POLYESTER CONCRETE PAVERS

APCP1600

SAFETY & OPERATIONS MANUAL

Manual Part #: 071161 | Revision: A
Language: English | Original Instructions

ALLEN
CONCRETE PAVERS

POLY-PAVER

SAFETY & OPERATOR MANUAL

This manual covers the products listed below:

Part No.	Description
072600	Poly-Paver, Diesel, Tier 3

NOTICE

This manual, or a copy of it, must be kept with the machine at all times.
There is a manual storage container located on the machine for your convenience.

EXCLUSIVELY DISTRIBUTED BY
MJ ALLEN, INC.
WWW.ALLENPAVERS.COM

Allen Products are covered under one or more of the following patent numbers:
10,100,537; 9,068,301; 9,068,300; 8,360,680; 7,690,864; 7,114,876B1; 6,857,815B2; 6,582,153
With other Patents Pending.

Printed in U.S.A.

Limited Warranty & Limitation of Liability

Allen Engineering Corporation ("Allen") warrants its products to be free of defects in material or workmanship for:

ONE YEAR FROM END USER'S DATE OF PURCHASE

Warranty period begins on the date of purchase by the End User of the product. All warranty is based on the following limited warranty terms and conditions, including the disclaimer of implied warranties and consequential damages.

1. Allen's obligation and liability under this warranty is limited to repairing or replacing parts if, after Allen's inspection, there is determined to be a defect in material or workmanship. Allen reserves the choice to repair or replace.
2. If Allen chooses to replace the part, it will be at no cost to the customer and will be made available to the Allen Distributor, Dealer, or Rental Center from whom the End User purchased the product.
3. Replacement or repair parts, installed in the product, are warranted only for the remainder of warranty period of the product as though they were the original parts.
4. Allen does not warranty engines or batteries. Engine warranty claims should be made directly to an authorized factory service center for the particular engine manufacturer. Batteries are not warranted due to unknown treatment during transport, etc, and any battery claims should be directed to the battery manufacturer.
5. Allen's warranty does not cover the normal maintenance of products or its components (such as engine tuneups and oil & filter changes). The warranty also does not cover normal wear and tear items (such as belts and consumables).
6. Allen's warranty will be void if it is determined that the defect resulted from operator abuse, failure to perform normal maintenance on the product, modification to product, alterations or repairs made to the product without the written approval of Allen. Allen specifically excludes from warranty any damage to any trowels resulting from an impact to the rotors.
7. Impact damage to gear boxes is not covered under the Allen warranty and is deemed customer abuse.
8. Allen will pay shop labor on warranty items at the Allen Shop Labor Rate in existence on the date of the warranty claim. An Allen labor chart will determine the time allowed to complete a repair and will govern the shop labor hours that will be allowed.
9. Allen will pay freight on warranty replacement parts at worldwide standard ground rates. No warranty replacement parts will be shipped air freight at the expense of Allen. Allen only pays outbound freight charges when sending warranty replacement parts to the customer via ground service. Allen does not pay any inbound freight. However, if Allen determines this to be a warranted item, only then will Allen reimburse the customer for inbound freight at standard ground rates.
10. ALLEN ENGINEERING CORPORATION'S WARRANTY POLICY WILL NOT COVER THE FOLLOWING: TAXES; SHOP SUPPLIES; ENVIRONMENTAL SURCHARGES; AIR FREIGHT; TRAVEL TIME; LOSS OF TIME; INCONVENIENCE; LOSS OF RENTAL REVENUE; RENTAL COSTS OF EQUIPMENT USED TO REPLACE THE PRODUCT BEING REPAIRED; LOSS OF USE OF THE PRODUCT; COMMERCIAL LOSS; OR ANY OTHER CHARGES WHATSOEVER OR ANY LIABILITIES FOR DIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGE OR DELAY.
11. ALLEN ENGINEERING CORPORATION MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED. THIS LIMITED WARRANTY IS IN LIEU OF THE WARRANTY OF MERCHANTABILITY AND FITNESS. THERE ARE NO OTHER WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THIS DOCUMENT.
12. No Allen employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of Allen Engineering Corporation.

GENERAL INFORMATION

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Table of Contents

Information Contained in this Manual

This manual provides information and procedures to safely operate and maintain the Allen Machine.

For your own safety and protection from personal injury, carefully read, understand, and observe the safety instructions described in this manual. Keep this manual or a copy of it with the machine at all times.

Always operate this machine in accordance with the instructions described in this manual. A well maintained piece of equipment will provide many years of trouble free operation.

This manual is divided into the following sections:

SECTION 1 SAFETY

SECTION 2 OPERATIONS

SECTION 3 SERVICE

SECTION 4 PARTS

Complete any warranty requirements as specified by the engine manufacturer in their instructions

Your engine and clutch is not manufactured by Allen Engineering Corporation, Inc, and therefore is not covered under Allen Engineering Corporation, Inc warranty.

Your engine manufacturer should be contacted if you wish to purchase a parts manual or a repair manual for your engine.

Refer to enclosed owners engine manual for complete O&M instructions. See your battery manufacturer for battery warranty.

Dealer Information / Ordering Parts

Your Dealer has Allen Engineering Corporation trained mechanics and original Allen replacement parts. Always contact the Allen Dealer who sold you this machine for Allen Certified repairs and replacement parts.

Place Allen Dealer information below for future reference.

Dealer Name: _____

Phone #: (___) -____- _____

Address: _____

City:_____ **State:**_____ **Zip:**_____

Salesman:_____ **Mobile Phone:**_____

Additional Comments:_____

_____

_____

_____

NOTE

ALL INFORMATION, SPECIFICATIONS, AND ILLUSTRATIONS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE AND ARE BASED ON THE LATEST INFORMATION AT THE TIME OF PUBLICATION.

The Parts section in this manual contains illustrated parts lists for help in ordering replacement parts for your machine. Follow the instructions below when ordering parts to insure prompt and accurate delivery:

1. All orders for service parts - **include the serial number** for the machine. Shipment will be delayed if this information is not available.
2. Include correct description **and** part number from the Parts Section
3. Specify exact shipping instructions, including the preferred routing and complete destination address.
4. **DO NOT** return parts to AEC without receiving written authorization from AEC. All authorized returns must be shipped pre-paid.
5. When placing an order, please contact the AEC dealer nearest you.

Model Number / Serial Number Unit Identification

Manufacturer's Codes:

When ordering parts or requesting service information, you will always be asked to specify the model and serial numbers of the machine. The legends below specifically defines each significant character or group of characters of the Model Number and Serial Number codes.

Model Number

APSFP 1600 A B

- **Cross Slope Package**
- **Electronic Grade Control**
- **Machine Width Rating**
- **Allen Polyester Slip Form Paver**

Serial Number

The serial number found on the identification plate is a ten digit format. The model number identifies your machine and will ensure that you receive the correct replacement parts.

Serial Number Example

APSF1600 - 2THP16 09 20 01

- **Production Sequence**
- **Year Manufactured**
- **Month Manufactured**
- **Two Track High Profile**
- **Model / Series**

Unit Identification Plate Location:

An identification plate listing the model number and the serial number is attached to each unit and is located on the rear lower left side of mainframe. Refer below for serial number and model number location. This plate should not be removed at any time.

Please record the information found on this plate below so it will be available should the identification plate become lost or damaged. When ordering parts or requesting service information, you will always be asked to specify the model and serial numbers of the machine.

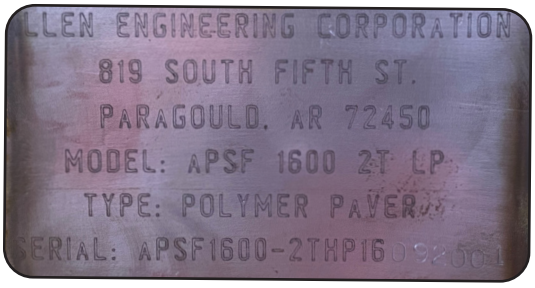
FILL IN FOR FUTURE REFERENCE

Model Number: APSF16002THP

Serial Number: APSF1600-2THP16-092001

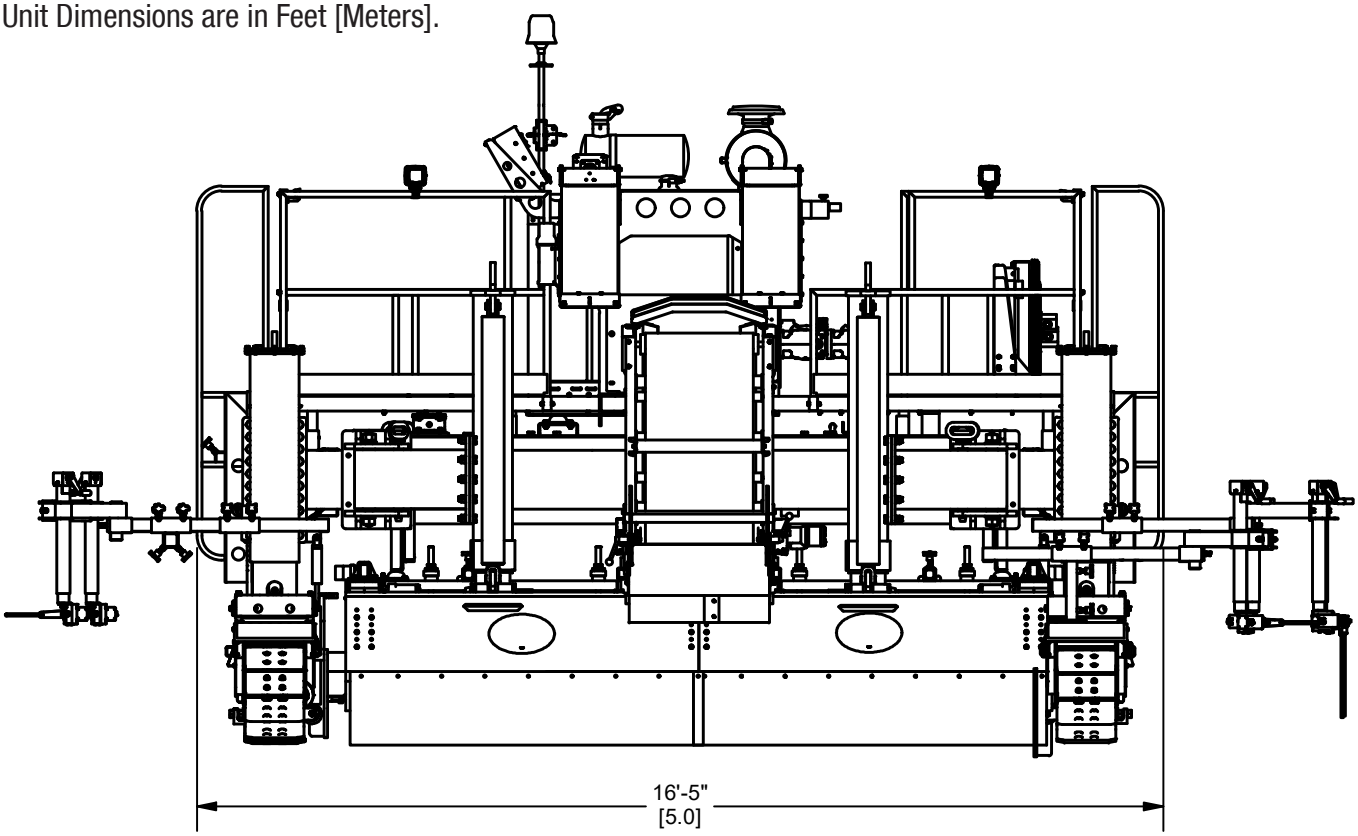
Date Purchased: _____

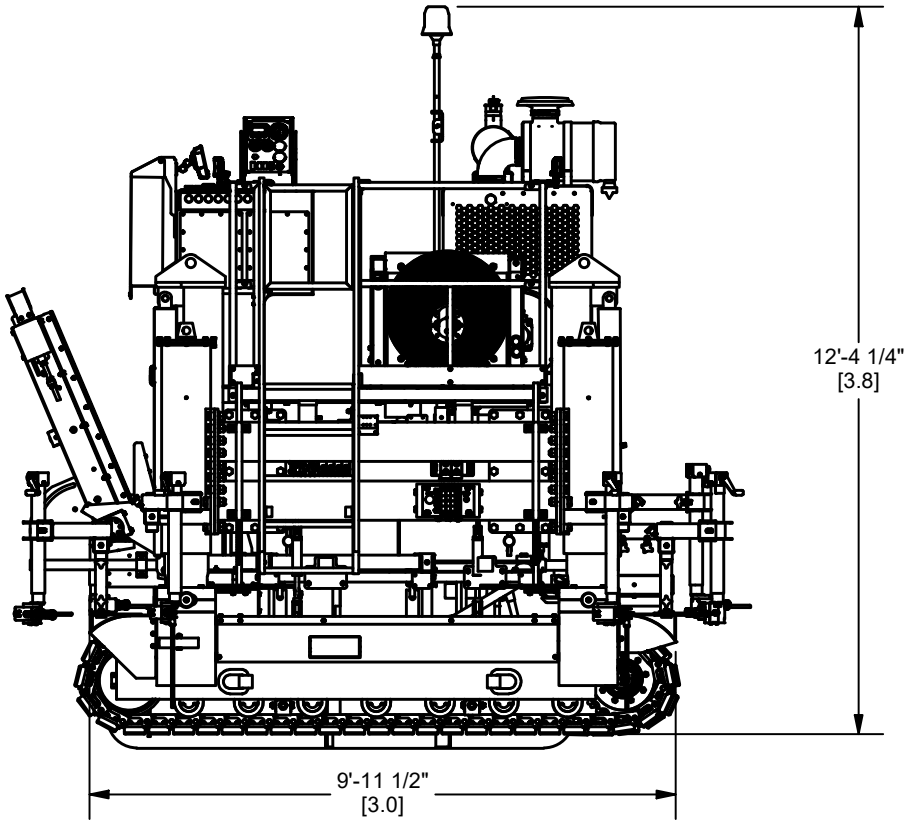
Purchased From: _____



Machine Dimensions

Unit Dimensions are in Feet [Meters].





Technical Specifications

Allen 1600 Two Track Polyester Concrete Slipform Paver

- Model: APSFP-1600 2T HP

Main Frame Power Unit:

- John Deere 4045HFC06
- Fuel reservoir 90 gal.

Main Frame:

- Paving width 12': 2 ea. standard end frames
- 24 " deep rectangular tube frame section

Paving Pan:

- 12ft. long X 36" wide X 3/8" AR200 high abrasive steel paving pan with 12" wide adjustable profile kit.
- Isolator mounted to a tubular frame work attached to the paver mainframe.
- 12' long adjustable texturing tine

Vibration System:

- 6 ea Minnich M-1200 hydraulic pan vibrators with individual speed control with 6 station adjustable speed control manifold.
- Vibrators centrifugal force is 1200 lbs. at 9000 VPM; requires 5.3 GPM per vibrator.

Hydraulic System:

- Engine mounted tandem hydraulic pump system with control valving, Heat exchanger, complete system producing approximately 60 GPM at 3000 PSIG.
- 140 gal. hydraulic reservoir
- #32 Hydraulic Fluid

Adjustable Side Forms:

- 5/8' thick steel side from 16" tall by 72" long end frame mounted with hydraulic lift and in and out.

Auger Spreading System:

- 12" diameter, 1/2 pitch, split reversible, heavy duty auger system
- Hydraulic driven each end with separate split control valves
- Auger box with rub skirt to contain the polyester concrete that meters the material to the paving pan.

Crawler Tracks:

- 2 ea. tracks 10 ft. long with 7 bottom rollers, 2 top rollers,
- Adjustable front idler and rear drive sprocket.
- Two each hydraulic driven planetary drives
- Two each hydraulic drive motors with slow speed for paving (down to 2 ft./min.) and high speed for travel up to 30 ft. /min.

Grade Control System:

- Four each electric-over-hydraulic string line sensors with adjustable vertical jacks and horizontal slides.
- Four each heavy duty hydraulic tower system with 3.5” diameter X 30” long hydraulic lift cylinders.
- Automatic and manual grade control from operator’s platform.

Steering System:

- Two each electric-over-hydraulic string line sensor controls forward steering.
- Steer from right side or left side of machine.
- Automatic or manual steering, controlled from operator’s platform. Rear steering optional.

Intermittent Shut-Down System:

- Single switch operation.
- Electronic over hydraulic.
- Controls all critical functions of machine: grade, travel, vibration.
- Emergency hydraulic shut-down on each end of machine and control panel.

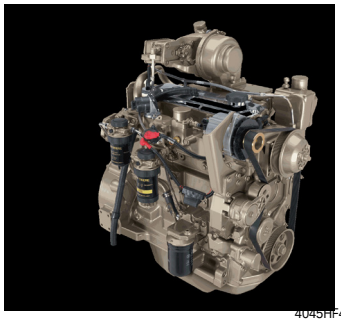
Operator Platform:

- Electric over Hydraulic controls for travel, vibrators, auger, grade, and steer.
- Hydraulic system pressure gauges located in display
- High visibility split operator console.
- Engine controls and monitoring devices mounted on console.
- Safety railing.
- Engineered for easy monitoring of all machine functions.
- Sectionalized open steel grid rear mounted walkway.

Engine Specifications

PowerTech ™ Plus 4045HF485 Diesel Engine

Industrial Engine Specifications

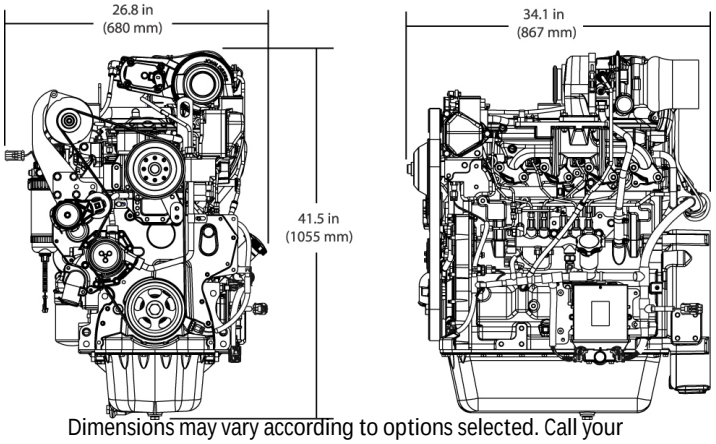


4045HF485 shown

Certifications

CARB
EPA Tier 3
EU Stage III A

Engine dimensions



Dimensions may vary according to options selected. Call your distributor for more information.

General data

Model	4045HF485	Length - mm (in)	867 (34.1)
Number of cylinders	4	Width - mm (in)	680 (26.8)
Displacement - L (cu in)	4.5 (275)	Height-- mm (in)	1055 (41.5)
Bore and Stroke-- mm (in)	106 x 127 (4.17 x 5.00)	Weight, dry-- kg (lb)	491 (1082)
Compression Ratio	17.0 : 1		
Engine Type	In-line, 4-Cycle		
Aspiration	Turbocharged and air-to-air aftercooled		

Performance data range

Application ratings	Intermittent	Heavy Duty
Rated power/Rated speed	111-129 kW(149-173 hp) @2000-2400rpm	115 kW(154 hp) @2400rpm
Peak power	116-129 kW (156-173 hp) @1800-2400rpm	115 kW (154 hp) @2400rpm
Power bulge	0-4% @ 1800rpm	0% @ NA rpm
Peak torque	645 N.m (476ft-lb) @1500rpm	575 N.m (424ft-lb) @1500rpm
Torque rise	22-26%	26%

The Industrial Intermittent engine power rating is for applications that operate at varying loads and speeds, and do not fit the Industrial Heavy-Duty rating information.

Some applications require Industrial Heavy-Duty engine power ratings. Please contact your John Deere Power Systems engine distributor for more information.

Power output is within + or - 5% at standard SAE J 1995 and ISO 3046.

Engine Specifications

Features and benefits

4-Valve Cylinder Head

- The 4-valve cylinder head provides excellent airflow resulting in greater low-speed torque and better transient response. Cross flow design

High-Pressure Common-Rail (HPCR) and Engine Control Unit (ECU)

- The HPCR fuel system provides variable common-rail pressure, multiple injections, and higher injection pressures, up to 1600 bar (23,000 psi). It also controls fuel injection timing and provides precise control for the start, duration, and end of the injection

Cooled Exhaust Gas Recirculation (EGR)

- EGR cools and mixes measured amounts of cooled exhaust gas with incoming fresh air to lower peak combustion temperatures, thereby reducing NOx

Variable Geometry Turbocharger (VGT)

- Varies exhaust pressure based on load and speed to insure proper EGR flow; greater low-speed torque, quicker transient response, higher peak torque, and best-in-class fuel economy.

Air-to-Air Aftercooled

- This is the most efficient method of cooling intake air to help reduce engine emissions while maintaining low-speed torque, transient response time, and peak torque. It enables an engine to meet emissions regulations with better fuel economy and the lowest installed costs

Compact Size

- Horsepower/displacement ratio is best-in-class
- Lower installed cost
- Mounting points are the same as Ti er 2/Stage II engine models

John Deere Electronic Engine Controls

- Electronic engine controls monitor critical engine functions, providing warning and/or shutdown to prevent costly engine repairs and eliminate the need for add-on governing components all lowering total installed costs. Snapshot diagnostic data that can be retrieved using commonly available diagnostic service tools
- Controls utilize new common wiring interface connector for vehicles or available OEM instrumentation packages; new solid conduit and "T" connectors to reduce wiring stress and provide greater durability and improved appearance
- Factory-installed, engine mounted ECU or remote-mounted ECU comes with wiring harness and associated components. Industry-standard SAE J1939 interface communicates with other vehicle systems, eliminating redundant sensors and reducing vehicle installed cost

Additional Features

- Glow plugs; gear-driven auxiliary drive; optional 500-hour oil change; self adjusting ploy-vee fan drive

Please follow this link to the manufactures website for more information

SECTION 1
SAFETY

Federal / State Warning Regulations

⚠ WARNING

RESPIRATORY HAZARDS

Grinding/cutting/drilling of masonry, concrete, metal and other materials can generate dust, mists and fumes containing chemicals known to cause serious or fatal injury or illness, such as respiratory disease, cancer, birth defects or other reproductive harm.

SILICOSIS WARNING

Grinding/cutting/drilling of masonry, concrete, metal and other materials with silica in their composition may give off dust or mists containing crystalline silica.

⚠ WARNING

Cancer and Reproductive Harm
www.P65Warnings.ca.gov

For more information reguarding Prop 65, please scan QR code.

CALIFORNIA PROPOSITION 65 WARNING

Gasoline engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

Manual Tag Safety Detail

Safety-Alert Signs

This manual contains Safety-Alert Signs, as defined below, which must be followed to reduce the possibility of improper service damage to the equipment or personal injury. Read and follow all Safety-Alert Signs included in this manual.

NOTE defines an operating procedure, condition, etc. which is essential to highlight that contains useful or important information.

EMERGENCY is used for the identification of safety equipment, first aid, or emergency egress locations.

NOTICE used to convey safety information on labels and signs.

CAUTION is indicative of a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

WARNING Indicative of a potentially hazardous situations that could result in death or serious injury

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury

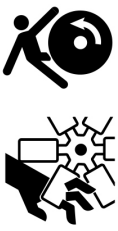
Spark Arrestor Notice

⚠ WARNING ⚠ ADVERTENCIA

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

El funcionamiento de este equipo puede producir chispas que pueden iniciar incendios en vegetación seca. Un supresor de chispas puede ser necesario. El operador debe comunicarse con las agencias locales de bomberos para las leyes o reglamentos relativos a los requisitos de prevención de incendios.

Some states require that in certain locations arrestors be used on internal combustion engines. A spark arrester is a device designed to prevent the discharge of spark or flames from the engine exhaust. It is often required when operating equipment on forested land to prevent the risk of fires. Consult the engine distributor or local authorities and make sure that you comply with regulations regarding spark arrestors.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Rotating parts/crush hazards
	Pressurized fluid hazards
	Hydraulic fluid hazards

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety notes.

SECTION 1 SAFETY

Operating Safety

⚠ WARNING

Familiarity and proper training are required for the safe operation of this equipment! Equipment operated improperly or by untrained personnel can be dangerous! Read the operating instructions contained in both this manual and the engine manual and familiarize yourself with the location and proper use of all controls.

- **ALWAYS** read, understand, and follow procedures in the Operator's Manual before attempting to operate the equipment.

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.

- **NEVER** operate this machine while under the influence of drugs or alcohol.
- **NEVER** allow anyone to operate this equipment without proper training. People operating this equipment must be familiar with the risks and hazards associated with it.

- **NEVER** touch the engine or muffler while the engine is on or immediately after it has been turned off. These areas get hot and may cause burns.
- **NEVER** use accessories or attachments that are not recommended by AEC. Damage to equipment and injury to the user may result.

- **NEVER** operate the machine with the belt guard missing. Exposed drive belt and pulleys create potentially dangerous hazards that can cause serious injuries.
- **NEVER** leave machine running unattended.

- **DO NOT** run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided. Exhaust gas from the engine contains poisonous carbon monoxide gas; exposure to carbon monoxide can cause loss of consciousness and may lead to death.

- **ALWAYS** remain aware of moving parts and keep hands, feet, and loose clothing away from the moving parts of the equipment.
- **ALWAYS** close fuel valve on equipped engines when machine is not being operated.
- **ALWAYS** store the equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children.

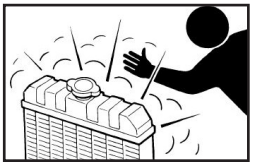
Engine Safety

⚠ DANGER

Internal combustion engines present special hazards during operation and fueling. Read and follow the warning instructions in the engine owner's manual and the safety guidelines below. Failure to follow the warnings and safety guidelines could result in severe injury or death.

- **DO NOT** run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided. Exhaust gas from the engine contains poisonous carbon monoxide gas; exposure to carbon monoxide can cause loss of consciousness and may lead to death.

- **DO NOT** smoke while operating the machine.
- **DO NOT** smoke when refueling the engine.
- **DO NOT** refuel a hot or running engine.



- **DO NOT** refuel the engine near an open flame.
- **DO NOT** spill fuel when refueling the engine.
- **DO NOT** run the engine near open flames.
- **ALWAYS** refill the fuel tank in a well-ventilated area.

- **ALWAYS** replace the fuel tank cap after refueling.
- **ALWAYS** keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.

Service Safety

⚠ WARNING

Poorly maintained equipment can become a safety hazard! In order for the equipment to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary.

- **ALWAYS** disconnect the battery before servicing the equipment.

- **DO NOT** attempt to clean or service the machine while it is running. Rotating parts can cause severe injury.
- **DO NOT** crank a flooded engine with the spark plug removed on gasoline-powered engines. Fuel trapped in the cylinder will squirt out the spark plug opening.

- **DO NOT** test for spark on gasoline-powered engines if the engine is flooded or the smell of gasoline is present. A stray spark could ignite the fumes.

- **DO NOT** use gasoline or other types of fuels or flammable solvents to clean parts, especially in enclosed areas. Fumes from fuels and solvents can become explosive.
- **ALWAYS** turn engine off and remove key from machine before performing maintenance or making repairs.

- **ALWAYS** handle blades carefully. The blades can develop sharp edges which can cause serious cuts.
- **ALWAYS** keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.
- **ALWAYS** replace worn or damaged components with spare parts designed and recommended by AEC Corporation.
- **ALWAYS** disconnect the spark plug on machines equipped with gasoline engines, before servicing, to avoid accidental start-up.

- **ALWAYS** relieve all pressure in the air, oil and cooling systems before disconnecting any lines, fittings or related items. Escaping fluid under pressure has sufficient force to penetrate skin causing serious personal injury, DO NOT check for leaks your hands.
- **ALWAYS** switch off the power supply at the battery disconnect before adjusting or maintaining the electrical equipment.
- **ALWAYS** keep the machine clean and labels legible. Replace all missing and hard-to read labels. Labels provide important operating instructions and warn of dangers and hazards.

- **ALWAYS** wear rubber gloves to avoid personal injury, when you treat fluids used in machine. In case of contact with skin, immediately wash off.

ALWAYS DO A THOROUGH INSPECTION OF THE SLINGS, CHAINS, AND HOOKS BEFORE ATTEMPTING TO LIFT THE MACHINE!

OSHA has set forth guidelines which detail the use of Rigging Equipment for Material handling. This guideline is found under

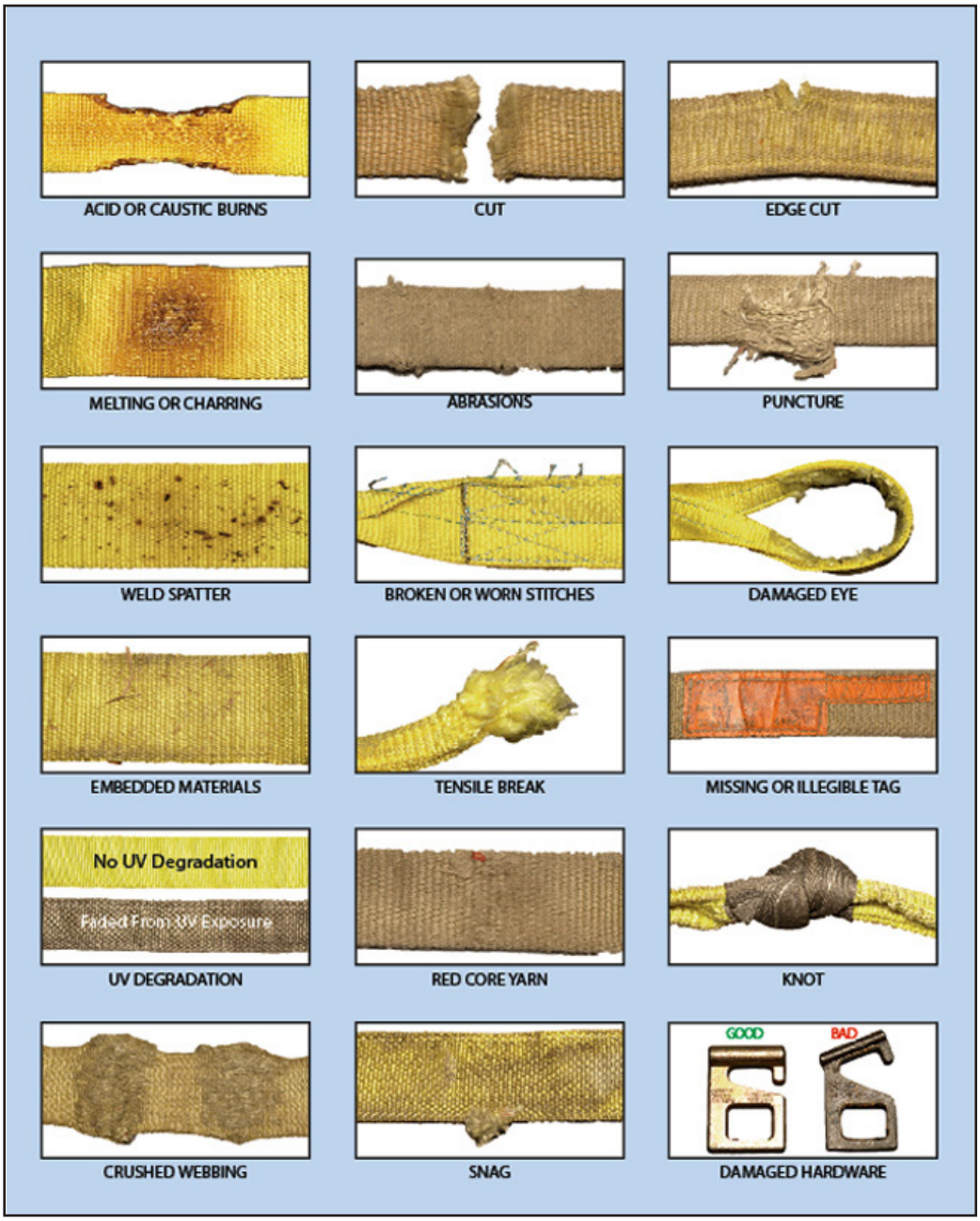
OSHA Standard Number: 1926.251

Please read and follow all guidelines found in this standard.

Removal from service.

Synthetic web slings shall be immediately removed from service if any of the following conditions are present:

OSHA 1926.251(e)(8)



Loading / Unloading Safety

INFORMATION PENDING

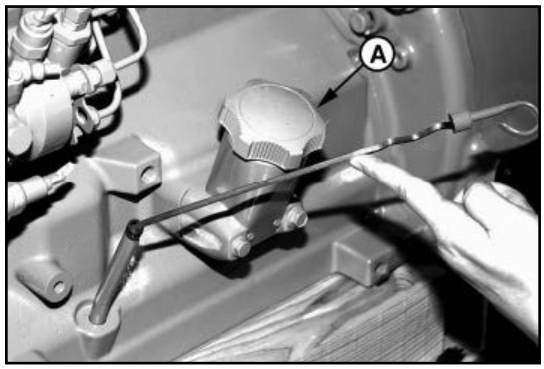
- Make sure the hitch and coupling of the towing vehicle are rated equal to, or greater than the trailer "gross vehicle weight rating."
- **ALWAYS** inspect the hitch and coupling for wear. Never tow a trailer with defective hitches, couplings, chains, etc.
- Check the tire air pressure on both towing vehicle and trailer. Trailer tires should be inflated to 50 psi cold. Also check the tire tread wear on both vehicles.
- **ALWAYS** make sure the trailer is equipped with a safety chain.
- **ALWAYS** properly attach trailer's safety chains to towing vehicle.
- **ALWAYS** make sure the vehicle and trailer directional, backup, brake and trailer lights are connected and working properly.
- DOT Requirements include the following:
    - Connect and test electric brake operation.
    - Secure portable power cables in cable tray with tie wraps.
- The maximum speed for highway towing is 55 MPH unless posted otherwise. Recommended off-road towing is not to exceed 15 MPH or less depending on type of terrain.
- Avoid sudden stops and starts. This can cause skidding, or jack-knifing. Smooth, gradual starts and stops will improve towing.
- Avoid sharp turns to prevent rolling.
- Trailer should be adjusted to a level position at all times when towing.
- Raise and lock trailer wheel stand in up position when towing.
- Place chock blocks underneath wheel to prevent rolling while parked.
- Place support blocks underneath the trailer's bumper to prevent tipping while parked.
- Use the trailer's swivel jack to adjust the trailer height to a level position while parked.
- Use tie downs to ensure machine does not move during transportation.

