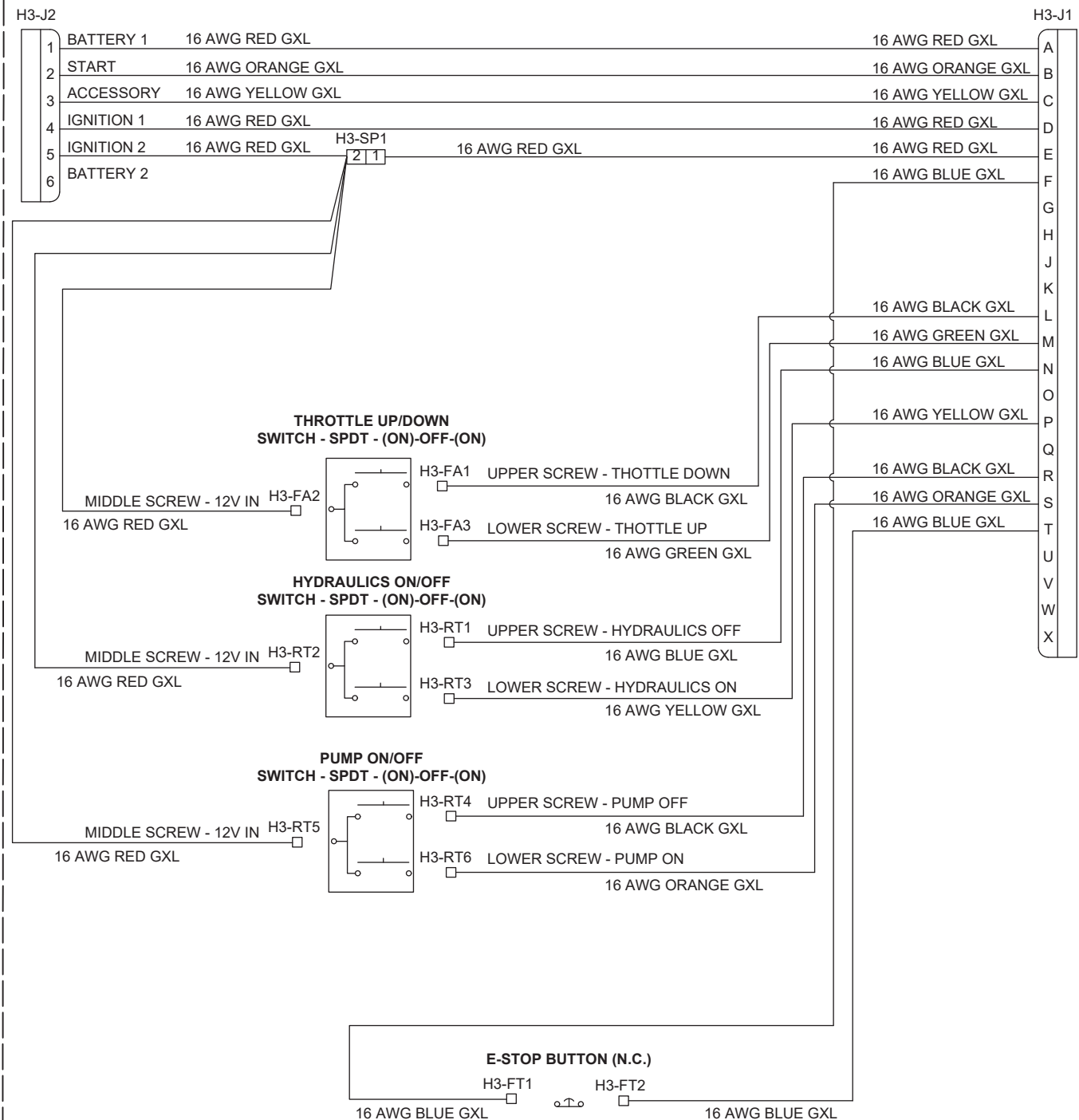
KITS AND MARKERS

	■	A5331-001	T330 Ground Level Control Box Assembly	
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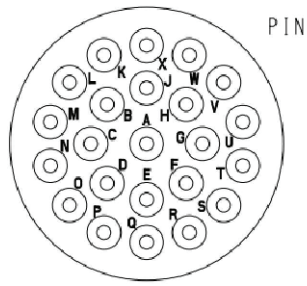
**WHEN ORDERING PARTS, BE SURE TO STATE
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GROUND LEVEL CONTROL BOX WIRING HARNESS A5357-001

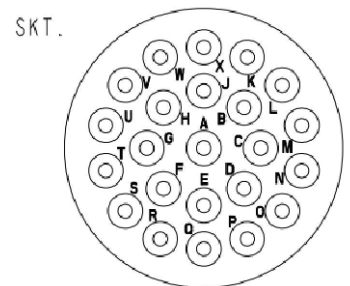
KEY SWITCH



H3-J1 VIEW FROM WIRE INSERT SIDE
CLOCKING MARK IS POINTING UP



H1-J3 VIEW FROM WIRE INSERT SIDE
CLOCKING MARK IS POINTING UP

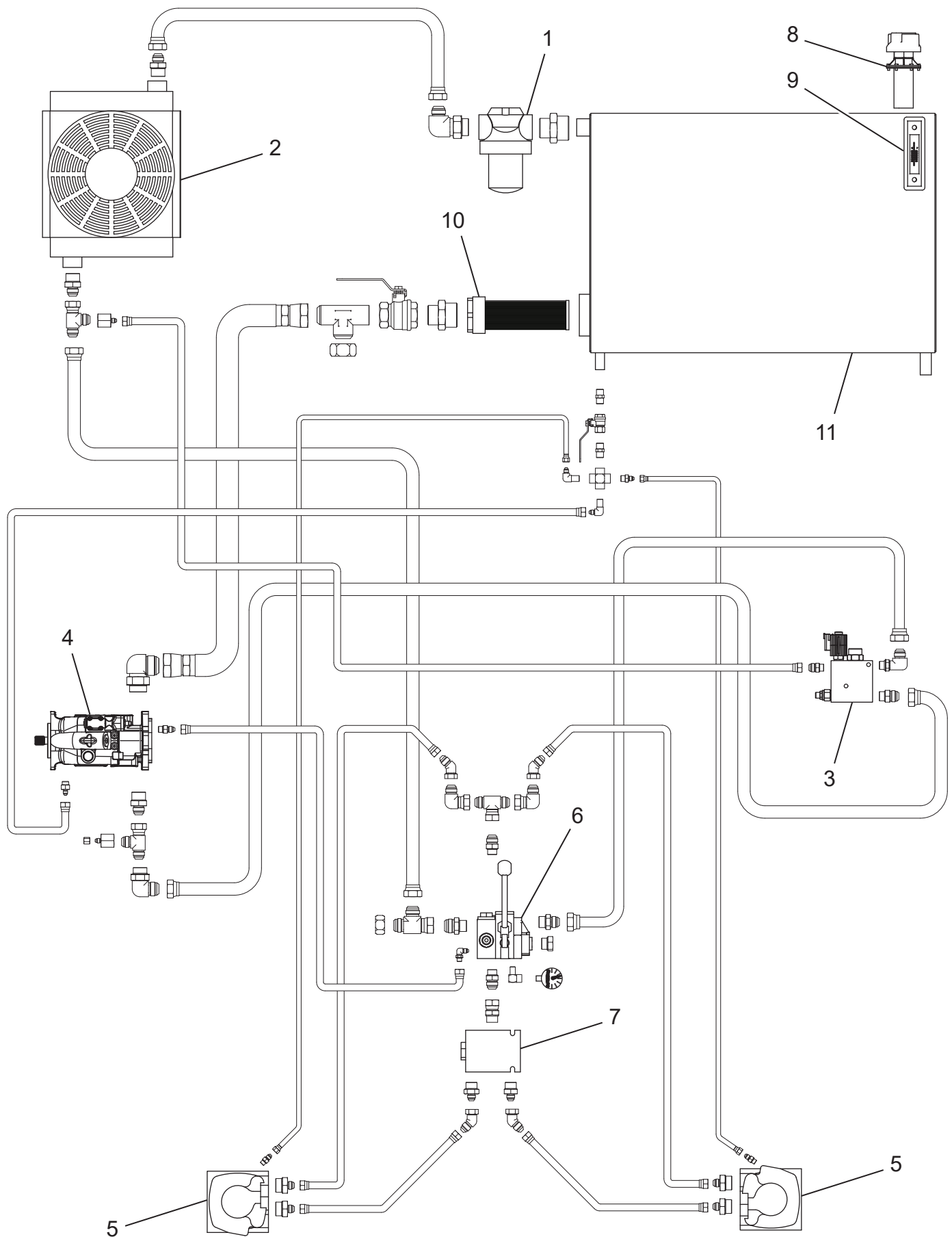


GROUND LEVEL CONTROL BOX (23-PIN)

H1-J3

A	KEY SWITCH BATTERY	16 AWG RED GXL
B	KEY SWITCH START	16 AWG ORANGE GXL
C	KEY SWITCH ACCESSORY	16 AWG YELLOW GXL
D	KEY SWITCH IGNITION 1	16 AWG RED GXL
E	KEY SWITCH IGNITION 2	16 AWG RED GXL
F	E-STOP OUT	16 AWG BLUE GXL
G		
H		
J		
K		
L	THOTTLE DOWN SWITCH	16 AWG BLACK GXL
M	THROTTLE UP SWITCH	16 AWG GREEN GXL
N	HYDRAULICS OFF SWITCH	16 AWG BLUE GXL
O		
P	HYDRAULICS ON SWITCH	16 AWG YELLOW GXL
Q		
R	PUMP OFF SWITCH	16 AWG BLACK GXL
S	PUMP ON SWITCH	16 AWG ORANGE GXL
T	E-STOP IN	16 AWG BLUE GXL
U		
V		
W		
X		

