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NOTICE

ANY PART, PORTION, DESIGN, NUMBER, SPECIFICATION, AND/OR DIMENSION IN THIS MANUAL IS SUBJECT TO CHANGE WITHOUT NOTICE BY THE MANUFACTURER.

INTRODUCTION

The purpose of this manual is to provide the user with specifications and procedures for the operation, maintenance and repair of this BANDIT product. As with any piece of equipment, safety should always be a constant thought while the machine is being operated, serviced or stored. In order to highlight this consideration, the material which addresses safety is proceeded by the following signal words:

Signal Word	Likelihood of Occurrence	Degree of Potential Injury or Damage
⚠ **DANGER**	Will occur if warning is ignored	Severe
⚠ **WARNING**	Can occur if warning is ignored	Severe
⚠ **CAUTION**	Will or can occur if warning is ignored	Minor to Severe
NOTICE	Important, but not hazard related	Minor

The equipment is designed and manufactured in accordance with the latest product industry standards. This alone does not prevent injury. It is the operator's responsibility to use good judgement and follow the warnings and instructions as indicated in this manual, on the machine and follow all safety standards per ANSI and OSHA instructions.

⚠ WARNING

Improper use of the product can result in severe personal injury. Personnel using the equipment must be qualified, trained and familiar with the operating procedures as defined in this manual, prior to operating the product.

⚠ WARNING

It is the responsibility of the owner or employer to insure that the operator is trained and practices safe operation while using and servicing the machine. It is also the owner's responsibility to provide and follow a regularly scheduled preventative maintenance and repair program on the product, using only factory approved replacement parts. Any unapproved repairs or modifications may not only damage the machine and its performance, but could result in severe personal injury. Unapproved repairs or modifications will void warranty and eliminate manufacturer of any liability claims. Consult the equipment manufacturer!!!

Each machine is shipped with a manual, a customer's check sheet on the product, and any available parts & service manuals on component parts not produced by this manufacturer. Additional copies of these manuals and check sheets can be purchased from the manufacturer, or through the dealer. Engine parts, service and maintenance manuals **MUST** be purchased through the engine manufacturer or their dealer.

NOTICE

The producer of this Bandit product reserves the right to make any modifications or revisions to the design or specifications of its machine without advance notice. The producer also reserves the right to change machine and part prices as needed without advance notice.

BANDIT INDUSTRIES, INC.

EXPLANATION OF LIMITED WARRANTY

The manufacturer will not reimburse the customer or dealer labor costs incurred for installing “bolt-on” or “slip-on” items, such as hydraulic pumps and motors, control valves, flow dividers, belts, sheaves, etc. The manufacturer will provide replacement parts to the customer for defective parts during the warranty period. **Defective parts must be returned to Bandit Industries, Inc.** It will be the customer’s responsibility to install the replacement parts unless arrangements are made with the selling dealer.

The manufacturer will not reimburse travel costs to servicing dealer unless prior approval has been obtained from the manufacturer. It is the customer’s responsibility to deliver the machine to dealer’s service facility, unless other arrangements have been agreed to between selling dealer and customer.

The manufacturer may elect, at its discretion, to reimburse reasonable labor costs to customer or dealer for major defect repairs. Diagnostic labor and overtime labor will not be covered under warranty. Prior approval must be obtained from Bandit Industries, Inc.

There are several forms that must be completely filled out and returned to us in reference to our portion of warranty. Read and understand the Bandit Limited Warranty responsibilities. Some components on your machine are covered by their respective manufacturers and cannot be handled through Bandit Industries as stated in Warranty Section of this manual.

Use this manual to help you resolve what and where your problem is, in most cases you can fix it easily. If you still have problems, work through the dealer you purchased the machine through, or contact Bandit Industries direct if needed.

Make sure the following forms are used, for us as well as you, to keep track of service and pending warranty request. It is our company policy that all parts shipped out will be invoiced until the possible warranty parts are returned with a Warranty Claim Form completed for consideration.

Make sure the Warranty Validation Form is completed and sent in to us as soon as you receive the Bandit. This will activate our warranty responsibilities.

If Warranty Validation Form is not on file, all Warranty consideration is null and void.

NOTICE

Prior to delivery to final owner and during storage, this machine must be serviced and lubricated to avoid damage that will not be covered under warranty, see “Lubrication & Coolant” page.

Also, damage or premature failure of equipment components because of incorrect or incomplete service and maintenance by the equipment owner will not be covered under warranty.

All controls, safety devices, guards, and shields must be correctly operational and securely in place at all times during equipment operation.

BANDIT INDUSTRIES, INC. LIMITED WARRANTY
(989) 561-2270

Bandit Industries Inc., also referred to as “Manufacturer” warrants this new product to be free of defects in workmanship and material for a period of 1 year.

This warranty takes effect upon delivery to the original retail purchaser. The manufacturer at it’s option will replace or repair at a point designated by the manufacturer, any parts which appear to have been defective in material or workmanship. The manufacturer is not responsible for labor, consequential damages, traveling or down time expenses.

This warranty and any possible liability of Bandit Industries Inc., is expressly in lieu of any other warranties, expressed or implied, including but not limited to, any implied warranty or merchantability of fitness for a particular purpose and of any noncontractual liabilities including product liabilities based upon negligence or strict liability. Bandit Industries Inc., will not be liable for consequential damages resulting from breach of warranty.

All parties involved agree that the Owner’s Sole and Exclusive Remedy against the Manufacturer, whether in contract or arising out of this warranty, instructions, representations, or defects shall only be for the replacement or repair of defective parts as provided herein. In no event or circumstances shall the Manufacturer’s liability exceed the purchase price of the machine. The buyer also agrees that no other remedy (including but not limited to consequential or incidental loss) shall be available to him or her.

It is absolutely necessary to return the Warranty Validation Form, completely and accurately filled out, and notify Bandit Industries Inc., in writing within ten (10) days from the date of purchase to validate this warranty. If Warranty Validation Form is not on file, all Warranty Consideration is NULL AND VOID.

This warranty will not apply if the Bandit product is not operated with replacement parts or equipment not manufactured or recommended by Bandit Industries, Inc.

This warranty will not apply if the Bandit product is not operated in a manner recommended by the manufacturer. The following examples would void the warranty:

1. The completed Warranty Validation Form is not on file.
2. The Bandit product has been abused, or not serviced properly.
3. Repairs or attempted repairs made without prior written authorization.
4. Repairs made due to normal wear are not warrantable.
5. The Bandit product was involved in, or damaged by an accident.
6. The Bandit product was damaged from any type of foreign material.