SECTION 2
OPERATION

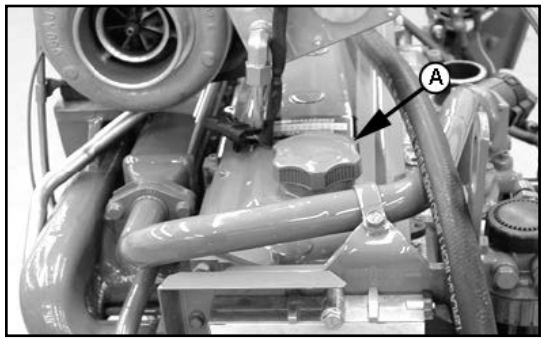
Pre-Start (Daily Check) Procedures

Before operation each day, check for the following:

1. **Check engine oil lever on dipstick.** Add as required, using seasonal viscosity grade oil. (See ENGINE OIL DETAIL). Depending on application, oil may be added at oil filler cap (A) on left side of engine, right side of engine (not shown), or rocker arm cover location.



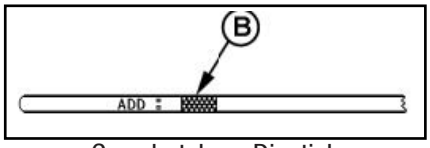
Oil Filler Cap (Left Side)



Oil Filler Cap (Rocer Arm Cover)

NOTICE

DO NOT fill above the top mark on the dipstick. Oil Levels anywhere within crosshatch marks (B) are considered in the acceptable operating range.



Crosshatch on Dipstick

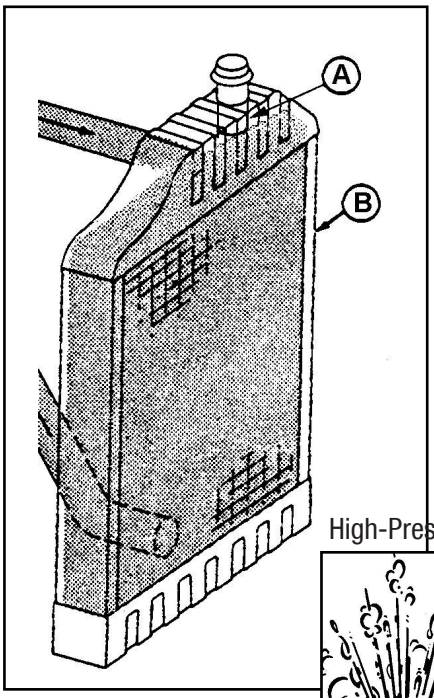
2. **Check the coolant level** when engine is cold.. Coolant level should be at bottom of surge tank filler neck or radiator filler neck (A). If equipped with a translucent surge tank, coolant level should be at cool fill line indicator on surge tank. Add proper coolant solution to radiator (B) or surge tank with if level is low. (See ENGINE COOLANT DETAIL) Check overall cooling system for leaks.

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

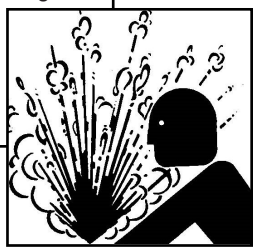
⚠ CAUTION

Only remove filler cap when engine is cold or when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

Fill Radiator

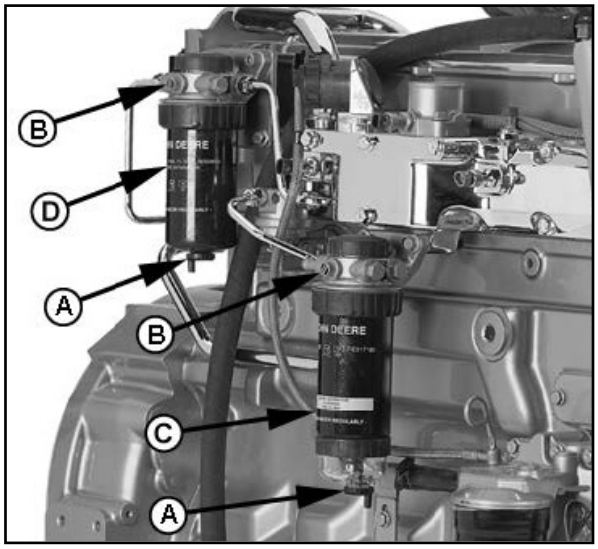


High-Pressure Fluids



Pre-Start Procedure

3. **Check the primary fuel filter (C) and the final fuel filter (D) for water or debris.** If filter is fitted with a seethrough bowl, drain as needed based on a daily visual inspection.



Drain Fuel Filters

NOTICE **Drain water into a suitable container and dispose of properly.**

a. Loosen drain plugs (A) at bottom of fuel filters or bowls, if equipped, half turn to one turn.

b. Loosen air bleed plugs (B) two full turns on fuel filter mounting and drain water from bottom until fuel starts to drain out.

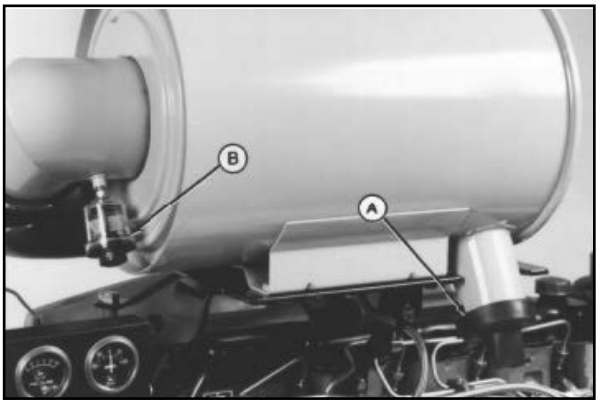
c. When fuel starts to drain out, tighten drain plugs securely.

After draining water from the fuel filters, the filters must be primed by bleeding all air from the fuel system.

NOTE Engine is equipped with a waterinfuel sensor at the primary fuel filter (C). Indicator light will signal the operator that water should be drained from the filter bowl.

4. **Check the Air Cleaner.** If the air cleaner has an automatic dust unloader valve (A), squeeze the unloader valve on air cleaner assembly to clear away any dust buildup.

   If equipped with air intake restriction indicator guage (B), check gauge to determine if air cleaner needs to be serviced.



Dust Unloader Valve and Indicator Gauge

NOTICE **Maximum air intake restriction is 6.25 kPa (0.06 bar) (1.0 psi) (25 in. H20). A clogged air cleaner element will cause excessive intake restriction and a reduced air supply to the engine.**

5. **Make a thorough inspection of the engine compartment.** Look for oil or coolant leaks, worn fan and accessory drive belts, loose connections and trash buildup. Remove trash buildup and have repairs made as needed if leaks are found.

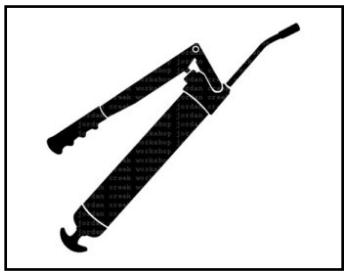
Inspect:

- Radiator for leask and trash build-up
- Air intake system hoses and connections for cracks and loose clamps
- Fan, alternator, and accessory drive belts for cracks, breaks, or other damage.
- Coolant pump for coolant leaks

NOTE Wipe all fittings, caps, and plugs before performing any maintenance to reduce the chance of system contamination.

NOTE It is normal for a small amount of leakage to occur as the engine cools down and parts contract. Excessive coolant leakage may indicate the need to replace the coolant pump seal. Contact your engine distributor or servicing dealer for repairs.

6. **Grease Points.** Some points on the machine need to be greased daily in order to maintain proper operation. See “GREASE POINTS” in this manual for detail explanations on which points need to be greased daily and ones that need weekly attention.



NOTE **NOTE:** Grease type **Mobil SHC 220** or similar is recomended for use on this machine.

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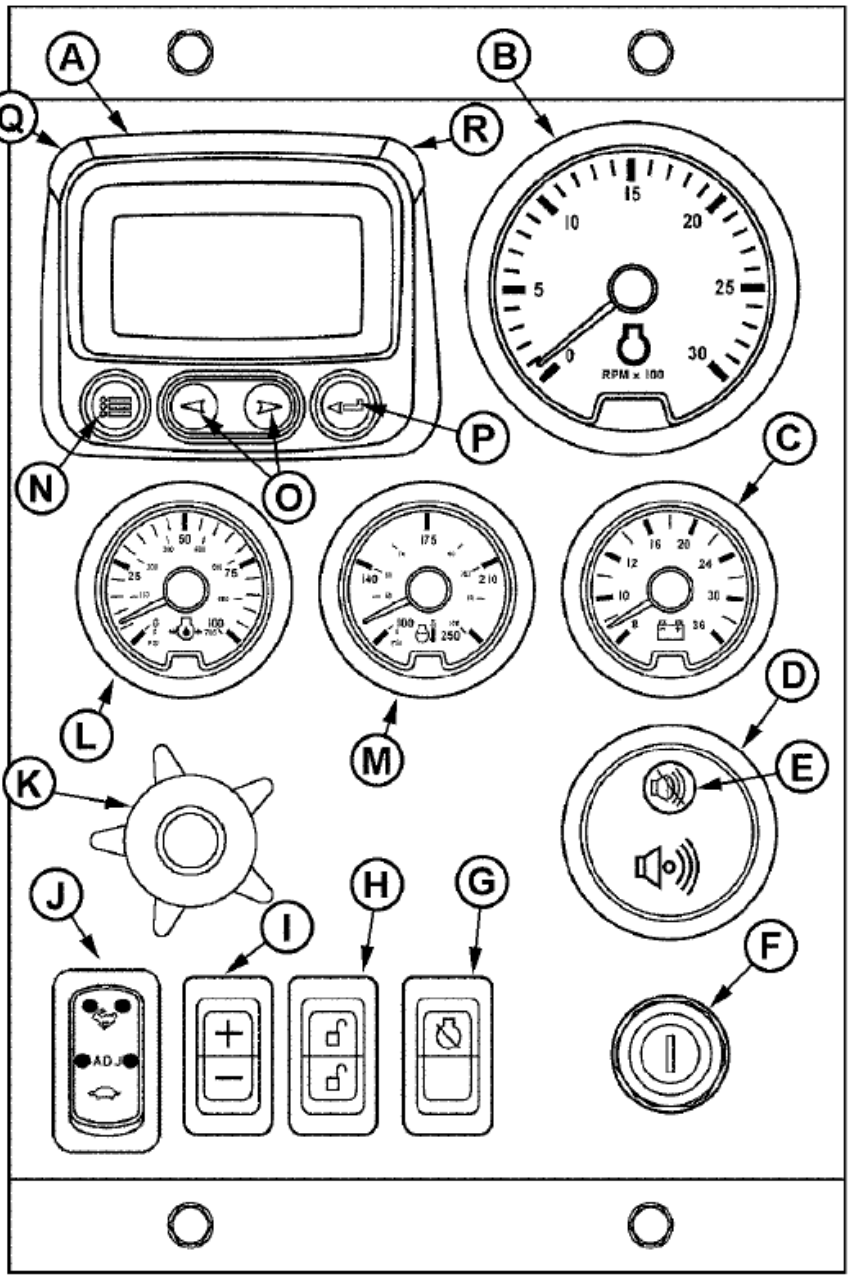
1. All guards, side screens and panels are in place
2. All safety and information signs are in place and legible
3. Gearbox, and Hydraulic Oil levels are correct.
4. Fuel level in fuel tank.
5. Condition of the Vibrators
6. Check operating controls for proper operation and adjustment
7. Check speed control operation before and after starting engine for proper operation
8. Check for any hydraulic leaks
9. Check for obstructions and debris under paving pan
10. Check engine fan for obstructions
11. Remove any loose objects that could interfere with the operation of the Paver
12. Check that all switches and convtrol levers are in the neutral position
13. Check that all personal are free and clear of moving parts

Note: If there is any indication that faulty equipment exists, shutdown safely, inform the proper authority and **DO NOT** operate the riding trowel until the problem has been fixed.

Engine Instrument Panel



A - Diagnostic Gauge / Hour Meter
The diagnostic gauge (A) displays diagnostic trouble codes (DTCs) as they are accessed. Other information on the engine can be accessed using the touch keys (N, O and P). The hour meter feature shows the operating hours of the engine and should be used as a guide for scheduling periodic maintenance. If the diagnostic gauge receives a trouble code from an engine control unit, the current display will switch to a warning or shutdown (depending on the severity of the code) screen that will display the trouble code number, the description of the code and the corrective action needed.

B - Tachometer
The tachometer (B) indicates engine speed in hundreds of revolutions per minute (rpm).

C - Voltmeter (Optional)
The voltmeter (C) indicates system battery voltage. The amber "Warning" light (Q) will illuminate when battery voltage is too low for proper operation of the fuel injection system.

D - Audible Alarm (Optional)
The audible alarm (D) will sound whenever low oil pressure, high coolant temperature, or water-in-fuel conditions exist. This includes all signals that light up the amber "warning" indicator (intermittent alarm) or the red "stop engine" indicator (steady alarm).

E - Audible Alarm Override Button
The optional audible alarm has an override button (E) that silences the audible alarm for approximately two minutes when pressed.

F - Key Start Switch
The three-position key start switch (F) controls the engine electrical system. When the key switch is turned clockwise to "START", the engine will crank. When the engine starts, the key is released and returns to the "ON" (RUN) position.

G - Override Shutdown Rocker Switch
Switch will be present, but may not be active, depending on engine control unit (ECU) options originally selected. If switch is active, pressing the upper half of the override shutdown switch (G) will override an engine shutdown signal. The switch must be pressed within 30 seconds to prevent undesired shutdown of engine. Pressing this switch will override the engine shutdown for 30 seconds at a time to move vehicle to a safe location.

H - Bump Speed Enable Rocker Switch
This is a threeposition switch (H) with the center position as "OFF" (locked). With this switch in the "OFF" position, the speed select switch (I) is also locked, to prevent accidental changes in operating speed. Pressing upper or lower half of switch (H) will unlock or enable the bump speed switch to take effect using speed select switch (I).

I - Speed Select Rocker Switch
The speed select switch (I) is used to bump engine speed up (+) or down (-) in small increments during operation. This switch must be used with the bump speed enable switch (H) in the unlocked position (top or bottom half of button depressed).

J - High / Low Speed Select Rocker Switch
The highlow speed select switch (J) is used to set the engine operating speeds at slow (turtle) or fast (rabbit). Factory preset idle speeds can also be adjusted using bump speed enable switch (H) with speed select switch (I). The basic instrument panel will have the highlow speed select switch only. Press and hold up (+) or down (-) to adjust engine speed as desired. The engine speed selected will not be held in the memory. To adjust engine speeds, See Changing Engine Speeds in Section 20 of Engine Owners Manual.

How to Select Preset Operating Speeds (Bump Speeds)
First select Turtle (Slow) or Adj by pressing speed select switch (J) to "Turtle" (slow) or "Adj"(center). Then you can press either the upper or lower portion of the bump speed enable switch (H) to unlock the setting. The bump speed enable must be held down as the speed select switch (J) is used to change the setting by pressing (+) to increase speed or (-) to decrease speed.

Once the slow idle speed has been set, the bump speed enable switch must be pressed and released three times within two seconds to commit the new operating speed to memory. If not done, the engine's new speed will only be effective until the key switch is shut off. Then the speed will revert back to the previous setting.

The fast idle speed is not adjustable. It will always go back to the factory preset fast idle speed.

K - Analog Throttle Control (Optional)
The throttle control (K) is used to control engine speed. This control is available only on engines with analog throttle.

L - Engine Oil Pressure Gauge
The oil pressure gauge (L) indicates engine oil pressure. An audible alarm (D) warns the operator if engine oil pressure falls below a safe operating pressure.

M - Engine Coolant Temperature Gauge
The engine coolant temperature gauge (M) indicates engine coolant temperature. An audible alarm (D) warns the operator if coolant temperature rises above the preset safe operating temperature.

N - Menu Key
The menu key is pressed to either enter or exit the menu screens on the diagnostic gauge.

O - Arrow Keys
Use the arrow keys (O) to change the display on the window of the diagnostic gauge and to access engine performance data.

Pressing the left arrow to scroll to the left or upward or the right arrow to scroll to the right or downward. This will allow you to view various engine parameters and any diagnostic trouble codes that occur.

Refer to the following story for accessing engine information on the diagnostic gauge using the touch keys.

P - Enter Key
The enter key is pressed to select the parameter that is highlighted on the screen.

Q - Amber "WARNING" Indicator Light
When light comes on, an abnormal condition exists. It is not necessary to shut down the engine immediately, but the problem should be corrected as soon as possible.

R - Red "STOP ENGINE" Indicator Light
When light comes on, stop engine immediately or as soon as safely possible to prevent engine damage. Correct problem before restarting.

See John Deere Operators Manual - Instrument Panels for more details.

Engine Start Procedure

Starting the Engine

The following instruction apply to the optional controls and instuments available through the John Deere Parts Distribution Network. The controls and instruments for your engine may be different from those shown here; always follow manufacturer's instructions.

⚠ CAUTION **Before starting engine in confined building, install proper outlet exhaust ventilation equipment. Alwasy use safety approved fuel storage and piping.**

NOTE: If temperature is below 0°C (32°F), it may be necessary to use cold weather starting aids.

1. Perform all prestarting checks outlined in Pre-Start Procedure.
2. Open the fuel supply shut-off valve, if equipped.
3. Disengage power (or clutch if equipped) to again engine drivelines.
4. Set slow idle as follows:
   - **Panels with high-low speed select rocker switch (J) only:** Set slow speed by pressing lower half of switch.
   - **Panels with Optional analog throttle(s) (K):** Set high-low speed select rocker switch to slow (turtle), then push in on analog throttle handle to turn full counterclockwise to set analog throttle(s) to slow speed.

NOTICE **Do not operate the starter for more than 30 SECONDS at a time. To do so may overheat the starter. If the engine does not start the first time, wait at least 2 minutes before trying again. If engine does not start after four attempts, see Troubleshooting section.**

5. Turn the key start switch (F) clockwise to the "ON" position. Wait until the Engine Preheater Indicator light turns off, then turn the key start switch clockwise "START" position to crank the engine. (In cold weather, preheater indicator light remains on longer while engine is warmed.) When the engine starts, release the key switch so that it returns to the "ON" position.

NOTICE **If the key switch is released before the engine starts, wait until the starter and the engine stop turning before trying again. This will prevent possible damage to the starter and/or flywheel.**

6. After engine starts, idle engine at not more than 1200 RPM until warm.
   - **Panels with high-low speed select rocker switch (J) only:** Set RPM using bump speed enable switch (H) with speed select rocker switch (I).
   - **Panels with optional analog throttle (K):** Set either high-low speed select switch (J) or analog throttle (K) to slow speed, and set desired speed with remaining control.

NOTE Engine control unit (ECU) reads the higher of the high-low speed select rocker switch or the analog throttle speed settings

7. Check all gauges for normal engine operation. If operation is not normal, stop the engine and determine the cause.

Normal Engine Operation

Observe engine coolant temperature and engine oil pressure. Temperatures and pressures will vary between engines and with changing operating conditions, temperatures, and loads.

Normal engine coolant operating temperature range is 82°—94°C (180°—202°F). If coolant temperature rises above 112°C (234°F), reduce load on engine. Unless temperature drops quickly, stop engine and determine cause before resuming operation.

Normal engine oil pressure at slow idle should be at least 105 kPa (15 psi) and should rise to at least 172 kPa (1.72 bar) (25 psi) at rated speed. Engine oil pressure at rated speed can be as low as 241 kPa (2.41 bar) (35 psi) and high as 586 kPa (5.86 bar) (85 psi). This not detrimental to the engine.

Operate the engine under a lighter load and at slower than normal speed for first 15 minutes after startup. **DO NOT** run engine at slow idle.

NOTICE Should the engine die while operating under load, immediately remove load and restart the engine. Overheating of the turbocharger parts may occur when oil flow is stopped.

Stop engine immediately if there are any signs of part failure. Symtoms that may be early signs of engine problems are:

- Sudden drop in oil pressure
- Abnormal coolant temperatures
- Unusual noise or vibration
- Sudden loss of power
- Exccessive black exhaust
- Excessive fuel consumption
- Excessive oil consumption
- Fluid leaks

NOTE These engines meet emission standards with an exhaust gas recirculation system and a variable geometry turbocharger. A revving sound may be heard for an instant after starting, as the variable geometry turbocharger recycles. This is normal.

Restarting Engine After Emergency Shutdown

In the event of an emergency engine shutdown, the following procedures are required to restart the engine.

1. Correct the condition causing the emergency shutdown
2. Perform initial restarting procedures, as required. See STARTING THE ENGINE, steps 1 through 4, earlier in this section.

NOTE For ALL emergency shutdowns, the controller must be reset before the engine can be restarted. Recycle the key switch to reset the controller.

3. Recycle the key start switch (F) as follows:
   a. Turn key switch off.
   b. Wait 15 seconds.
   c. Turn key switch clockwise to crank the engine.
4. Perform final restarting procedures, as required. See STARTING THE ENGINE, steps 6 and 7, earlier in this section.

Engine Run Procedure

Avoid Excessive Engine Idling

Prolonged idling may cause the engine coolant temperature to fall below its normal range. This, in turn, causes crankcase oil dilution, due to incomplete fuel combustion, and permits formation of gummy deposits on valves, pistons, and piston rings. It also promotes rapid accumulation of engine sludge and unburned fuel in the exhaust system.

Once an engine is warmed to normal operating temperatures, engine should be idled at slow idle speed.

Slow idle speed for this engine is 800 rpm at factory. If an engine will be idling for more than 5 minutes, stop and restart later.

NOTE Generator set applications where the governor is locked at a specified speed may not have a slow idle function. These engines will idle at no load governed speed (high idle).

Changing Engine Speed

Changing from slow to fast speed using Adjustable High-Low Speed Select Rocker Switch (J)

Engine panels have an adjustable three-position rocker switch (J) that can be used to select slow idle, fast idle, or and adjustable ("ADJ") intermediate speed.

- For slow speed, press lower half of rocker switch (indicated by turtle symbol)
- For fast speed, press upper half of rocker switch (indicated by rabbit symbol)

NOTE To adjust preset fast or slow speed with adjustable High-Low speed Select Rocker Switch:

1. Select middle position (ADJ) to slow (turtle) position on the optional Adjustable Three-State Speed Select Rocker Switch (J)
2. Press and hold top or bottom half of Bump Speed Enable Rocker Switch (H) while using Speed Select Rocker Switch (I)
3. Use Speed Select Rocker Switch (I) to bump engine speed up (+) or down (-)

NOTE Slow (turtle) position is factor preset at low engine idle, while middle (ADJ) position is factory set at high engine idle.

NOTE Once the speed has been set, the BUmp Speed Enable Switch (H) must be pressed and released three times within two seconds to commit the new slow or fast speed to memory. If not done, the engine's new slow or fast speed will only be effective until the key is shut off. Then the speed will revert to its previous setting.

Changing engine speed using optional analog throttle (K)

NOTE Pushing in on analog throttle will immediately take engine to slow idle speed.

1. Set High-Low Speed Select Rocker Switch (J) to low speed "turtle" position.
2. Turn along throttle (K) clockwise to increase speed or counterclockwise to decrease speed.

NOTE Engine Control Unit (ECU) reads the higher of the HighLow Speed Select Rocker Switch or the Analog Throttle(s) Speed Settings. With HighLow switch at low speed, Analog Throttle(s) will control speed higher than low idle setting.

Stopping the Engine

1. Disengage clutch, if equipped, controlling engine power driveline.

NOTICE

Before stopping an engine that has been operating at working load, idle engine at least 2 minutes at 1000-1200 rpm to cool hot engine parts.

Engines in generator set applications where the ECU is locked at a specified speed and no slow idle function is available, run engine for at least 2 minutes at fast idle and no load.

2. Run engine at 1000-2000 rpm for at least 2 minutes to cool.
3. Set either High-Low Speed Select ROcker Switch (J) or Analog Throttel (K) to low idle, and set desired speed with remaining control.

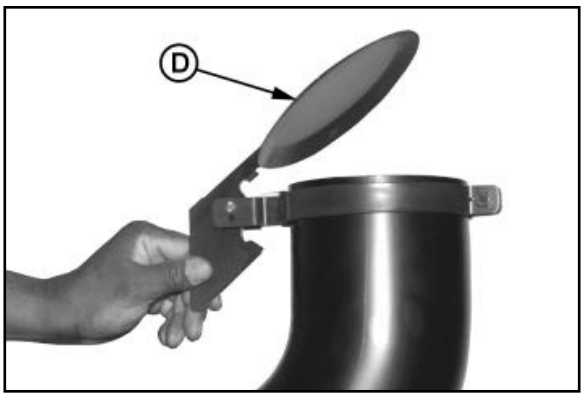
NOTE

Engine Control Unit (ECU) reads the higher of the High-Low Speed Select Rocker Switch or the Analog Throttle(s) Speed setting.

4. Push in on analog throttle potentiometer handle (if equipped) so that engine goes to slow idle, or set slow speed with High-Low Speed Select Rocker Switch.
5. Turn Key switch (F) to “OFF” position to stop the engine, Remove ignition key.

NOTICE

Make sure that exhaust stack rain cap (D) is installed when engine is not running

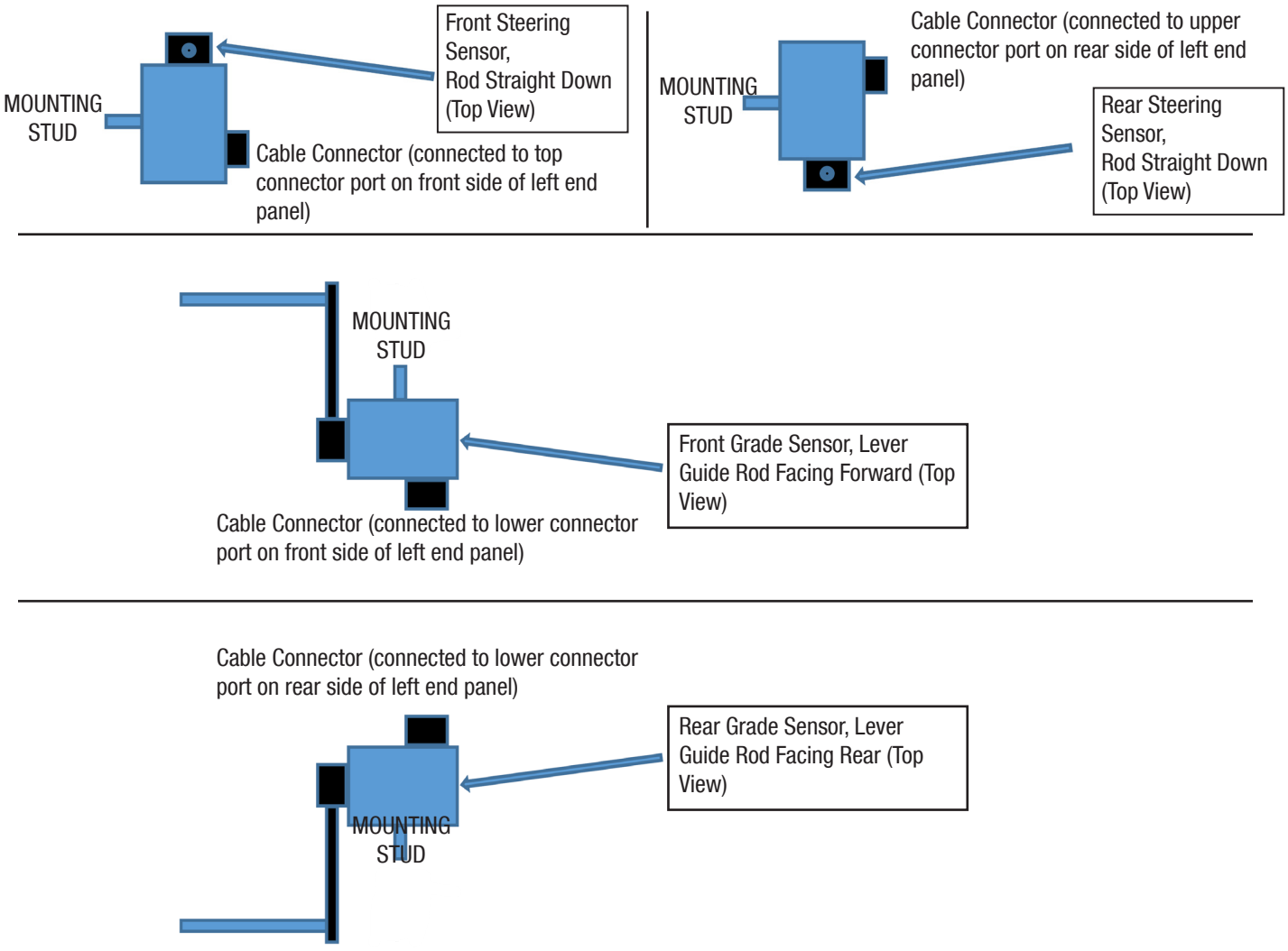


Quick Start Guide

To set up for string line grade control on left side and steer on left side:

- Right side will be controlled in Slope Mode, Left Side will be string line control
- Setup Switches will be as follows:
  - ON LEFT PANEL - Auto Grade Left Side Mode Set to STRING
    - » Selects Function of Left Towers in Auto Mode
  - ON LEFT PANEL - Auto Grade Right Side Mode Set to SLOPE
    - » Selects Function of Right Towers in Auto Mode
  - ON LEFT PANEL - Auto Steer Set to LEFT STRING
    - » Selects String side that will be used for Auto Steer

Position Strring Line Sensors on LEFT String Line and with Orientation as Shown:



Basic Power Up/Functionality of Switches and Keypads:

Set Switches as Noted Prior to Startup

Operator Control Panels:

- *Vibrator Switch* - Set to "OFF" Position (Located on Right Panel)
  "MAN" turns on Vibrators at any time, "AUTO" setting turns vibrators on/off with AutoPave ON/OFF switch so when propel is turned off, vibrators automatically stop.

- *AutoPave Switch* - Set to "OFF" Position (Located on Right Panel)
  Auto Pave switch is a Master switch for the Auto functions. This includes steer, tower control (grade/slope) and propel. None of these functions will operate in an auto mode without this switch in the ON position.

- *Autopave INC/OFF/DEC Switch* (Located on Right Panel)
  This switch increases or decreases the propel speed setting when in Autopave mode. A bar graph on screen indicates the speed setting of the Autopave speed. This speed setting can be adjusted at any time. (Auto pave speed is limited to approximately 20% of full speed)

- *Propel Mode* – Set to MAN (Mid Position) Located on Right Panel
  Propel Mode switch controls the propel functionality. The "AUTOPAVE FWD" selects FWD travel in Autopave mode with the respective FWD steer sensor based on the Right or Left Side Selection of the AUTO STEER switch located on left panel. The "AUTOPAVE REV" selects REV travel in Autopave mode with the respective REV steer sensor based on the RIGHT or LEFT side selection of the AUTO STEER switch. No Movement will occur if AUTOPAVE switch is not in the ON position or if the respective steering sensor being requested is not within an operational band of 10-90 Percent of the rotational movement of the sensor (if sensor not on line/ a fault message will appear when travel is requested). The MAN or Mid position of the switch activates the functionality of the propel joysticks (Left on Left Panel/Right on the Right Panel)

- *Right Propel Joystick* - Set to Neutral Positon (Located on Right Panel)
  Right propel Joystick controls right track direction and speed when propel mode switch is in Mid position. (MAN)
- *Left Propel Joystick* - Set to Neutral Positon (Located on Left Panel)
  Left propel Joystick controls Left track direction and speed when propel mode switch is in Mid position. (MAN)

- *Right Auger Joystick* - Set to Neutral Positon (Located on Right Panel)
  Right Auger Joystick controls right material auger direction and speed. Auger can be operated at any time pumps are at pressure.

- *Left Auger Joystick* - Set to Neutral Position (Located on Left Panel)
  Left Auger Joystick controls left material auger direction and speed. Auger can be operated at any time pumps are at pressure.

Quick Start Guide

- *P1, P2, Switches* - Set to Off Position (Located on Right Panel)
  Controls the main hydraulic pumps and when activated brings respective pump(s) to operating pressure. P1 is normally set at 2500 PSI and P2 is normally set at 1500 PSI. Pressures are indicated on the operating panel

- *E-Stop Switch Verify* - it is fully in the Up Positon (Located on Right Panel)
  E-Stop warning to check E-Stops will appear on the display if any of the three E-Stops are pushed in. E-Stops are located on End Panels of machine as well as the one located on the right operator panel. Pressing E-Stop will kill engine, however will not shut down the control system.

- *Control Power Switch* (Located on Right Panel)
  Control power switch has 3 positions. ON, OFF, TEST. At current time the TEST position is not an active function. Turning on the control power powers up the display and the controllers. Left Circuit Breaker on Right Panel controls power to center console, Center Circuit Breaker controls power to left side controller, Right Circuit Breaker controls power to right side controller. Make sure none of the circuit breakers have the yellow tab visible.