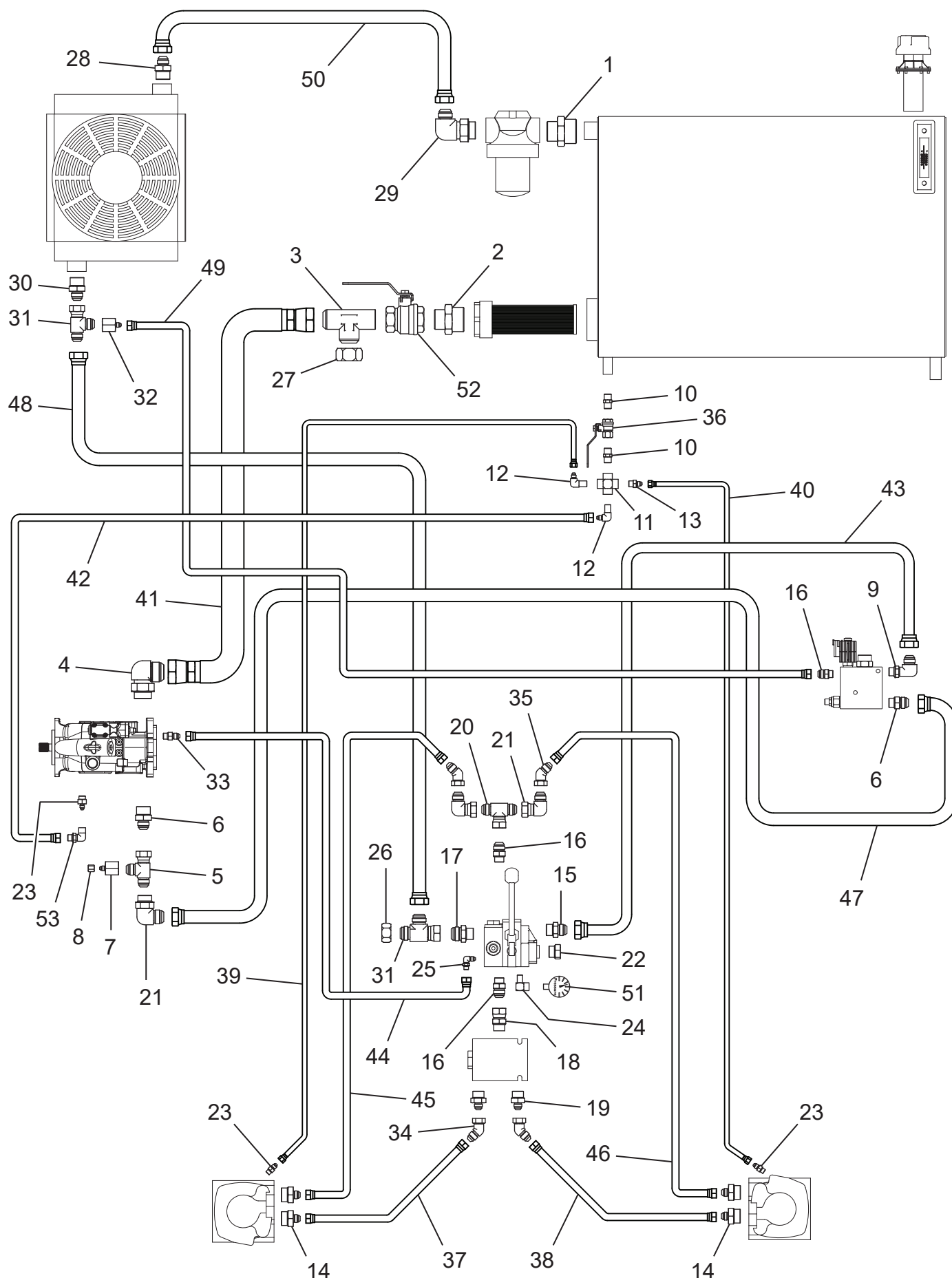
**WHEN ORDERING PARTS, BE SURE TO STATE
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HYDRAULIC SYSTEM COMPONENTS

Ref. No.	Part Number	Description	No. Req'd
1	008702	Low Pressure Filter Assembly	1
2	013119	Oil Cooler	1
3	013238	Valve Assembly	1
4	A6364-001	Hydraulic Pump	1
5	012333	Hydraulic Motor	2
6	012336	Hydraulic Valve	1
7	012334	Flow Divider	1
8	008706	Filter/Breather Assembly	1
9	080329	Sight Gauge with Thermometer	1
10	011927	Suction Strainer	1
11	012352	Hydraulic Reservoir	1

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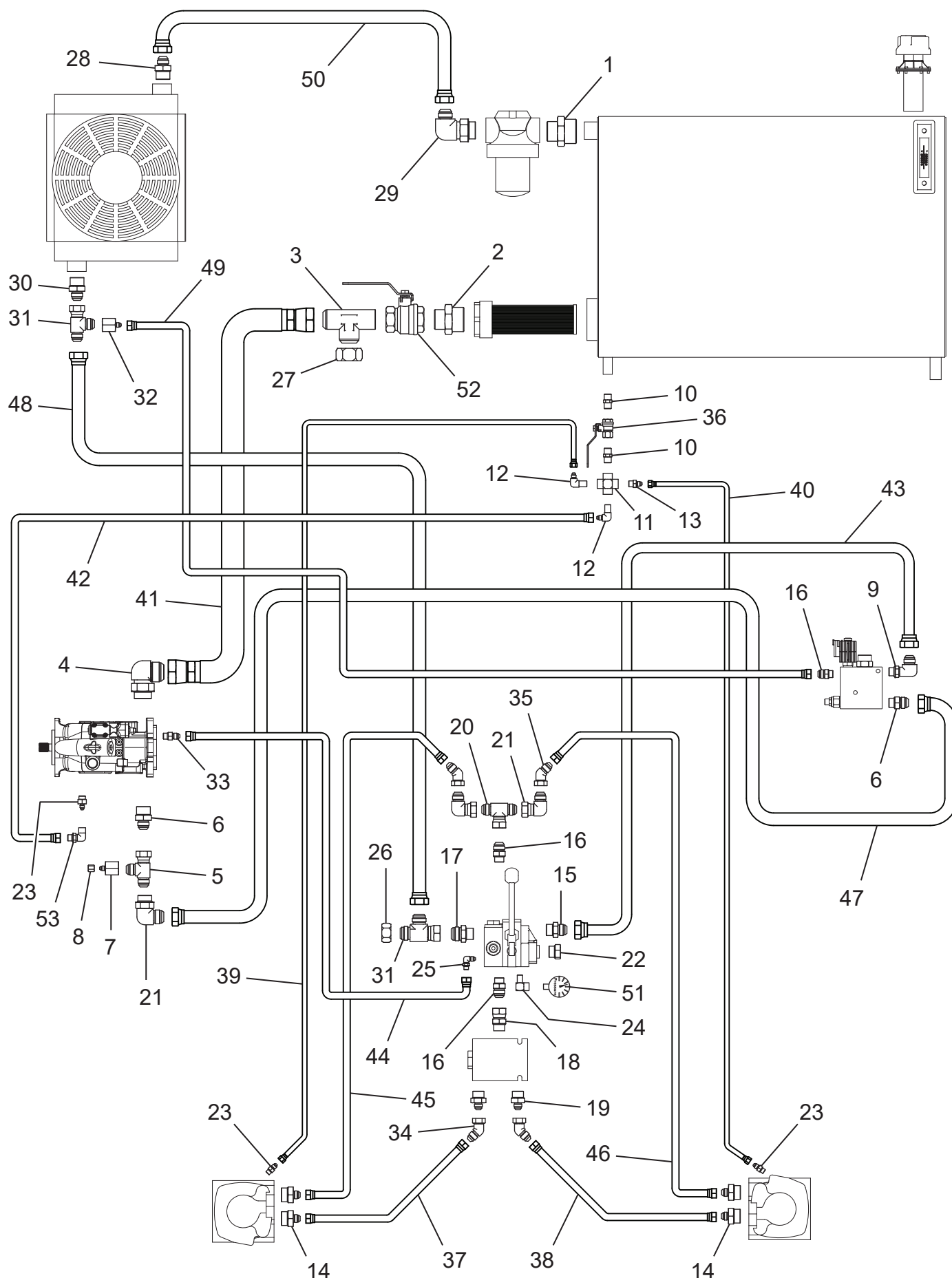


HYDRAULIC SYSTEM HOSES AND FITTINGS

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	6900-20-20	Fitting, #20 MSAE x #20 FPS, ST	1
2	▲	5404-32-24	Fitting, #32 MNPT x #24 MNPT, ST	1
3	▲	2605-24-24-24	Fitting, Tee, #24 MJIC x #24 MNPT x #24 MKIC	1
4	▲	6801-24-24 NWO	Fitting, #24 MJIC x #24 MSAE ADJ, 90 EL	1
5	▲	6602-12-12-12	Fitting, #12 MJIC x #12 FJICS x #12 MJIC, Tee	1
6	▲	6400-12-16-O	Fitting, #12 MJIC x #16 MSAE, ST	2
7	▲	2406-12-04	Fitting, Reducing Adapter, #12 FJIC x #04 MJIC	1
8	▲	0304-C-04	Fitting, Cap, #4 FJIC	1
9	▲	6801-12-16 NWO	Fitting, #12 MJIC x #16 MSAE ADJ, 90 EL	1
10	▲	5404-06-06	Fitting, #06 MNPT x #06 MNPT, ST	2
11	▲	5652-06-06-06-06	Fitting, Cross, #6 FNPT x #6 FNPT x #6 FNPT x #6 FNPT	1
12	▲	2501-04-06	Fitting, #04 MJIC x #06 MNPT, 90 EL	2
13	▲	2404-04-06	Fitting, #04 MJIC x #04 MNPT, ST	1
14	▲	6400-08-16-O	Fitting, #08 MJIC x #16 MSAE, ST	4
15	▲	6400-12-12-O	Fitting, #12 MJIC x #12 MSAE, ST	1
16	▲	6400-12-10-O	Fitting, #12 MJIC x #10 MSAE, ST	3
17	▲	6400-16-12-O	Fitting, #16 MJIC x #12 MSAE, ST	1
18	▲	6402-12-12-O	Fitting, #12 MSAE x #12 FJIC, ST	1
19	▲	6400-8-12-O	Fitting, #08 MJIC x #12 MSAE, ST	2
20	▲	6600-12-12-12	Fitting, Tee, #12 MJIC x #12 MJIC x #12 FJIC SW	1
21	▲	6500-12-12	Fitting, #12 MJIC x # 12 FJIC SW, 90 EL	3
22	▲	6408-12-O	Fitting, PLUG, #12 MSAE	1
23	▲	6400-4-4-O	Fitting, #4 MJIC x #4 MSAE, ST	3
24	▲	5502-04-04	Fitting, #04 MNPT x #04 FNPT, Street, 90 EL	1
25	▲	6801-4-6 NWO	Fitting, #04 MJIC x #06 MSAE ADJ, 90 EL	1
26	▲	0304-C-16	Fitting, CAP, #16 FJIC	1
27	▲	0304-C-24	Fitting, CAP, #24 FJIC	1
28	▲	6400-20-16-O	Fitting, #20 MJIC x #16 MSAE, ST	1
29	▲	6801-20-20 NWO	Fitting, #20 MJIC x #20 MSAE ADJ, 90 EL	1
30	▲	6400-16-16-O	Fitting, #16 MJIC x #16 MSAE, ST	1
31	▲	6602-16-16-16	Fitting, Tee, #16 MJIC x #16 FJIC SW x #16 MJIC	2
32	▲	2406-16-12	Fitting, #16 FJIC x #12 MJIC, ST	1
33	▲	6400-04-04	Adapter, Straight, #4 SAE #6 ORB, Steel	1
34	▲	6502-08-08	Fitting, #08 MJIC x #08 FJIC SW, 45 EL	2
35	▲	6502-12-12	Fitting, #12 MJIC x #12 FJIC SW, 45 EL	2
36	▲	012365	3/8 in. NPT Ball Valve, Full Port, Brass #FBV38	1