The owner is responsible for all scheduled maintenance as explained in the Operators Manuals. Negligence of proper maintenance or any other negligence, accident or fire; nor with failure to adjust, tighten, or replace wear items included but not limited to items such as teeth, teeth holders, belts, lubrication fluids, bearings, filters, hydraulic components, loose nuts or bolts, etc. may void warranty.

All components and parts being returned to Bandit Industries for warranty consideration must be complete and assembled when delivered. Hydraulic components and parts must be returned assembled with all fluid ports capped or plugged and free of foreign contamination, or warranty will not be considered.

BANDIT INDUSTRIES, INC. LIMITED WARRANTY
(989) 561-2270

NOTICE This warranty applies only to new and unused equipment or parts thereof manufactured by Bandit Industries Inc. and is void if the machine is operated with replacement parts or equipment not manufactured or recommended by Bandit Industries Inc.

All other components are warranted by their respective manufacturers (i.e. engines, axles, hydraulic pumps and motors, clutches, tires, batteries, etc.) Any machines used for lease or rental purposes warranty is limited to 90 days from the first day of initial service.

NOTICE **Clutch maintenance and adjustments and engine maintenance (air filter maintenance, oil changes, oil filter maintenance, etc.) are important to your machine. Refer to the clutch or engine manual for the maintenance schedule. Failure to perform the clutch or engine maintenance will void the warranty with the respective manufacturer, Bandit Industries Inc. does not warranty these components!**

CONTINENTAL U.S. INFORMATION PHONE NUMBERS FOR ACCESSORIES (NOT COVERED UNDER PRODUCT WARRANTY PROGRAM)

Briggs & Stratton (Vanguard) Engines	1-414-259-5333	PGL Auto Clutch	1-800-551-2938
Caterpillar Engines (Thru 275Hp)	1-800-551-2938	PT Tech Clutch	1-330-414-3172
Caterpillar Engines (300Hp & Up)	1-866-228-2111	NACD, Rockford Clutch	1-800-383-9204
Continental Engines	1-800-726-8870	Twin Disc Clutch	1-262-638-4000
Cummins Engines	1-248-573-1592	Electronic Solutions	1-866-736-6839
Deutz, Lombardini Engines	1-800-445-5273	I.E.C. (formerly E.S.I.)	1-815-985-0383
Ford, Hatz Engines	1-800-726-8870	L.O.R. MFG.	1-866-644-8622
GM, Perkins Engines	1-800-551-2938	Miratron Inc.	1-866-285-0132
Honda Engines	1-734-453-6258	Omnex Radios	1-419-294-4985
John Deere Engines	1-888-803-9175	Dexter Axles	1-574-295-7888
Kohler Engines	1-800-854-9273	Tires	1-989-463-4088
Kubota Engines	1-800-457-7056	Caterpillar Tracks	1-309-636-1100
Robin Engines	1-248-399-0002	Chermack Tracks	1-715-458-2655
Wisconsin Engines	1-800-726-8870	Petro-Canada Hydrex XV	1-888-284-4572
Interstate Batteries	1-800-331-2000		

(Phone numbers for outside the continental U.S. can be supplied from your phone directory or local Bandit dealer.)

In order to process any warranty claims, it is the owner's responsibility to report the claims promptly to the Manufacturer, or our authorized dealer from whom the equipment was purchased.

It is necessary to include the following information on any and all requests for warranty:

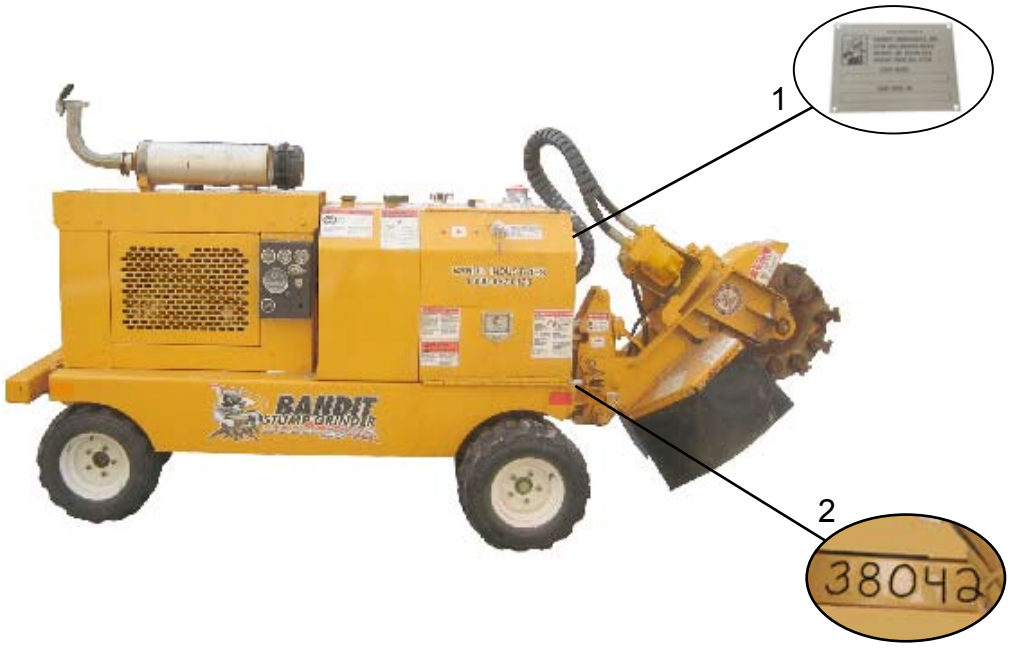
1) Warranty Claim Form, obtained from Bandit Industries or it's dealers, completely and accurately filled out.
2) Dealer from whom purchased.
3) Date of delivery.
4) Serial number of unit.
5) Model number of unit.
6) Engine make and serial number.
7) Length of time in use (hours on machine).
8) Date of Failure.
9) Nature of Failure.

Bandit Industries Inc., reserves the right to alter, improve, revise or modify any parts or products with the altered, improved, revised or modified parts or products. They also may change design, specifications, or part prices without advance notice.

Bandit Industries Inc., is NOT responsible for updating or upgrading completed machines with design changes that are made after it's production.