- *Belt ON/OFF Switch* - Set to Off (Located on Left Panel)
  This switch stops and starts the conveyor belt. The speed of the belt is controlled by the INC/DEC switch located beside the on/off switch. Current speed setting is indicated by bar graph on main screen. Belt will return to last set speed. Conveyor can be operated at any time the pumps are at pressure.

- *Belt INC/DEC Switch*
  This switch adjusts speed of the conveyor belt. A bar graph is located on display that shows the current speed setting of conveyor belt. Speed can be adjusted at any time

- *Auto Grade Switch* - Set to off (Located on Left Panel)
  This switch controls the Tower Auto functions based on the selection of string or slope control for the respective side. For this switch to be active the AutoPave switch must be in the ON position. If this switch is in the on position when the AutoPave switch is turned on, then all towers will come up in the last state. (If all were in Auto, then all towers will come on in auto.

  When this switch is OFF when Auto Pave is turned on, then all towers will come up in Manual mode and can be set to AUTO mode one at a time with the AUTO/MAN Key located on the Tower Keypad. When positioning machine before operation, always power up with Auto Grade set to off and manually turn each tower to AUTO and get that axis stable before turning on additional towers.

- *Tower Keypad*
  This 3 x 5 Keypad (15 Keys) is located on the left console and is dedicated to Tower Control. There are 3 keys assigned to each tower (1 row per tower) and the two keys starting from the left provide a raise and lower function when tower is in manual and a sensitivity adjustment when in Auto mode. The Auto/Man mode is reflected by the 3 LEDS located on the most right hand key being on in Auto Mode and off in Manual mode. This mode is also reflected on the operator Display with an A for Auto for each Tower and an M for Manual for each tower. Pressing the Right hand key for the respective tower turns the tower mode from manual to auto. Auto Mode is only enabled when Autograde switch is set to ON and the Autopave Switch is set to ON.

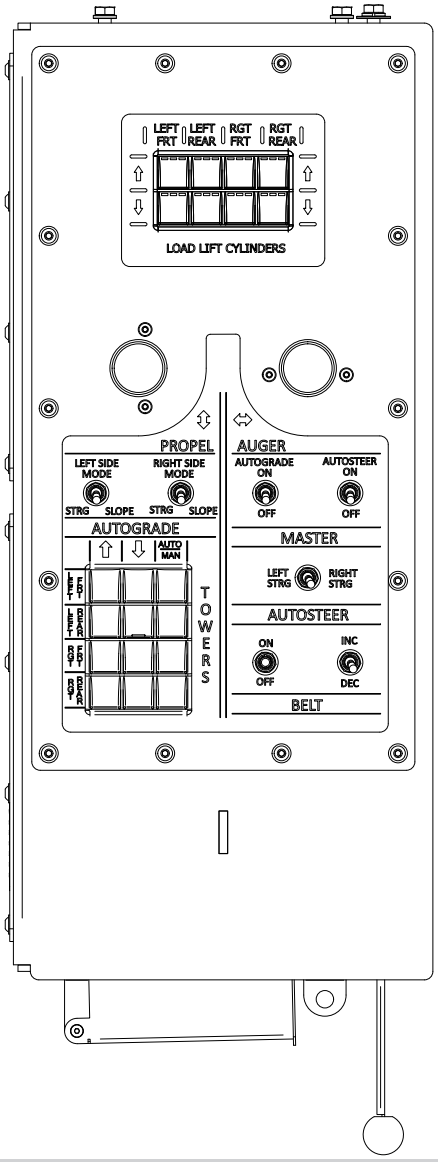
- *Load Lift Keypad*

  This 2 x 4 Keypad (8 Keys) is located on left console. It provides individual control of load lift cylinders. Multiple buttons can be pressed at the same time. It is active at any time the pumps are at pressure.

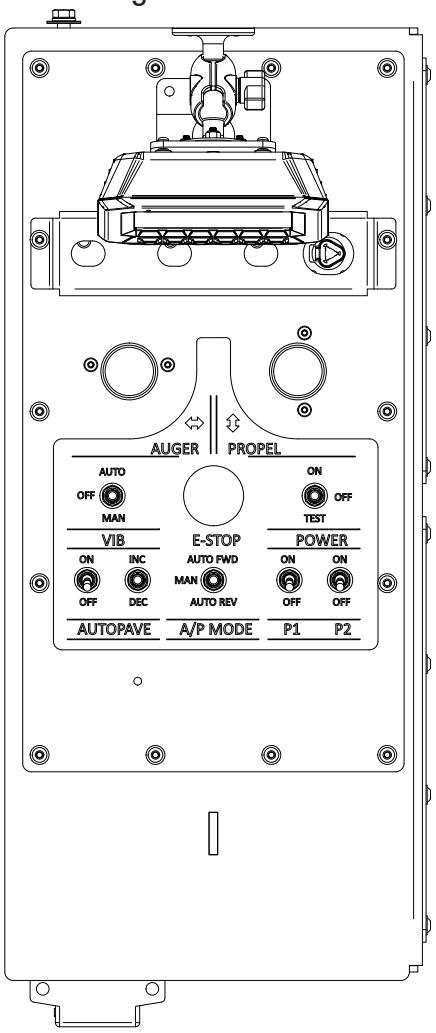
CAUTION:

ALWAYS PUT MACHINE ON LINE AND POSITION THE MACHINE AS CLOSE TO FINAL STRING LINE POSITION AS PRACTICAL BEFORE TURNING ON ANY AUTOMATIC TOWER OPERATION. LARGE FRAME MACHINES HAVE A LIMIT TO THE AMOUNT OF VARIATION THAT CAN BE ACCOMMODATED FROM TOWER TO TOWER, SO IF A TOWER IS COMMANDED TO LOWER THE FRAME AND THE FRAME CANNOT ACCOMMODATE THAT MOVEMENT, THEN THE TOWER WILL PULL THE TRACK OF THE GROUND AND CREATE AN UNDESIRABLE SITUATION.

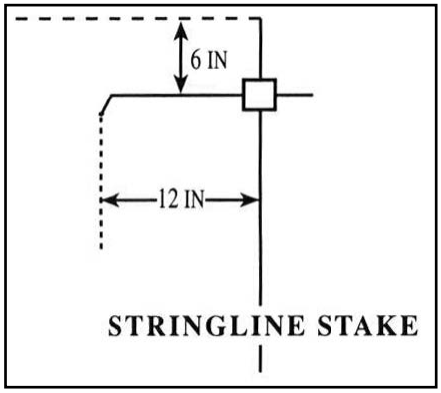
Left Side Panel



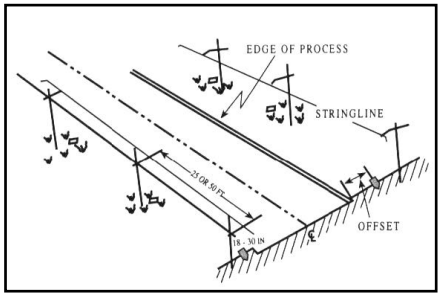
Right Side Panel



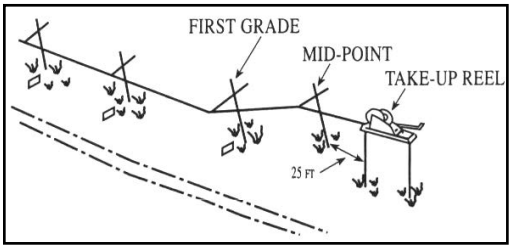
Stringline Setup



Assemble the stringline stakes so the stringline holders are uniform horizonatally and vertically.



Typical Stringline Installation



Take-up Reel Installation

1. Typical stringline installation.

Start by sliding the stringline rod into the bracket and securing it with a set screw. The notched end of the rod should be about 12 inches (300mm) from the rod bracket. Slide the rod bracket onto the the stringline stake, with the notched end up, and position it about 6 inches (150mm) from the blunt end of the stake. temporarily secure with the set screw.

Load the stakes on a truck and drop one stake at each stringline hub along the route. The number of stakes required will depend on the length of the stringline station - normally 1,500 ft. (450 m) maximum - and the spacing between hubs.

After the stakes have been dropped, work back toward the starting point. Drive one stake about 1 ft. (30mm) to the rear of each hub. Each stake must be vertical and driven deeply enough to give it stability. The slotted end of the holder must be directly over the tack line. Use a plumb bob to determine the holder's horizontal placement. Then, use the folding rule or a rod marked with the exact dimension to position the holder vertically. The height of the holders is calculated beforehand and is uniform for each stringline stake. The agreed upon distance between the holder and the hub should be between 1.5 ft and 2.5 ft (450-750 mm) whenever possible.

2. Take-up reel installation

After the stringline stakes are positioned, install one stringline take-up reel about 25 ft (8m) behind the first stringline stake. Offset the take-up reel 12-18 in (300-450 mm) outside the line of stringline stakes with the crank handle to the outside.

To set up the take-up reel, drive two stringline stakes through the pockets of the take-up reel firmly in place. Slide the reel up the stakes to a height that is convenient for for turning the crank.

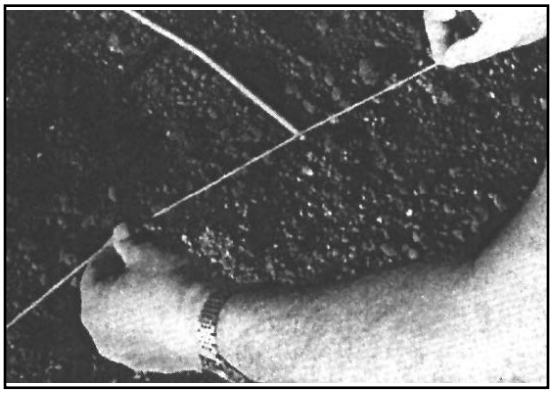
Locate another stringline stake midway between the first stringline stake and the take-up reel. The stringline holder of the mid-point stake should be 1-2 in (25-50 mm) higher than the other holders. This stake will serve to relieve the strain on the first stake. It will prevent the sensor wand from tracing the take-up line.

3. Reeling out stringline.

To reel out the stringline rapidly, place a storage reel(two reels if it's a dual stringline) in the bed of a truck. Tie the end of the stringline to the take-up reel and wind about 25 ft (7.5 m) of line on the take-up reel. Then, drive the truck the length of the stringline stake.

Unwind an additional 50 ft (15 m) of line. Twenty-five ft (7.5m) of the extra line is for the distance to the next take-up reel and then the other 25 ft (7.5 m) is for winding on the take-up reel. The extra line on each take-up reel is used in
case the stringline breaks and slack is needed to repair the break.

Install another take-up reel and mid-point stake behind the last stringline stake. Pull the stringline as tightly as possible
by hand and tie the line to the take-up reel. Tighten the stringline with the take-up reel until it is taught.



The stringline should slip into the notches easily, but not pull out without force

Then walk down the roadway, placing the stringline in the notches in the holders. The stringline should slip into the notches easily, but not pull out without force. Adjustment of the notch openings can be made using a screwdriver to open it or a pair of pliers to close it. Check to see if there are any burs on the notches that would cut the line. Use the three-cornered saw file to deburr the notches.

Be sure the stringline is tight. There should be no sag between the stringline stakes.

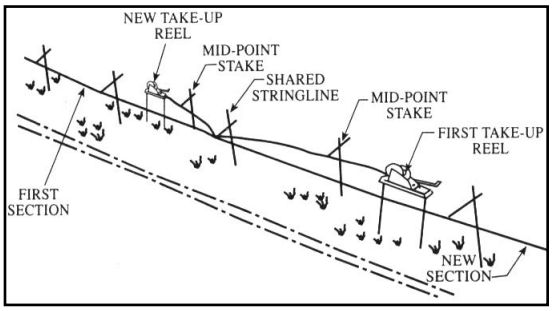
With the folding rule and plumb bob, check the elevation and alignment of the of the stringline at each stake.

4. Continuous stringline

Stringline stations, the distance between take-up reels, should be limited to 1,500 ft (450m). To continue the stringline for greater distances, an anchoring station must be installed.

To continue the stringline, place a new take-up reel and mid-point stake between the last two stakes of the first stringline station. Secure the new reel and install the stringline on the reel in the previously described manner.

When the new stringline is being fitted in the holder notches, the last stake in the old station will become the first stake in the new station. That notch will have two stringlines in it and will have to be widened to accommodate the extra thickness. The shared stake will be in the middle of the anchor station. It marks the end of one stringline station and the beginning of a new one.

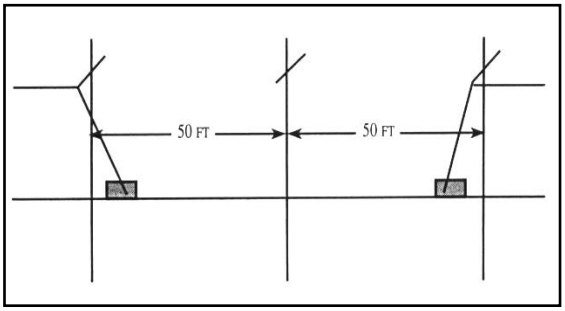


Anchor stations are used to connect stringline stations which are normally no more than 1,500ft (450 m) long.

Stringline Setup

5. Stringline gates

Sometimes, “gates” must be created in continuous stringlines to permit entry and exit for material supply trucks. A simple and effective way to create a gate is to remove the stringline from one holder and use cement blocks at the stakes on either side of that stake and holder to force the stringline down. This works when the stakes are placed at 50 ft (15 m) intervals. If the stakes are placed at 25 ft (7.5 m) intervals, remove the stringline from two consecutive holders to gain enough slack in the stringline to force it down so trucks can drive over it.



Stringline “gates” can be made by removing from one stringline holder and using cement blocks to force down the stringline at the two adjacent stringline stakes.

6. Dismantling the stringline

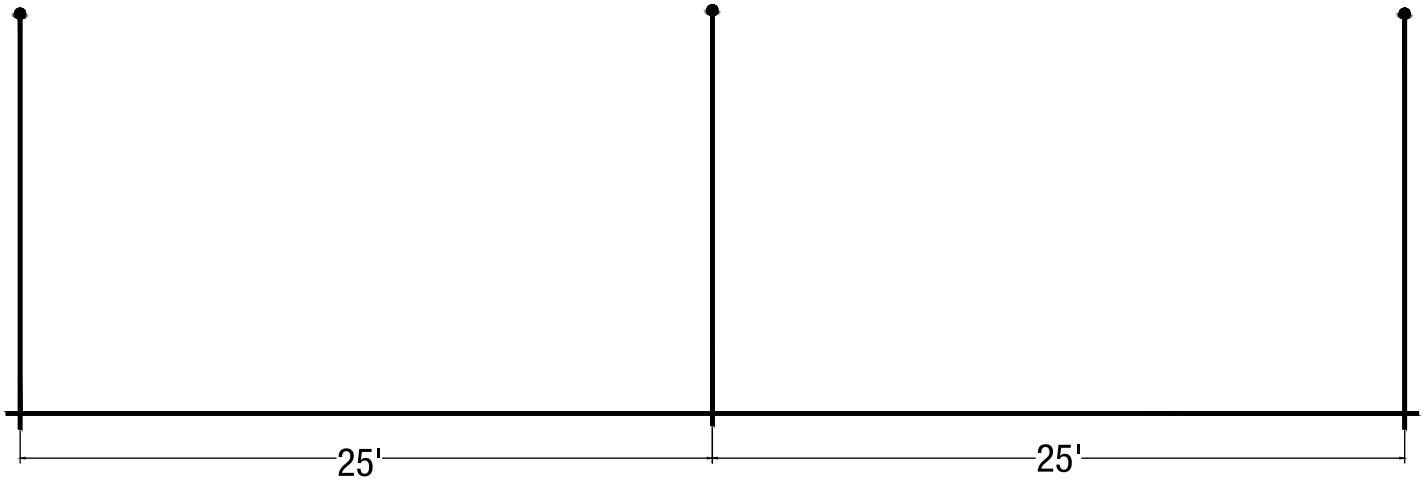
To dismantle and store the stringline, first, remove the stringline from the holder notches. Then, release the tension on the take-up reels and unwind the excess line from the reels.

Pull the stakes and load them in a truck for transport to the next section of roadway or to storage. Wind the stringline onto the storage reel(s).

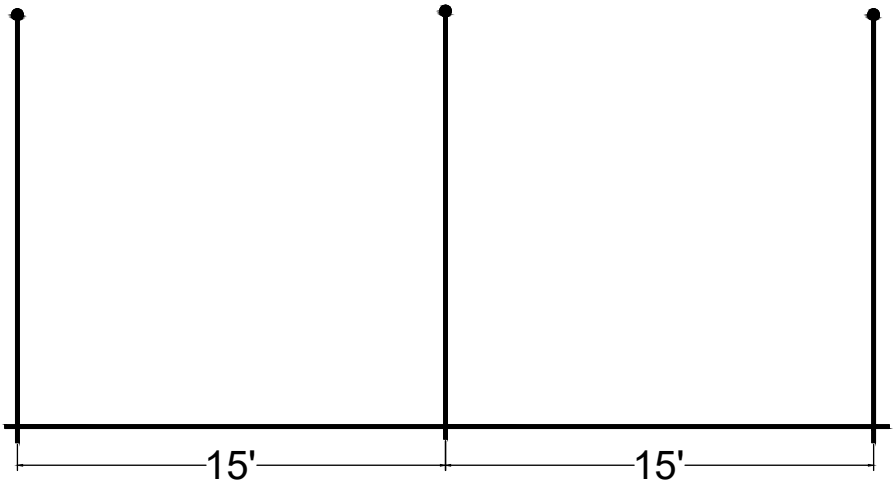
7. Stringline Repair

A break in the stringline can be repaired by tying the stringline together with a square knot. The knot will not alter the accuracy of the reference but it must be tied securely enough to permit proper tightening of the stringline. All loose ends at the knot must be trimmed.

STRINGLINE STAKE SPACING
GENERAL SETUP TANGENT SECTION



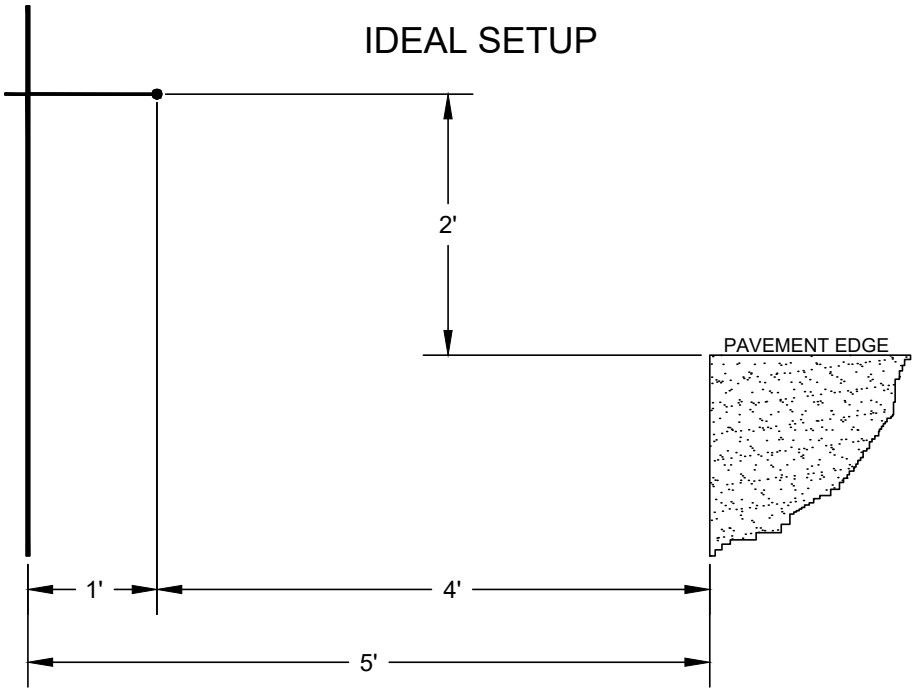
RIDE SPEC - 12 AND BELOW

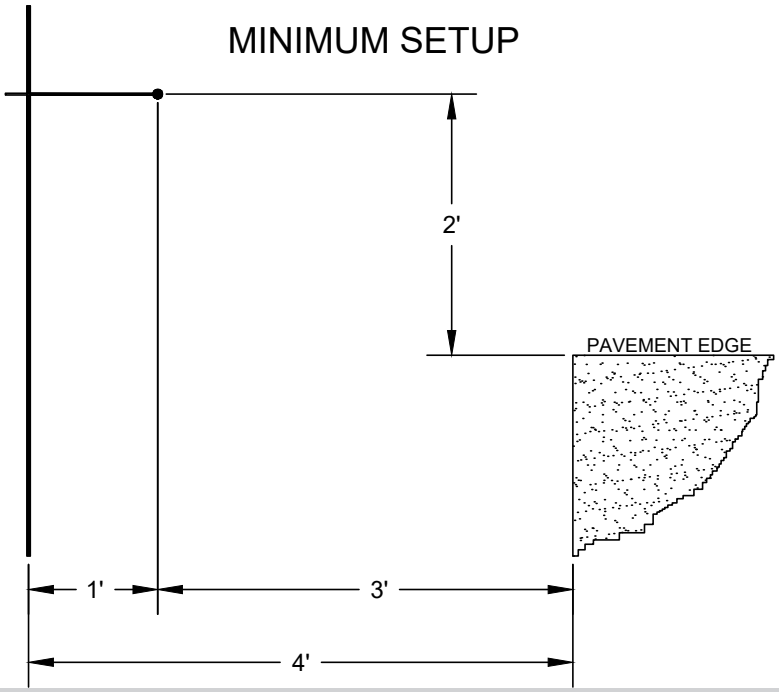


STRINGLINE MUST BE SET ACCURATELY AND TIGHT.
USE WINCH SETUP TO KEEP TIGHT

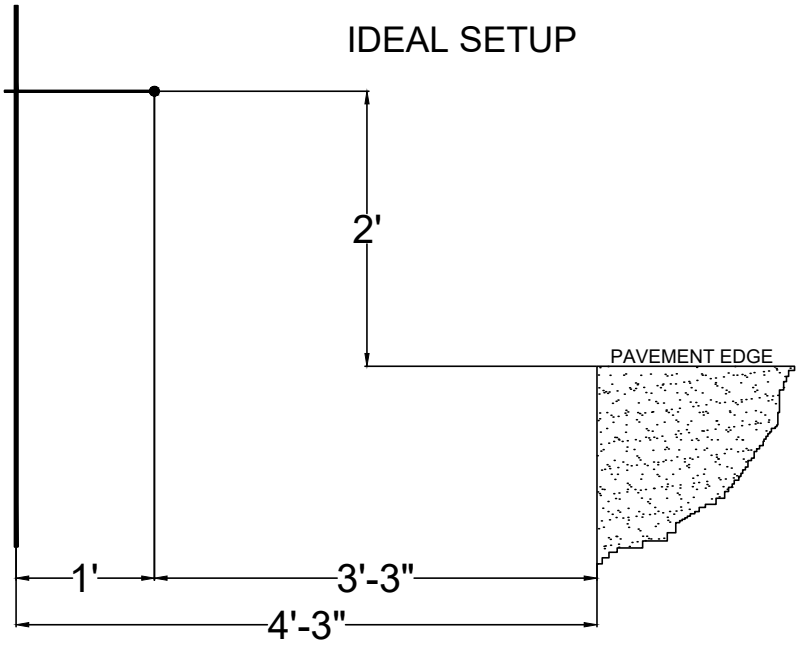
Stringline Setup

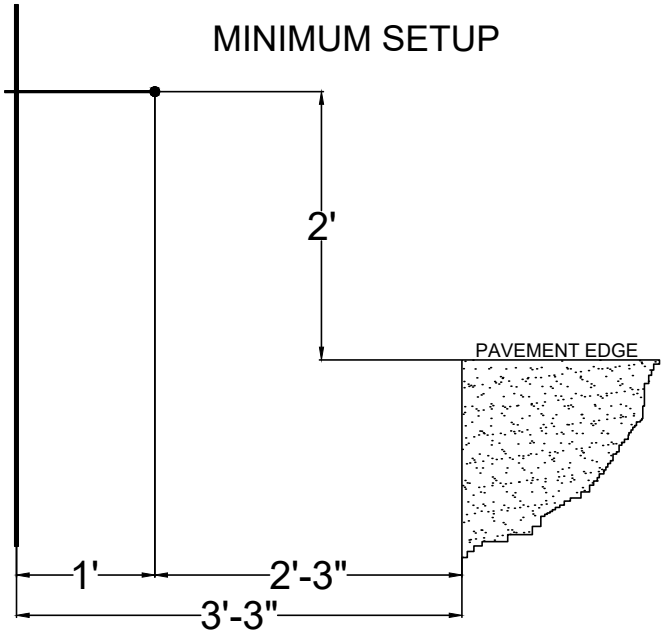
STANDARD TRACK MACHINE: 27" OUTSIDE OF TRACK STRINGLINE SETUP



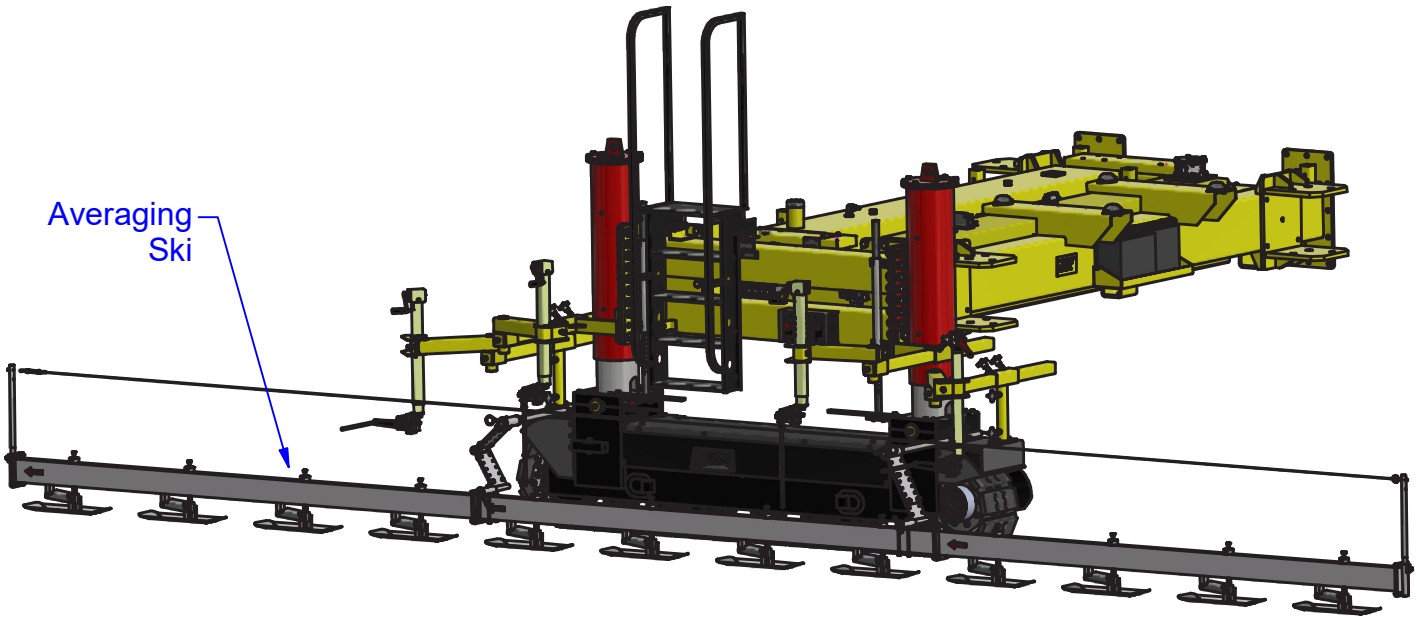


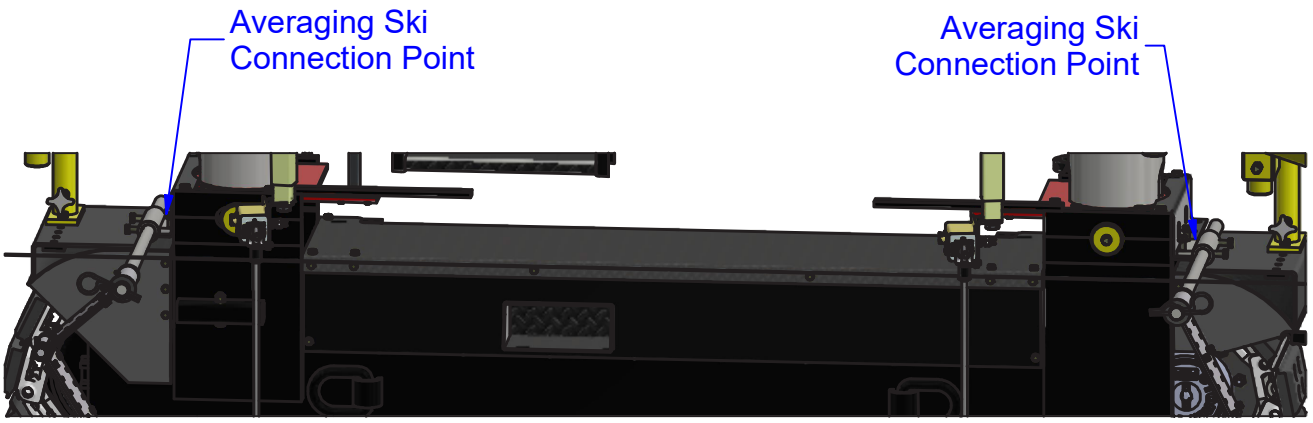
NARROW CLEARANCE TRACK MACHINE: 18" OUTSIDE OF TRACK STRINGLINE SETUP





Averaging Ski Connections





DO NOT MOVE THE MACHINE IN REVERSE WHEN THE AVERAGING SKI IS ATTACHED! DAMAGE TO THE AVERAGING SKI WILL OCCOUR!

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SECTION 3
SERVICE

Maintenance Schedule

Maintenance Schedule				
Description	Daily	500 Hours of Operation / or Every 12 Months	2000 Hours of Operation / or Every 24 Months	As Required
Visual Walk Around Inspection	x			
Check Engine Oil and Coolant Level	x			
Check Fuel Filter / Water Bowl	x			
Check Air Cleaner Dust Unloader Valve	x			
Check Restriction Indicator Guage[1]	x			
Service Fire Extinguisher		x		
Check Engine Mounts		x		
Service Battery		x		
Change Engine Oil and Replace Oil Filter[2,3]		x		
Check Crankcase Vent System		x		
Check Air Intake Hoses, Connections, & System		x		
Replace Fuel Filter Elements		x		
Check Automatic Belt Tensioner and Belt Wear		x		
Check Engine Electrical Ground Connection		x		
Check Cooling System		x		
Check Engine Speeds		x		
Flush and Refill Cooling System			x	
Test Termostats			x	
Check and Adjust Engine Valve Clearance			x	
Test Glow Plugs			x	
Add Coolant				x
Replace Fan and Alternator Belts				x
Check Fuses				x
Check Air Compressor (if equipped)				x
Bleed Fuel System				x
Change Hydraulic Filters				x
Flush and Refill Hydraulic System[6]				x

[1] Replace primary air cleaner element when restriction indicator shows a vacuum of 625 mm (25 in.) H2O. If not equipped with indicator, replace air cleaner elements at 500 hours or 12 months, whichever occurs first.

[2] During engine breakin, change the oil and filter for the first time after 100 hours of operation (maximum).

[3] Service intervals depend on sulfur content of the diesel fuel, oil pan capacity, and the oil and filter used.

[4] Replace crankshaft damper every 4500 hours or 60 months, whichever occurs first.

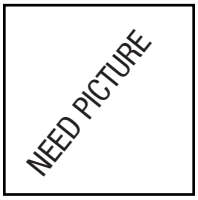
[5] If John Deere COOLGARD is used, the flushing interval may be extended to 3000 hours or 36 months. If John Deere COOLGARD is used and the coolant is tested annually AND additives are replenished as needed by adding a supplemental coolant additive, the flushing interval may be extended to 5000 hours or 60 months, whichever occurs first.

[6] A system “flush and refill” will only be required when hydraulic fluid is tested and found to be at an unacceptable level of usage. Please refer to the Hydraulic Fluid Testing section for details about testing and analysis.

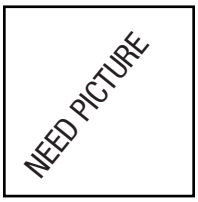
Replacent Filters / Fluids

FILTERS

Part #: 073413
Description: Filter, Oil, for John Deere 4045HF485



Part #: 073414
Description: Filter, Primary Fuel, for John Deere 4045HF485



Part #: 073415
Description: Filter, Final Fuel, for John Deere 4045HF485

Part #: 073416
Description: Filter, Primary Air, for John Deere 4045HF485

Part #: 073417
Description: Filter, Safety Air, for John Deere 4045HF485

Part #: 073418
Description: Filter, Hydraulic, for APSFP1600

Part #: 073419
Description: Filter, Hydraulic, for APSFP1600

FLUIDS

Part #: 001002-2
Description: Fluid, Hydraulic, QTY: 110 Gal (416 L)

Part #: 055399
Description: Oil, Gear, QTY: 25 oz (739 ml)

Diesel Fuel Detail

Consult your local fuel distributor for properties of the diesel fuel available in your area.

In general, diesel fuels are blended to satisfy the low temperature requirements of the geographical area in which they are marketed.