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HYDRAULIC SYSTEM HOSES AND FITTINGS

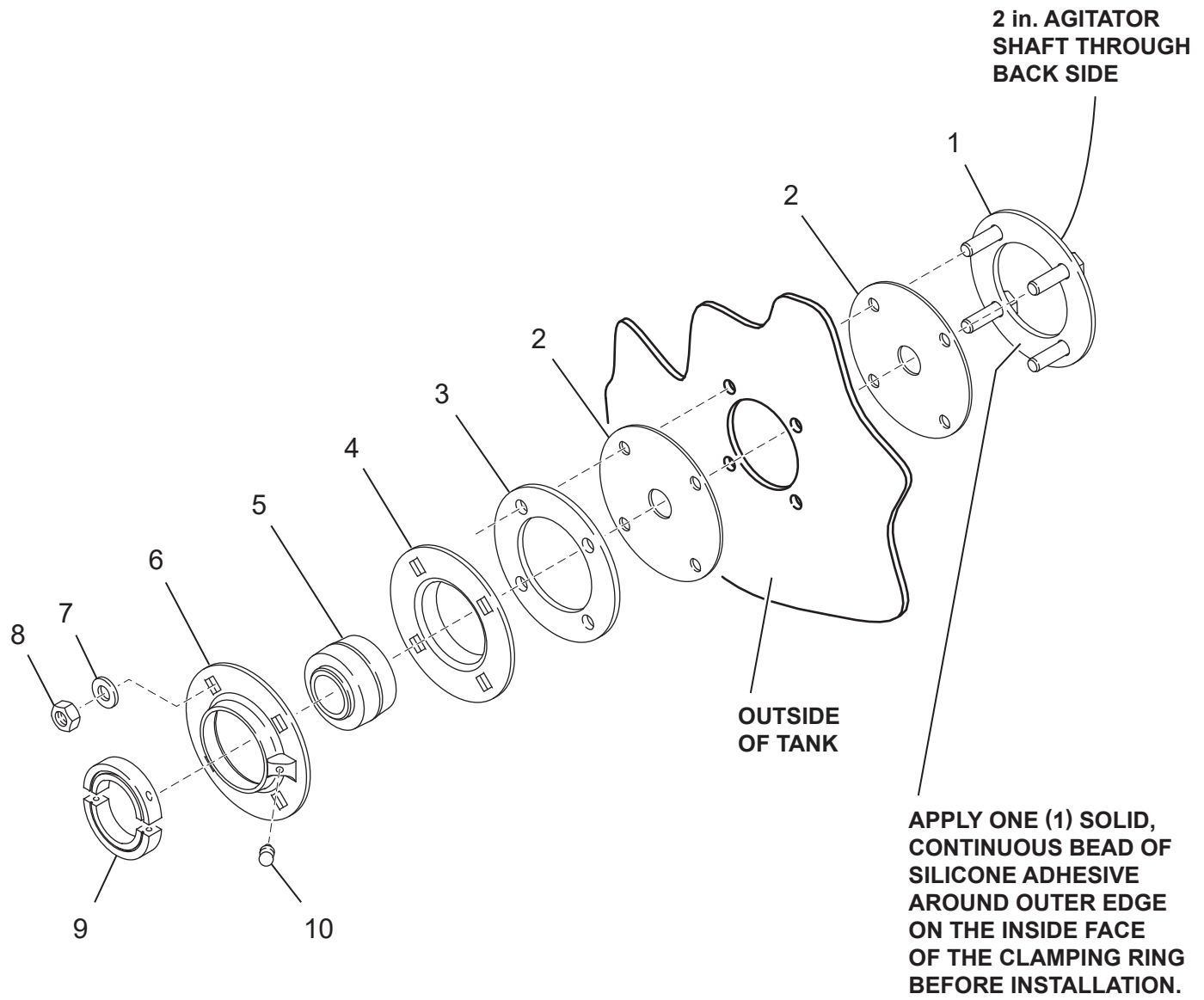
Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
37	▲	A5888-001	1/2 in. 3KT Hose x 25.25 in. OAL with #8 FJIC ST SW x #8 FJIC 90 EL SW	1
38	▲	A5889-001	1/2 in. 3KT Hose x 45.25 in. OAL with #8 FJIC ST SW x #8 FJIC ST SW	1
39	▲	A5891-001	1/4 in. 100R17 Hose x 33.25 in. OAL with #4 FJIC ST SW x #4 FJIC ST SW	1
40	▲	A5892-001	1/4 in. 100R17 Hose x 18.25 in. OAL with #4 FJIC ST SW x #4 FJIC ST SW	1
41	▲	A5894-001	1-1/2 in. 100R4 Hose x 27.5 in. OAL with #24 FJIC 90 EL SW x #24 FJIC ST SW	1
42	▲	A5895-001	1/4 in. 100R17 Hose x 42.5 in. OAL with #4 FJIC ST SW x #4 FJIC ST SW	1
43	▲	A5896-001	3/4 in. 3KT Hose x 64 in. OAL with #12 FJIC ST SW x #12 FJIC 90 EL SW	1
44	▲	A5897-001	1/4 in. 100R17 Hose x 59 in. OAL with #4 FJIC ST SW x #4 FJIC ST SW	1
45	▲	A5898-001	1/2 in. 3KT Hose x 25.25 in. OAL with #8 FJIC 90 EL SW x #12 FJIC ST SW	1
46	▲	A5899-001	1/2 in. 3KT Hose x 50.5 in. OAL with #8 FJIC ST SW x #12 FJIC ST SW	1
47	▲	A5900-001	3/4 in. 3KT Hose x 14.5 in. OAL with #12 FJIC ST SW x #12 FJIC ST SW	1
48	▲	A5902-001	1 in. 100R1S Hose x 90 in. OAL with #16 FJIC ST SW x #16 FJIC 90 EL SW	1
49	▲	A5903-001	1/2 in. 3KT Hose x 44 in. OAL with #12 FJIC ST SW x #12 FJIC 90 EL SW	1
50	▲	A5904-001	1 in. 100R1S Hose x 50 in. OAL with #20 FJIC ST SW x #20 FJIC 90 EL SW	1
51	▲	012044	Pressure Gauge #CF-5000-25	1
52	▲	007710	1-1/2 in. Ball Valve in Full Port	1
53	▲	FW71909	JIC 90° Elbow Adapter	1

KITS AND MARKERS

▲	A5907-001	T330 Hydraulic Hose and Fitting Kit
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**WHEN ORDERING PARTS, BE SURE TO STATE
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**NOTE: TO TIGHTEN, TURN THE NUT – NOT THE BOLT.
TORQUE TO 25 lb-ft (34 N•m) – DO NOT OVER-TORQUE.**



AGITATOR BEARING AND SEAL ASSEMBLY

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	012527	Agitator Inner Clamping Ring with Studs	1 per
	▽	A5452-001	Agitator Clamping Ring with Studs, Stainless Steel	1 per
2	▲▽	012528	Agitator Shaft Seal	2 per
3	▲	012525	Agitator Outer Clamping Ring	1 per
	▽	A5451-001	Agitator Outer Clamping Ring, Stainless Steel	1 per
4	▲▽	012451-01	Flangette with Lube Coupling	1 per
5	▲	012450	Ball Bearing, 2 in. Dia.	1 per
	▽	A5453-001	Ball Bearing, 2 in. Dia., Stainless Steel	1 per
6	▲▽	012452-01	2 in. Flangette with Lube Coupling	1 per
7	▲	012605	Sealing Washer	4 per
	▽	●	1/2 in. x 1 Sealing Washer, Stainless Steel	4 per
8	▲	000Y08	Hex Nut	4 per
	▽	●	1/2-13 UNC Hex Nut, Stainless Steel	4 per
9	▲▽	012625	2 in. Split Lock Collar	4
10	▲▽	008154	Grease Fitting Adapter	4

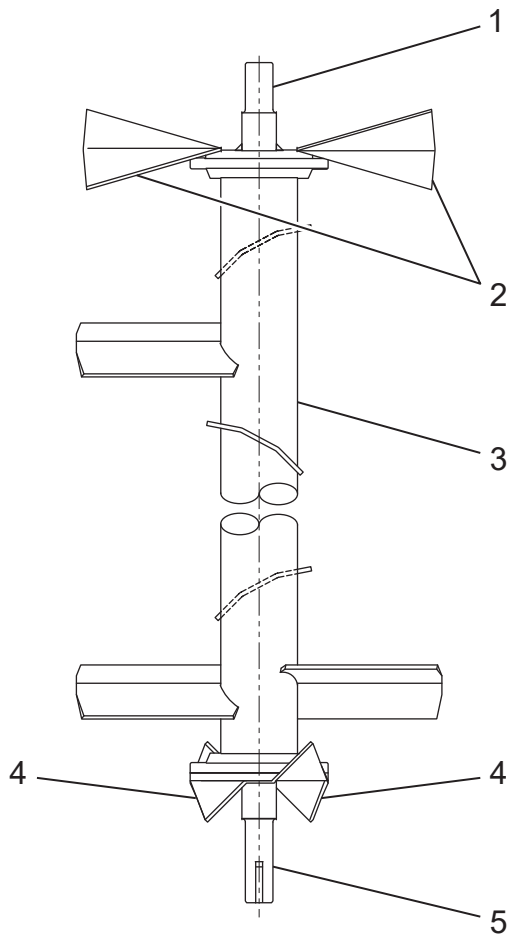
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022407	Grease Line Elbow	4
012520	Bulk Head Fitting	4
012521	Grease Line Hose	4