Bandit Industries Inc., expects the Customer/Owner to bring their machine to the Dealer/Manufacturer for Warranty Repairs. The Manufacturer DOES NOT pay Dealers or Customers for bringing their machine in for repair. Nor does the Manufacturer furnish loaner machines while the unit is being repaired.

TYPICAL GRINDER SERIAL NUMBER AND/OR WORK ORDER NUMBER LOCATIONS



1. Serial Number
2. Work Order Number welded on frame

NOTICE The engine information is located on the engine block. The clutch information is located on the clutch plate (if equipped).

SAFETY PROCEDURES

⚠ DANGER

The words ⚠ Danger, ⚠ Warning, ⚠ Caution, and Notice are used on the safety decals and throughout this manual, to make you aware of the safety procedures. These procedures are very important, read and obey them.

YOUR SAFETY IS VERY IMPORTANT TO US!

This machine is equipped with safety decals, guards and designs for your protection.

Don't ever take the machine for granted, always be cautious and careful when operating your equipment.

Read and follow all the instructions in your manual thoroughly. Your safety is dependent on your knowledge of how to operate and maintain this machine. You may obtain additional copies of this manual from your Bandit Dealer.

Before operating machine, you must have all potential operators; read and understand manuals and decals, watch the video and follow the recommendations.

Regardless of how hard a manufacturer tries to produce a safe machine, accidents still happen. Normally accidents are caused by people making mistakes. They do not read the manual, they ignore warning decals or do not use lockouts provided for their safety. This normally happens after the person has become accustomed to the machinery. In the initial start up and operation of the machinery, they are cautious, they are very careful because they do not understand the machine.

This equipment is intended for use by personnel who are experienced with similar equipment. Always operate safely. There should be at least two qualified and trained operators at the work site. They should be positioned in safe working locations, following safety procedures and instructions, and aware of each others whereabouts. There should, also, be at least two people on site during maintenance and service procedures in case an accident should occur. Never operate any machine while under the influence of drugs or alcohol.

Keep children, bystanders and animals clear of working area. Never operate equipment that is in need of repair or adjustment.

⚠ DANGER

Before starting the machine, take a minute to check a few things. The grinder should be in an area restricted from people passing by. This area around the grinder must be free of all objects that can obstruct movement when working with the grinder. The machine should be checked for loose tools or foreign objects, especially in the grinding area. All tools not in use should be secured in a tool box.

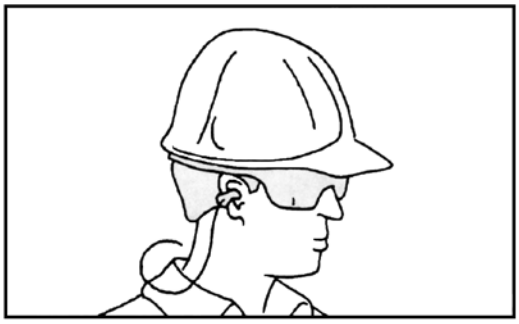
⚠ WARNING

Operators **must** at all times be located within easy reach of all feed control and shut-off devices when the unit is running. They must be attentive and prepared to activate the devices.

⚠ DANGER

Torn or loose clothing is more likely to get caught in moving machinery parts. Keep such items as long hair, shirt sleeves, and shirt tails properly contained. Avoid wearing necklaces, rings, watches, and especially neckties while operating this machinery. Make sure the machine is in excellent condition, and all the guards are in place, tight and secure.

Wear all personal protection equipment and follow all safety standards per ANSI and OSHA instructions. Examples of equipment: hard hat, face shield, safety glasses, gloves, ear protection, etc. Always keep a fully charged fire extinguisher with the machine while operating and servicing the machine.



SAFETY PROCEDURES

⚠ DANGER

NEVER sit, stand, lay, climb or ride anywhere on this machine while it is running, operating, or in transit. You will be injured.

⚠ WARNING

It is very important after you have operated a new machine for approximately an hour to shut down the machine and recheck all hydraulic fittings. Retighten as needed.

DO NOT GO NEAR HYDRAULIC LEAKS! High pressure oil easily punctures skin causing serious injury, gangrene, or death. DO NOT use fingers or skin to check for leaks. Lower load or relieve hydraulic pressure before loosening fittings. Use a piece of cardboard to find leaks. Never use your bare hands.

In cold weather situations let your hydraulic system idle for approximately 15 minutes to allow the system to warm up to operating temperature. Avoid burns from fluid. Hot fluid under pressure can cause severe burns. Relieve all pressure in the system before disconnecting the lines, hoses or performing other work. Allow system to cool down to ambient temperature before opening any coolant or hydraulic oil system.

⚠ WARNING

It is very important after you have operated a new machine for approximately an hour to shut down the machine and recheck all nuts and bolts. It is normal for nuts and bolts to loosen once on a new piece of machinery. If you tighten them now, there is a good possibility they won't loosen again. Certain nuts and bolts must be checked periodically such as cutter teeth bolts, etc. for torque and fit.

Most of the nuts used on the Bandit Grinder are self locking. After a nut or bolt has been removed five times, it should be replaced to insure proper tightness. This is especially critical on the cutter tooth bolts!

After the engine is started, let the grinder disc turn at the lowest RPM's possible. Listen for any type of noise that is foreign. Any steel on steel noise is foreign. If you hear a noise, stop the engine, find the problem and fix it.

⚠ WARNING

DO NOT operate this machine unless all hydraulic control devices operate properly. They must function, shift and position smoothly and accurately at all times. Faulty controls can cause personal injury!

⚠ DANGER

Do not go near or in-line with the debris field of the stump grinder while in operation. While grinding stumps, the chips and portions of the stump fly from the cutterhead and can cause severe injury.

⚠ DANGER

DO NOT operate this machine indoors! Exhaust fumes can be fatal. Never refuel while the machine is running. Never refuel in the shop or building. Always refuel in a well ventilated area, away from sparks or open flames, DO NOT SMOKE. Extinguish all smoking materials. Wipe up all spilled fuel before restarting the engine. Do not fill above 1/2" (12.7 mm) from top of tank.

To obtain the most from your machine, for the least amount of cost, it is a good practice to set up and follow a scheduled preventative maintenance program. It will eliminate many possible problems and down time.