Diesel fuels specified to EN 590 or ASTM D975 are recommended. Renewable diesel fuel produced by hydrotreating animal fats and vegetable oils is basically identical to petroleum diesel fuel. **Renewable diesel that meets EN 590 or ASTM D975 is acceptable for use at all percentage mixture levels.**

Required Fuel Properties

In all cases, the fuel shall meet the following properties:

- **Cetane number of 43 minimum.** Cetane number greater than 47 is preferred, especially for temperatures below –20°C (–4°F) or elevations above 1500 m (5000 ft.).
- **Cold Filter Plugging Point** (CFPP) should be at least 5°C (9°F) below the expected lowest temperature or Cloud Point below the expected lowest ambient temperature.
- **Fuel lubricity** should pass a maximum scar diameter of 0.45 mm as measured by ASTM D6079 or ISO 121561.
- **Diesel fuel quality and sulfur content** must comply with all existing emissions regulations for the area in which the engine operates. DO NOT use diesel fuel with sulfur content greater than 10 000 mg/kg (10 000 ppm).

Sulfur Content for Tier 3 and Stage III A Engines

- Use of diesel fuel with sulfur content less than 1000 mg/kg (1000 ppm) is **RECOMMENDED**
- Use of diesel fuel with sulfur content 1000–5000 mg/kg (1000–5000 ppm) REDUCES oil and filter change intervals.
- BEFORE using diesel fuel with sulfur content greater than 5000 mg/kg (5000 ppm), contact your John Deere dealer

IMPORTANT: Do not mix used diesel engine oil or any other type of lubricating oil with diesel fuel.

IMPORTANT: Improper fuel additive usage may cause damage on fuel injection equipment of diesel engines.

Handling and Storaging Diesel Fuel

⚠ CAUTION **Reduce the risk of fire. Handle fuel carefully. DO NOT fill the fuel tank when engine is running. DO NOT smoke while you fill the fuel tank or service the fuel system.**

Fill the fuel tank at the end of each day's operation to prevent water condensation and freezing during cold weather.

Keep all storage tanks as full as practicable to minimize condensation.

Ensure that all fuel tank caps and covers are installed properly to prevent moisture from entering. Monitor water content of the fuel regularly.

When using biodiesel fuel, the fuel filter may require more frequent replacement due to premature plugging.

Check engine oil level daily prior to starting engine. A rising oil level may indicate fuel dilution of the engine oil.

IMPORTANT: The fuel tank is vented through the filler cap. If a new filler cap is required, always replace it with an original vented cap.

When fuel is stored for an extended period or if there is a slow turnover of fuel, add a fuel conditioner to stabilize the fuel and prevent water condensation. Contact your fuel supplier for recommendations.

See John Deere Operators Manual - Fuels, Lubricants, and Coolant for more details.

Engine Oil Detail

DIESEL ENGINE BREAK-IN OIL

New engines are filled at the factory with John Deere ENGINE BREAK-IN OIL. During the breakin period, add John Deere ENGINE BREAK-IN OIL as needed to maintain the specified oil level.

Operate the engine under various conditions, particularly heavy loads with minimal idling, to help seat engine components properly.

Change the oil and filter after the FIRST 100 HOURS of operation of a new or rebuilt engine. After engine overhaul, fill the engine with John Deere ENGINE BREAK-IN OIL.

If John Deere ENGINE BREAKIN OIL is not available, use a diesel engine oil meeting one of the following during the first 100 hours of operation:

- API Service Classification CE
- API Service Classification CD
- API Service Classification CC
- ACEA Oil Sequence E2
- ACEA Oil Sequence E1

After the breakin period, use John Deere PLUS50™ or other diesel engine oil as recommended in this manual.

DIESEL ENGINE OIL

Use oil viscosity based on the expected air temperature range during the period between oil changes.

John Deere Plus50™ II oil is preferred.

John Deere Plus50™ is also recommended.

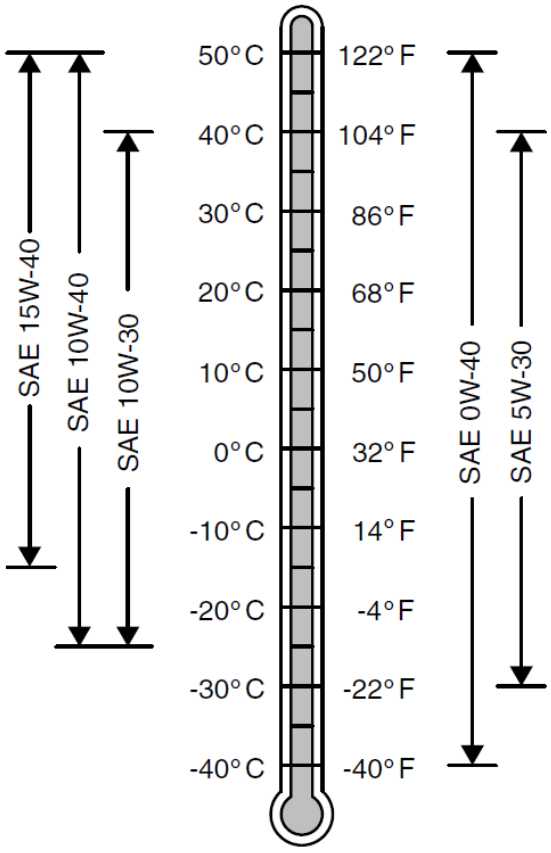
Other oils may be used if they meet one or more of the following:

- John Deere TorqGard™
- API Service Category CJ4
- API Service Category CI4PLUS
- API Service Category CI4
- ACEA Oil Sequence E9
- ACEA Oil Sequence E7
- ACEA Oil Sequence E6
- ACEA Oil Sequence E5
- ACEA Oil Sequence E4

Multi-viscosity diesel engine oils are preferred.

Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.

DO NOT use diesel fuel with sulfur content greater than 10 000 mg/kg (10 000 ppm).



Oil Viscosities for Air Temperature Ranges

See John Deere Operators Manual - Fuels, Lubricants, and Coolant for more details.

Engine Coolant Detail

The engine cooling system is filled to provide yearround protection against corrosion and cylinder liner pitting, and winter **freeze protection to 37°C** (34°F). If protection at lower temperatures is required, consult your John Deere dealer for recommendations.

Avoid Automotive-Type Coolants

Never use automotivetype coolants (such as those meeting ASTM D3306). These coolants do not contain the correct additives to protect heavyduty diesel engines. They often contain a high concentration of silicates and may damage the engine or cooling system. Do not treat an automotive engine coolant with a supplemental coolant additive because the high concentration of additives can result in additive fallout.

The following engine coolants are preferred:

- John Deere COOLGARD™ II Premix
- John Deere COOLGARD II PG Premix*

*Use John Deere COOLGARD II PG Premix when a nontoxic coolant formulation is required.

Additional Recommended Coolants

The following engine coolant is also recommended:

- John Deere COOLGARD II Concentrate in a 40–60% mixture of concentrate with quality water.

*John Deere COOLGARD II Premix, COOLGARD II PG Premix, and COOLGARD II Concentrate coolants do not require use of supplemental coolant additives.

Other Coolants

John Deere COOLGARD II and COOLGARD II PG coolants might not be available in the geographical area where service is performed.

If these coolants are unavailable, use a coolant concentrate or prediluted coolant intended for use with heavy duty diesel engines and with a minimum of the following chemical and physical properties:

- Is formulated with a quality nitritefree additive package.
- Provides cylinder liner cavitation protection according to either the John Deere Cavitation Test Method or a fleet study run at or above 60% load capacity
- Protects the cooling system metals (cast iron, aluminum alloys, and copper alloys such as brass) from corrosion

The additive package must be part of one of the following coolant mixtures:

- Ethylene glycol or propylene glycol base prediluted (40—60%) heavy duty coolant
- Ethylene glycol or propylene glycol base heavy duty coolant concentrate in a 40—60% mixture of concentrate with quality water

Water Quality

Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate. All water used in the cooling system should meet the following minimm specifications for quality:

Chlorides	< 40 mg/L
Sulfates	< 100 mg/L
Total Dissolved Solids	< 340 mg/L
Total Hardness	< 170 mg/L
pH	5.5 to 9.0

IMPORTANT:

DO NOT use cooling system sealing additives or antifreeze that contains sealing additives.

DO NOT mix ethylene glycol and propylene glycol base coolants.

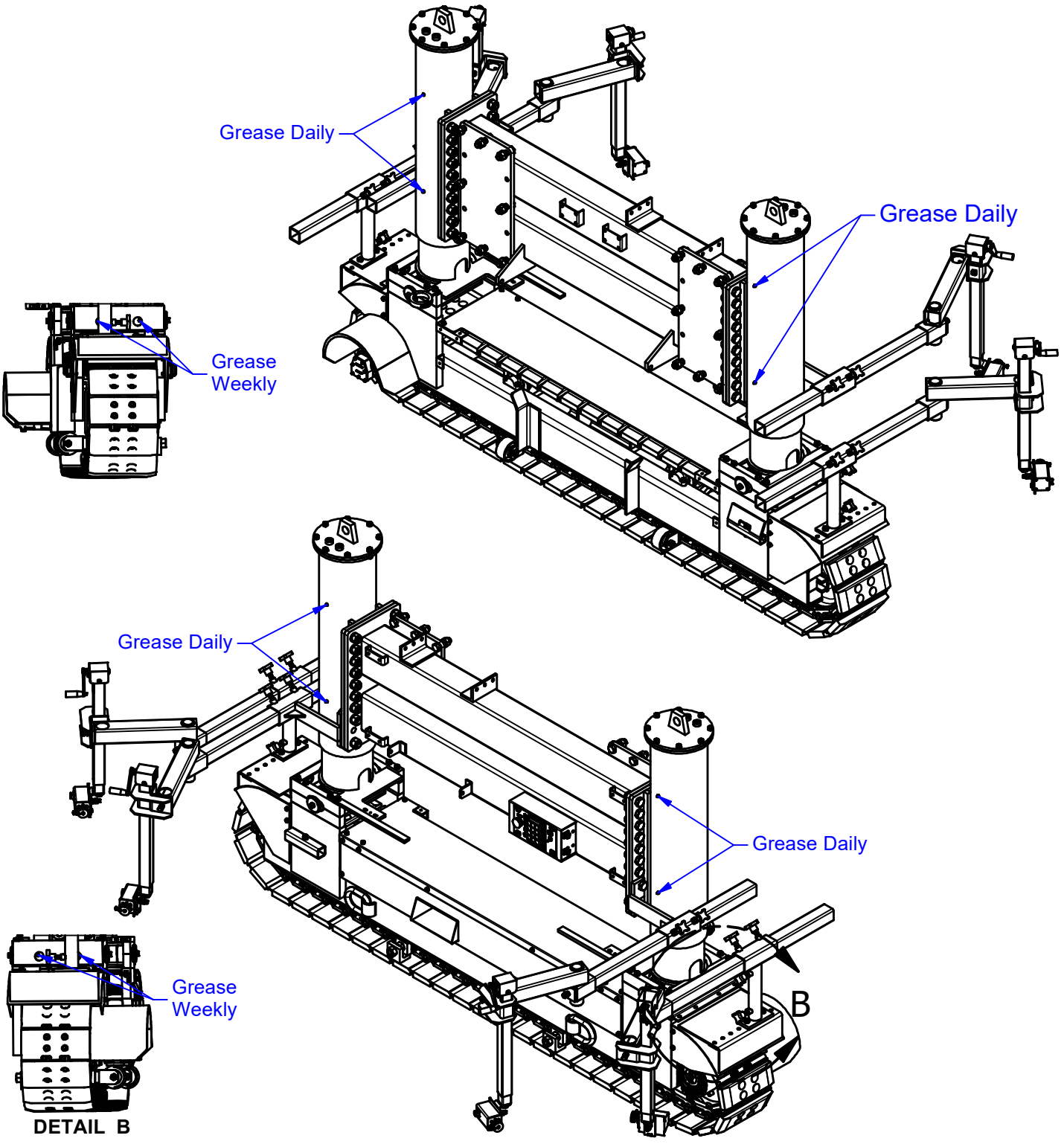
DO NOT use coolants that contain nitrites.

DO NOT use a coolant-water mixture greater than 60% ethylene glycol or 60% propylene glycol.

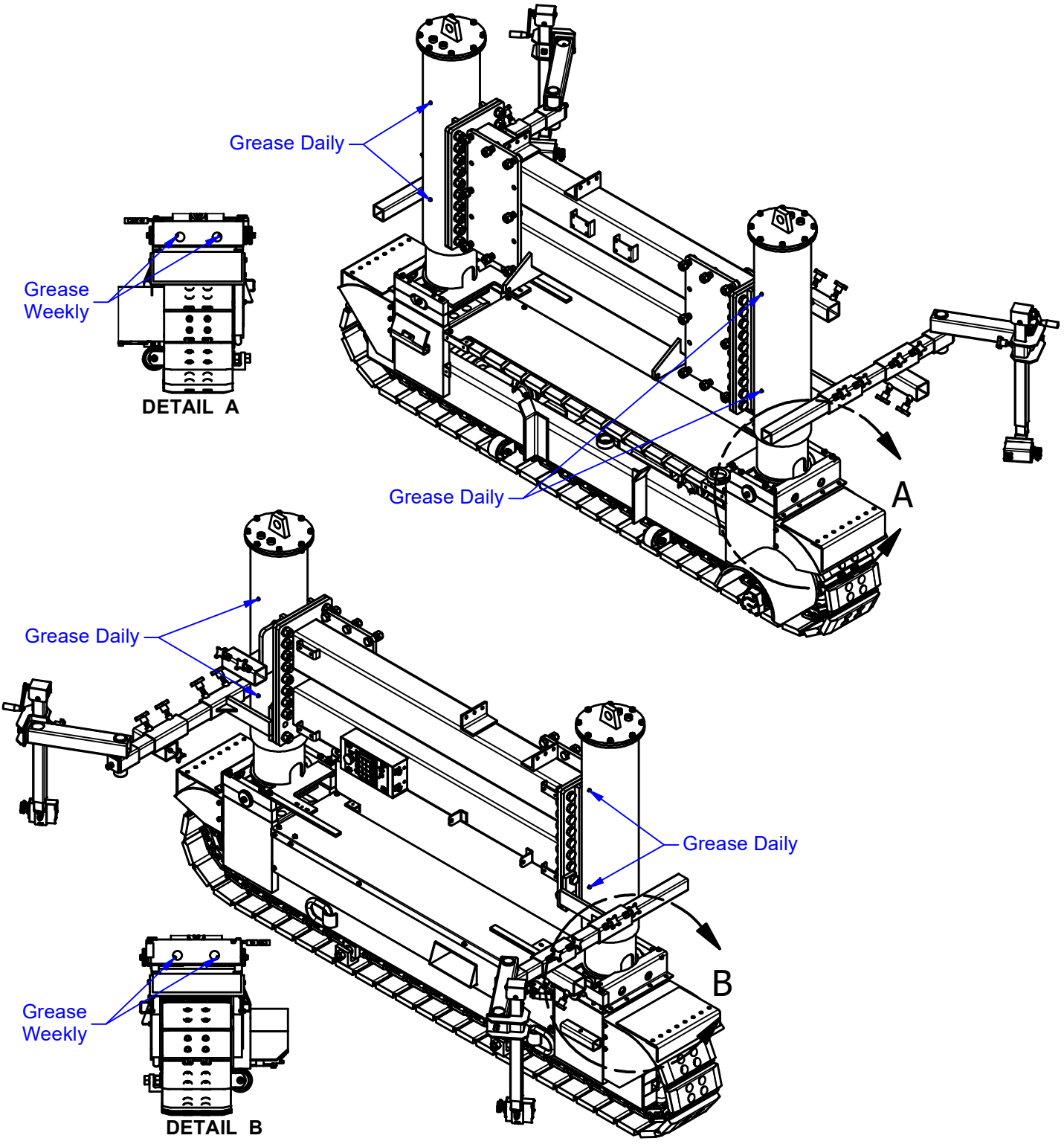
See John Deere Operators Manual - Fuels, Lubricants, and Coolant for more details.

Grease Points

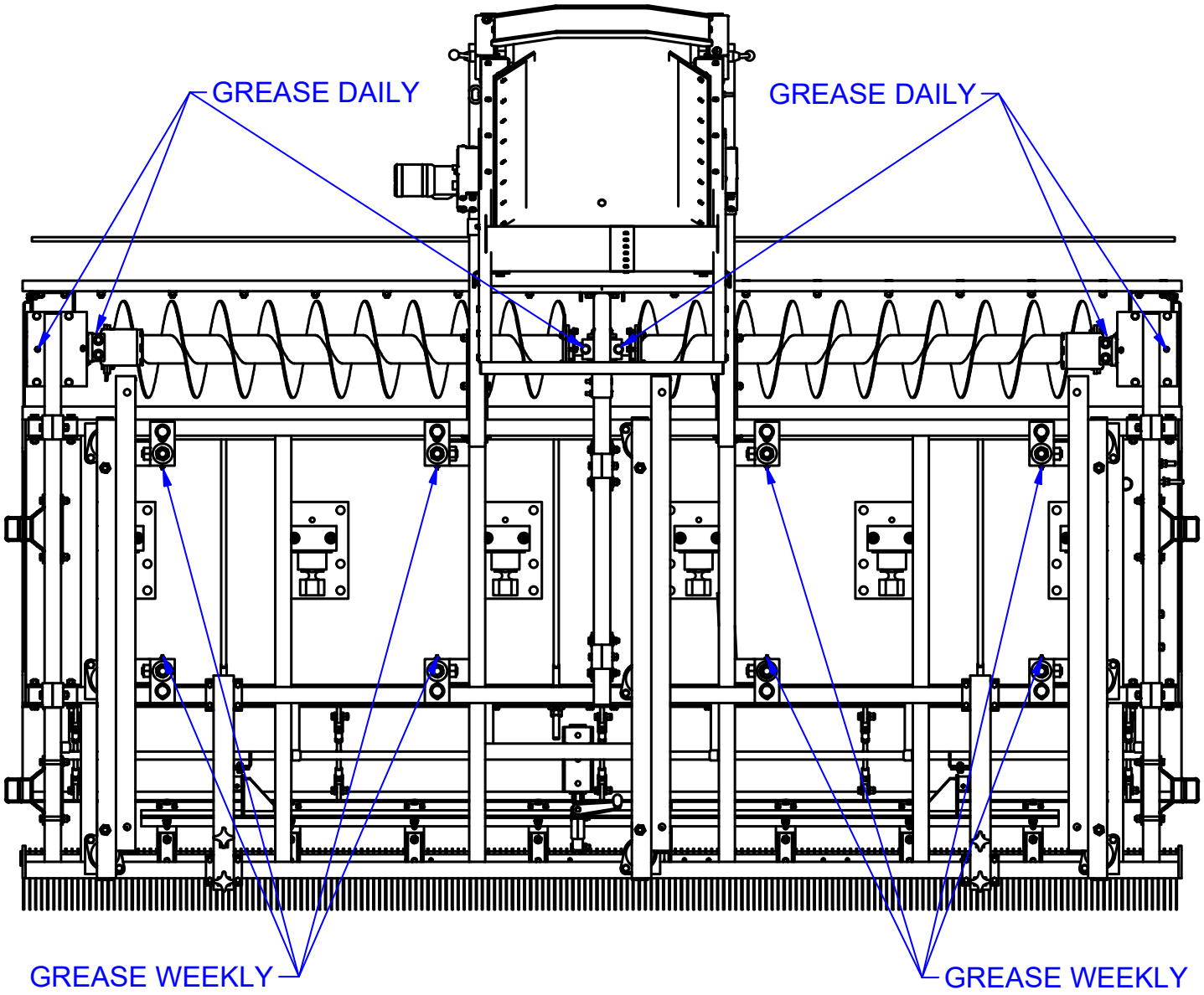
GREASE POINTS - LEFT HAND END FRAME

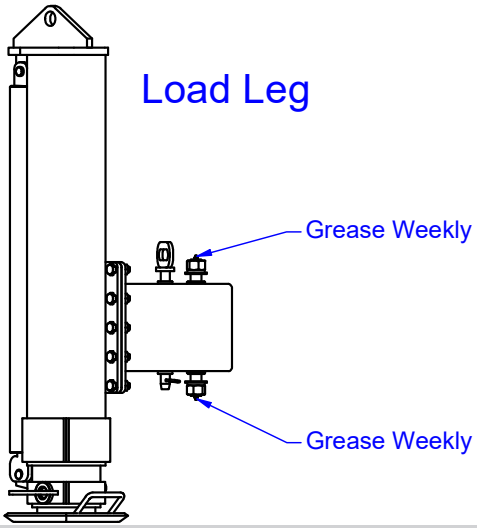


GREASE POINTS - RIGHT HAND END FRAME

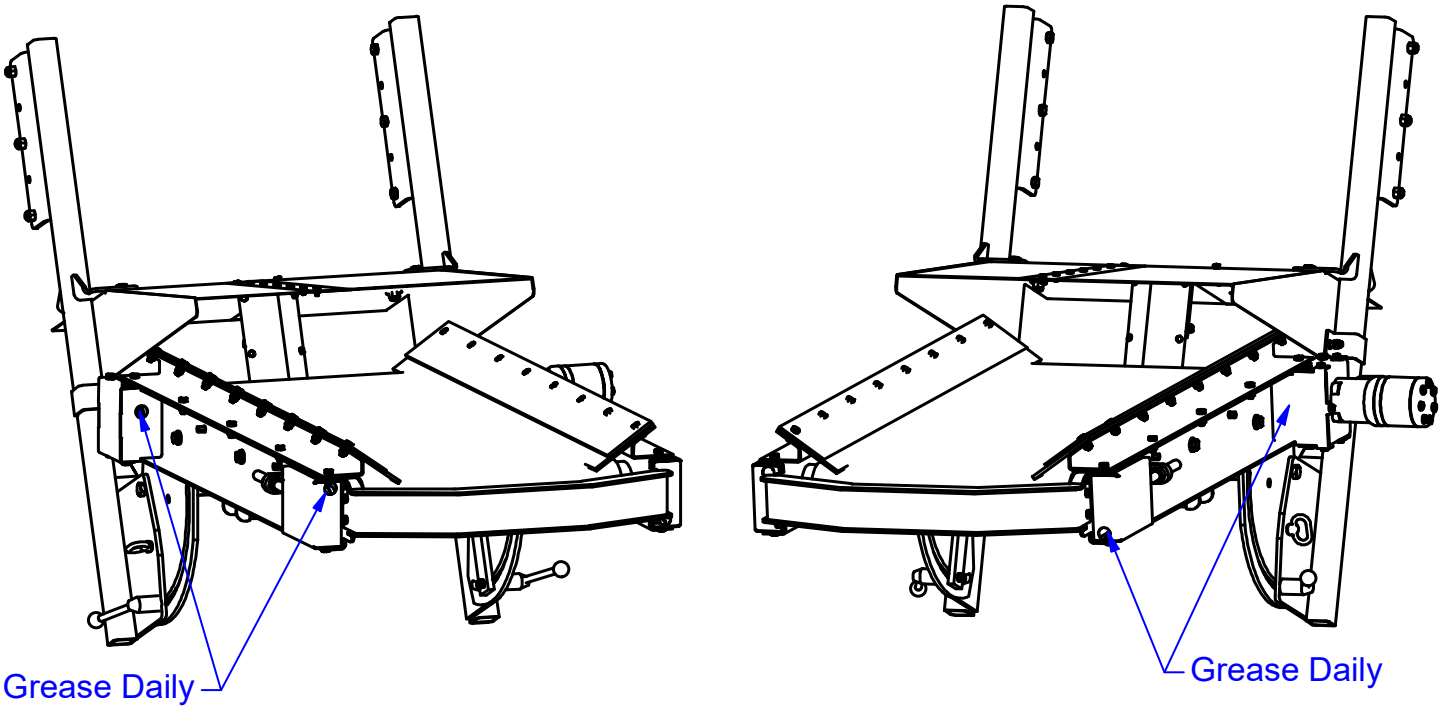


Grease Points

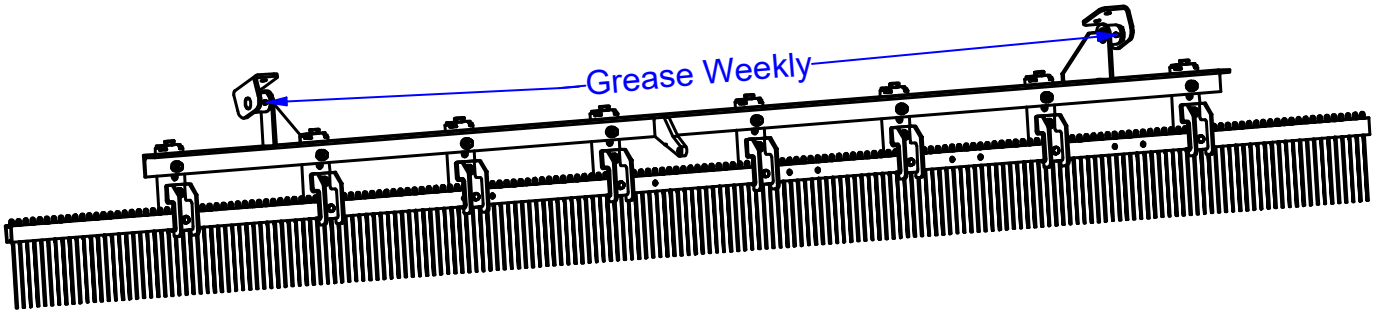




MATERIAL CONVEYOR



PAVING TINE



Battery Jump Start Procedure

Occasionally it may be necessary to jump start a weak battery. If jump starting is necessary the following procedure is recommended to prevent starter damage, battery damage, and personal injury.

⚠ WARNING

Jump starting a battery incorrectly can cause the battery to explode resulting in severe personal injury or death. Do not smoke or allow any ignition sources near the battery and do not start a frozen battery.

⚠ WARNING

Electrical arcing can cause severe personal injury.
Do not allow positive and negative cable ends to touch.

1. Use a battery of the same voltage (12V) as is used with your engine.
2. Attach one end of the positive booster cable (red) to the positive (+) terminal of the booster battery. Attach the other end to the terminal of your engine battery.
3. Attach one end of the negative booster cable (black) to the negative (-) terminal on the booster. Attach the other end of the negative cable to your engine battery.
4. Jump starting in any other manner may result in damage to the battery or the electrical system.

⚠ CAUTION

Over cranking the engine can cause starter damage.
Allow 5 minutes for starter to cool if engaged for more than 15 seconds.

⚠ CAUTION

When using lights or high amperage draw accessories,
idle the engine for a period of 20 minutes to bring the battery to charge state.

Machine Cleaning Procedure

When cleaning the machine, please adhere to the following information to ensure proper cleaning and to keep the machine in the best condition possible.

Power Washing Procedure:

NOTICE

- Ensure that the water pressure is below 2000 PSI (14 MPa)
- Always keep the water temperature below 180°F (80°C)
- Use a spray nozzle with at minimum 40° wide spray angle
- Keep the nozzle at least 1 foot (300mm) away from the machine
- Keep a perpendicular angle (90°) when cleaning over a decal.
  - Holding nozzle of a pressure washer at an angle different from 90° may lift the decal from the machine.
- Recommended using a safe cement dissolver, **BACK-SET** or similar**,** to remove hardened concrete.
- It is **NOT** recommended to use chemicals such as:
  - Muriatic Acid
  - Hydrochloric Acid
  - Hydrofluoric Acid
  - Sulfuric Acid
  - Phosphoric Acid
- To prevent build-up of concrete on the machine, use **BODY GUARD** or similar protection wax.

Filter Cleaning Procedure:

- Remove air filters and blow out with compressed air, **NOT** to exceed 80 PSI.

SECTION 4
PARTS

Replacement Part Procedure

SECTION 4
PARTS

ALL REFERENCES MADE TO LEFT/RIGHT SIDES IN THIS MANUAL ARE SITTING ON MACHINE (SOM)
[i.e. Left / Right are in reference from a sitting position on the machine]

We recommend AEC quality replacement parts, available from the AEC Customer Service Department or your nearest AEC Dealer.

Part numbers are subject to change without notice. Part numbers might be different outside of the United States of America. Use part numbers listed in the applicable parts list table when you place your order. If a part number changes, the AEC Customer Service Department or your nearest AEC dealer will have the latest part number for the replacement part.

Remember when you order replacement parts, you will need your **MODEL NUMBER** and **SERIAL NUMBER**. These are the numbers that you have recorded in the Model Number / Serial Number Unit Identification in this manual or by looking on the Unit Identification Plate. Please order replacement parts by the appropriate part number, not the item number.

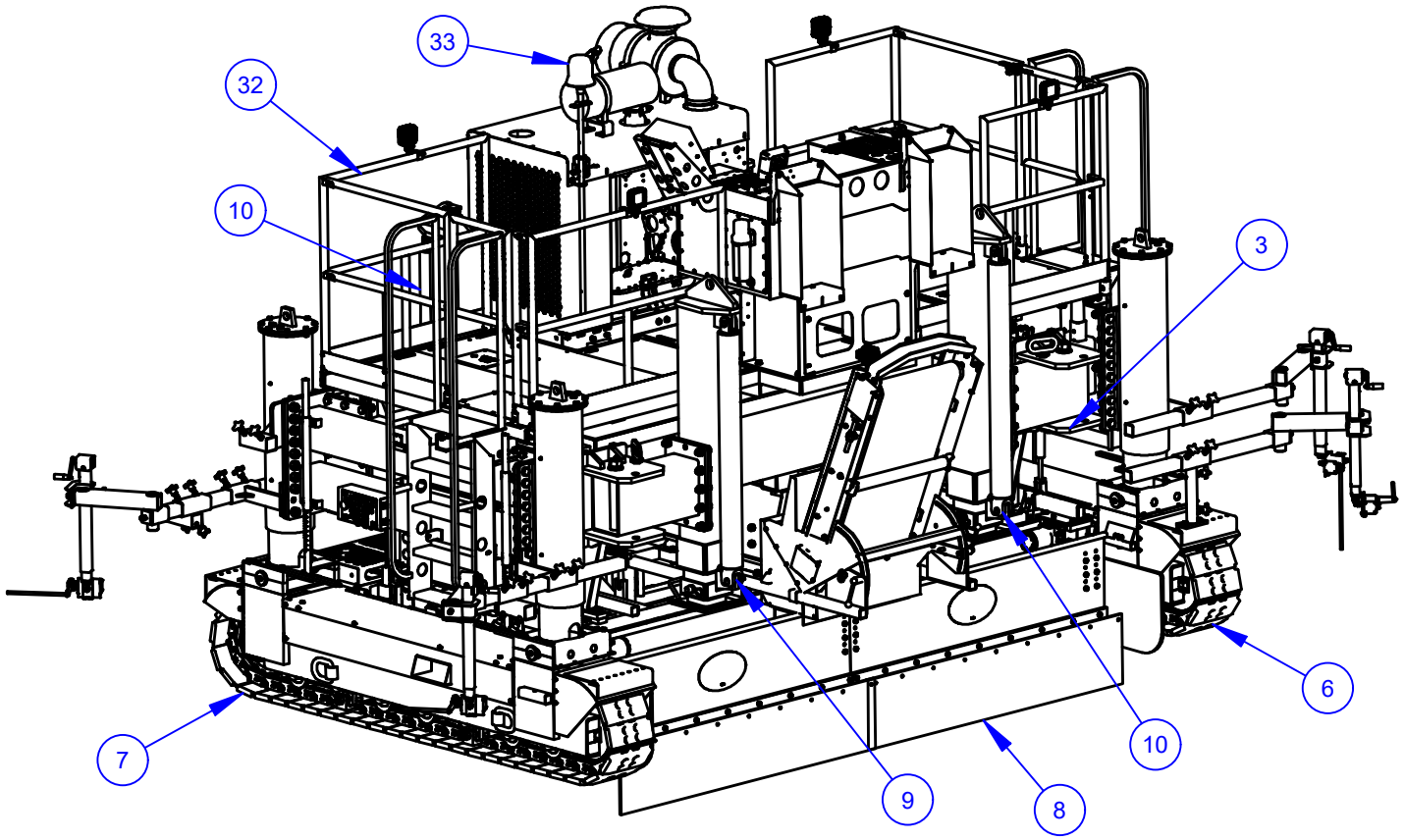
This manual contains an illustrated parts list for help in ordering replacement parts for your machine. Follow the instructions below when ordering parts to ensure prompt and accurate delivery:

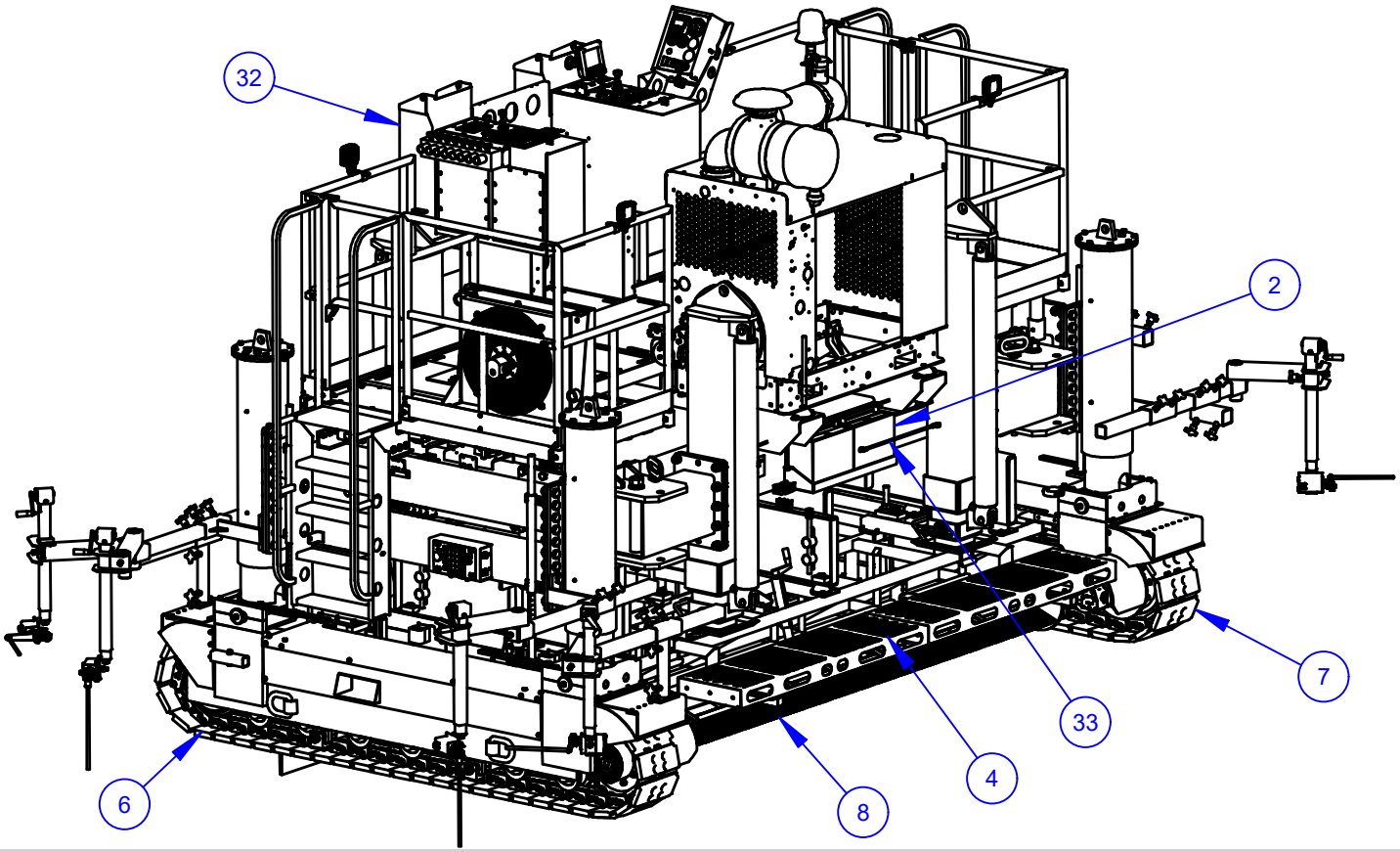
1. All orders for service parts - include the serial number for the machine. Shipment will be delayed if this information is not available.
2. Include correct description and part number
3. Specify exact shipping instructions, including the preferred routing and complete destination address.
4. **DO NOT** return parts to AEC without receiving written authorization from AEC. All authorized returns must be shipped pre-paid.
5. When placing an order, please contact the AEC Dealer nearest you.