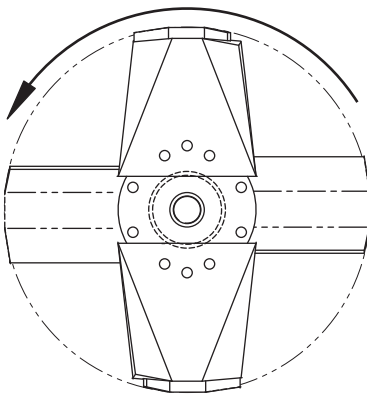
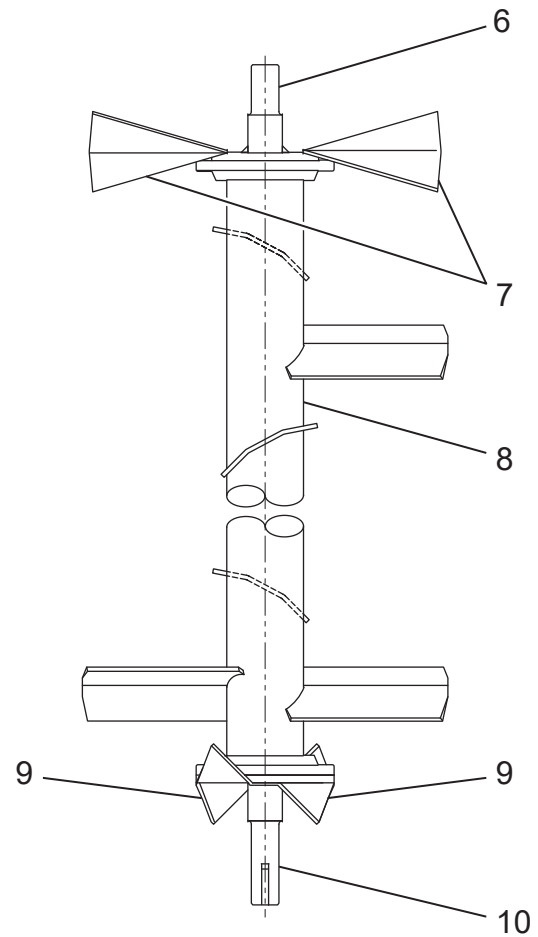
KITS AND MARKERS

▲	012529	Bearing and Seal Assembly
▽	A5450-001	Bearing and Seal Assembly, Stainless Steel
●	Standard Hardware Item - Available at your local hardware store.	

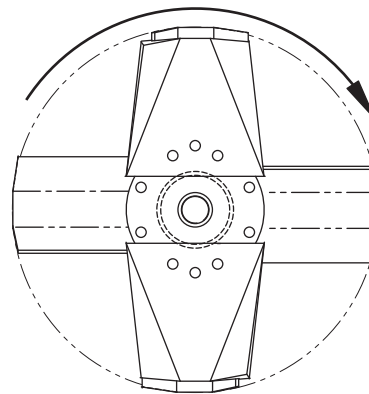
**WHEN ORDERING PARTS, BE SURE TO STATE
SERIAL NUMBER OF MACHINE**



DRIVE END



LEFT-HAND AGITATOR



RIGHT-HAND AGITATOR

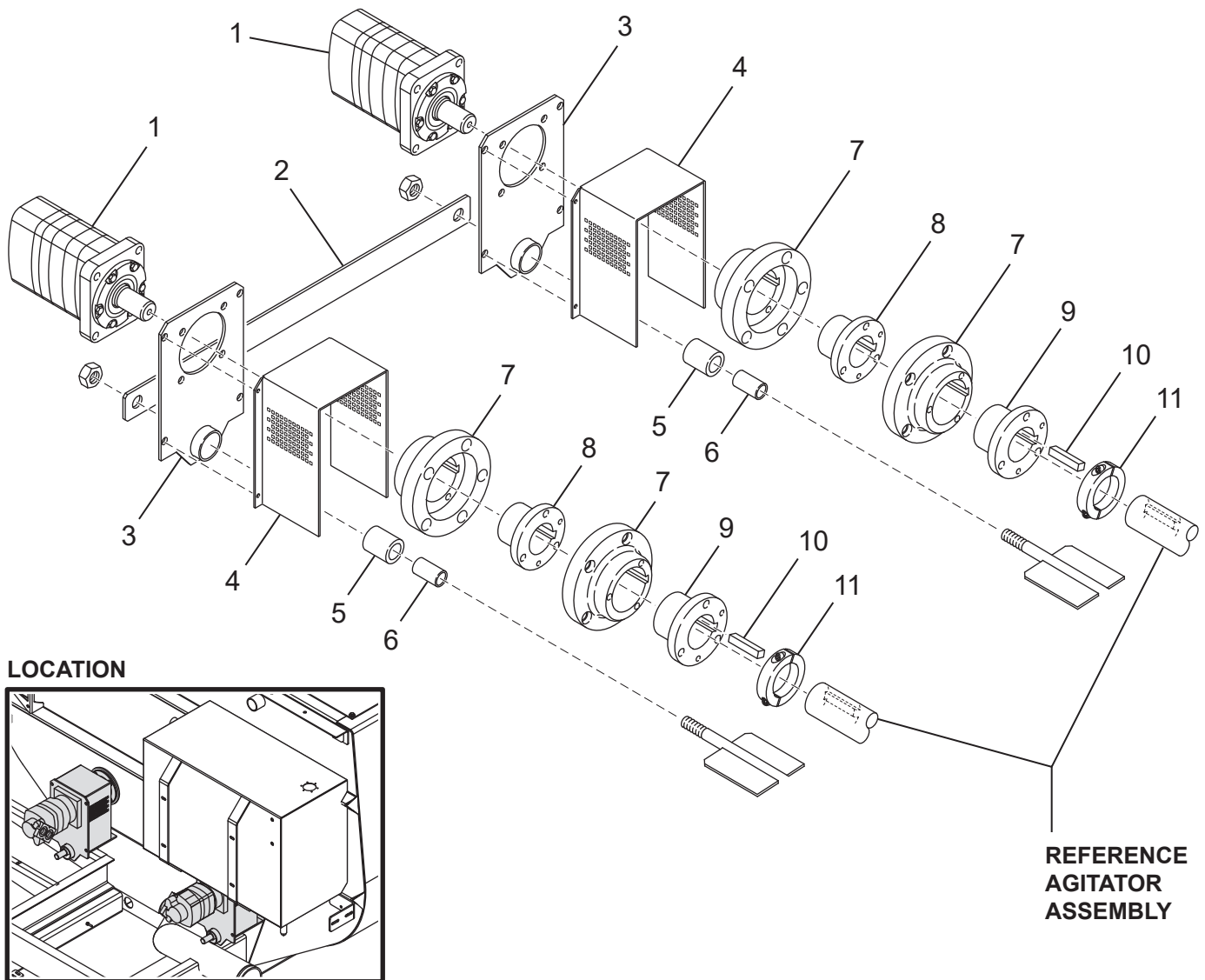
AGITATOR ASSEMBLY

Ref. No.	Part Number	Description	No. Req'd
1	A1701-001	Idler Stub Weldment	1 per
2	F330-0010-01	Bolt-On Paddle	2 per
3	A1588-002	Left-Hand Agitator Section	1 per
4	F330-0010-02	Bolt-On Paddle	2 per
5	A1700-001	Drive Stub Weldment	1 per
6	A1701-001	Idler Stub Weldment	1 per
7	F330-0010-01	Bolt-On Paddle	2 per
8	A1588-001	Right-Hand Agitator Section	1 per
9	F330-0010-02	Bolt-On Paddle with Identification Hole	2 per
10	A1700-001	Drive Stub Weldment	1 per