⚠ WARNING

Never use jumper cables during freezing temperatures. Haul the machine inside and allow the battery time to warm up. If the machine must be started outside, inspect the battery acid for ice formation. Explosion will occur with a frozen battery. If the machine is going to be operated in excessively cold conditions, a larger cold cranking amp battery may be needed to insure proper and prompt starting. Never use jumper cables in a confined or unventilated area. Battery acid fumes are explosive. Battery acid can cause severe burns. Never expose an open flame or spark near the battery. Keep all burning materials away from the battery. When servicing the battery, shield eyes and face, and do not smoke. Service in a well ventilated area.

⚠ DANGER

Before attempting any type of maintenance disengage clutch, turn off engine, wait for the cutter wheel to come to a complete stop, install the cutter wheel lock pin, disconnect battery, and make sure the ignition key is in your possession.

ALWAYS install the lock pin into the cutter lock tube before working on the grinder.

Simply slide the lock pin into the cutter wheel lock tube. This is to insure that the cutter wheel cannot be started while you are working on the grinder. If for some reason the cutter wheel would start to turn, it would simply hit the lock pin.

SAFETY PROCEDURES

NOTICE

Do not attempt to start the engine or engage the engine PTO (power-take-off) system on this machine if the cutter wheel is jammed or frozen in place. If you do, you will damage or ruin the drive belts and/or the PTO which will not be covered under warranty and will cost you down time and money.

⚠ DANGER

Your machine may or may not be equipped with a clutch. Depending on the options ordered, some machines are direct drive.

Do not work on the machine if the engine is running with the clutch disengaged. A clutch can self engage if either the pilot or throw-out bearing happens to seize to the main output shaft.

There are various types of clutches (PTO's) available for this type of equipment. Make sure to study the original clutch manufacturer's manual that is provided with the machine and follow its instructions for operation, service, and adjustments. Some styles require clutch engagement to be maintained so that it takes a lot of force, others will require very little force, and some are push button, electric, manual lever, or hydraulic activation. Each different style clutch (PTO) is a very expensive item that will fail if not correctly maintained and adjusted. It will be quite costly if a few minutes are not taken daily, weekly, and monthly to keep the clutch serviced as required.

The operator must take care in the engagement and disengagement of the clutch, engine RPM should always be below 1000 RPM. When the engine has sufficiently warmed up, bump the clutch handle against engagement to start the cutter wheel turning. This will have to be repeated until the cutter wheel is turning at proper ratio with engine RPM. Then push the handle all the way in gear until it locks into position securely. After engagement raise engine RPM to full throttle. Engaging and disengaging the clutch at high engine RPM will quickly and excessively wear out clutch plates as well as bearings. Refer to clutch manufacturer's manual for proper service and operation.

⚠ DANGER

Never grind any materials that might contain wires, stones, nails, or other metal objects which may damage the teeth and become dangerous projectiles. Remove all rocks and stones from stump grinding area.

⚠ DANGER

Avoid moving parts. Keep hands, feet, and clothing away from power driven parts. Keep all guards and shields in place and properly secured.

⚠ DANGER

Do Not start to grind a stump unless you are completely sure there are not any power lines, water lines, sewer lines, phone lines, etc. in the area above or below ground level where you are grinding.

⚠ DANGER

Never go near cutter wheel or teeth while engine is running or cutter wheel is coasting to a stop.

⚠ DANGER

Keep the machine in good condition. Be sure the machine is in good operating condition and that all safety devices, including guards and shields are installed and functioning properly. Visually inspect the machine daily before starting the machine. Refer to the "Daily Start Up & Maintenance". Make no modifications to your equipment unless specifically recommended or requested by Bandit Industries Inc.

⚠ WARNING

Check laws and regulations. Know and obey all federal, state, and local laws and regulations that apply to your work situation and the transportation of a machine this size.

CALIFORNIA

Proposition 65 Warning

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

SAFETY PROCEDURES

IF MACHINE IS EQUIPPED WITH A SELF PROPELLED UNDERCARRIAGE

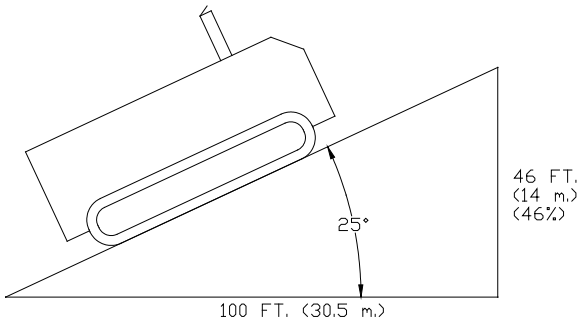
Machines equipped with undercarriage tracks are shipped with a manual from the track manufacturer. Refer to it for service, operation, and safety information.

⚠ WARNING

Do not attempt to operate the machine on an ascending or descending slope of more than 25° or 46% or a side slope of more than 17° or 30%, it is Dangerous and could be Fatal. This is the maximum slope grade the machine can be operated on if the hydraulics, self propelled undercarriage, and engine are running at maximum performance and good traction is sustained.

Maximum Slope Grade

Ascending or Descending Slope



Side Slope

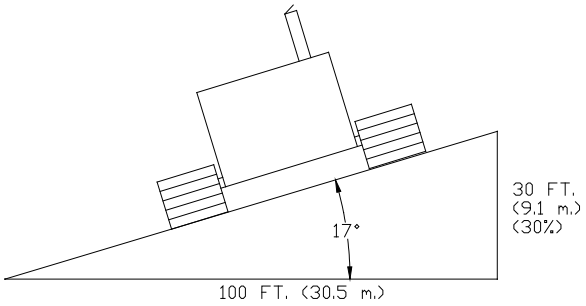


Diagram shows percentage to degree of slope.
Percentage is in vertical feet for every 100 horizontal feet.

⚠ WARNING

Any increase from the specified maximum operating angles may cause loss of lubrication function and damage the engine.

⚠ DANGER

The machine should never be parked on a slope at any time. The machine can coast or creep causing equipment and/or personal injury.

⚠ DANGER

Make sure everyone is clear of machine before moving the machine. Stay clear of undercarriage travel system when the machine is moving.

⚠ DANGER

DO NOT entangle feet or hands in undercarriage travel system.