NOTE

All information, specifications, and illustrations in this manual are subject to change without notice and are based on the latest information at the time of publication.

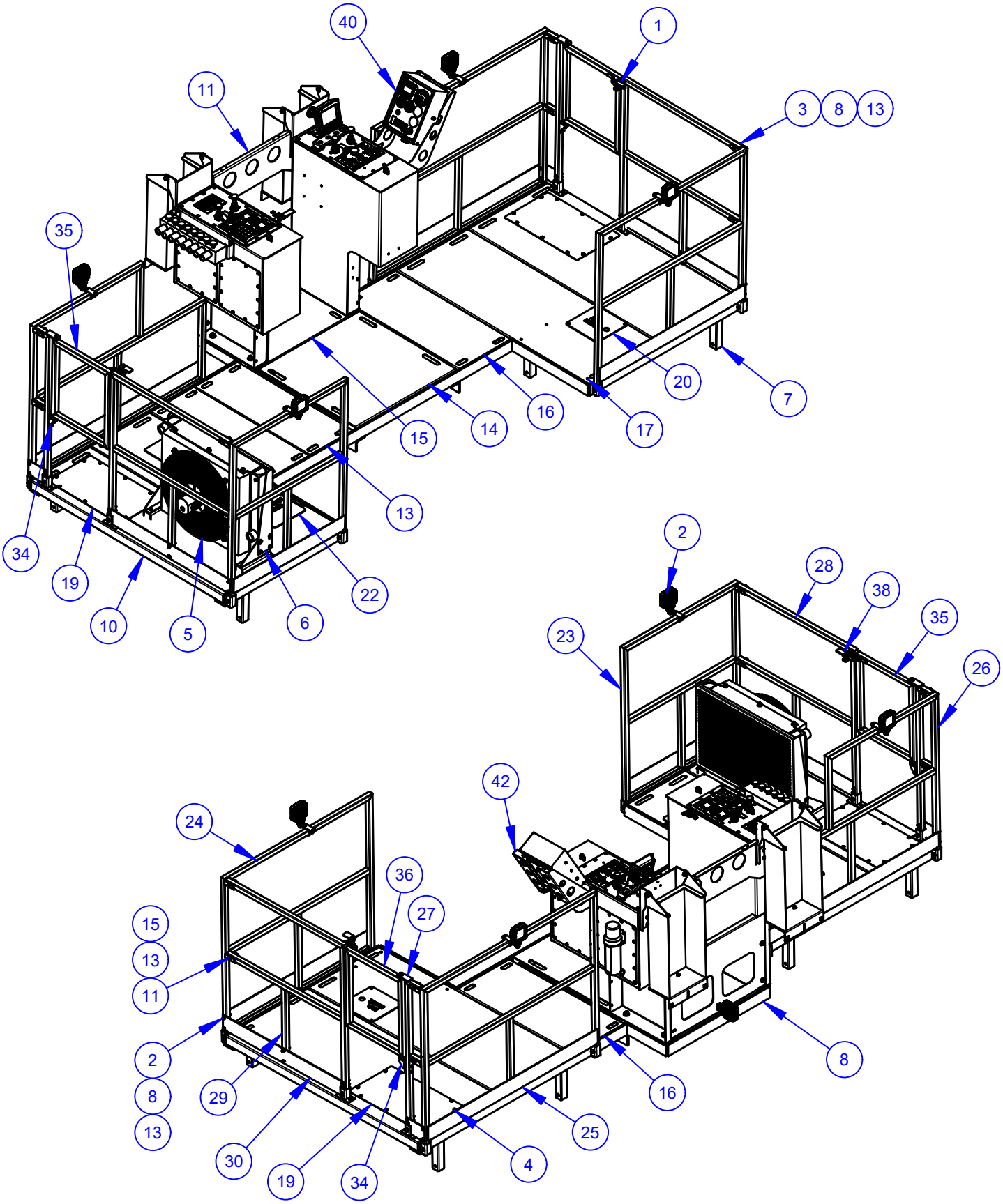
Machine Assembly





ITEM	PART NO.	DESCRIPTION	QTY
-	072600	Assembly, Main, APSFP1600, Diesel, T3	-
1	052957	Alarm, Backup	1
2	055030	Battery,	2
3	070122	Weldment, Main Frame	1
4	070590	Assembly, Rear Walkway for APSFP1600	1
5	070634	Channel, for Electronic Sensor Wand Assembly	6
6	070655	Assembly, Left Hand End Frame	1
7	070666	Assembly, Right Hand End Frame	1
8	070810	Assembly, Paving Package	1
9	071175	Assembly, Load Leg, Right/Front - Left/Rear	2
10	071176	Assembly, Load Leg, Right/Rear - Left/Front	2
11	071231	Cushion, Rubber, for Battery Hold Down	1
12	071232	Channel, Battery Hold Down	1
13	071233	Cushion, Rubber, for Battery Hold Down	2
14	071250	Tank, Hydraulic	1
15	071260	Tank, Fuel	1
16	071268	Assembly, Left Hand, Side Form	1
17	071275	Assembly, Right Hand, Side Form	1
18	071297	Cushion, Isolation for Hydraulic Tank	2
19	071298	Cushion, Isolation for Fuel Tank	2
20	071310	Mount, Brake Release Handle	1
21	071312	Tube, Break Jack Override	1
22	071327	Filter, Hydraulic, In-Tank, with Dual Return Ports	1
23	071328	Diffuser, for Return Filter	1
24	071329	Flange, Suction Port Assembly	2
25	071336	Manifold, Bracket Mount, High Pressure	1
26	071337	Manifold, Bracket Mount, Vibration ON/OFF	1
27	071340	Fitting, 1/2	2
28	071341	Bracket, for Hight Pressure Filter	2
29	071343	Fitting, 3/8” Hose x 1/2” NPT, Stainless	2
30	071344	Fitting, Plug, 1/2” NPT, Stainless	2
31	071352	Bracket, Pressure Filter Modifier	1
32	071360	Assembly, Operator Platform	1
33	072599	Assembly, Engine Power Unit	1

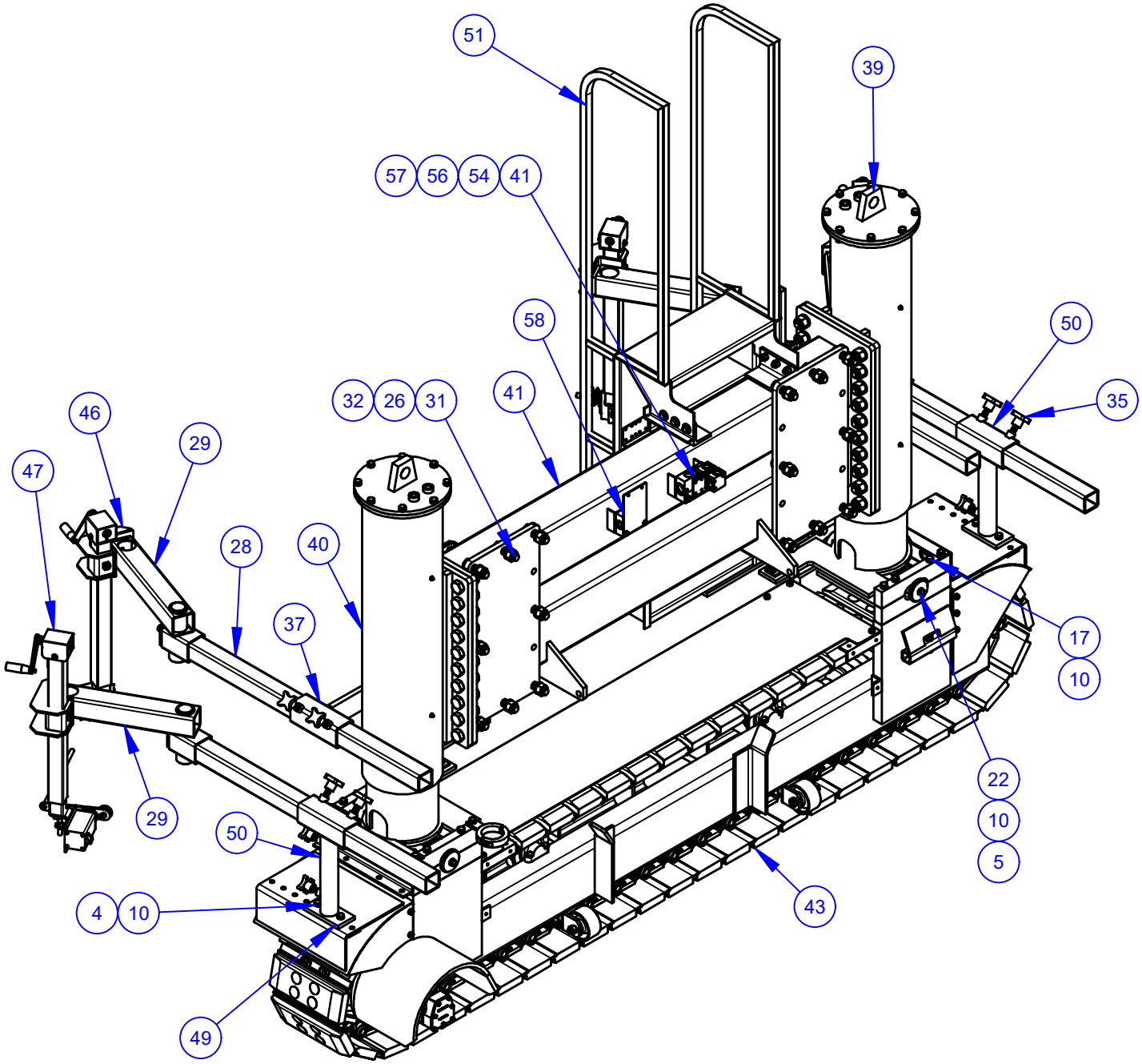
Operator Platform Assembly



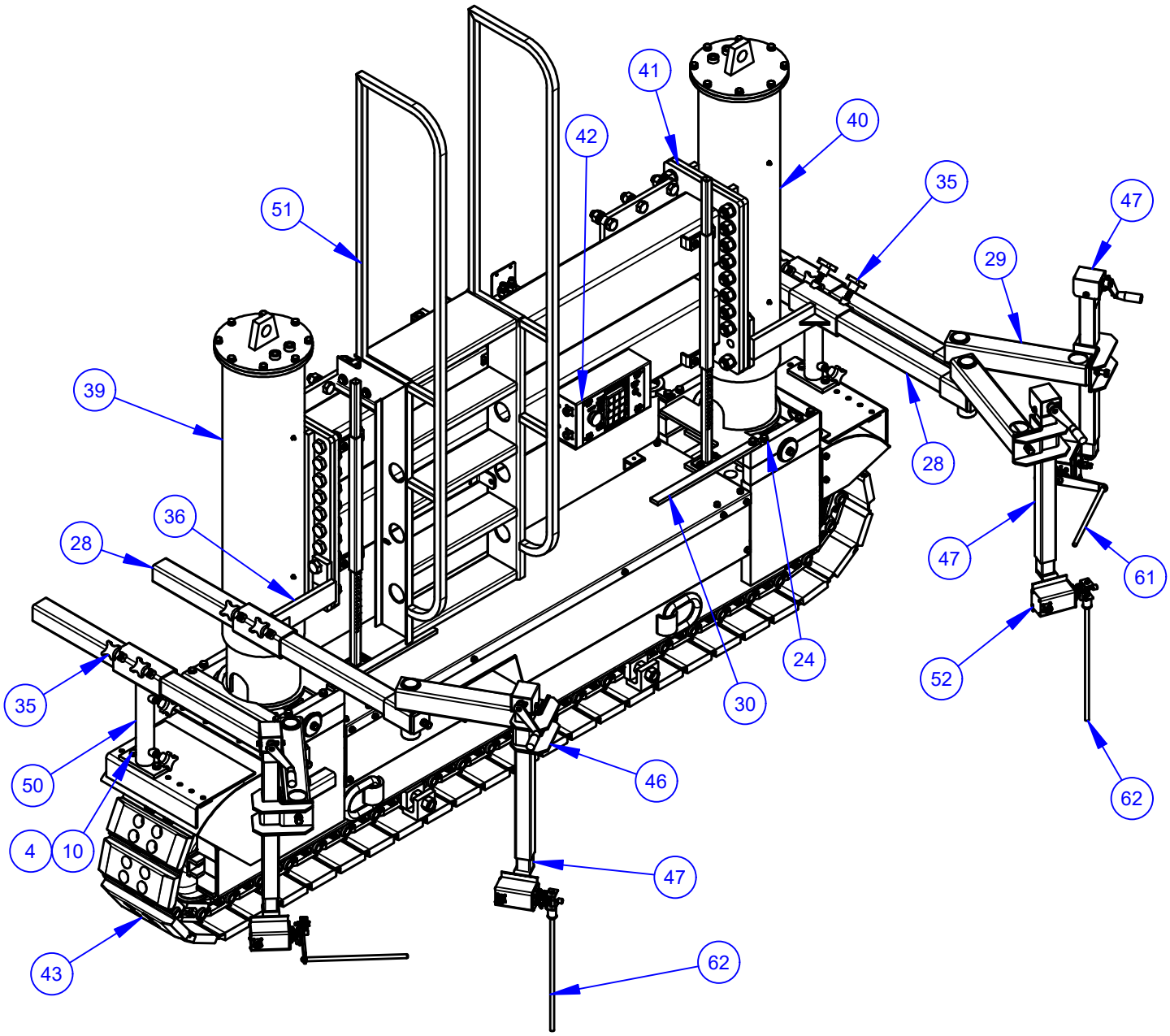
Operator Platform Assembly

ITEM	PART NO.	DESCRIPTION	QTY
-	072600	Assembly, Operator Platform, APSFP1600	-
1	053708	Weldment, Catch Lift on Gate	1
2	067939	Light, LED, 2.6 AMP	5
3	070597	Bracket, for Outside Light Mount	4
4	070598	Plate, Back for Light Mount	4
5	071281	Cooler, Hydraulic Oil	1
6	071296	Guard, for Hydraulic Cooler	1
7	071359	Weldment, Frame, Rear Operator Platform	1
8	071380	Front, Operator Platform Frame	1
9	071394	Angle, Operator Plateform Frame	1
10	071395	Deck, Left Hand Outside	1
11	071400	Assembly, Control Panel	1
12	071405	Deck, Left Hand, Second from Outside	1
13	071410	Deck, Left of Center, Control Panel	2
14	071415	Deck, Center Rear	1
15	071420	Deck, Front Center	1
16	071423	Deck, Right Hand of Control Panel	1
17	071425	Weldment, Deck, Right Hand, Second from End	1
18	071430	Weldment, Deck, Right Hand Outside	1
19	071432	Plate, Cover for Deck Operator Plate	2
20	071433	Cover Plate, Door Access for Hydraulic Filter for Control Panel	1
21	071435	Door, “Diesel” for Deck panel Operator Platform	1
22	071438	Door, for Hydraulic Fill for Operator Platform	1
23	071440	Hand Rail, Rear, Left Hand	1
24	071445	Hand Rail, Rear, Right Hand	1
25	071450	Hand Rail, Front, Right Hand	1
26	071455	Hand Rail, Front, Left Hand	1
27	071460	Hand Rail, Front, Inner Hinge Post	2
28	071470	Hand Rail, Left Hand, End	1
29	071471	Hand Rail, Right Hand, End	1
30	071473	Toe Kick, for Right Hand End, Hand Rail	1
31	071474	Toe Kick, for Left Hand End, Hand Rail	1
32	071475	Toe Kick, for Front Left Hand End Hand Rail	1
33	071476	Toe Kick, for Front Right Hand Hand Rail	1
34	071477	Bracket, Bottom Hinge	2
35	071480	Door, Left Hand	1
36	071485	Gate, Right Hand Side	1
37	071486	Bracket, Hand Rail Mount	4
38	071487	Weldment, Catch Lift on Gate for Control Panel	1
39	072746	Angle, Connecting, Operator Plateform	1
40	072872	Assembly, Control Panel, for Engine	1
41	073290	Bracket, Left Hand, for Engine Control Panel Mount	1
42	073291	Bracket, Right Hand, for Engine Control Panel Mount	1

Left Hand, End Frame Assembly



Left Hand, End Frame Assembly



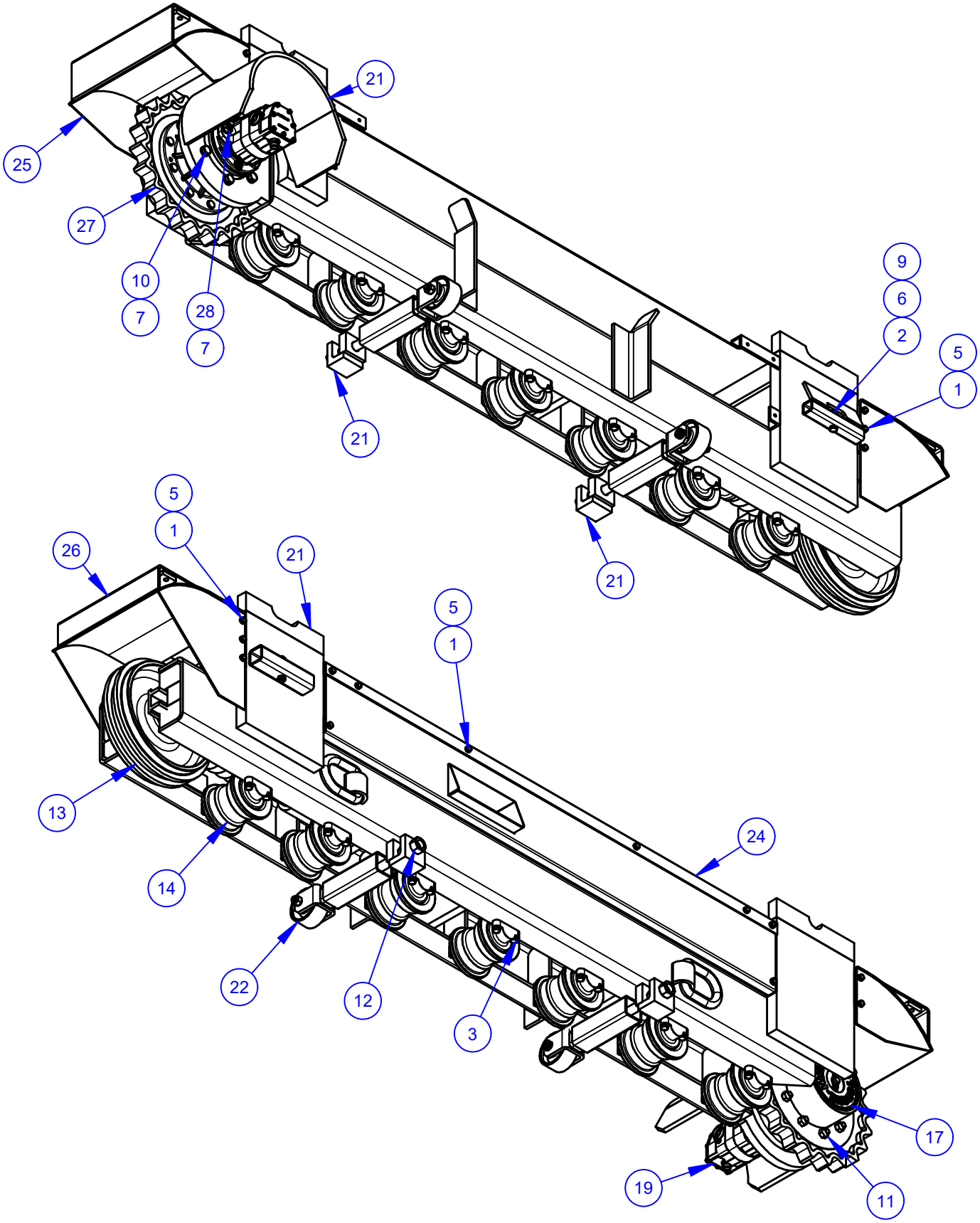
Left Hand, End Frame Assembly

ITEM	PART NO.	DESCRIPTION	QTY
-	070665	Assembly, End Frame, Left Hand	-
1	010024	Fastener, Bolt, HHCS, 5/16”-18 x 2”, Grade 8	2
2	010036	Fastener, Bolt, HHCS, 3/8”-16 x 1”, Grade 8	8
3	010050	Fastener, Nut, Hex, 1/2”-13, Grade 8	8
4	010067	Fastener, Bolt, HHCS, 1/2”-13 x 1”, Grade 8	4
5	010069	Fastener, Bolt, HHCS, 1/2”-13 x 1-1/2”, Grade 8	12
6	010082	Fastener, Washer, Flat, 5/16”, Grade 8	2
7	010085	Fastener, Washer, Flat, 1/2”, Grade 8	6
8	010090	Fastener, Washer, Lock, 5/16”, Grade 8	2
9	010091	Fastener, Washer, Lock, 3/8”, Grade 8	2
10	010093	Fastener, Washer, Lock, 1/2”, Grade 8	24
11	011238	Fastener, Nut, Hex, Nylock, 1/2”-13, Grade 8	6
12	017751	Fastener, Washer, Flat, 3/8”, Grade 8	16
13	020514	Fastener, Nut, Stover, 3/8”-16, Grade 8	14
14	023003	Fastener, Bolt, HHCS, 1/2”-13 x 4”, Grade 8	4
15	032875	Fastener, BOlt, HHCS, 3/8”-16 x 1-1/4”, Grade 8	4
16	037798	Fastener, Bolt, HHCS, 1/2”-13 x 1-1/2”, Grade 8	6
17	038781	Fastener, Bolt, HHCS, 1/2”-13 x 3-3/4”, Grade 8	12
18	040004	Fastener, Nut, Hex, 5/16”-18, Grade 8	2
19	040275	Fastener, Bolt, HHCS, 3/4”-16 x 2”, Grade 8	4
20	040637	Fastener, Bolt, HHCS, 3/8”-16 x 2-1/4”, Grade 8	2
21	040741	Fastener, Washer, Lock, Helical Spring, Grade 8	38
22	043514	Retainer, for Tower to Track Pin Textcure	8
23	043516	Pin, for Track to Jack Textcure	2
24	043517	Bar, Clamp, Rear for Track Assemlby Textcure	2
25	043518	Bar, Clamp, Front for Track Assembly Textcure	2
26	044032	Fastener, Nut, Hex, 7/8”, Grade 8	16
27	045019	Fastener, Nut, Hex, 1”, Grade 8	38
28	054735	Weldment, for Sensor	4
29	054736	Weldment, Sensor, Jack Pivot Mount	4
30	054858	Bar, Sensorr Lock Down for Auto Grade	2
31	055036	Fastener, Bolt, HHCS, 7/8”-9 x 2-3/4”, Grade 8	16

Left Hand, End Frame Assembly

ITEM	PART NO.	DESCRIPTION	QTY
32	055038	Fastener, Washer, Lock, Split, 7/8", Grade 8	16
33	055043	Fastener, Washer, Lock, 3/4", Grade 8	4
34	055376	Fastener, Bolt, HHCS< 1"-8 x 3-3/4", Grade 8	4
35	066376	Knob, Clamping, 1/2"-13, Aluminum	12
36	070260	Mount, Grade Control Arm, Front Left Hand / Rear Right Hand	1
37	070267	Mount, Grade Control Arm, Front Right Hand / Rear Left Hand	1
38	070634	Channel, for Electronic Sensor Wand Assembly	2
39	070667	Assembly, Grade Tower, Front Left Hand / Rear Right Hand	1
40	070668	Assembly, Grade Tower, Front Right Hand / Rear Left Hand	1
41	070675	Bolster, End, Left Hand	1
42	070690	Control Panel, for Each End of Paver	1
43	070750	Assembly, Track, Left Hand, 10' Length	1
44	070785	Catch, Hose, for Track Assembly	1
45	071215	Bracket, Electric Grade Sensor Mount	4
46	071220	Bracket, Square Sensor Jack Mount	4
47	071230	Jack, Square, for Grade Control	4
48	071282	Bracket, for Grade Ski / Track Mounting	2
49	071283	Mount, Grade and Steer Sensor	2
50	071286	Bracket, Reciever, for Steering Sensor Arm	2
51	071300	Assembly, Ladder	1
52	071335	Sensor, Analog String Line	4
53	071338	Assembly, Valve, for Load Leg	1
54	071339	Valve, Counter Balance, for Track Drive	1
55	071346	Bracket, for Valve Mount	2
56	071347	Plate, Spacer for Valve	2
57	071348	Valve, Float	2
58	071349	Plate, Holding Valve for Grade Towers	1
59	071353	Male, Grade Measure Post	2
60	071356	Post, Grade Measure, Female	2
61	071660	Assembly, Wand String Line Follower Grade	2
62	071661	Follower, Wand String Line Steer	2
63	072679	Fastener, Bolt, HHCS, 1"-8 x 3", Grade 8	34

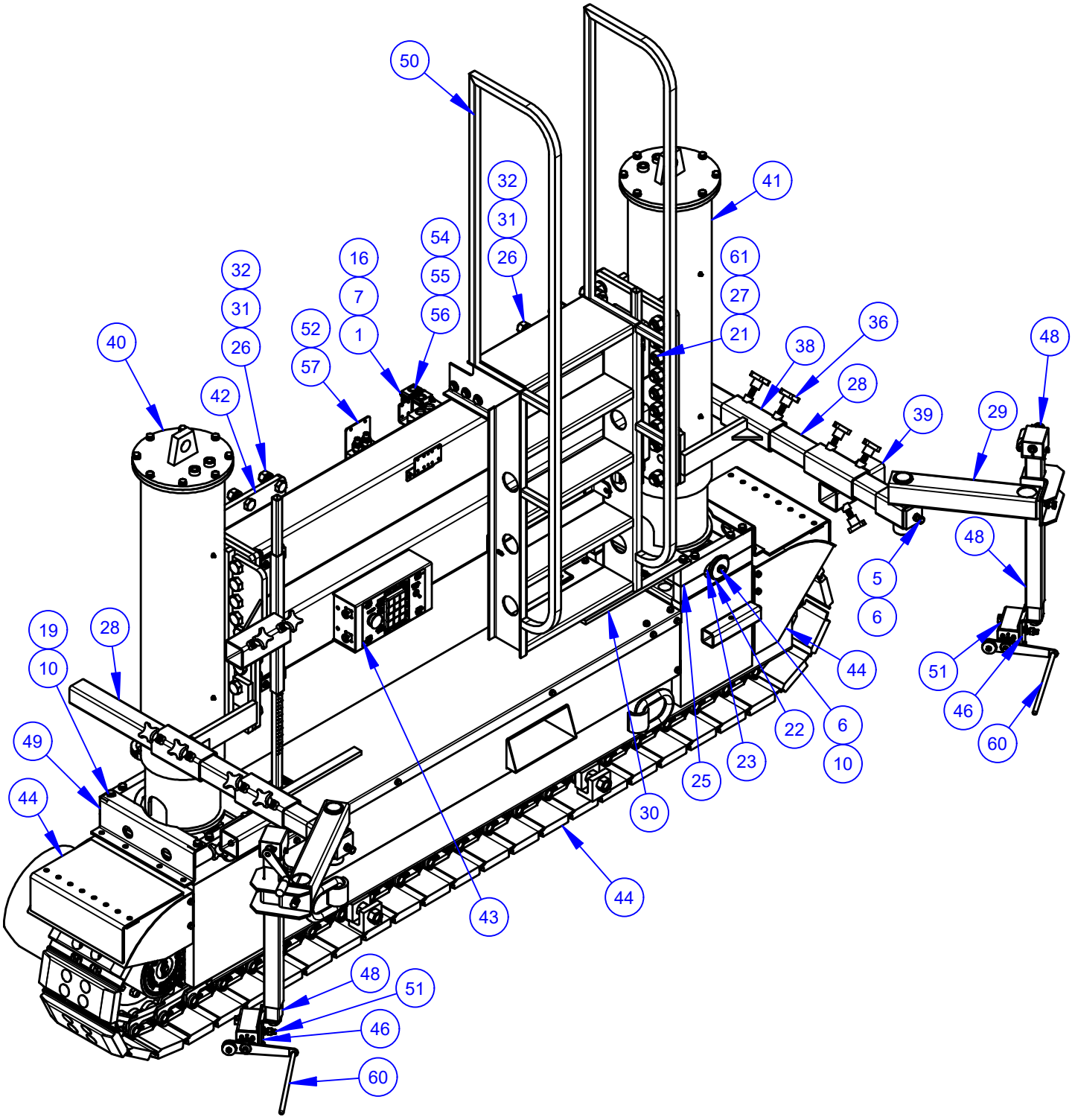
Track Assembly, Left Hand



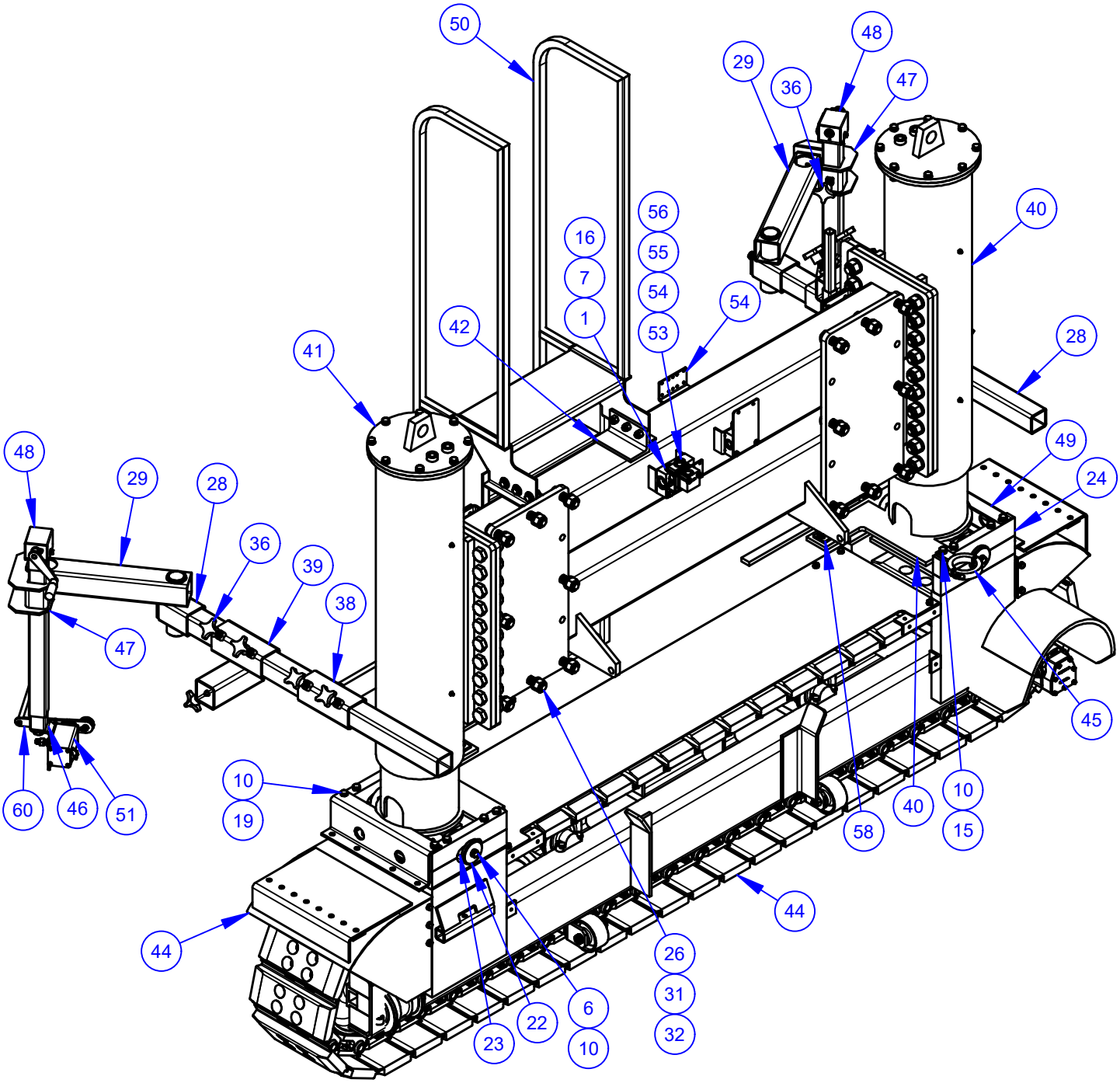
Track Assembly, Left Hand

ITEM	PART NO.	DESCRIPTION	QTY
-	070750	Assembly, Track, Left Hand, 10’ Length	-
1	010035	Fastener, Bolt, HHCS, 3/8”-16 x 3/4”, Grade 8	24
2	010072	Fastener, Bolt, HHCS, 1/2”-13 x 2-1/4”, Grade 8	1
3	010073	Fastener, Bolt, HHCS, 1/2”-13 x 2-1/2”, Grade 8	36
4	010074	Fastener, Bolt, HHCS, 1/2”-13 x 2-3/4”, Grade 8	1
5	010091	Fastener, Washer, Lock, 3/8”, Grade 8	24
6	010093	Fastener, Washer, Lock, 1/2”, Grade 8	38
7	010095	Fastener, Washer, Lock, 5/8”, Grade 8	8
8	010102	Fastener, Nut, Hex, 1/2”-13, Grade 8	1
9	010106	Fastener, Nut, Hex, 1/2”-13, Grade 8	38
10	029311	Fastener, Bolt, HHCS, 5/8”-11 x 1-3/4”, Grade 8	6
11	043269	Fastener, Nut, Stover, 5/8”-18, Grade 8	9
12	043399	Fastener, Nut, Hex, 1”-8, Steel	4
13	043507	Unit, ATC Track Idler	1
14	043511	Roller, Idle, for Ground Track	9
15	043524	Tensioner, Spring, for Track	1
16	046084	Valve, Track, for Ground Track	1
17	070661	Drive, Planetary	1
18	070662	Brake, Sandwich, for Track Drive	1
19	070663	Motor, Hydraulic, for Track Drive	1
20	070664	Assembly, Track, 10’ Length, with 12” Poly Pads (Not Shown)	1
21	070710	Main Frame, Undercarriage, for Left Hand Tracks	1
22	070744	Assembly, Roller for Side Form	2
23	070754	Cover, Left Hand Outside Track Cover	1
24	070762	Cover, Top for 10ft Track Assembly	1
25	070763	Fender, Rear, Left Hand	1
26	070770	Fender, Front, Left Hand	1
27	070780	Sprocket, for Planetary Drive	1
28	073685	Fastener, Bolt, HHCS, 5/8”-11 x 4-1/4”, Grade 8	2