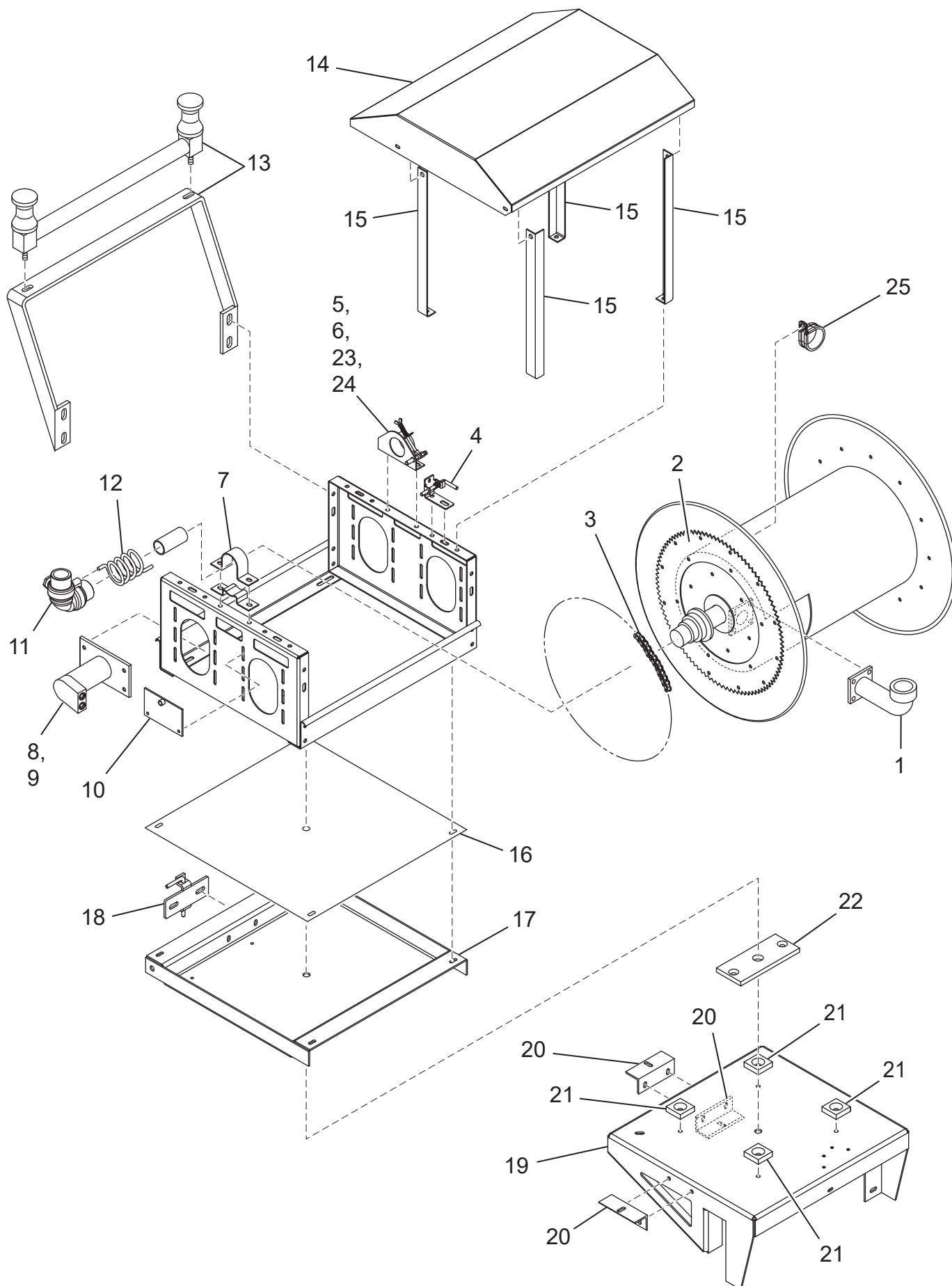
**WHEN ORDERING PARTS, BE SURE TO STATE
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HYDRAULIC AGITATOR DRIVE

Ref. No.	Part Number	Description	No. Req'd
1	012333	Hydraulic Motor	2
2	012522-01	Torsion Bar	1
3	012354	Hydraulic Motor Mount	2
4	F330-0029	Agitator Coupling Guard	2
5	012522-02	Rubber Bushing	2
6	012522-04	Torque Arm Insert	2
7	011780	Rigid Coupling	2
8	003055B	Motor Bushing	2
9	055103	Agitator Bushing	2
10	190127-40	Key	2
11	012625	Split Lock Collar	4



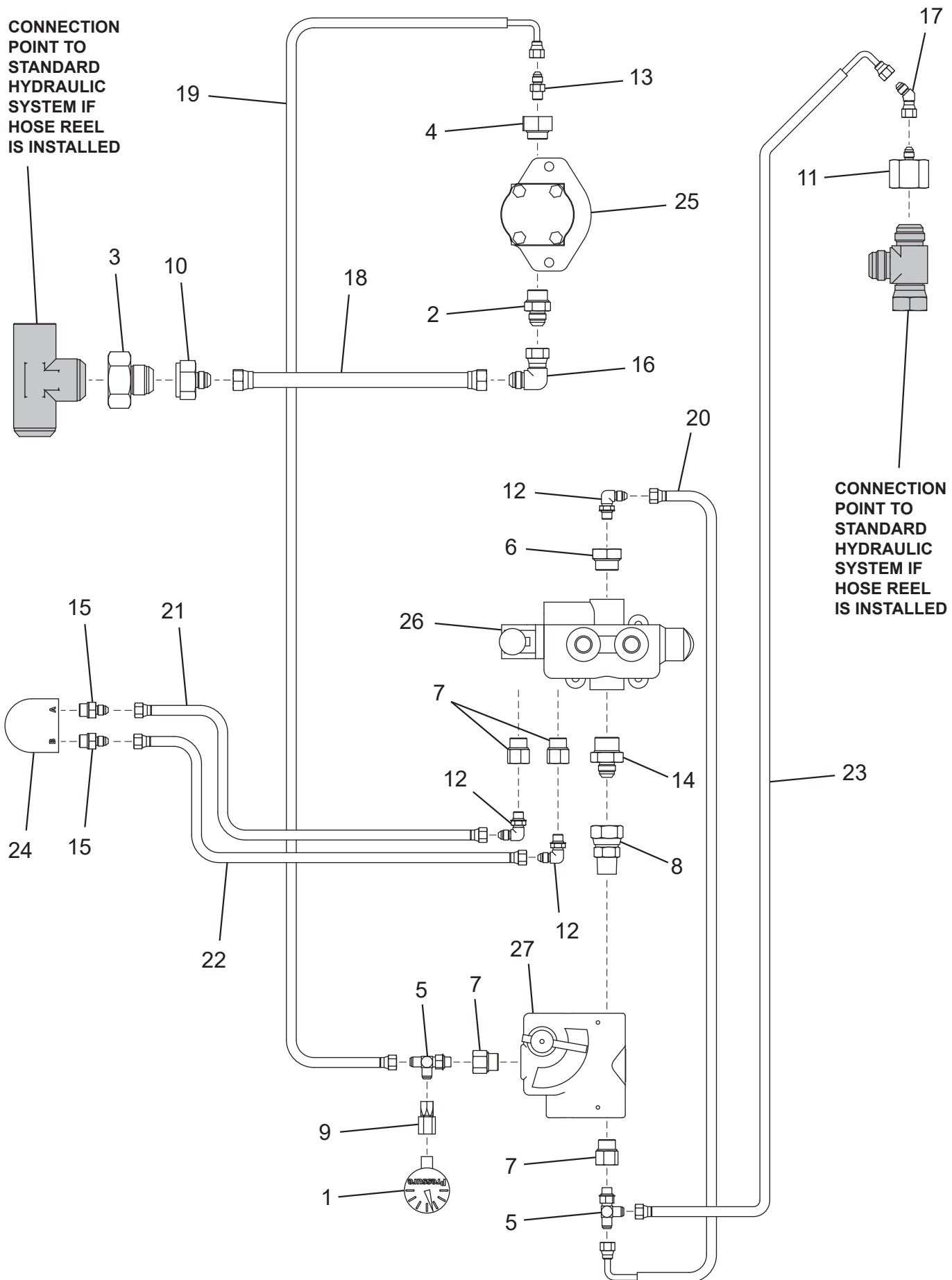
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HOSE REEL ASSEMBLY

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 ft.)	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	▲	008635	Hydraulic Motor	1
9	▲	008199	Chair Sprocket - 11 Tooth	1
10		012757-01	Spring Retainer Plate	1
11		003207	1- 1/2 in. Dia. x 90 Degree Swivel Joint	1
12		003299	Torsion Spring	1
13		011894	Hose Roller	1
		011894-G	Guide Spool	2
		011894-R	Flat Roller	1
14		F330-0077	Hose Reel Canopy	1
15		F330-0094	Hose Reel Canopy Support	4
16		F330-0104	Hose Reel Mount Cover	1
17		F330-0068	Upper Hose Reel Bracket	1
18		008433	Pinlock w/ Brackets Assembly	1
19		F330-0067	Lower Hose Reel Bracket	1
20		012781	Hose Reel Lock Angle	3
21		012798	Hose Reel Bearing Block	4
22		012861	Hose Reel Washer	1
23		008112	Brake Spring (Part of Hose Reel)	1
24		008109	Brake Adjustment Screw (Part of Hose Reel)	1
25		A4839-001	1- 1/4 in. Hose Clamp (1-1/4 in. Hose Option)	1
		A4844-001	1- 1/2 in. Hose Clamp (1-1/2 in. Hose Option)	1
NOT SHOWN				
		004832-20	1- 1/4 in. Hose Reel Hose x 200 ft. (1-1/4 in. Hose Option)	1
		008315-20	1- 1/2 in. Hose Reel Hose x 200 ft. (1-1/2 in. Hose Option)	1
KITS AND MARKERS				
	▲	008212	Hose Reel and Swivel Assembly	

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HOSE REEL HYDRAULIC ASSEMBLY

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	012044	Pressure Gauge	1
2	▲	6400-08-10	MSAE - MJIC Adapter	1
3	▲	2406-24-16	JIC Reducer	1
4	▲	6410-08-04	SAE Reducer	1
5	▲	6804-04-04-04	SAE Run Tee	2
6	▲	6410-12-04	SAE Reducer	1
7	▲	6410-10-04	SAE Reducer	4
8	▲	6402-10-08	MSAE - FJIC Adapter	1
9	▲	6506-04-04	FNPT - FJIC Adapter	1
10	▲	2406-16-08	JIC Reducer	1
11	▲	2406-16-04	JIC Reducer	1
12	▲	6801-04-04	MSAE - MJIC 90° Elbow Adapter	3
13	▲	6400-04-04	MSAE - MJIC Adapter	1
14	▲	6400-08-12	MSAE - MJIC Adapter	1
15	▲	6400-04-06	MSAE - MJIC Adapter	2
16	▲	6500-08-08	JIC 90° Swivel Elbow	1
17	▲	6502-04-04	JIC 45° Swivel Elbow	1
18	▲	012691	1/2 in. Hydraulic Hose x 30 in.	1
19	▲	012864-02	1/4 in. Hydraulic Hose x 147 in.	1
20	▲	012865-03	1/4 in. Hydraulic Hose x 27 in.	1
21	▲	012866-04	1/4 in. Hydraulic Hose x 70 in.	1
22	▲	012864-05	1/4 in. Hydraulic Hose x 68 in.	1
23	▲	A6121-001	1/4 in. Hydraulic Hose x 185 in.	1
24		008635	Hydraulic Motor	1
		008635	Seal Kit for Hydraulic Motor	1
25		012689	Hydraulic Pump	1
26		012857	Control Valve	1
		SF310B	Hydraulic Valve Handle	1
		0SF311	Handle Knob	1
		0SF312	1/8 in. x 1-3/8 in. Roll Pin	1
		023120	Seal Kit for 012857	1
		023470	Handle Bracket	1
		008293-RC	Brand Valve Relief Cartridge	1
27		055746	Flow Divider	1
		055140-SK	Seal Kit for 055746	1
		023890-K	Indicator Knob	1
		023890-L	Indicator Lever	1