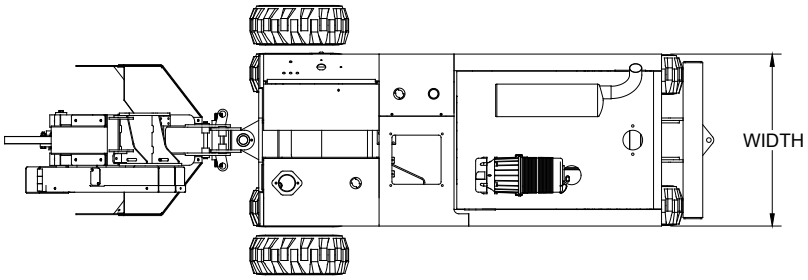
⚠ DANGER

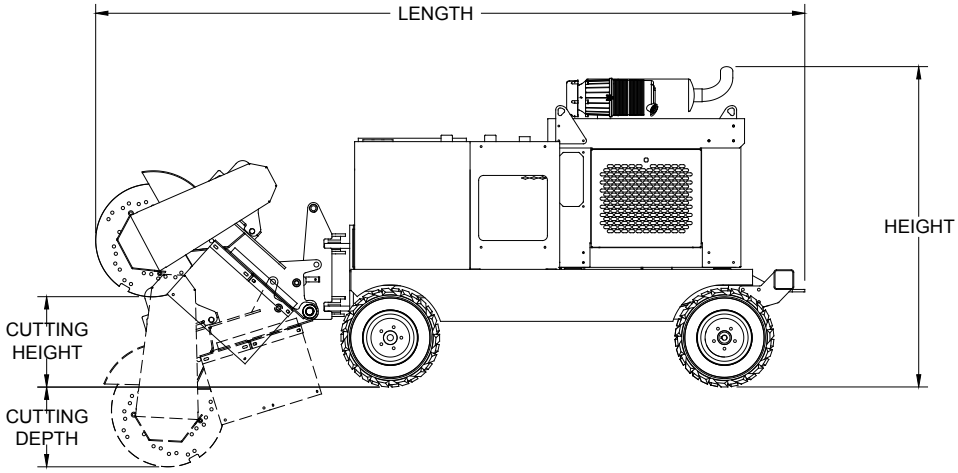
Use **EXTREME CAUTION** when traveling over non-level surface! This machine can tip over or tip backwards on non-level surface. You will cause engine damage, machine damage and possible personal injury!

⚠ DANGER

NEVER sit, stand, lay, climb or ride anywhere on this machine while it is running, operating, or in transit. You will be injured.

2890SP EQUIPMENT SPECIFICATIONS





Approximate Dimensions & Weights

(Dimensions & weights will vary depending on optional equipment)

Approx. Weight: Model 2890SP: 3750 lbs. (1700 kg)

(Approximate weights depending on engine and equipment options.)

Overall Dimension: Height: 53” (1.4 m), Length: 142” (3.6 m), Width (with dual wheels removed): 35” (.89 m)

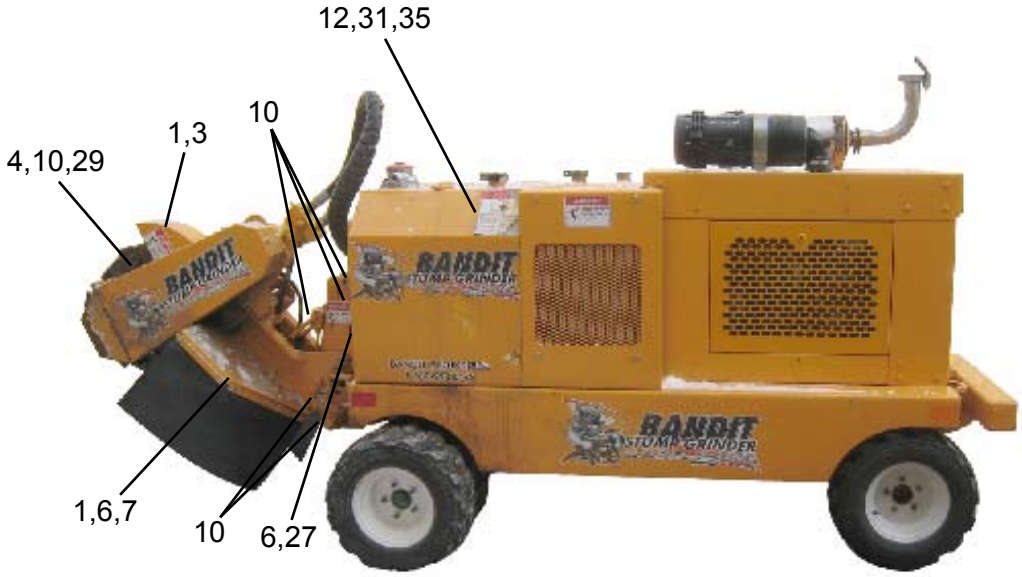
Cutting Depth:	25 5/8” (.65 m)
Cutting Height:	31 1/2” (.8 m)
Cutting Swing:	74” (1.9 m)
Number of Teeth on Cutter Wheel:	24
Cutter Wheel Diameter with Teeth:	24” (.6 m)
Fuel Tank Capacity:	17 Gallons (64 Liters)
Hydraulic Tank Capacity:	31 1/2 Gallons (119 Liters)

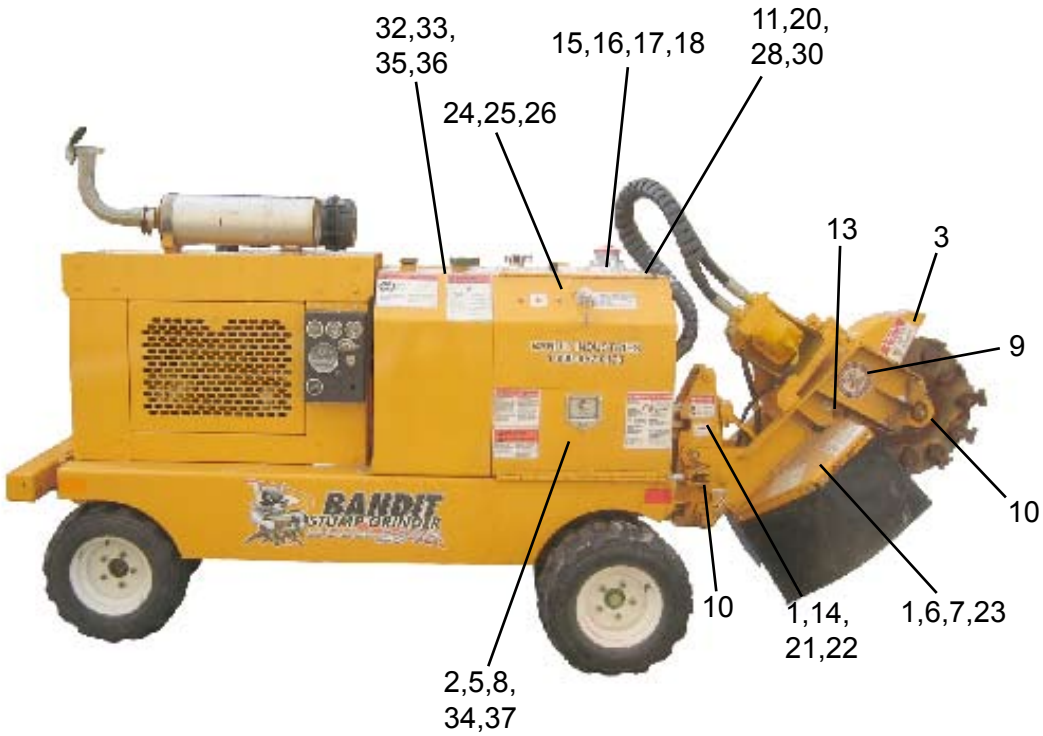
(Approximate dimension depending on equipment options.)