Right Hand, End Frame Assembly



Right Hand, End Frame Assembly



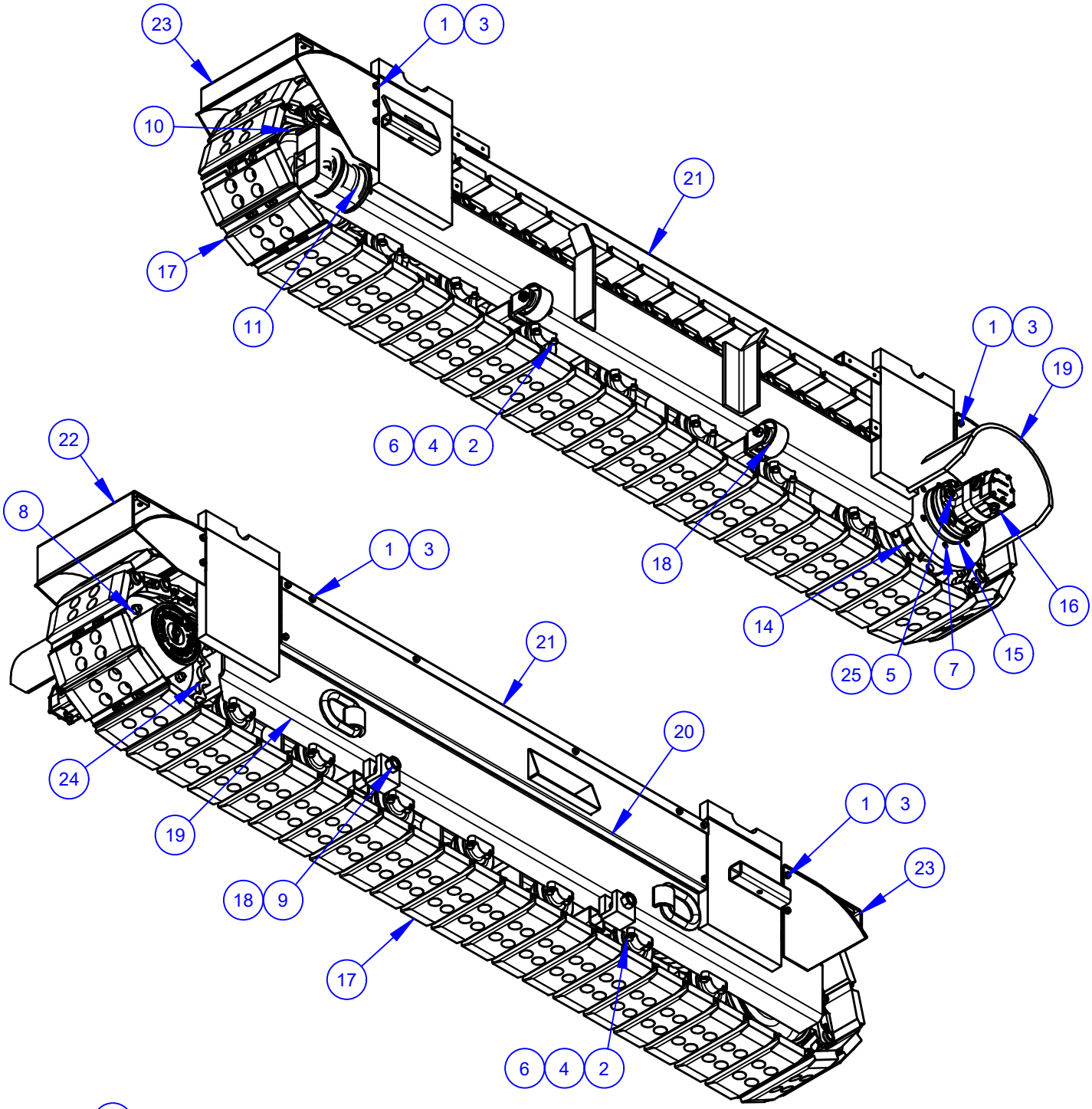
Right Hand, End Frame Assembly

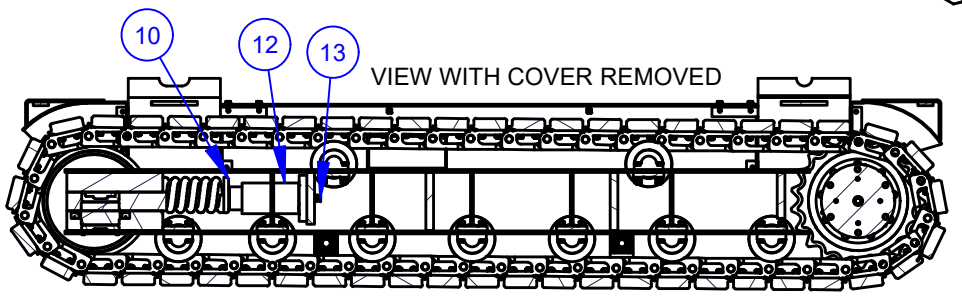
ITEM	PART NO.	DESCRIPTION	QTY
-	070666	Assembly, End Frame, Right Hand	-
1	010014	Fastener, Bolt, HHCS, 1/4”-20 x 3”, Grade 8	2
2	010024	Fastener, Bolt, HHCS, 5/16”-18 x 2, Grade 8	2
3	010036	Fastener, Bolt, HHCS, 3/8”-16 x 1”, Grade 8	8
4	010040	Fastener, Bolt, HHCS, 3/8”-16 x 2”, Grade 8	2
5	010050	Fastener, Nut, Hex, 1/2”-13, Grade 8	4
6	010069	Fastener, Bolt, HHCS, 1/2”-13 x 1-1/2”, Grade 8	8
7	010081	Fastener, Washer, Flat, 1/4”, Grade 8	4
8	010082	Fastener, Washer, Flat, 5/16”, Grade 8	2
9	010085	Fastener, Washer, Flat, 1/2”, Grade 8	6
10	010093	Fastener, Washer, Lock, 1/2”, Grade 8	22
11	010464	Fastener, Nut, Nylock, 3/8”-16, Grade 8	2
12	011238	Fastener, Nut, Nylock, 1/2”-13, Grade 8	6
13	012612	Fastener, Nut, Hex, Nylock, 5/16”-18, Grade 8	2
14	017751	Fastener, Washer, Flat, 3/8”, Grade 8	16
15	023003	Fastener, Bolt, HHCS, 1/2”-13 x 4”, Grade 8	3
16	029671	Fastener, Nut, Hex, Nylock, 1/4”-20, Grade 8	2
17	032875	Fastener, Bolt, HHCS, 3/8”-16 x 1-1/4”, Grade 8	4
18	037798	Fastener, Bolt, HHCS, 1/2”-13 x 1-1/2”, Grade 8	6
19	038781	Fastener, Bolt, HHCS, 1/2”-13 x 3-3/4”, Grade 8	15
20	040275	Fastener, Bolt, HHCS, 3/4”-16 x 2”, Grade 8	2
21	040741	Fastener, Washer, Lock, Helical Spring	38
22	043514	Retainer, for Tower to Track Pin Textcure	8
23	043516	Pin, for Track to Jacks Textcure	2
24	043517	Bar, Clamp, for Rear Track Assembly Textcure	2
25	043518	Bar, Clamp, for Front Track Assembly Textcure	2
26	044032	Fastener, Nut, Hex, 7/8”-9	16
27	045019	Fastener, Nut, Hex, 1”-8, Grade 8	38
28	054735	Weldment, Sensor	2
29	054736	Weldment, Sensor, Jack Pivot Mount Bracket	2
30	054858	Bar, Sensor, Lock Down for Auto Grade	2

Right Hand, End Frame Assembly

ITEM	PART NO.	DESCRIPTION	QTY
31	055036	Fastener, Bolt, HHCS, 7/8:-9 x 2-3/4", Grade 8	16
32	055038	Fastener, Washer, Lock, 7/8", Grade 8	16
33	055043	Fastener, Washer, Lock, 3/4", Grade 8	2
34	055376	Fastener, Bolt, HHCS, 1"-8 x 3-3/4", Grade 8	8
35	060337	Bracket, Mount, Sensor, Right Hand Front / Left Hand Rear	1
36	066376	Knob, Clamping, 1/2"-13, with Aluminum Knob	15
37	070260	Mount, Grade Control Arm, Front Left Hand / Rear Right Hand	1
38	070267	Mount, Grack Control Arm, Front Right Hand / Rear Left Hand	1
39	070281	Mount, Steering Control Arm, Sensor Relocating	2
40	070667	Assembly, Grade Tower, Front Left Hand / Rear Right Hand	1
41	070668	Assembly, Grade Tower, Front Right Hand / Rear Left Hand	1
42	070674	Bolster, End, Right Hand	1
43	070690	Control Panel, for Each End of Paver	1
44	070755	Assembly, Right Hand Track, 10 Ft Long	1
45	070785	Catch, Hose, for Track Assembly	1
46	071215	Bracket, Electric Grade Sensor Mount	2
47	071220	Bracket, Square Sensor Jack Mount	2
48	071230	Jack, Square, Grade Control	2
49	071282	Bracket, for Grade Ski to Track Mounting	2
50	071300	Assembly, Ladder	1
51	071335	Sensor, Analog String Line	2
52	071338	Assembly, Valve, Load Leg	1
53	071339	Valve, Counter Balance for Track Drive	1
54	071349	Bracket, for Valve Mount	2
55	071347	Plate, Spacer for Valve	2
56	071348	Valve, Float	2
57	071349	Plate, Holding Valve for Grade Towers	1
58	071353	Post, Grade Measure, Male	2
59	071356	Post, Grade Measure, Female	2
60	071660	Assembly, Wand String Line	2
61	072679	Fastener, Bolt, HHCS, 1"-8 x 3", Grade 8	30

Track Assembly, Right Hand

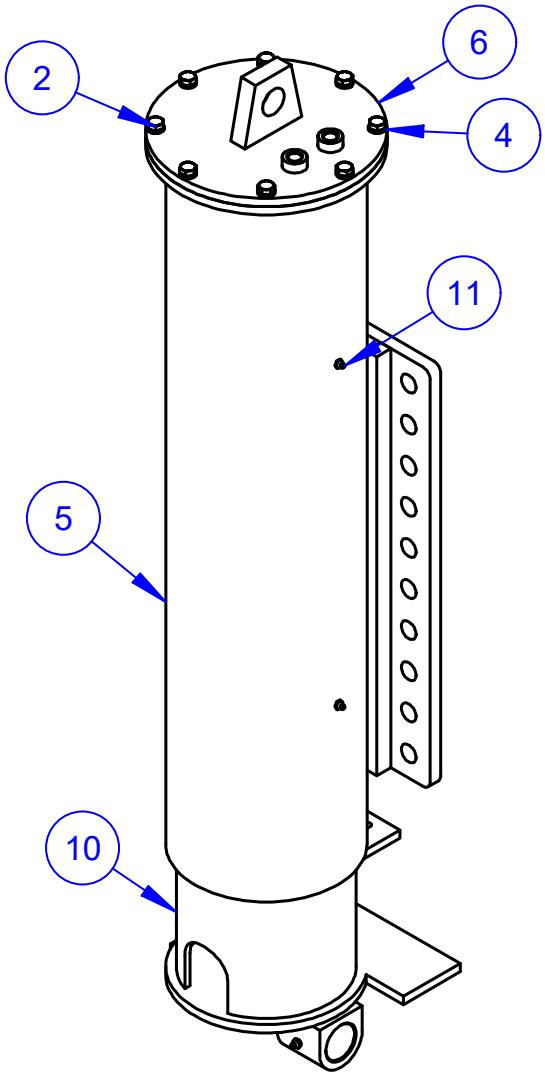




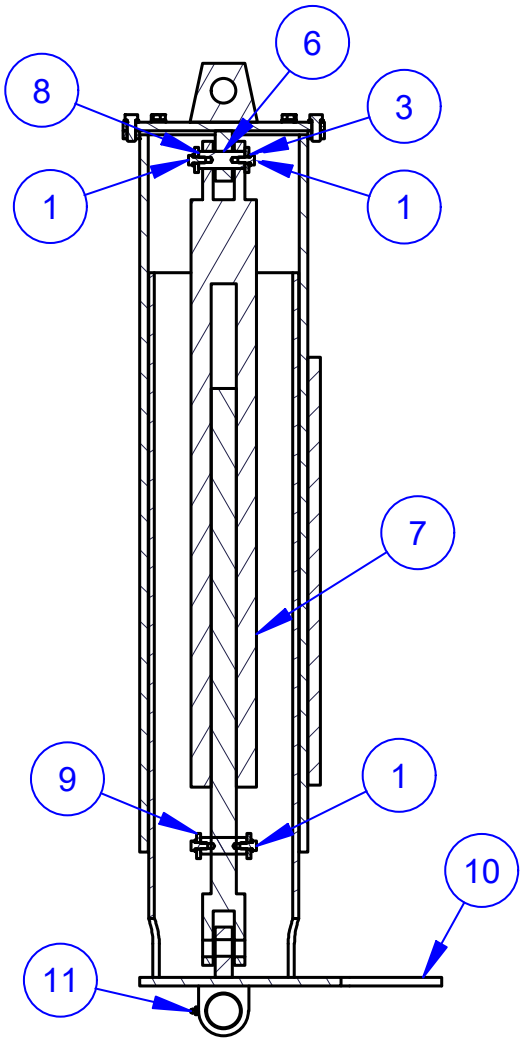
Track Assembly, Right Hand

ITEM	PART NO.	DESCRIPTION	QTY
-	070755	Assembly, Track, Right Hand, 10' Length	-
1	010035	Fastener, Bolt, HHCS, 3/8"-16 x 3/4", Grade 8	24
2	010073	Fastener, Bolt, HHCS, 1/2"-13 x 2-1/2", Grade 8	36
3	010091	Fastener, Washer, Lock, 3/8", Grade 8	24
4	010093	Fastener, Washer, Lock, 1/2", Grade 8	36
5	010095	Fastener, Washer, Lock, 5/8", Grade 8	8
6	010106	Fastener, Nut, Hex, 1/2"-13, Grade 8	36
7	029311	Fastener, Bolt, HHCS, 5/8"-11 x 1-3/4", Grade 8	6
8	043269	Fastener, Nut, Stover, 5/8"-18, Grade 8	9
9	043399	Fastener, Nut, Hex, 1"-8, Steel	4
10	043507	Unit, ATC Track Idler	1
11	043511	Roller, Idle for Ground Track	10
12	043524	Tensioner, Spring, for Track	1
13	046084	Valve, Track, for Ground Track	1
14	070661	Drive, Planetary	1
15	070662	Brake, Sandwich Module for Tracks	1
16	070663	Motor, Hydraulic, for Track Drive	1
17	070664	Assembly, Track, 10' with 12" Poly-Pads	1
18	070744	Assembly, Roller, for Side Form Track Assembly	2
19	070745	Main Frame, Undercarriage, for Right Hand Tracks	1
20	070760	Guard, Right Hand, Outside for Track Assembly	1
21	070762	Cover, Top for Track Assembly	1
22	070764	Fender, Rear, Right Hand Tracks	1
23	070770	Fender, Front, Right Hand Tracks	1
24	070780	Sprocket, for Planetary Drive	1
25	073685	Fastener, HHCS, 5/8"-11 x 4-1/4", Grade 8	2

Grade Tower Assembly



Breakout View



ITEM	PART NO.	DESCRIPTION	QTY
-	070668	Assembly, Grade Tower	-
1	010035	Fastener, Bolt, HHCS, 3/8”-16 x 3/4”, Grade 8	4
2	010068	Fastener, Bolt, HHCS, 1/2”-13 x 1-1/4”, Grade 8	8
3	010091	Fastener, Washer, Lock, 3/8”, Grade 8	4
4	010093	Fastener, Washer, Lock, 1/2”, Grade 8	8
5	043502	Weldment, Upper Tower	1
6	043503	Weldment, Top Plate for Hydraulic Cylinder Mount	1
7	055102	Cylinder, Grade, 3-1/2” x 30” x 1-1/2”	1
8	055395	Pin, Hydraulic Cylinder for Towers Textcure	2
9	055396	Fastener, Washer, Retainer	4
10	070670	Tower, Grade, Male	1
11	201163	Fitting, Grease, 1/8”-27, Straight	6

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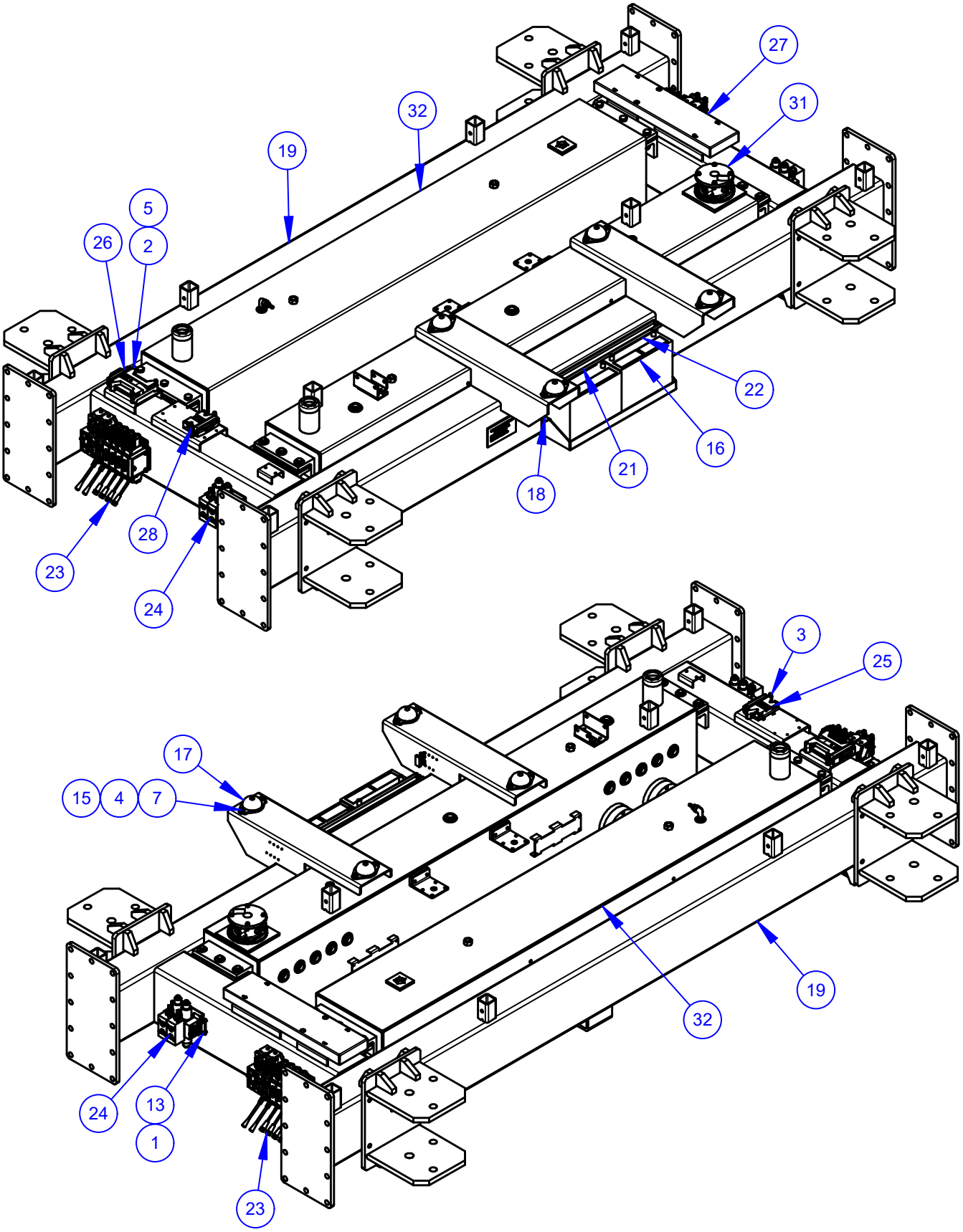
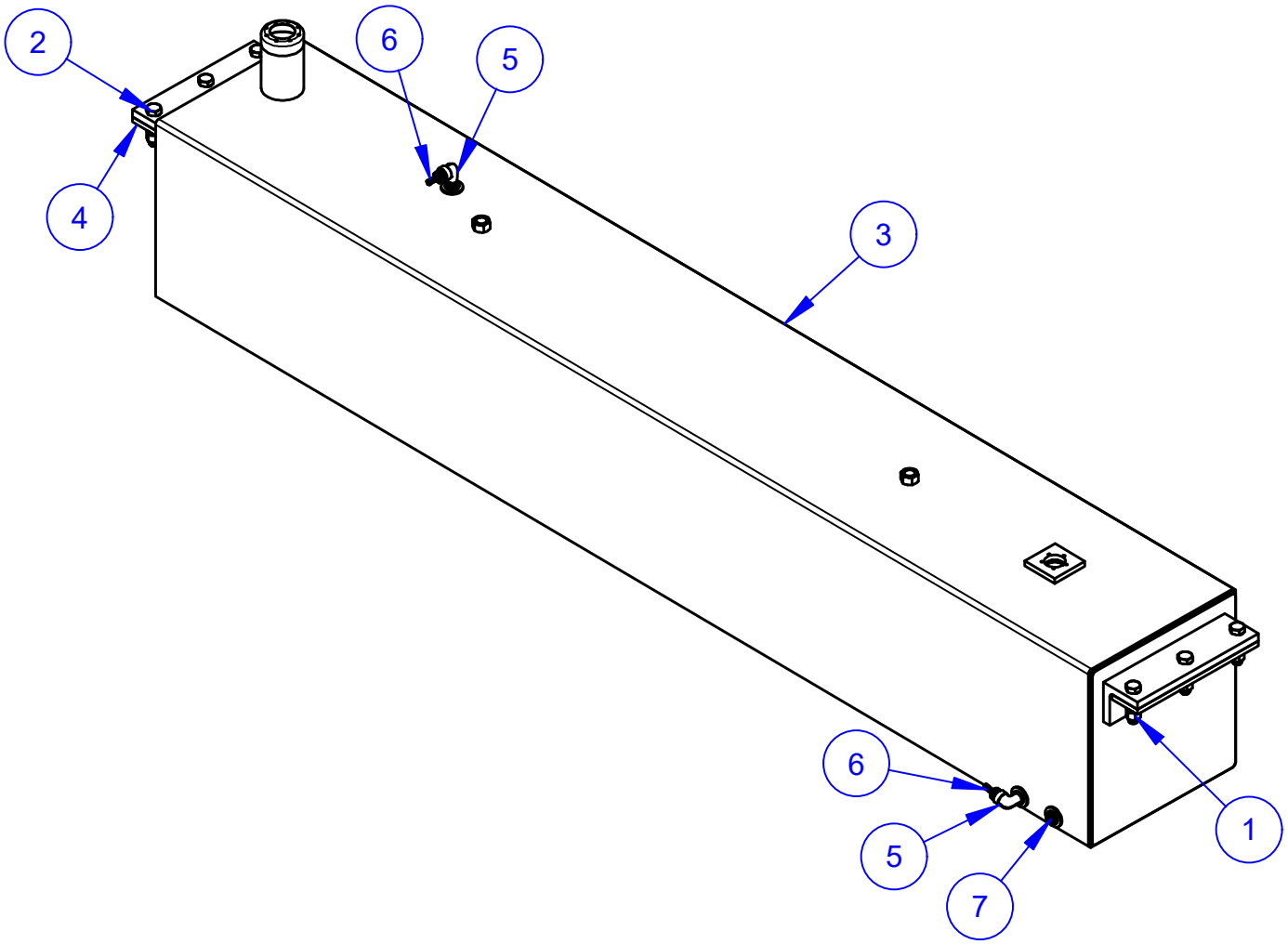
Main Frame Assembly



Main Frame Assembly

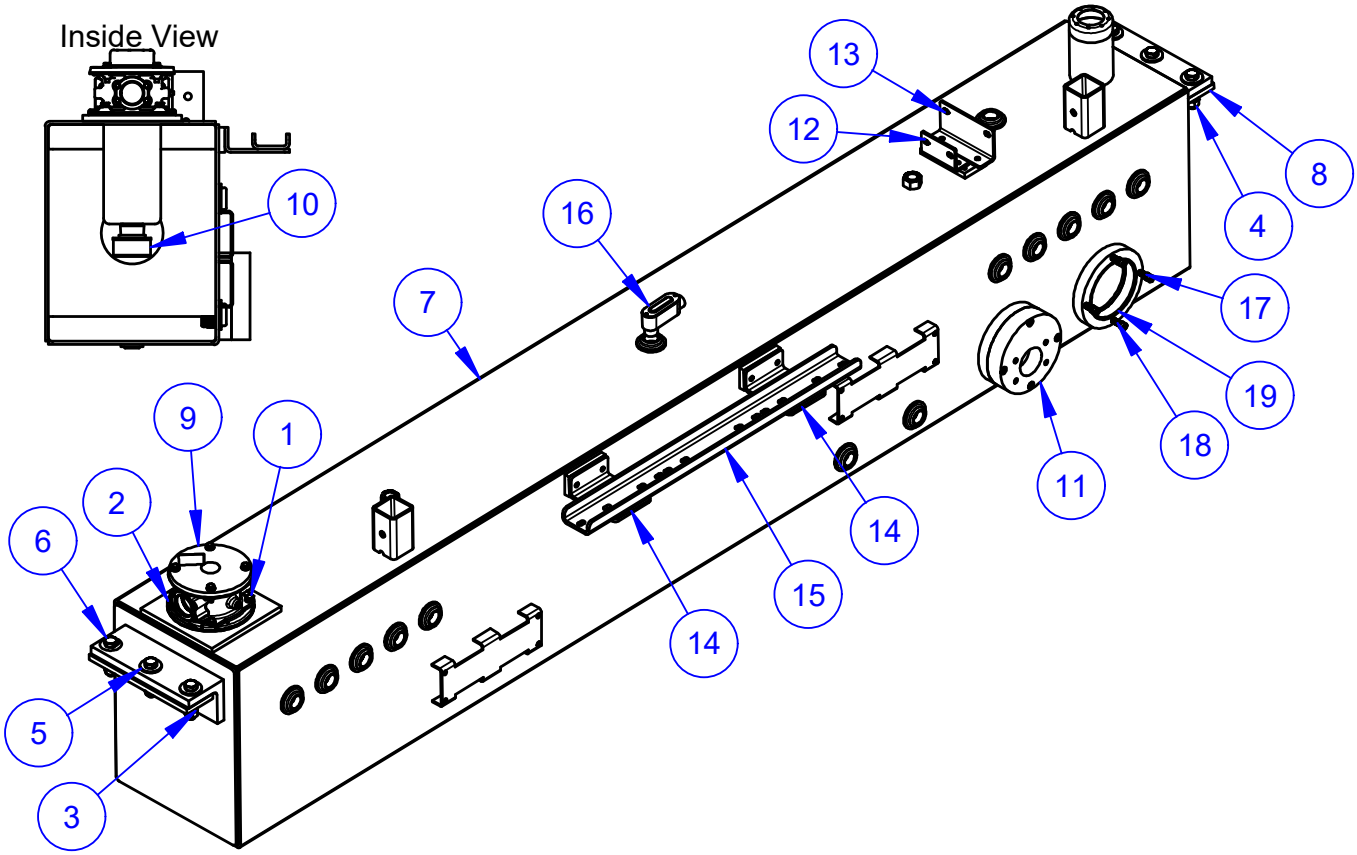
ITEM	PART NO.	DESCRIPTION	QTY
-	070122	Assembly, Main Frame, APSFP1600, T3	-
1	010002	Fastener, Bolt, HHCS, 1/4”-20 x 3/4”, Grade 8	4
2	010009	Fastener, Bolt, HHCS, 1/4”-20 x 2-1/2”, Grade 8	8
3	010011	Fastener, Bolt, HHCS, 1/4”-20 x 3”, Grade 8	4
4	010068	Fastener, Bolt, HHCS, 1/2”-13 x 1-1/4”, Grade 8	8
5	010081	Fastener, Washer, Flat, 1/4”, Grade 8	6
6	010082	Fastener, Washer, Flat, 5/16”, Grade 8	2
7	010085	Fastener, Washer, Flat, 1/2”, Grade 8	8
8	010090	Fastener, Washer, Lock, 5/16”, Grade 8	2
9	010100	Fastener, Nut, Hex, 5/16”-18, Grade 8	2
10	010570	Fastener, Nut, Hex, 10-32, Grade 8	2
11	013727	Fastener, Screw, RHMS, 10-32 x 3/4”	2
12	013740	Fastener, Washer, Lock, Star, #10	2
13	029671	Fastener, Nut, Hex, Nylock, 1/4”-20, Grade 8	16
14	032106	Fastener, Nut, Wing, 5/16”-18, Steel	2
15	040208	Fastener, Nut, Stover, 1/2”-13, Grade 8	8
16	055030	Battery	2
17	055031	Isolator, Domed, Rated 550 LBS, for Text Cure	4
18	066239	Rod, 5/16”-18, for Battery Retainer	2
19	070790	Weldment, Main Frame, APSFP1600	1
20	071231	Cushion, Rubber, for battery Tray	1
21	071232	Channel, Battery Hold Down	1
22	071233	Isolator, Rubber, for Battery Hold Down Channel	2
23	071326	Valve, Stack, 6-Bank	2
24	071332	Valve, Hydraulic, for Side Forms	2
25	071333	Sensor, CAN Slope	2
26	071334	Controller	2
27	071342	Cover, for Electronic Controller	2
28	071345	Spacer, for Controller Cover	4
29	071350	Holder, Fuse, MIDI Style	1
30	071351	Fuse, Bolt Down, 30A, Time Delay	1
31	071500	Assembly, Hydraulic Tank	1
32	072874	Assembly, Fuel Tank	1