KITS AND MARKERS

▲	A6120-001	Hydraulic Hoses and Fittings Kit
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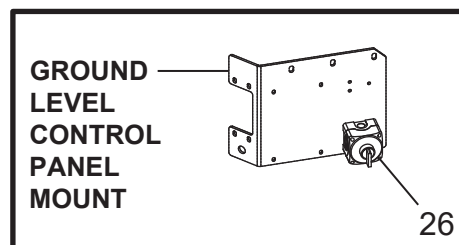
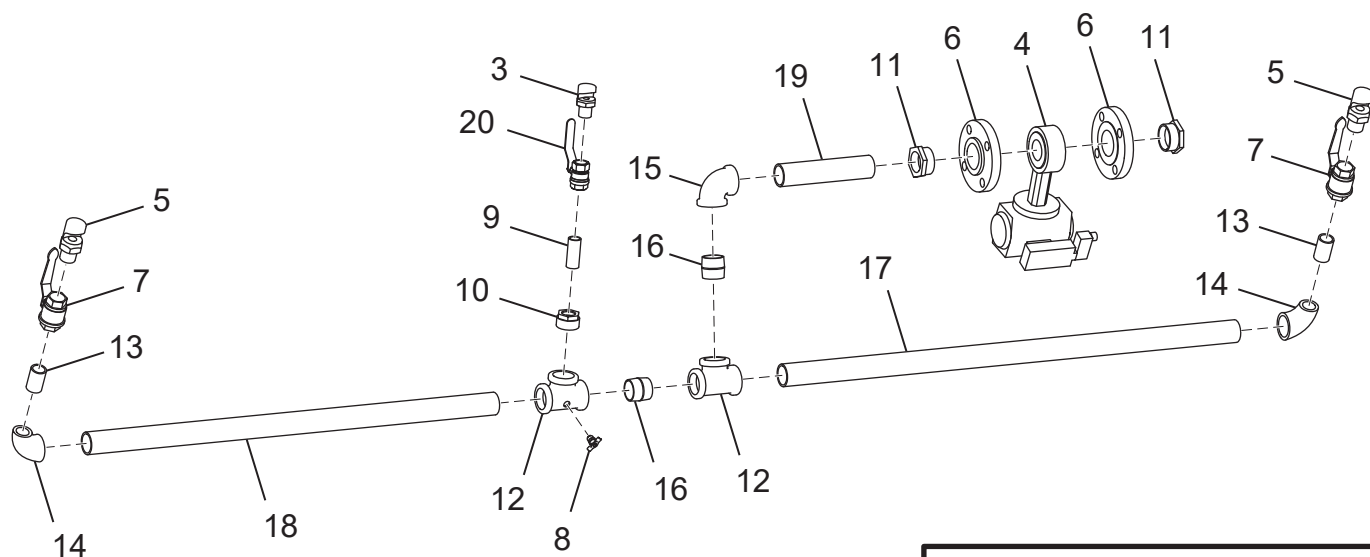
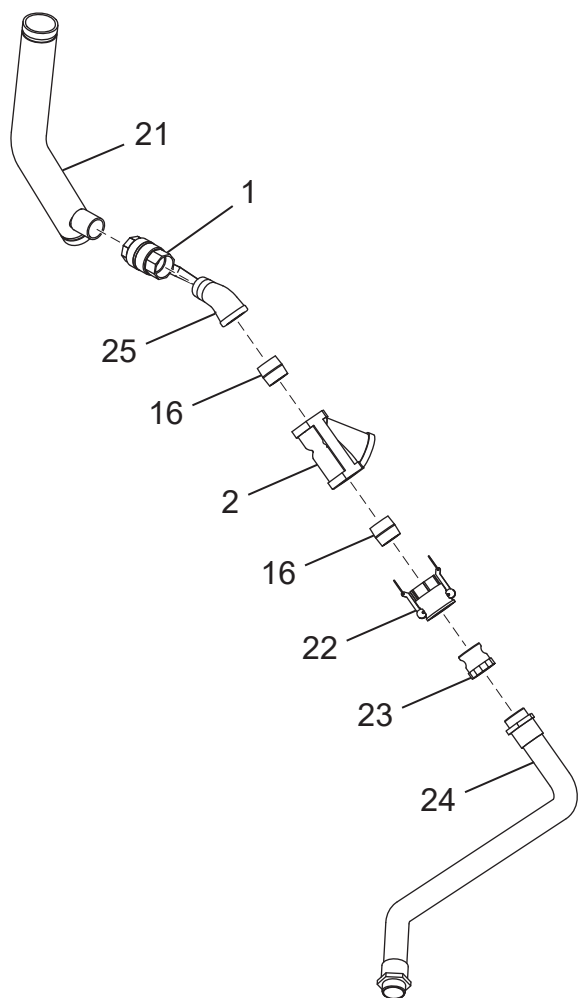
DISCHARGE HOSE EXTENSIONS

Part Number	Description	No. Req'd
BOOM TAKE OFF SYSTEM		
007930-02	Boom Discharge Extension Hose Assembly	As Ordered
007929	1 - 1/2 in. x 50 ft. Extension Hose with Nipples	1 per
002191	2 - 1/2 in. Male Brass Adapter	1 per
160768	2 - 1/2 in. to 1 - 1/2 in. Reducer Bushing	1 per
010544	2 - 1/2 in. Female Coupler	1 per
006513	2 - 1/2 in. Quick-Coupler Gasket	1 per
PUMP TAKE OFF SYSTEM		
007930-01	Pump Remote Discharge Hose Assembly	As Ordered
007929	1 - 1/2 in. x 50 ft Extension Hose with Nipples	1 per
001207	1 - 1/2 in. Male Brass Adapter	1 per
002158	1 - 1/2 in. Female Brass Coupler	1 per
006515	1 - 1/2 in. Coupler Gasket	1 per
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. SCH 40 Close Nipple	1
007740	Remote Valve Assembly	1
007710	1 - 1/2 in. Full Port Ball Valve	1
003243	1 - 1/2 in. Aluminum Nipple Pipe	1
160309	1 - 1/2 in. Std. Close Nipple	1
160763	2 in. x 1 - 1/2 in. Tank 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 Adapter	1
160761	2 in. to 1 in. Reducer Bushing	1
006622	Narrow Fan Nozzle Assembly	1
006605	Narrow Fan nozzle	1
006096	2 in. Male Adapter	1
160761	2 in. to 1 in. Reducer Bushing	1

TOOL KIT

Part Number	Description	No. Req'd
011775	Long Distance Nozzle (Large Hole)	1
011703	Long Distance Nozzle Assembly (Small Hole)	1
001042	Long Distance Nozzle	1
002191	2- 1/2 in. Brass Male Adapter	1
160309	Close Nipple	1
160768	2- 1/2 in. to 1- 1/2 in. Reducer Bushing	1
011706	Wide Fan – Small Nozzle Assembly	1
006604	Wide Fan – Small Nozzle (50500)	1
002191	2- 1/2 in. Brass Male Adapter	1
160766	2- 1/2 in. to 1 in. Reducer Bushing	1
011707	Narrow Fan – Small Nozzle Assembly	1
006605	Narrow Fan – Small Nozzle (25500)	1
002191	2- 1/2 in. Brass Male Adapter	1
160766	2- 1/2 in. to 1 in. Reducer Bushing	1
011890	Wide Fan – Large Nozzle Assembly	1
011861	Wide Fan – Large Nozzle (501500)	1
002191	2- 1/2 in. Brass Male Adapter	1
160769	2- 1/2 in. to 2 in. Reducer Bushing	1
011891	Narrow Fan – Large Nozzle Assembly	1
011860	Narrow Fan – Large Nozzle (251500)	1
002191	2- 1/2 in. Brass Male Adapter	1
160769	2- 1/2 in. to 2 in. Reducer Bushing	1
021375	Grease Gun (<i>Hose Not Included</i>)	1
021741	12 in. Whip Hose for Grease Gun	4
020365	Multi-Purpose Grease Cartridge	1
A2401-001	Grease For Pressure Lubricator, 14 oz. (414 mL)	1
007469	Lube Sticks For Discharge and Recirculation Valves (Box of 24)	1
002190	Main Tank Dust Cap with Gasket	1
006513	2- 1/2 in. Quick-Coupler Gasket	1
005220	Impeller Wrench	1
012681A	Touch-Up Paint (FINN Beige - 4.5 oz. Aerosol)	1
	Engine Operator's Manual	1
	HydroSeeder® Operator Instructions and Parts Manual	1

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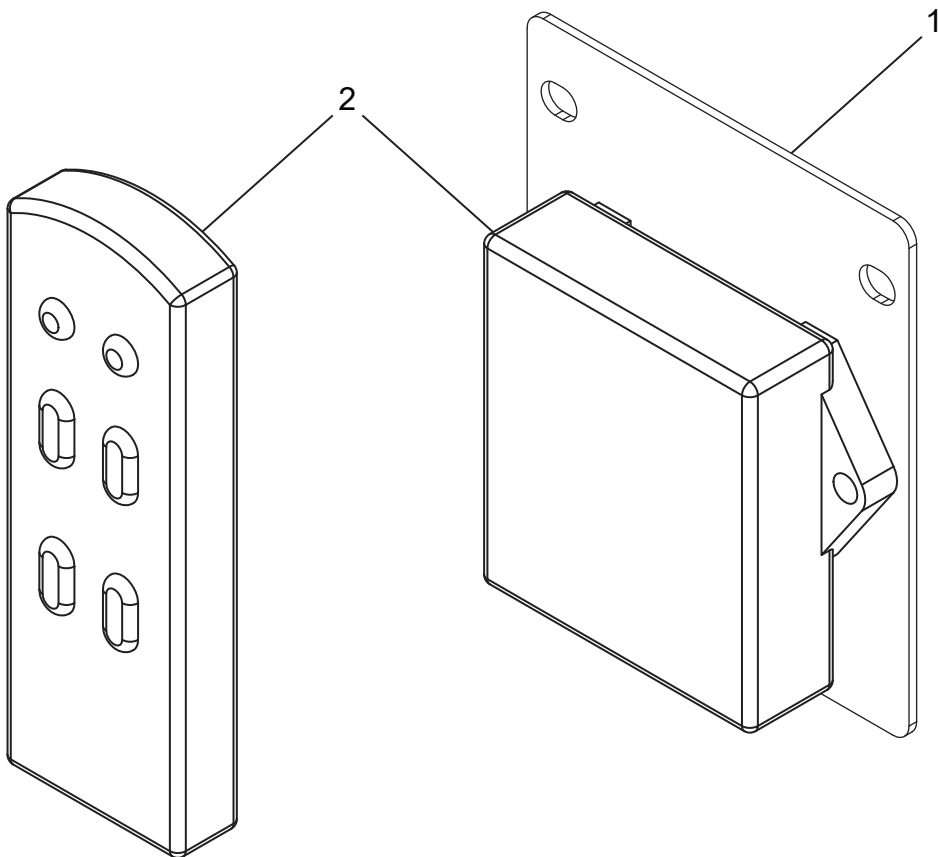
OPTIONAL REAR SPRAY BAR SYSTEM