Bandit

MODEL 2890SP DECAL LOCATIONS

Decal locations may vary, these are general locations.





MODEL 2890SP DECAL LOCATIONS

Modifications and/or additions of decals to this list will happen.
Consult machine dealer or manufacturer for most current decal package.

LOCATION	NUMBER	DESCRIPTION
1.	SPD-02	Moving Parts Keep Hands...
2.	SPD-19	...Minimum 10 Feet Away From Tracks...
3.	SPD-20	Flying Objects Stand Clear...
4.	SPD-28	Do Not Insert Fingers...
5.	SPD-30	Do Not Sit, Stand, Lay, Climb or...
6.	SPD-35	Extreme Caution...Non-Level Surface...
7.	SPD-36	...Debris Field...
8.	SPD-39	Do Not Operate...
9.	ID-42	Bandit Industries, Inc...USA
10.	INST-12	Grease Daily
11.	INST-44	Proposition 65
12.	INST-53	Hydraulic Oil...Hydrex XV...
13.	INST-73	Cutter Head Lock Hole
14.	INST-74	Cutter Head Lock Pin
15.	INST-79	Swing Speed - Counter-Clockwise To Slow
16.	INST-80	Travel Speed - Counter-Clockwise To Slow
17.	INST-81	Swing Speed - Clockwise To Slow
18.	INST-82	Travel Speed - Clockwise To Slow
19.	INST-86	Grease Daily - Double Arrow
20.	INST-101	Canada Engine Decal
21.	INST-111	Frame Lock Hole
22.	INST-112	Frame Lock Pin
23.	INST-115	Belt Tightening Instructions...
24.	INST-135	Remote Starting Procedure
25.	INST-137	Remote / Tether
26.	INST-156	Filter Clog Indicator
27.	N-02	Maintain Lubrication...
28.	SPN-06	Decal Maintenance..
29.	N-24	Service Under Beltshield...
30.	N-33	Engine Oil Lubrication...Break-In...
31.	SPW-01	Do Not Go Near Oil Leaks...
32.	SPW-02	Combustible Liquid...Diesel Fuel Only...
33.	SPW-03	Flammable Liquid...Gasoline Fuel Only...
34.	SPW-04	Frozen Battery Will Explode...
35.	SPW-06	Do Not Attempt...Slope More Than...
36.	SPW-08	Wear Eye & Personal Protection...
37.	SPW-09	...Go Slow Around Corners...
38.	900-8900-34	Basic Safety Decal Kit (Options may require additional decals)
39.	900-8900-62	Bandit Model 2890SP Logo Decal Kit

NOTICE

Some decals are for optional equipment. Decal locations may vary, these are general locations.
If any decals become damaged, replace immediately.

Bandit

DECALS

Decals located on your Bandit equipment contain useful information to assist you in operating your equipment safely. Some of the decals on your machine and their location are shown in this section.

It is very important that all decals remain in place and in good condition on your machine. Please follow the care and instructions given below:

1) You should use soap and water to keep your decals clean. Never use mineral spirits or any other abrasive cleaners.
2) Replace immediately any missing or damaged decals. The location the decal is going to be applied to must be clean and dry, and at least 40°F (5°C) before applying decal.
3) When the need arises to replace a machine component with a decal attached, be sure and replace the decal.
4) Replacement decals are available, and can be purchased from the manufacturer or your Bandit Dealer.
5) Peel back about half of the backer paper on the decal. Position it on the flat, dry, clean surface so it is smooth and secure. Peel off the remainder of the backer paper as you continue to stick the decal on the surface.
6) Rub decal from the center outward to remove air bubbles and to secure contact.
7) Combination English / Spanish decals are typically standard. Other foreign language decals are available and may be purchased. Mail translated decals required to Bandit Industries, Inc.

EXAMPLES:

DECALS

WARNING

DO NOT GO NEAR LEAKS!

- Pressured oil easily punctures skin causing injury, gangrene or death.
- Seek immediate medical care.
- Do not use finger or skin to check for leaks.
- Remove hydraulic pressure or load before loosening fittings.

WARNING

FROZEN BATTERY WILL CAUSE BATTERY TO EXPLODE.

Tow machine inside and allow battery to warm up before using jumper cables. If machine must be started outside, inspect the battery acid for ice formation.

Never use jumper cables in a confined or un-ventilated area. Battery acid vapors are explosive. Keep all spark producing items, open flames, or other ignition sources away from the battery.

DANGER

FLYING OBJECTS STAND CLEAR OR YOU WILL BE INJURED!

DANGER

- DO NOT OPERATE THIS UNIT WITHOUT GUARD IN PLACE.
- DO NOT REMOVE GUARD WHILE UNIT IS IN OPERATION.
- WAIT FOR ALL MOVING PARTS TO COME TO A COMPLETE STOP BEFORE SERVICING MACHINE.
- DO NOT LEAVE CONTROLS UNTIL THE CUTTER WHEEL COMES TO A COMPLETE STOP. NOTE: THE CUTTER WHEEL WILL CONTINUE TO MOVE ONCE THE MACHINE IS SHUT OFF.
- KEEP HANDS, FEET AND LOOSE CLOTHING AWAY FROM MOVING PARTS.
- ALWAYS MAKE SURE AREA IS CLEAR BEFORE STARTING MACHINE.