Fuel Tank Assembly



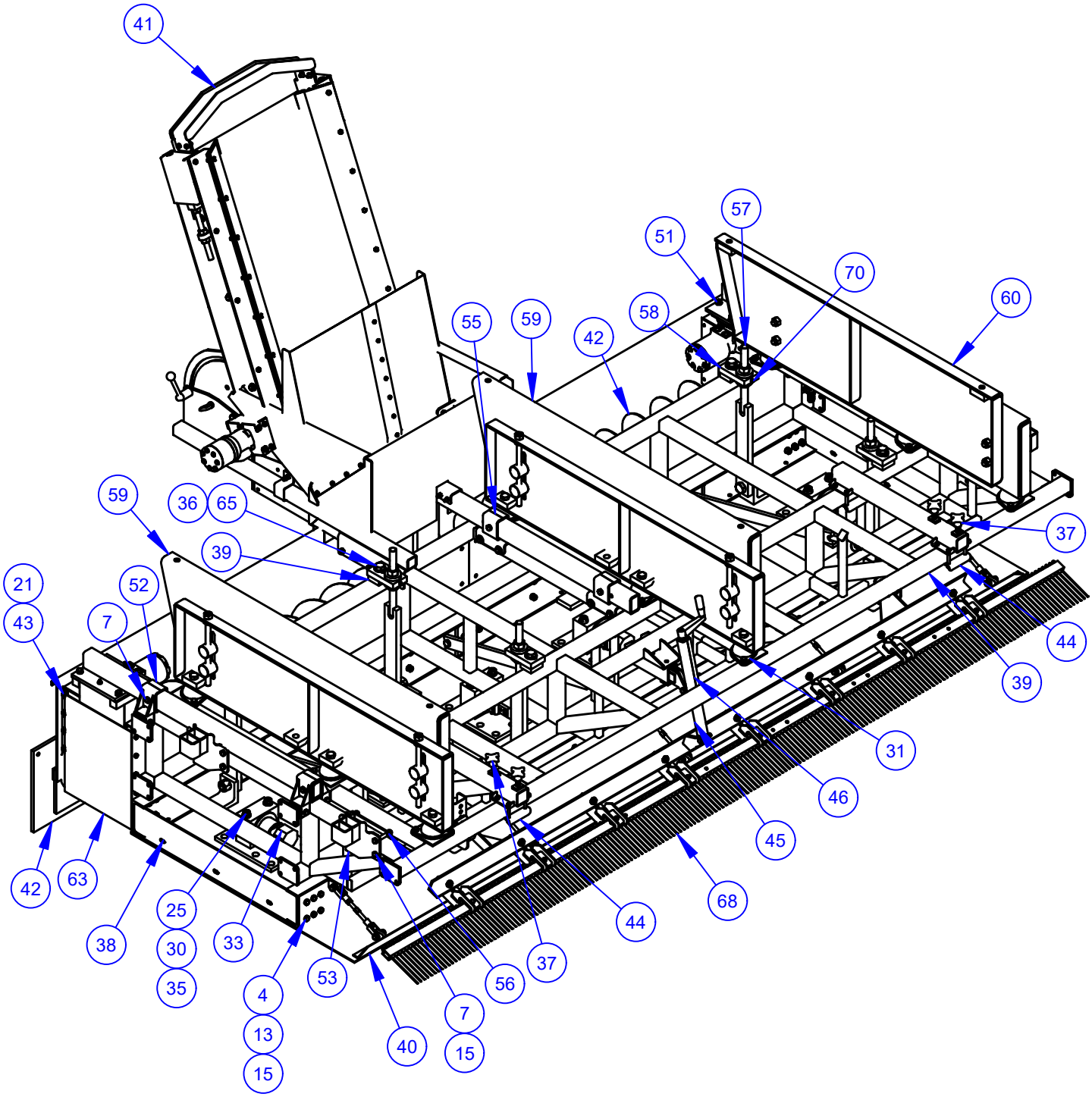
ITEM	PART NO.	DESCRIPTION	QTY
-	072874	Assembly, Fuel Tank, APSFP1600	-
1	044129	Fastener, Nut, Hex, Nylon, 3/4”-10, Grade 8	6
2	070995	Fastener, Bolt, HHCS, 3/4”-10 x 3-1/4”, Grade 8	6
3	071260	Weldment, Fuel Tank	1
4	071298	Cushion, Isolation for Fuel Tank	2
5	071340	Fitting, Street “L”, 1/2” NPT, Stainless	2
6	071343	Fitting, Hose Barb, 3/8” x 1/2” NPT, Stainless	2
7	071344	Fitting, Plug, 1/2” NPT, Stainless	2

Hydraulic Tank Assembly

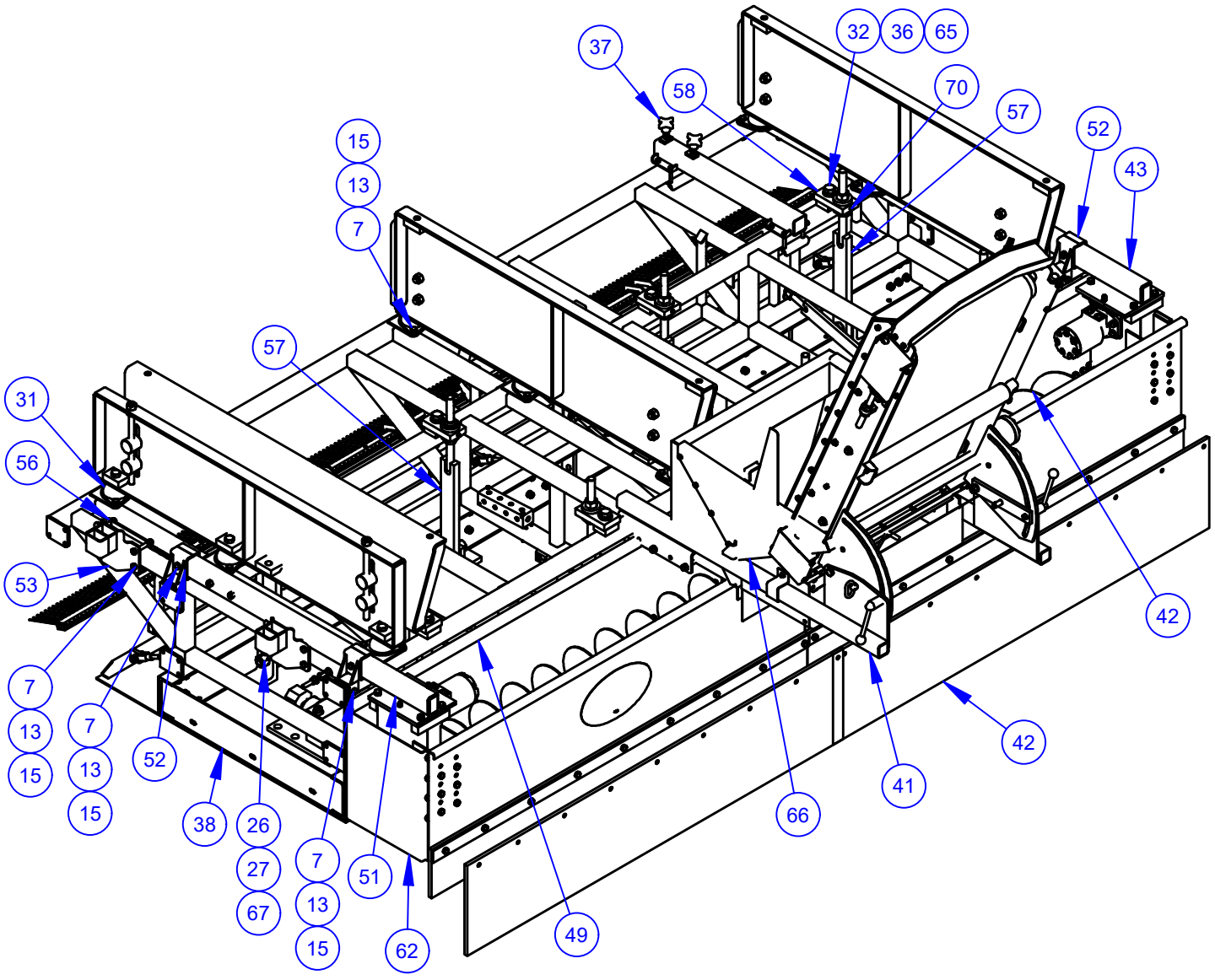


ITEM	PART NO.	DESCRIPTION	QTY
-	071500	Assembly, Hydraulic Tank, APSFP1600	-
1	010035	Fastener, Bolt, HHCS, 3/8”-16 x 3/4”, Grade 8	4
2	010091	Fastener, Washer, Lock, 3/8”, Grade 8	4
3	010095	Fastener, Washer, Lock, 5/8”, Grade 8	6
4	010110	Fastener, Hex, Nut, 5/8”-11, Grade 8	6
5	012982	Fastener, Washer, Flat, 5/8”, Grade 8	6
6	048455	Fastener, Bolt, HHCS, 5/8”-11 x 3”, Grade 8	6
7	071250	Weldment, Hydraulic Tank	1
8	071297	Cushion, Isolation for Hydraulic Tank	2
9	071327	Filter, Return, Located in Tank with Dual Return Ports	1
10	071328	Diffuser, for Return Filter	1
11	071329	Flange, Suction Port Assembly	2
12	071336	Bracket, Mount, for High Pressure Manifold	1
13	071337	Bracket, Mount, for Vibration ON/OFF Relief Manifold	1
14	071341	Bracket, High Pressure Filter Mount	2
15	071352	Bracket, Pressure Filter Modifier	1
16	073389	Box, Junction, Access Port, 1/2” NPT	1
17	073695	Fastener, Washer, Lock, 3/8”	8
18	073696	Fastener, Screw, SHCS, 3/8”-16 x 1-1/4”, Black Oxide	8
19	073697	O-Ring, for Hydraulic Tank	2

Paving Package Assembly



Paving Package Assembly



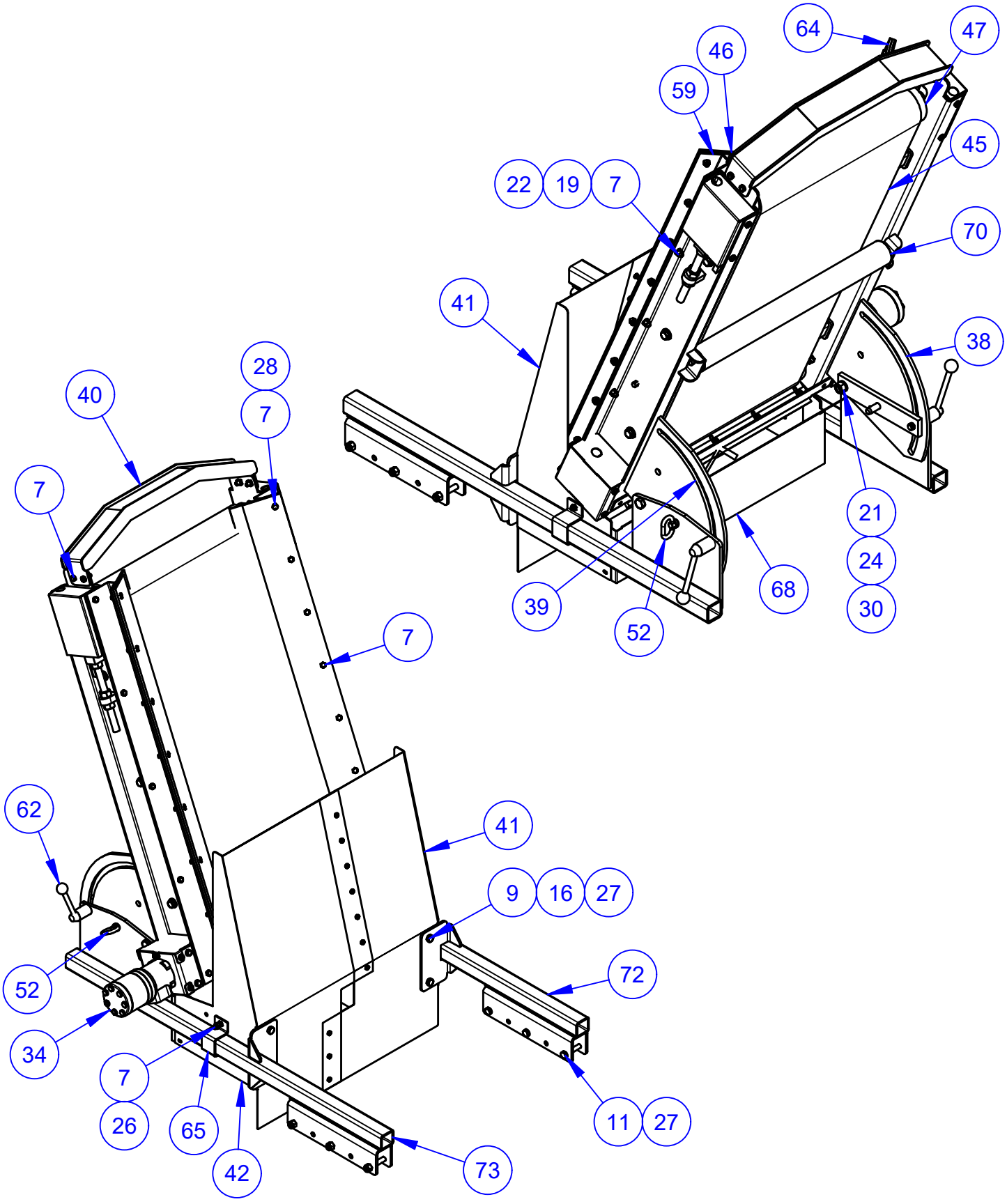
Paving Package Assembly

ITEM	PART NO.	DESCRIPTION	QTY
-	070810	Assembly, Paving Package, for APSFP1600, Tier 3	-
1	010020	Fastener, Bolt, HHCS, 5/16-18 x 1", Grade 8	4
2	010035	Fastener, Bolt, HHCS, 3/8"-16 x 3/4", Grade 8	4
3	010036	Fastener, Bolt, HHCS, 3/8"-16 x 1", Grade 8	8
4	010068	Fastener, Bolt, HHCS, 1/2"-13 x 1-1/4", Grade 8	42
5	010069	Fastener, Bolt, HHCS, 1/2"-13 x 1-1/2, Grade 8	6
6	010071	Fastener, Bolt, HHCS, 1/2"-13 x 2", Grade 8	2
7	010071	Fastener, Bolt, HHCS, 1/2"-13 x 3-1/4", Grade 8	48
8	010077	Fastener, Bolt, HHCS, 1/2"-13 x 3-1/2", Grade 8	4
9	010082	Fastener, Washer, Flat, 5/16", Grade 8	4
10	010085	Fastener, Washer, Flat, 1/2", Grade 8	8
11	010087	Fastener, Washer, Flat, 3/4", Grade 8	6
12	010090	Fastener, Washer, Lock, 5/16", Grade 8	4
13	010093	Fastener, Washer, Lock, 1/2", Grade 8	98
14	010095	Fastener, Washer, Lock, 5/8", Grade 8	3
15	010106	Fastener, Nut, Hex, 1/2"-13, Grade 8	100
16	010110	Fastener, Nut, Hex, 5/8"-11, Grade 8	3
17	010112	Fastener, Nut, Hex, 3/4"-10, Grade 8	6
18	011238	Fastener, Nut, Hex, Nylock, 1/2"-13, Grade 8	2
19	011238	Fastener, Nut, Hex, Nylock, 1/2"-13, Grade 8	4
20	011490	Fastener, Washer, Flat, 1/2", Grade 8	4
21	017751	Fastener, Washer, Flat, 3/8", Grade 8	8
22	020514	Fastener, Nut, Lock, Stover, 3/8"-16, Grade 8	8
23	020542	Fastener, Nut, Lock, Stover, 1/4"-20, Grade 8	2
24	029311	Fastener, Bolt, HHCS, 5/8"-11 x 1-3/4", Grade 8	3
25	038782	Fastener, Washer, Flat, 5/8", Grade 8	12
26	040741	Fastener, Washer, Lock, , Grade 8	8
27	045019	Fastener, Nut, Hex, 1"-8, Grade 8	8
28	045855	Fastener, Bolt, HHCS, 1/2"-13 x 3-1/2", Grade 8	2
29	049351	Fastener, Nut, Hex, Nylock, 3/4"-10, Grade 8	9
30	053422	Fastener, Washer, Lock, 5/8", Grade 8	12
31	055031	Isolator, Domed, Rated 550 LBS, for Text Cure	9
32	055038	Fastener, Washer, Lock, 7/8", Grade 8	9
33	055751	Vibrator, M/1200	6
34	060345	Pull Back	3
35	062876	Fastener, Bolt, HHCS, 5/8"-16 x 5-3/4", Grade 8	12

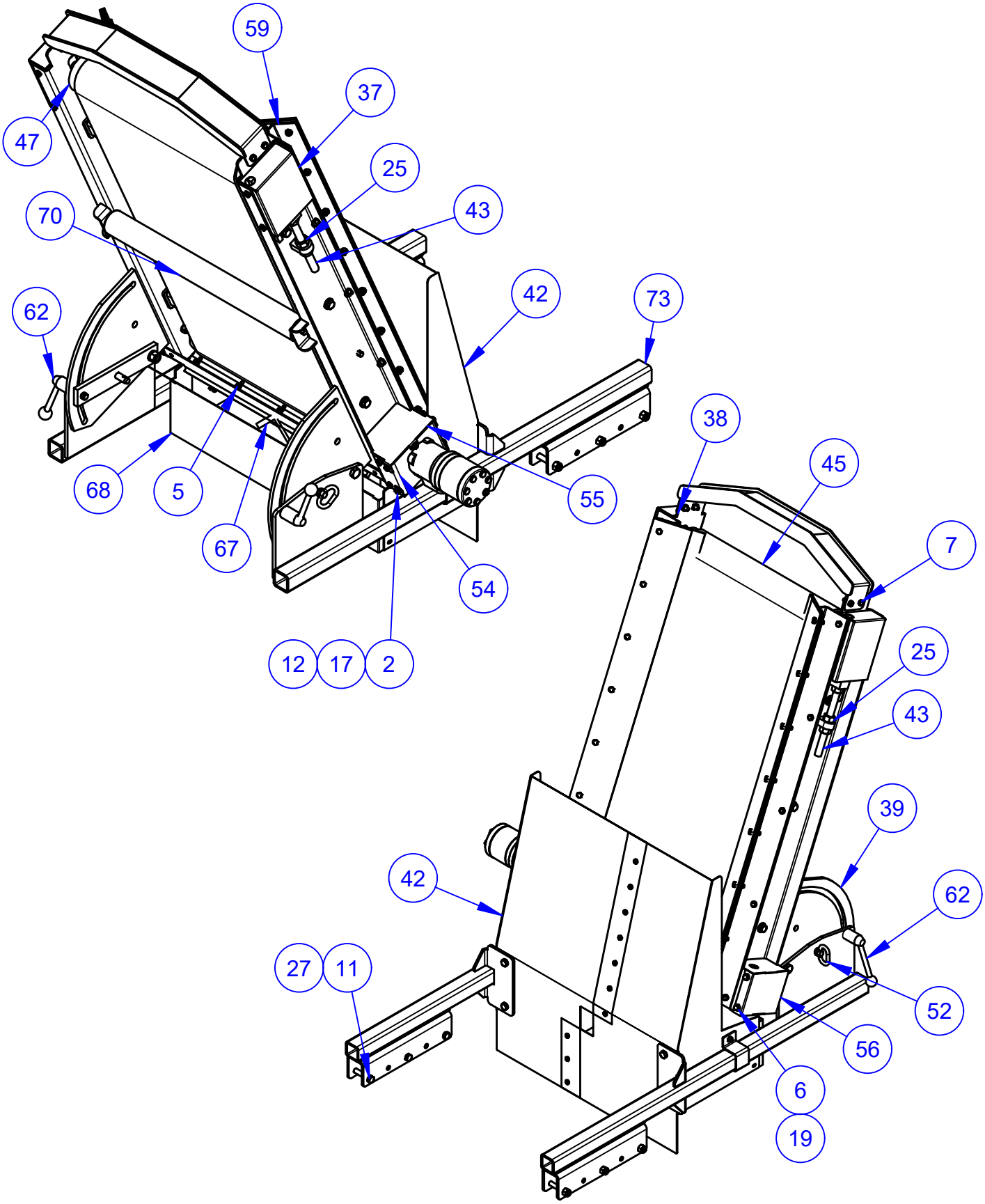
Paving Package Assembly

ITEM	PART NO.	DESCRIPTION	QTY
36	064810	Fastener, Washer, Flat, 7/8", Grade 8	8
37	066376	Knob, Clamping, 1/2"-13, with Aluminum Knob	4
38	070809	Pan, Paving	1
39	070825	Frame, for Main Paving Pan, 12'	1
40	070855	Assembly, Profile Pan, 1	1
41	070860	Conveyor, for Material	1
42	070870	Assembly, Auger Box, 12'	1
43	070900	Assembly, Auger Box, Left Hand	1
44	070907	Assembly, Reciever Tube, for Walkway	2
45	070912	Weldment, Jack, Male, for Tine	1
46	070916	Weldment, Jack, Female, for Tine	1
47	070920	Weldment, Shaft, for Tine Jack	1
48	070923	Handle, Crank, for Tine	1
49	070924	Plate, Auger Box, Inside Left Hand Auger Box	1
50	070925	Plate, Auger Box, Inside Right Hand Auger Box	1
51	070926	Assembly, Auger Box, Right Hand	1
52	070955	Reciever, for Auger Mounting	4
53	070985	Bracket, Side Form Guide	4
54	070961	Bracket, Tine Rack Jack Mount	1
55	070966	Bracket, Center Auger Support Reciever	2
56	070968	Plate, Side Form Guide Mounting Bracket	4
57	070970	Pull Up	8
58	070975	Bracket, Pull Up Adjustment	8
59	070976	Assembly, Right Hand / Center Connecting Bracket	2
60	070985	Assembly, Left Hand, Connecting Bracket	1
61	070992	Manifold, Vibrator Case Drains for Pourback Attachment	1
62	070993	Cover, End, Right Hand for Auger Box	1
63	070994	Cover, End, Left Hand for Auger Box	1
64	070995	Fastener, Bolt, HHCS, 3/4"-10 x 3-1/4, Grade 8	9
65	070996	Fastener, Bolt, HHCS, 7/8"-9 x 2", Grade 8	9
66	070997	Chute	1
67	072679	Fastener, Bolt, HHCS, 1"-8 x 3", Grade 8	8
68	072740	Assembly, Tine, 12 Foot	1
69	072747	Fastener, Bolt, HHCS, 1/4"-20 x 4-1/2", Grade 8	2
70	201163	Fitting, Grease, Straight, 1/8"-27	9

Conveyor Assembly



Conveyor Assembly

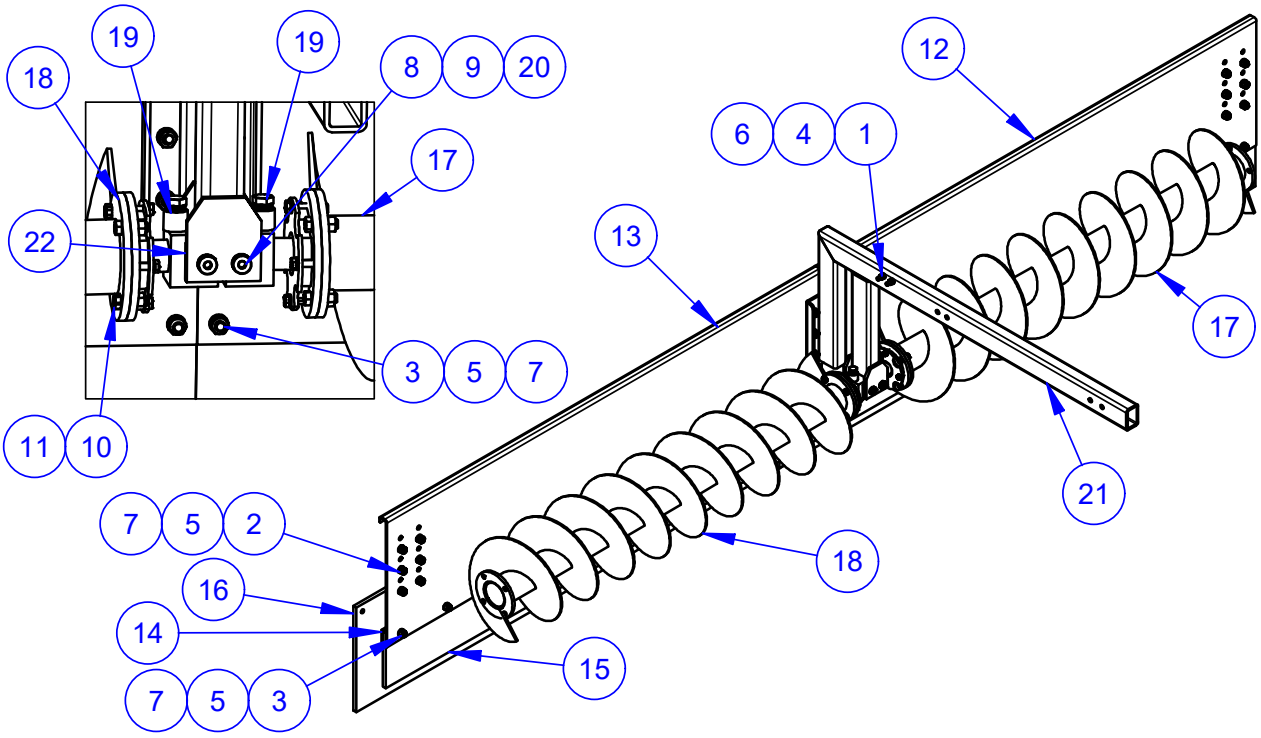


Conveyor Assembly

ITEM	PART NO.	DESCRIPTION	QTY
-	071175	Assembly, Conveyor	-
1	010001	Fastener, Bolt, HHCS, 1/4”-20 x 1/2”, Grade 8	10
2	010002	Fastener, Bolt, HHCS, 1/4”-20 x 3/4”, Grade 8	6
3	010003	Fastener, Bolt, HHCS, 1/4”-20 x 1”, Grade 8	6
4	010019	Fastener, Bolt, HHCS, 5/16”-18 x 3/4”, Grade 8	2
5	010021	Fastener, Bolt, HHCS< 5/16”-18 x 1-1/4”, Grade 8	5
6	010035	Fastener, Bolt, HHCS, 3/8”-16 x 3/4”, Grade 8	12
7	010036	Fastener, Bolt, HHCS, 3/8”-16 x 1”, Grade 8	34
8	010054	Fastener, Bolt, HHCS, 7/16”-14 x 1-1/2”, Grade 8	4
9	010067	Fastener, Bolt ,HHCS, 1/2”-13 x 1”, Grade 8	6
10	010068	Fastener, Bolt, HHCS, 1/2”-13 x 1-1/4”, Grade 8	6
11	010076	Fastener, Bolt, HHCS, 1/2”-13 x 3-3/4”, Grade 8	6
12	010081	Fastener, Washer, Flat, 1/4”, Grade 8	6
13	010082	Fastener, Washer, Flat, 5/16”, Grade 8	5
14	010083	Fastener, Washer, Flat, 3/8”, Grade 8	15
15	010084	Fastener, Washer, Flat, 7/16”, Grade 8	4
16	010085	Fastener, Washer, Flat, 1/2”, Grade 8	4
17	010089	Fastener, Washer, Lock, 1/4”, Grade 8	6
18	010090	Fastener, Washer, Lock, 5/16”, Grade 8	3
19	010091	Fastener, Washer, Lock, 3/8”, Grade 8	14
20	010092	Fastener, Washer, Lock, 7/16”, Grade 8	4
21	010095	Fastener, Washer, Lock, 5/8”, Grade 8	8
22	010102	Fastener, Nut, Hex, 3/8”-16, Grade 8	10
23	010104	Fastener, Nut, Hex, 7/16”-14, Grade 8	4
24	010110	Fastener, Nut, Hex, 5/8”-11, Grade 8	2
25	010112	Fastener, Nut, Hex, 3/4”-10, Grade 8	6
26	010464	Fastener, Nut, Hex, Nylock, 3/8”-16, Grade 8	12
27	011238	Fastener, Nut, Hex, Nylock, 1/2”-13, Grade 8	10
28	020514	Fastener, Nut, Hex, 3/8”-16, Grade 8	16
29	029311	Fastener, Bolt, HHCS, 5/8”-11 x 1-3/4”, Grade 8	10
30	029311	Fastener, Bolt, HHCS, 5/8”-11 x 1-3/4”, Grade 8	2
31	039136	Bearing, 1”, Flanged, Ecentric Collar	2
32	040663	Fastener, Bolt, HHCS, 3/8”-16 x 3”, Grade 8	2
33	044037	Fastener, Bolt, FHCS, 3/8”-16 x 1-1/4”, Grade 8	6
34	050468	Motor, Hydraulic	1
35	060767	Angle, Scraper Mount, for Belt Placer	1
36	060768	Retainer, for Roller Drive Shafts	3
37	060769	Cover, Belt Placer, Right Hand Front	1
38	060773	Bracket, Belt Placer, Left Hand Side	1
39	060774	Bracket, Belt Placer, Right Hand Side	1
40	060775	Weldment, Protector Guard for Belt Placer	1

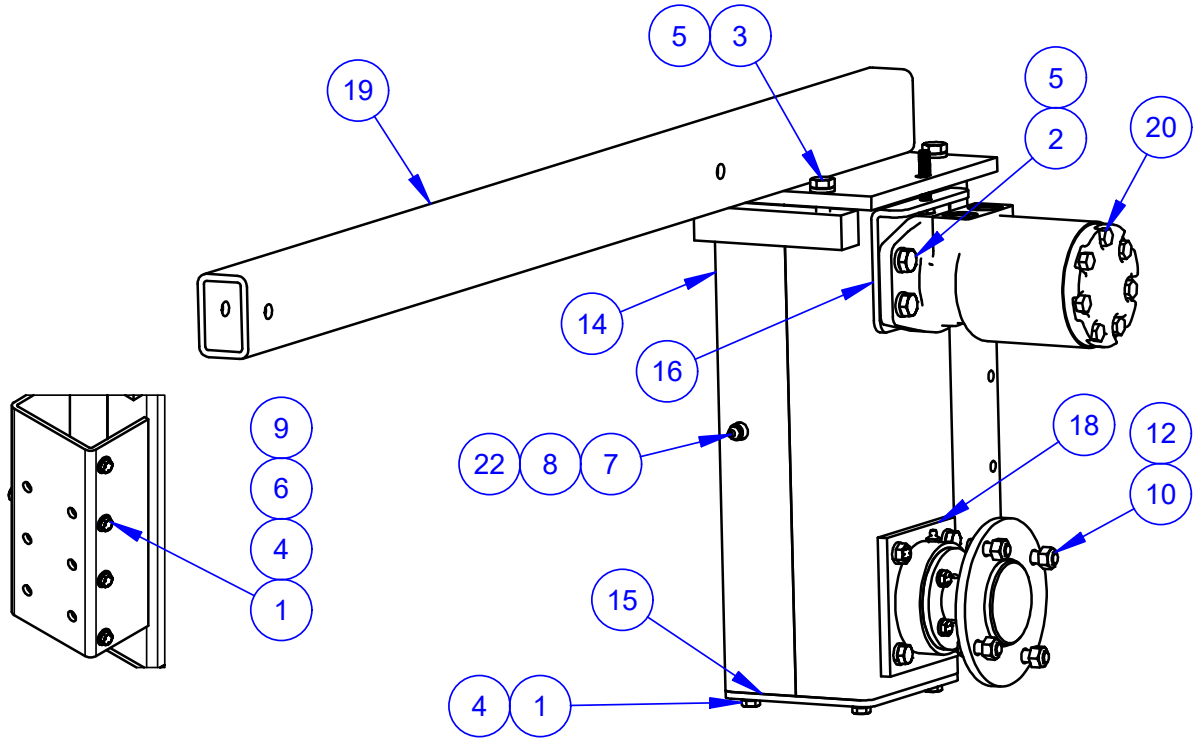
ITEM	PART NO.	DESCRIPTION	QTY
41	060776	Backer, Left Hand, Splash	1
42	060777	Backer, Right Hand, Splash	1
43	060778	Rod, All Thread, for Belt Adjuster	2
44	060779	Weldment, Belt Roller Bearing Mount	2
45	060780	Belt, for Meterial Conveyor	1
46	060781	Liner, 1/4" Rubber Skirt for Belt Placer	2
47	060782	Roller, 4" Diameter Lagged, 1/4" Rubber, 24" x 1" QD Bushings	1
48	060783	Roller, 4" Diameter, x 24" x 1" QD Bushings	1
49	060786	Bearing, 1" Bore, Chevron Mount	2
50	060787	Chain, for Flex Coupler Belt Placer	1
51	060788	Coupling, Chain, Flex Shaft for Hight Torque 1"	2
52	060789	Pin, Quick Release, 5/8" x 2"	2
53	060791	Scraper, for Material Conveyor	1
54	060792	Bracket, Belt Placer Motor Mount	1
55	060793	Cover, Belt Placer, Rear Right Hand	2
56	060794	Weldment, Bearing Cover, Rear Left Hand, for Belt Placer	1
57	060795	Weldment, Front, Left Hand, Bearing Cover	1
58	060796	Weldment, Cross Brace Belt Placer	3
59	060797	Channel, Skirt mount Bracket	2
60	060798	Shaft, Front Idler for Belt Placer	1
61	060799	Shaft, Drive for Rear Roller Belt Placer	1
62	060883	Handle, Adjustable, Steel, with Ball Knob	2
63	061487	Weldment, Connecting Strip for Scraper	1
64	061722	Plate, Hold Down, for Rubber Skirt	2
65	061999	Bracket, Side Mount for Material Conveyor Back Splash	2
66	062974	Bracket, Poly Deflector	1
67	062975	Angle, UHMW for Poly Deflector	1
68	062976	Panel, Front Splash for Material Conveyor	1
69	064352	Plate, Backing for Belt Placer Adjuster	2
70	066377	Roller, Conveyor, 2.5"	1
71	066378	Roller, Conveyor, 1.9"	2
72	070861	Weldment, Left Hand, Belt Placer Mounting Bracket	1
73	070862	Weldment, Right Hand, Belt Placer Mounting Bracket	1
74	201163	Fitting, Grease, Straight, 1/8"-27, Plastic	1