Ref. No.	Part Number	Description	No. Req'd
1	007710	1 - 1/2 in. Ball Valve In Full Port	1
2	020745	Y-Strainer, 1 - 1/2 in.	1
3	011524	Flood Nozzle, 3/4 in. NPT, 21 GPM @ 10 psi	1
4	012294	ABZ - 2 in. Butterfly Valve with Acuator	1
5	011523	Flood Nozzle, 1 in. NPT, 45 GPM @ 10 psi	2
6	012057	2 in. #150 Threaded Pipe Flange	2
7	021559	Ball Valve, 1 in. NPT	2
8	022452	Draincock, Ext. Seat, Brass, 1/4 MNPT	1
9	160452	3/4 in. Stdandard Pipe Nipple x 2 - 1/2 in. Long	1
10	160754	1 - 1/2 in. x 3/4 in. Reducer Bushing	1
11	160763	2 x 1 - 1/2 in. Reducer Bushing	2
12	160218	1 - 1/2 in. Stdandard Pipe Tee	2
13	160480	1 - 1/2 in. Stdandard Pipe Nipple x 2 in. Long	2
14	160115	1 - 1/2 in. x 1 in. 90° Reucing Elbow	2
15	160014	1 - 1/2 in. Stdandard 90° Elbow	1
16	160309	1 - 1/2 in. Stdandard Close Nipple	4
17	012806-04	1 - 1/2 SCH. 40 Pipe X 42 - 1/2 Long TBE	1
18	012806-05	1 - 1/2 SCH. 40 Pipe x 38 - 1/4 Long TBE	1
19	012806-03	1 - 1/2 SCH. 40 Pipe x 8 - 1/2 Long TBE	1
20	020658	Ball Valve, 3/4 in. NPT	1
21	A5474-001	Discharge Pipe Weldment, Rear Spray Bar	1
22	002158	Part D Brass Coupler, 1 - 1/2 in.	1
23	001207	Male Brass Adapter, 1 - 1/2 in.	1
24	011435	Lead In Hose, 1 - 1/2 in. x 3 in. Long	1
25	160092	45° Street Elbow, 1 - 1/2 in.	1
26	A5394-001	Two Position Selector Switch Assembly	1
NOT SHOWN			
	080071	Pipe U-Bolt, 1 - 1/2 in.	5
	012806-02	Mounting Bracket, 3 x 2 x 1/4 Angle x 3 - 1/2 Long	2

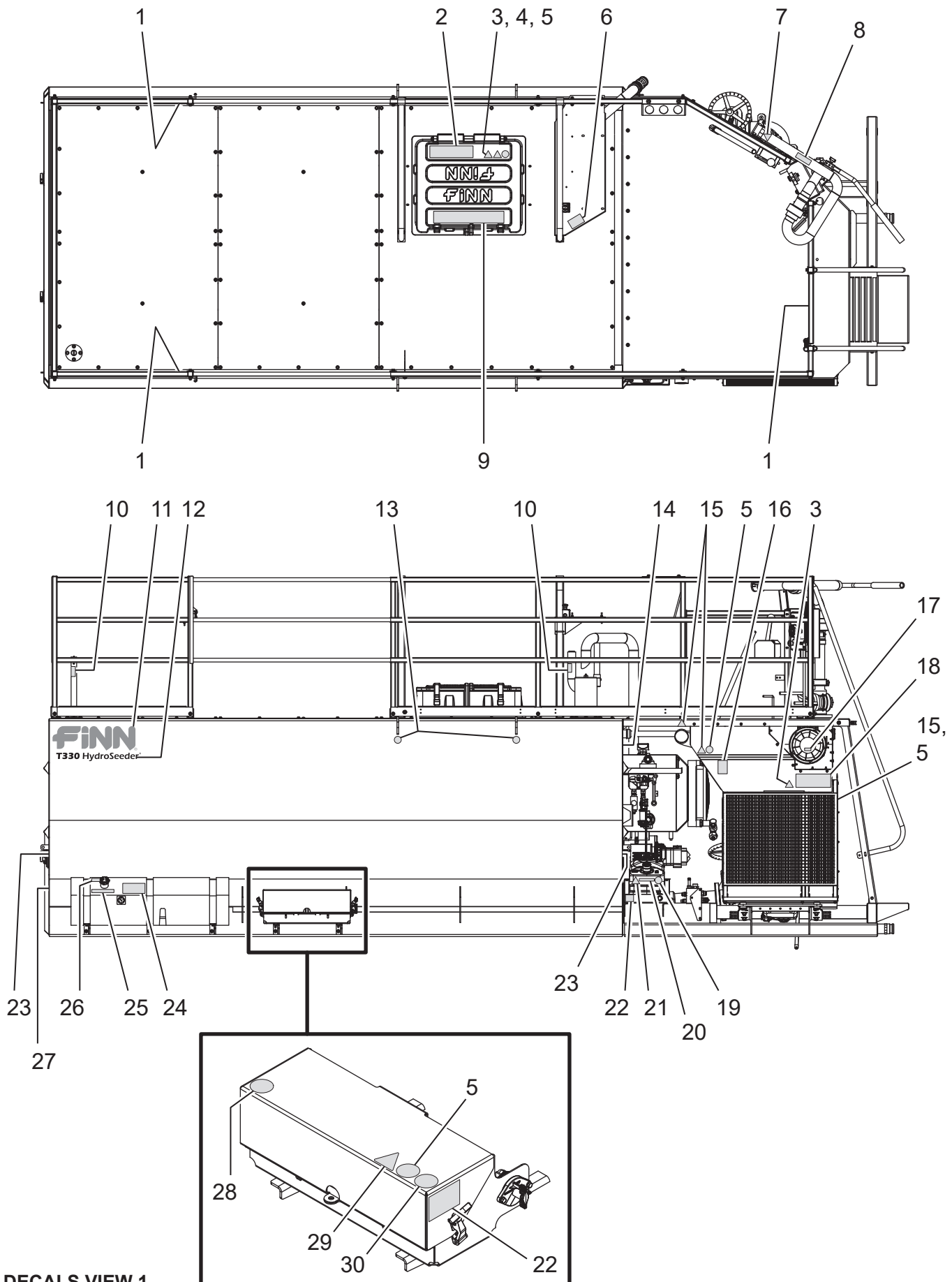
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OPTIONAL RADIO REMOTE CONTROL SYSTEM

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	■	A5703-001	Radio Remote Receiver Mounting Bracket	1
2	■	012721	Four-Function Remote Set	1
NOT SHOWN				
	■	A5391-001	T330 T4F Radio Receiver Connector Kit	1
KITS AND MARKERS				
	■	A5435-002	T330 T4F Radio Remote Control System	