WARNING

WEAR EYE & PERSONAL PROTECTION EQUIPMENT

Wear all personal protection equipment and follow all safety standards per ANSI and OSHA instructions.

DANGER

MOVING PARTS!

KEEP HANDS CLEAR!

ENGINE OPERATING SPEEDS

NOTICE

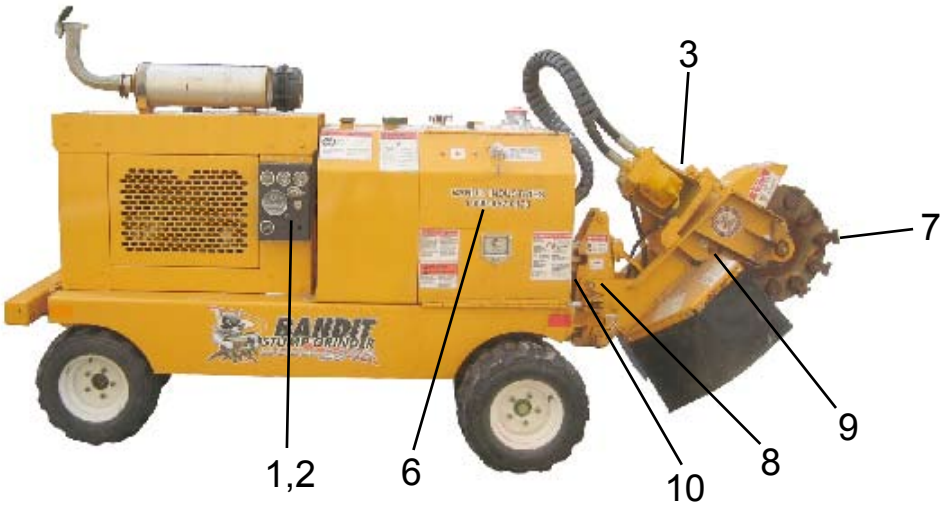
Refer to the Completion/Check Sheet, that is shipped with the machine for the correct engine rpm. If needed, contact your local dealer or Bandit Industries. **Always run the grinder at full engine speed.**

Some Current Engine Types	Maximum RPM
CAT C4.4 - 114 Hp	2425
Kubota V3600T - 84.5 Hp	2600
Kubota V3300 - 90 Hp	2600
Kubota V3800T - 99.2 Hp	2600
Perkins 804D-34T	2500
Some Prior Engine Types	
Deutz BF4L2011 - 79 Hp	2800

2890SP Basic Location of Controls

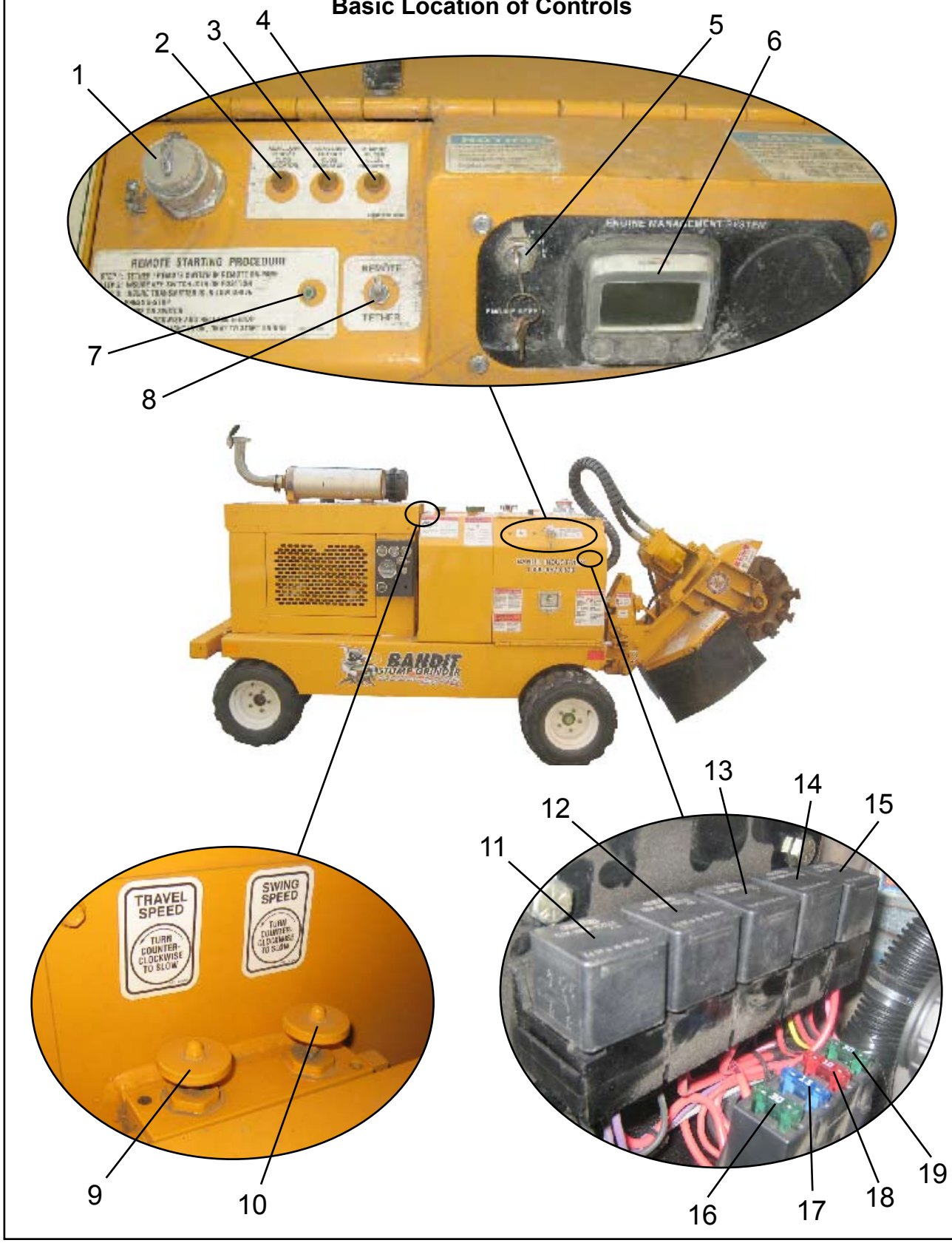
LOCATION SHOWN

1. Key Switch (varies with engines)
2. Tachometer / Hour Meter (varies with engines)
3. Belt Tensioner
4. Poly Chain (Cutter Wheel) Belt
5. Debris Clean Out Door
6. Hydraulic Control Valve
7. Grinder Teeth
8. Upper Frame Lock Pin Hole
9. Cutter Wheel Lock Pin Hole
10. Upper Frame & Cutter Wheel Lock Pin