Auger Box Assembly



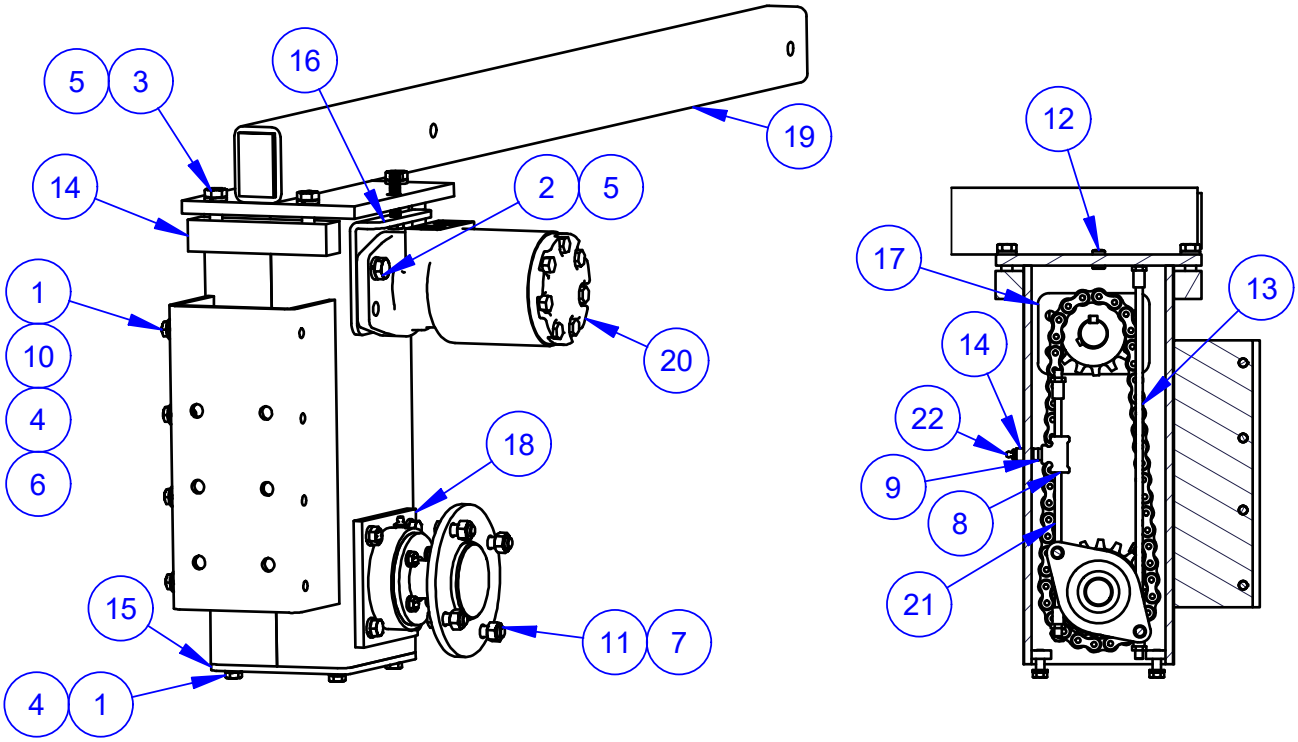
ITEM	PART NO.	DESCRIPTION	QTY
-	070870	Assembly, Auger Box	-
1	010044	Fastener, Bolt, HHCS, 3/8”-16 x 3”, Grade 8	2
2	010067	Fastener, Bolt, HHCS, 1/2”-13 x 1”, Grade 8	18
3	010070	Fastener, Bolt, HHCS, 1/2”-13 x 1-3/4”, Grade 8	18
4	010091	Fastener, Washer, Lock, 3/8”, Grade 8	2
5	010093	Fastener, Washer, Lock, 1/2”, Grade 8	37
6	010102	Fastener, Nut, Hex, 3/8”-16, Grade 8	2
7	010106	Fastener, Nut, Hex, 1/2”-13, Grade 8	36
8	011490	Fastener, Washer, Flat, 1/2”, Grade 8	2
9	040208	Fastener, Nut, Stover, 1/2”-13, Grade 8	2
10	045854	Fastener, Bolt, HHC, 7/16”-14 x 1-1/4”, Grade 8	11
11	060868	Fastener, Nut, Hex, 7/16”-14, Grade 8	9
12	070864	Plate, Right Hand, for Outside Front Auger Box	1
13	070865	Plate, Left Hand, for Outside Front Auger Box	1
14	070866	Plate, Rubber Backing, for Front Auger Box	2
15	070867	Skirt, Rubber, for Front Auger Box	2
16	070868	Seal, Rubber, Front	2
17	070869	Auger, Center, Left Hand	1
18	070871	Auger, Center, Right Hand	1
19	070877	Assembly, Idle Auger Slide	2
20	070890	Fastener, Bolt, Shoulder, 5/8” x 3-3/4”	2
21	070891	Mount, Center Auger Support	1
22	070897	Spacer, Center Auger Slide Mount	2

Left Hand Auger Drive Assembly



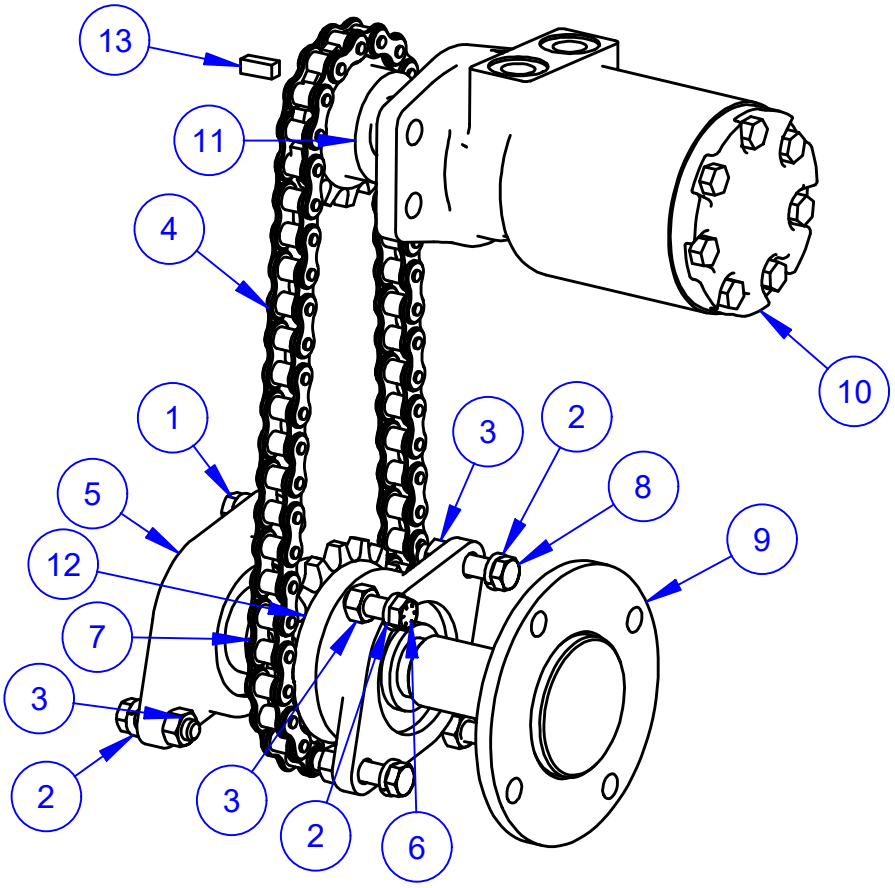
ITEM	PART NO.	DESCRIPTION	QTY
-	070900	Assembly, Left Hand Auger Drive	-
1	010036	Fastener, Bolt, HHCS, 3/8”-16 x 1”, Grade 8	8
2	010070	Fastener, Bolt, HHCS, 1/2”-13 x 1-3/4”, Grade 8	4
3	010071	Fastener, Bolt, HHCS, 1/2”-13 x 2”, Grade 8	4
4	010091	Fastener, Washer, Lock, 3/8”, Grade 8	8
5	010093	Fastener, Washer, Lock, 1/2”, Grade 8	8
6	010102	Fastener, Nut, Hex, 3/8”-16, Grade 8	4
7	010318	Fitting, Tee, 1/4” NPT, Galvinized	1
8	012393	Fitting, Nipple, 1/4” NPT x 7/8”, Black Steel	1
9	017751	Fastener, Washer, Flat, 3/8”, Grade 8	4
10	045854	Fastener, Bolt, HHC, 7/16”-14 x 1-1/4”, Grade 8	4
11	050963	Fitting, Plug, 18” NPT, Hex Socket	1
12	060868	Fastener, Nut, Hex, 7/16”-14, Grade 8	4
13	063085	Hose, 18”, Flexable Grease	1
14	070933	Box, Left Hand Auger Drive	1
15	070934	Plate, Bottom Cover, for Auger Box Assembly	1
16	070935	Mount, for Auger Motor	1
17	070937	Bracket, Inside Motor Mount	2
18	070938	Assembly, Auger Shaft Seal Housing	1
19	070950	Mount, Auger Box Slide, Left Hand	1
20	071134	Assembly, Auger Motor	1
21	071135	Hose, 12”, Flexable Grease	1
22	201163	Fitting, Grease, Straight, 1/8”-27	1

Right Hand Auger Drive Assembly



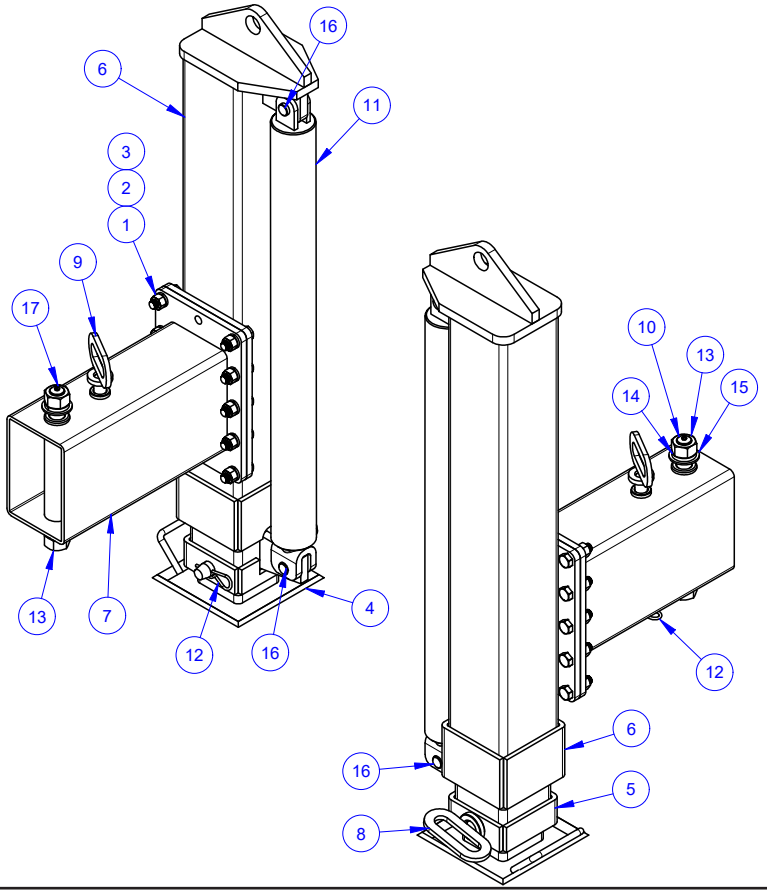
ITEM	PART NO.	DESCRIPTION	QTY
-	070926	Assembly, Right Hand Auger Drive	-
1	010036	Fastener, Bolt, HHCS, 3/8”-16 x 1”, Grade 8	8
2	010070	Fastener, Bolt, HHCS, 1/2”-13 x 1-3/4”, Grade 8	1
3	010071	Fastener, Bolt, HHCS, 1/2”-13 x 2”, Grade 8	4
4	010091	Fastener, Washer, Lock, 3/8”, Grade 8	8
5	010093	Fastener, Washer, Lock, 1/2”, Grade 8	5
6	010102	Fastener, Nut, Hex, 3/8”-16, Grade 8	4
7	010104	Fastener, Nut, Hex, 7/16”-14, Grade 8	4
8	010318	Fitting, Tee, 1/4” NPT, Galvanized	1
9	012393	Fitting, Nipple, 1/4” NPT x 7/8” NPT, Steel, Black	1
10	017751	Fastener, Washer, Flat, 3/8”, Grade 8	4
11	045854	Fastener, Bolt, 7/16”-14 x 1-1/4”, Grade 8	4
12	050963	Fitting, Plug, 18” NPT, Hex Head Socket	1
13	063085	Hose, 18”, Flexible Grease, with 1/8” NPT Fitting	1
14	070927	Box, Right Hand Auger Drive	1
15	070934	Plate, Bottom Cover, for Auger Box Assembly	1
16	070935	Mount, for Auger Motor	1
17	070937	Bracket, Inside Motor Mount	1
18	070938	Assembly, Auger Shaft Seal Housing	1
19	070949	Mount, Auger Box Slide, Right Hand	1
20	071134	Assembly, Auger Motor	1
21	071135	Hose, 12”, Flexible Grease, with 1/8” NPT Fittings	1
22	201163	Fitting, Grease, Straight, 1/8”-27 PTF	1

Auger Motor Assembly



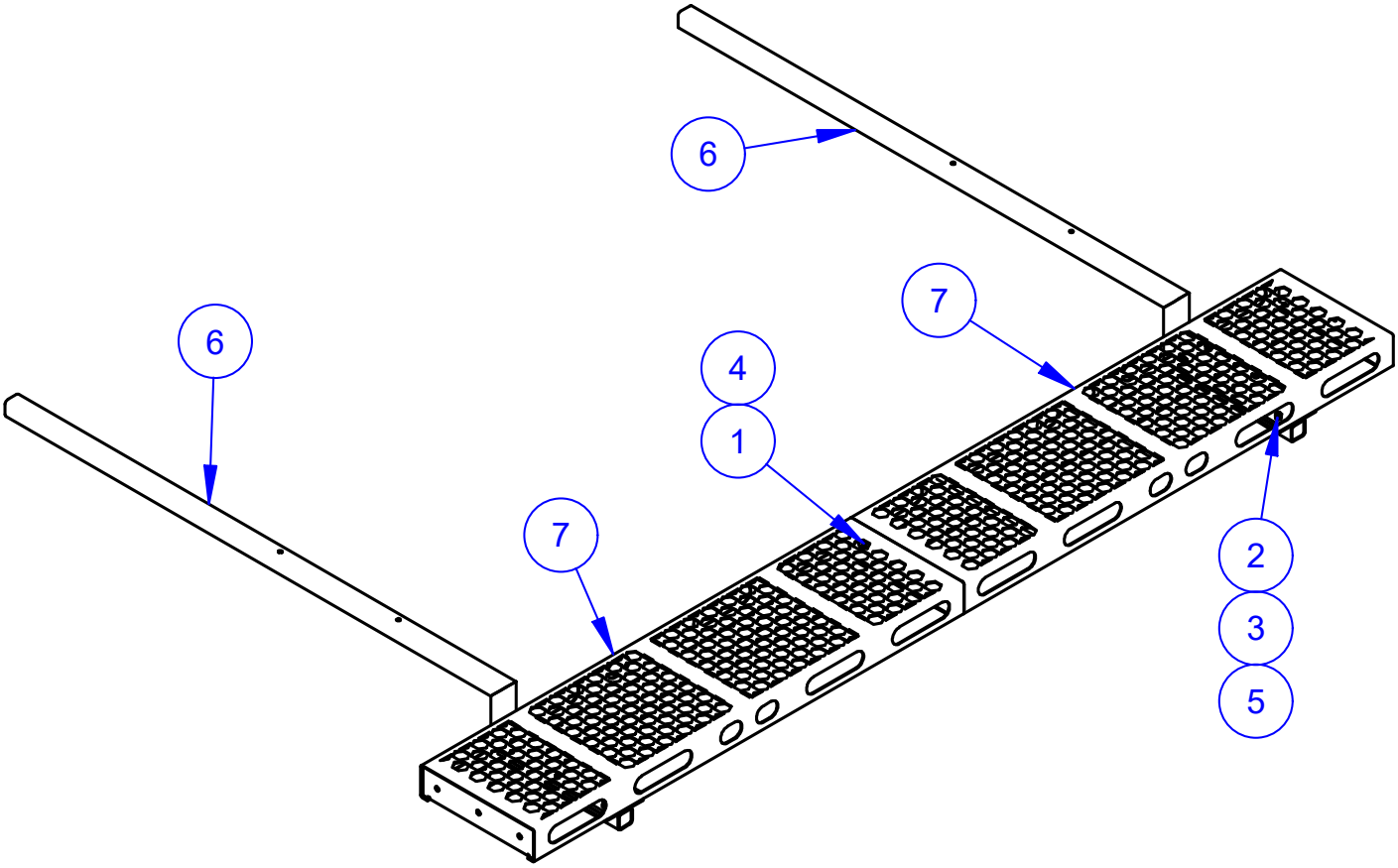
ITEM	PART NO.	DESCRIPTION	QTY
-	071134	Assembly, Auger Motor	-
1	010054	Fastener, Bolt, HHCS< 7/16”-14 x 1-1/2”, Grade 8	2
2	010092	Fastener, Washer, Lock, 7/16” , Grade 8	6
3	010104	Fastener, Nut, Hex, 7/16”-14, Grade 8	6
4	032432	Chain, Roller, 60 Series	1
5	033768	Bearing, SCJT, 1-1/4”	2
6	045854	Fastener, Bolt, HHC, 7/16”-14 x 1”, Grade 8	2
7	060867	Key, 3/8” x 1”	1
8	062877	Fastener, Bolt, HHCS, 7/16”-14 x 2”, Grade 8	2
9	070942	Shaft, Auger Drive, for 12” Auger	1
10	070945	Motor, Hydraulic, for Auger Drive Assembly	1
11	070946	Sprocket, 60 Series, 14 Tooth, 1-1/4”, Boore Hardened Teeth	1
12	070947	Sprocket, 60 Series, 18 Tooth, 1-1/4”, Boore Hardened Teeth	1
13	070948	Key, 5/16” x 3/4”	1

Load Leg Assembly



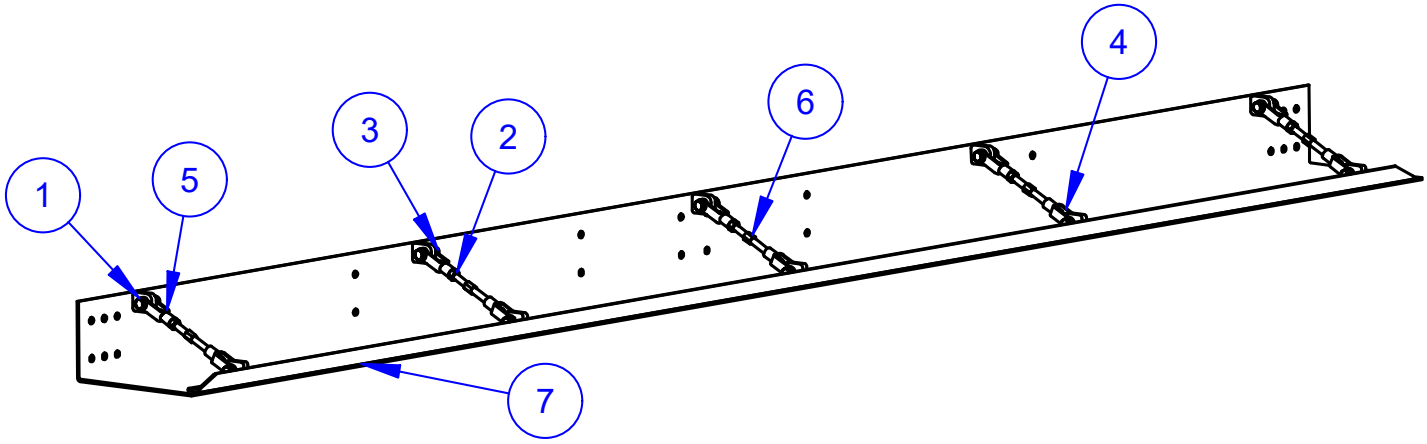
ITEM	PART NO.	DESCRIPTION	QTY
-	071175	Assembly, Load Leg, Right Front / Left Rear	-
	071176	Assembly, Load Leg, Right Rear / Left Front (Not Shown)	
1	044032	Fastener, Nut, Hex, 7/8”-9, Grade 8	10
2	055036	Fastener, Bolt, HHCS, 7/8”-9 x 2-3/4”, Grade 8	10
3	055038	Fastener, Washer, Lock, 7/8”,Grade 8	10
4	071177	Leg, Drop, for Load Leg Assembly	1
5	071181	Leg, Jack, Male, for Load Leg Assembly	1
6	071187	Weldment, Load Leg, Female, Left Hand Rear / Right Hand Front	1
	071186	Weldment, Load Leg, Female, Left Hand Front / Right Hand Rear (Not Shown)	
7	071196	Weldment, Load Leg Swing-Out	1
8	071201	Pin, for Drop Leg	1
9	071205	Pin, Top, Locating	1
10	071209	Pin, Pivot	1
11	071210	Cylinder, Hydraulic	1
12	071211	Pin, Hair	2
13	071212	Fastener, Nut, Hex, 1-1/2”-6, Grade 8	2
14	071213	Fastener, Washer, Lock, 1-1/2”, Grade 8	2
15	071214	Fastener, Washer, Flat, 1-1/2”, Grade 8	2
16	071620	Pin, Load Leg Assembly	2
17	201163	Fitting, Grease, Straight, 1/8”-27	2

Rear Walkway Assembly



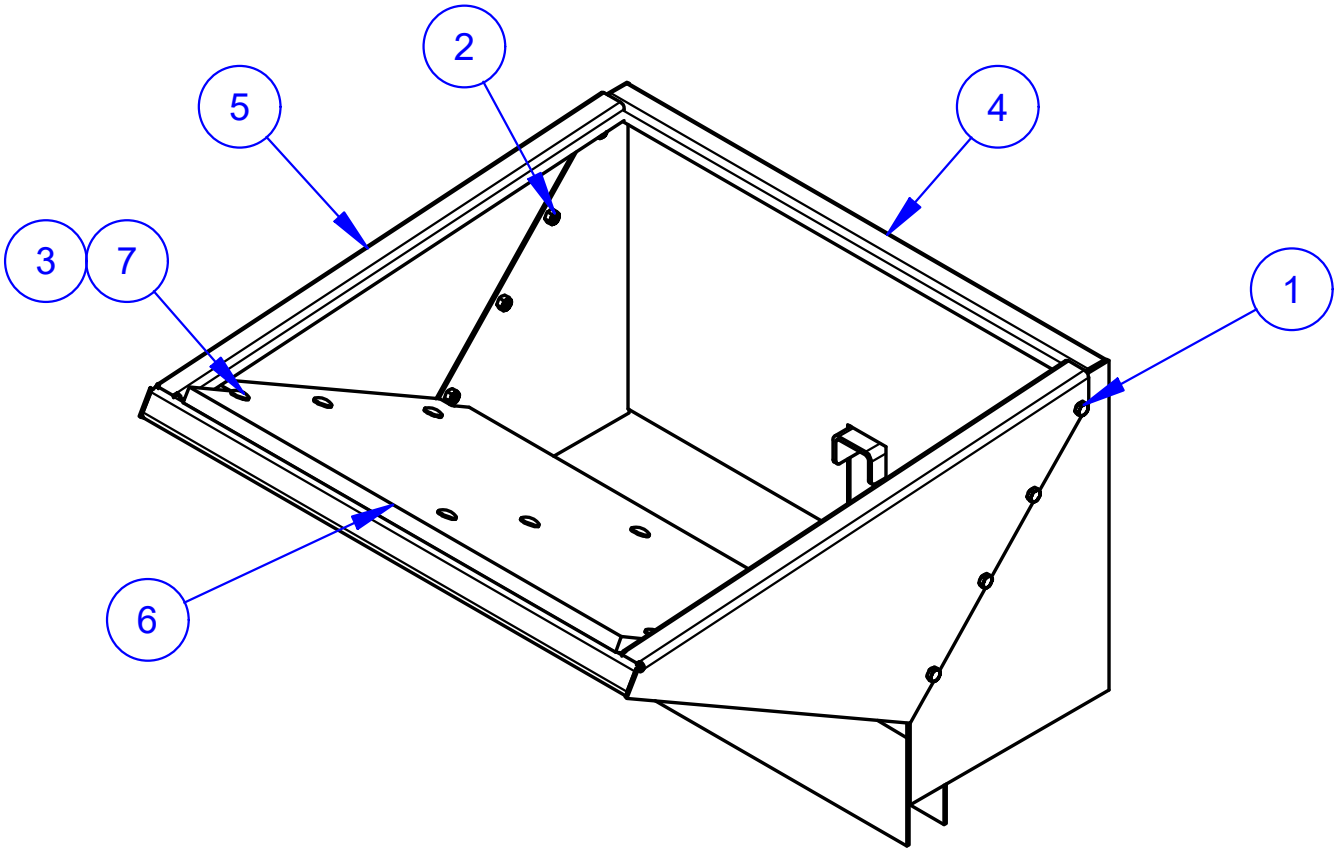
ITEM	PART NO.	DESCRIPTION	QTY
-	071175	Assembly, Rear Walkway	-
1	010069	Fastener, Bolt, HHCS, 1/2”-13 x 1-1/2, Grade 8	3
2	010091	Fastener, Washer, Lock, 3/8”, Grade 8	12
3	010464	Fastener, Nut, Nylock, 3/8”-16, Grade 8	12
4	011238	Fastener, Nut, Hex, Nylock, 1/2”-13, Grade 8	3
5	028402	Fastener, Bolt, HHCS, 3/8-16 x 1-1/2”, Grade 8	12
6	070589	Bracket, Rear Walkway Support	2
7	071290	Walkway, Rear	2

Profile Pan Assembly



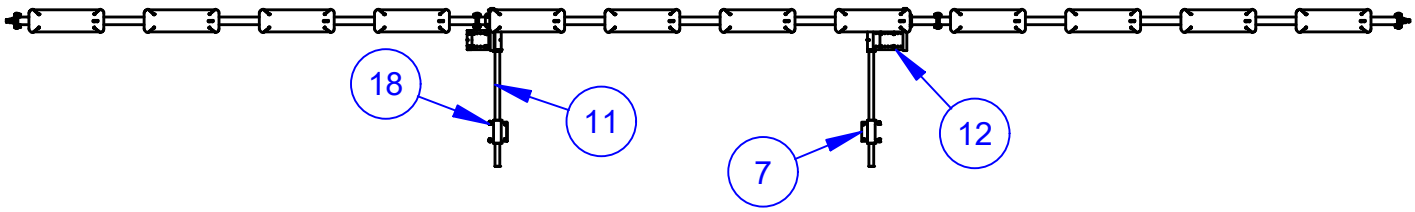
ITEM	PART NO.	DESCRIPTION	QTY
-	070855	Assembly, Profile Pan	-
1	010070	Fastener, Bolt, HHCS, 1/2”-13 x 1-3/4”, Grade 8	10
2	010107	Fastener, Nut, Hex, 1/2”-20, Grade 8	5
3	011238	Fastener, Nut, Hex, Nylock, 1/2”-13, Grade 8	10
4	043814	Yoke, Turnbuckle, 1/2”-20, Right Hand	5
5	043815	Yoke, Turnbuckle, 1/2”-20, Left Hand	5
6	043819	Shaft, Turnbuckle, 1/2”-20	5
7	070856	Weldment, Profile Pan	1

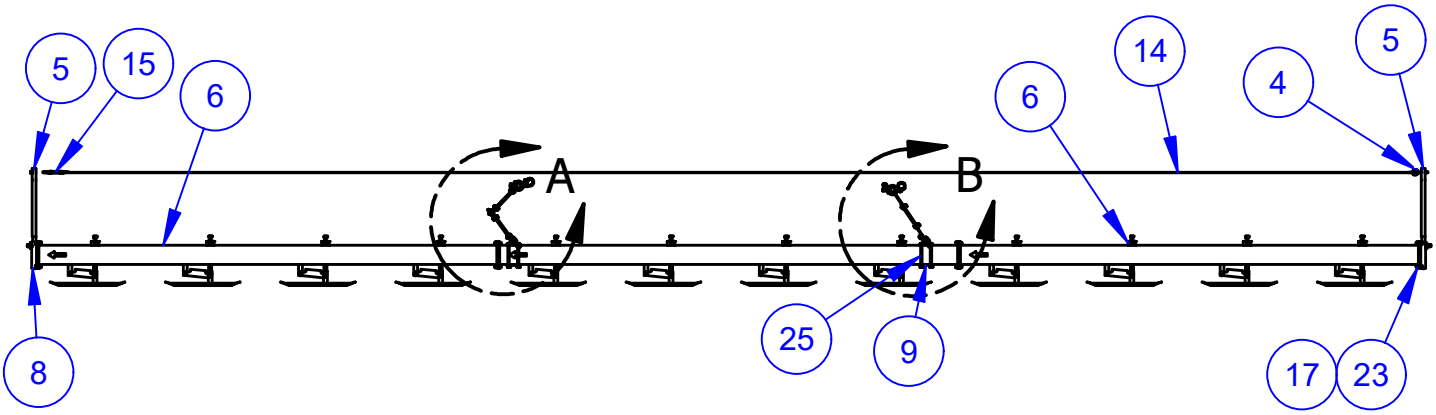
Hopper Assembly

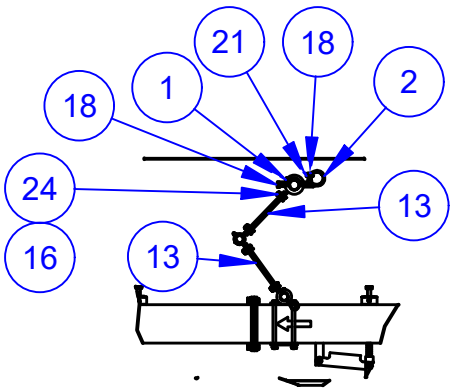


ITEM	PART NO.	DESCRIPTION	QTY
-	070997	Assembly, Hopper	-
1	010035	Fastener, Bolt, HHCS, 3/8”-16 x 3/4”, Grade 8	12
2	010102	Fastener, Nut, Hex, 3/8”-16, Grade 8	12
3	010464	Fastener, Nut, Nylock, 3/8”-16, Grade 8	9
4	070998	Weldment, Hopper, Upper	1
5	071005	Weldment, Hopper, Upper	1
6	071010	Front, Liner for Hopper	1
7	071011	Fastener, Bolt, Carriage, 3/8”-16 x 1-1/2”	9

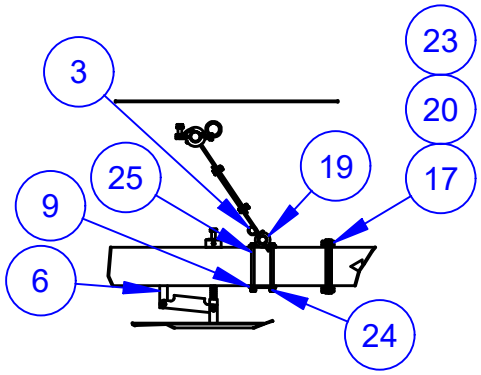
Traveling Ski Assembly







DETAIL A
SCALE 1 / 25



DETAIL B
SCALE 1 / 25

Traveling Ski Assembly

ITEM	PART NO.	DESCRIPTION	QTY
-	2197-7415	Assembly, Traveling Ski	-
1	059763	Fastener, Washer, Flat, 1-1/4", Grade 8	2
2	-	Pin, Hair, 1-1/4"	2
3	060997	Pin, Hair, 1"	2
4	060994	Bolt, Eye, 5/16"	2
5	2197-998	Tube, Stringline Upright Post	2
6	2197-7400	Assembly, 10ft Stringline Section	3
7	2197-7414	Mount, String Line Machine Connection	2
8	2197-7418	Recviever, String Line Mast	2
9	2197-7422	Plate, Pivot Connecting Base	2
10	2197-7423	Base, Pivot, for Beam	2
11	2197-7430	Arm, Connecting for String Line	2
12	2197-7432	Bracket, Rear Connecting, for Grade Ski	1
13	2197-7439	Assembly, Front Hinge for Grade Ski	1
14	2197-7442	Cable, 1/8"	1
15	3003T182	Turnbuckle, 5/16"-18 x 2-1/2"	1
16	010036	Fastener, Bolt, HHCS, 3/8"-16 x 1", Grade 8	14
17	010053	Fastener, Bolt, HHCS< 7/16"-14 x 1-1/4", Grade 8	16
18	010068	Fastener, Bolt, HHCS, 1/2"-13 x 1-1/4", Grade 8	8
19	010088	Fastener, Washer, Flat, 1", Grade 8	2
20	010092	Fastener, Washer, Lock, 7/16", Grade 8	16
21	010093	Fastener, Washer, Lock, 1/2", Grade 8	4
22	010100	Fastener, Nut, Hex, 5/16"-18, Grade 8	2
23	010104	Fastener, Nut, Hex, 7/16"-14, Grade 8	16
24	010464	Fastener, Nut, Hex, 3/8"-16, Nylock, Grade 8	20
25	060999	Fastener, Bolt, HHCS< 3/8"-16 x 6", Grade 8	8

Hydraulic and Electrical Schematic Information

Hydraulic and Electrical Schematics are available in **3** ways:

1. Located in the PVC tube attached to the machine
2. On the USB drive that was provided with other documentation
3. Available online by following these links:

Link for **Electrical** Schematic

Link for **Hydraulic** Schematic

MANUAL REVISION DETAIL			
REVISION #	**REVISION DATE**	**REVISION REFERENCE #**	**REVISION BY**
-	09/20	Initial Release	MW
A	01/22	Updated Covers	MK

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