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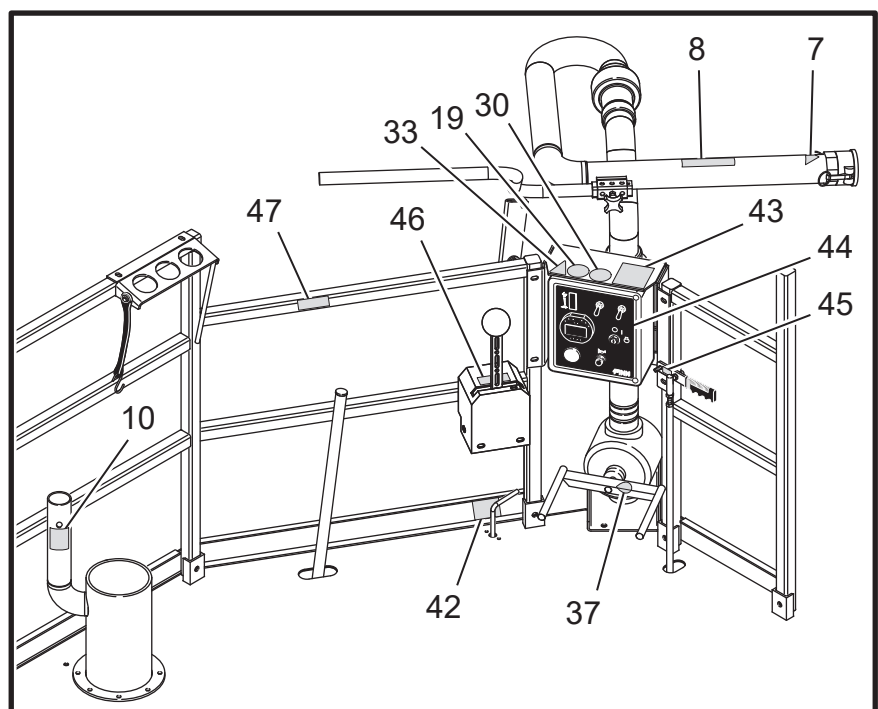
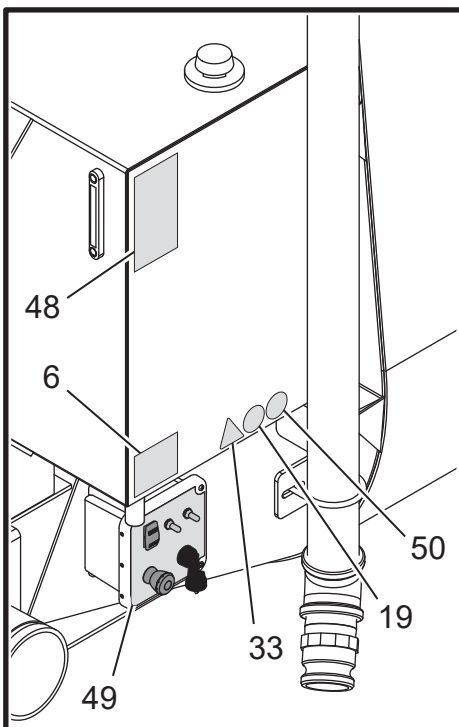
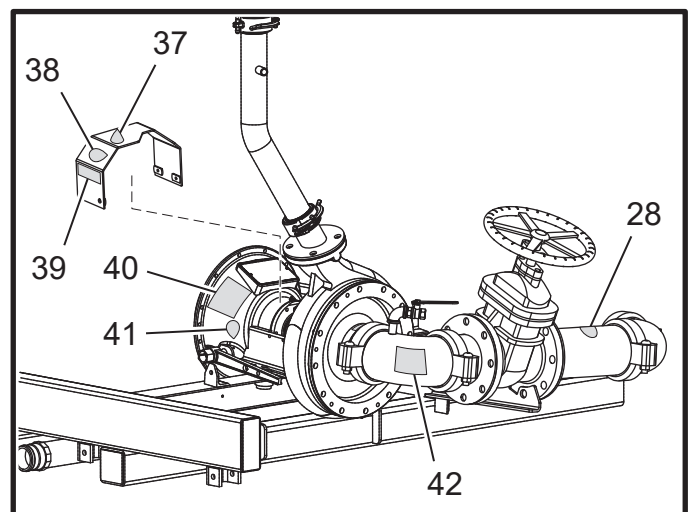
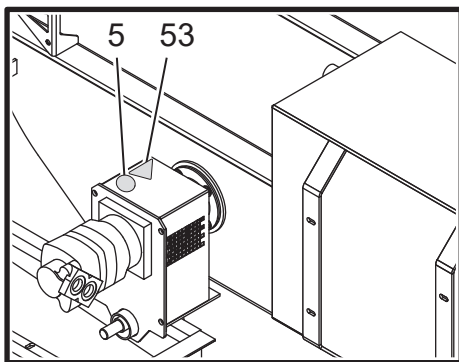
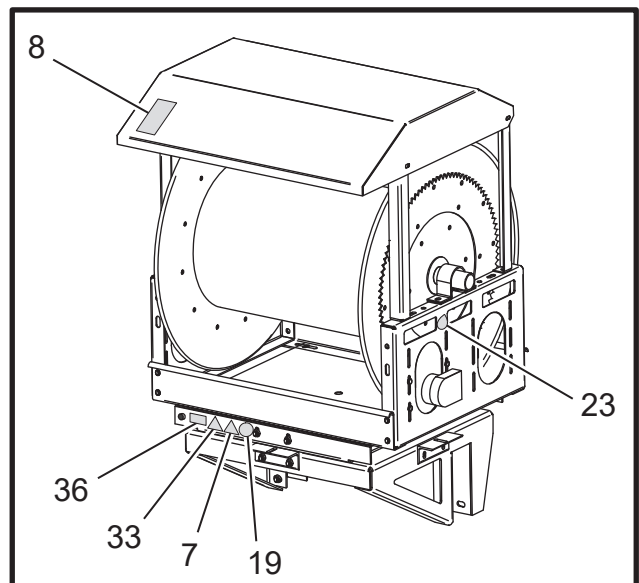
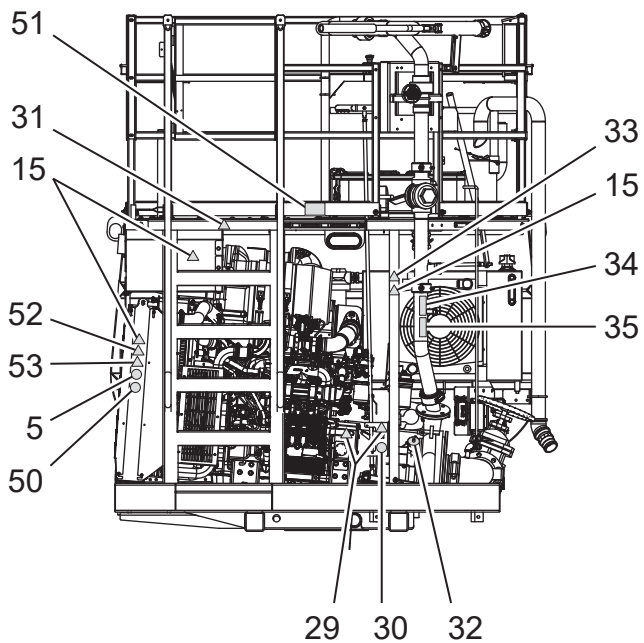
DECALS VIEW 1

DECALS

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
1	▲	-----	WARNING Fall Hazard	3
2	▲	-----	DANGER Confined Space Hazard	1
3	▲	-----	Remote Start Hazard	3
4	▲	-----	Entanglement Hazard	1
5	▲	-----	Do Not Remove Guard	7
6	▲	-----	CAUTION Wear Ear Protection	1
7	▲	-----	Spray Hazard	9
8	▲	-----	DANGER Electrocution Hazard	3
9	▲	-----	Operating Instructions	1
10	▲	-----	CAUTION Keep Tank Vent Clean and Open	2
11		023174	Decal Finn - Large, Red	2
12		012661-01	T330 Decal	2
		011595	HydroSeeder Decal	2
13	▲	-----	Lift Points	4
14	▲	-----	Decibel Warning 102dB	1
15	▲	-----	Burn Hazard	7
16	▲	-----	WARNING Wear proper eye protection	1
17	▲	-----	NOTICE Do not use ether or starting fluid	1
18	▲	-----	WARNING Burn Hazard and Radiator Handling	1
19	▲	-----	Read Manual	3
20	▲	-----	DEF Fluid Decal	1
21	▲	-----	Poison Hazard	1
22	▲	-----	CAUTION DEF System Battery Disconnect	2
23	▲	-----	Service Daily Decal (Upright)	4
24	▲	-----	DANGER Fire Hazard/Fuel Safety	1
25	▲	-----	Diesel Fuel Decal	1
26	▲	-----	Ultra-Low-Sulfur Diesel Fuel Only Decal	1
27	▲	-----	US Patent	1
28	▲	-----	Do Not Step	2
29	▲	-----	Electrical Shock Hazard	5
30	▲	-----	Do Not Pressure Wash	3

Continued to next page.

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DECALS VIEW 2

DECALS

Ref. No.	Kit Ref.	Part Number	Description	No. Req'd
31	▲	-----	Fall Hazard	1
32	▲	-----	Auto Lubricator Decal	1
33	▲	-----	Hazard/Attention Decal	3
34	▲	-----	WARNING Burn Hazard/Pump Operation	3
35	▲	-----	CAUTION Connection Is for Remote and Hose Reel Only	1
36	▲	-----	Hose Reel Rewind	1
37	▲	-----	Service Weekly Decal (Upright)	4
38	▲	-----	Auto Lubricator Service Daily (Blue)	1
39	▲	-----	NOTICE Seal Lubricator Must Be Kept In Operation	1
40	▲	-----	Service Weekly Decal (Upside down)	2
41	▲	-----	CAUTION New Clutch Information	1
42	▲	-----	BLEEDER VALVE - Open/Close	2
43	▲	-----	VALVE - Open/Close	1
44		A5341-001	Platform Control Panel Decal	1
45	▲	-----	CLUTCH - Engage/Disengage	1
46	▲	-----	AGITATOR Operation - Forward/Reverse	1
47	▲	-----	RECIRCULATION VALVE - Close/Open	1
48	▲	-----	Hydraulic System Instructions	1
49		A5342-001	Ground Level Control Panel Decal	1
50	▲	-----	Wear Eye Protection	2
51		012260	Metal Plate "IMPORTANT"	1
52	▲	-----	Reach Hazard - Fingers Cut	1
53	▲	-----	Pinch Point Belt Hazard	3
NOT SHOWN				
		A4691-001	Skid Nameplate/Serial Plate	1
	▲	-----	Hand in Gears Crush/Hazard	1
	▲	-----	Service Daily Decal (Upside down)	2
	▲	-----	Spray Bar - ON/OFF Decal (<i>See Note Below</i>)	1
	▲	-----	CE Decal	1
KITS AND MARKERS				
	▲	A5440-001	T330 Decal Kit	

NOTE: The decals listed here with a ▲ in the kit reference space are available only in the T330 Decal Kit. Decals and plates identified with a part number are **NOT** part of the decal kit and **must** be ordered separately.

NOTE: The Spray Bar Decal is used with the Spray Bar option installed on the T330. The decal is affixed to a control box that is installed next to the standard ground control box.

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RECOMMENDED SPARE PARTS AND REPAIR KITS

Part Number	Description
RECOMMENDED SPARE PARTS	
A2401-001	Grease For Pressure Lubricator, 14 oz. (414 mL)
011919	Suction Pipe Seal - 5 in.
002820	Discharge Pipe Seal - 2-1/2 in.
006722	Recirculation Pipe Seal - 1-1/4 in.
006513	Nozzle Coupler Gasket - 2-1/2 in.
006514	Coupler Gasket 2 in.
007469	Lube Sticks For Recirculation and Discharge Valves (Box of 24)
031245	Snapper Pin – Boom Hold Down
A2021-001	Fuel Filter Element, Primary With Water Separator
A2022-001	Fuel Filter Element, Secondary
005726	Fuel Cap
A4471-001	Harness, Coolant Level Switch
A4470-001	Coolant Level Sensor
A1999-001	DEF Filter
A1927-001	Oil Filter
A1924-001	31AQ Alternator, 12V, 120A
A1926-001	3075 Starter Motor Kit
A1929-001	Filter Element, CCV
A1928-001	Engine V-Belt
A3002-001	Filter Element, Primary Air, 4 in.
A3284-001	Filter Element, Safety Air, 4 in.
REPAIR KITS	
012397	Swivel Repair Kit
011920	O-ring
006443	Mechanical Seal Assembly
006444	Grease Retainer
012733	Grease Seal

Note: Recommended Spare Parts are available to avoid unnecessary down time.
Repair Kits are available to recondition parts, which periodically need service.