MODEL 2890SP

Basic Location of Controls



MODEL 2890SP
BASIC LOCATION OF CONTROLS

1. **Tether Plug Jack:**
   Plug the tether control cord in here to control the machine if the batteries in your remote control run out of power.
2. **Auxiliary Filter 1 Clog Indicator:**
   Indicates when the high pressure auxiliary filter for the manifold valve is plugged.
3. **Auxiliary Filter 2 Clog Indicator:**
   Indicates when the high pressure auxiliary filter for the drive is plugged.
4. **Charge Filter Clog Indicator:**
   Indicates when the cutter head charge filter for the manifold valve is plugged.
5. **Key Switch (varies with engines):**
   Start the engine here. May be located on the engine instead of the control box.
6. **Hour Meter, Tachometer, Engine Throttle (varies with engines):**
   Refer to the engine manufacturer's manual. Depending on engine options, may display the engine hours, the engine rpm's and hours, and control the engine throttle. May be located on the engine instead of the control box.
7. **Link Light:**
   Light will be on when the transmitter is successfully linked to the receiver.
8. **Remote / Tether:**
   To use the radio remote controls, push the switch away from the operator. To use the tether controls, pull the switch towards the operator.
9. **Travel Speed Control:**
   Controls the rate the machine approaches the stump. To decrease the travel speed, the control knob will have to be turned counter-clockwise.
10. **Swing Speed Control:**
    The swing speed controls the rate the cutter wheel passes through the stump. To decrease the swing speed, the control knob will have to be turned counter-clockwise.
11. **Engine Kill Relay:**
12. **Oil Cooler Fan Relay:**
13. **Main Power Relay:**
14. **Cutter Head Safety Relay:**
15. **Brake Release Relay:**
16. **Oil Cooler Fan Fuse:** 30 Amp
17. **Radio / Tether Power Fuse:** 15 Amp
18. **Brake Release Fuse:** 10 Amp
19. **Main Power Fuse:** 30 Amp

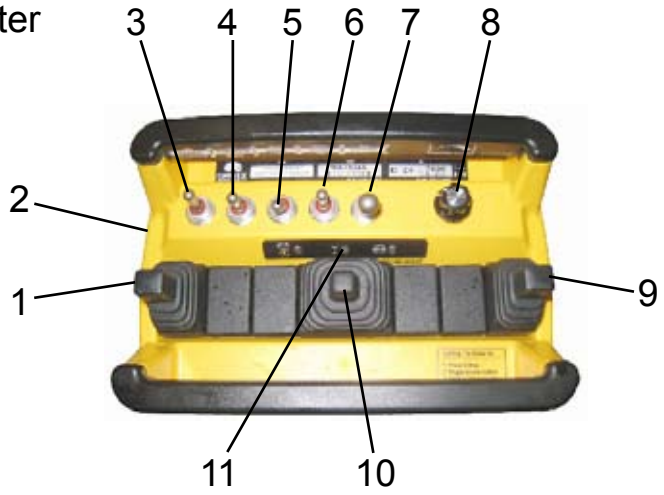
MODEL 2890SP RADIO CONTROLS

Basic Location of Controls and Adjustments

LOCATION SHOWN

1. Lift Down / Up
2. Throttle Up /Down
3. Swing Left / Right
4. Drive Forward / Reverse
5. Drive High / Low
6. Engine Stop
7. Steer Right / Left
8. Cutter Bump Adjustment
9. Link Light
10. Batteries

Model 2890SP
Omnex Transmitter

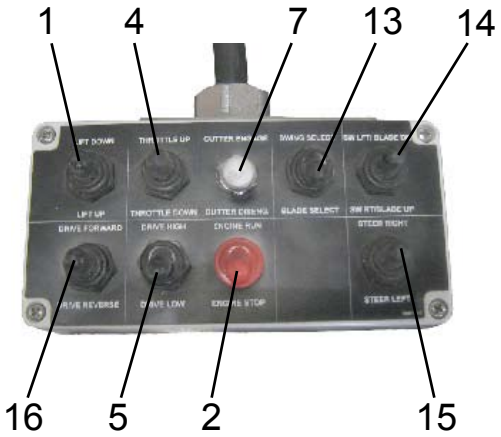


NOTICE

To link the transmitter with the machine:

1. Tether / Remote switch on the machine in the remote position.
2. Turn the key switch to the on position.
3. High / Low switch on the transmitter in the low position.
4. Press the e-stop on the side of the transmitter.
5. Press the on switch on the transmitter.
6. Twist and release the e-stop switch on the transmitter.
7. When the green link light on the machine is lit, machine is ready to start.

Model 2890SP
Tether Control



RADIO CONTROL OPERATING PROCEDURES

1. Cutter (Lift) Down / Up: To lower the cutter wheel, push the joystick or switch away from the operator. To lift the cutter wheel, pull the joystick or switch towards the operator. The cutter wheel lift is stationary when the joystick or switch is in the center location.

2. Engine Stop Button / Switch: Shuts off the power to the engine and to the hydraulic valve.

3. Power On / Calibrate: To turn the power on to the Omnex transmitter, push the switch away from the operator. The calibrate switch, is used set the tracks, so it does not do anything on the 2890.

4. Throttle Up / Down: To increase the engine throttle, push the switch away from the operator. To decrease the engine throttle, pull the switch towards the operator.

5. Drive High / Low: To put the drive in high for moving the machine, push the switch away from the operator. To put the drive in low for more precise movement or while grinding, pull the switch towards the operator.

6. Blade Down / Up (Optional): If equipped, to lower the grading blade, push the switch away from the operator. To lift the grading blade, pull the switch towards the operator. The grading blade is stationary when the switch is in the center location. For the blade to be operated using the tether control, make sure the Swing / Blade select switch is in the blade position.

7. Cutter Head On / Off: To turn the cutter head on, push the switch away from the operator. To turn the cutter head down, pull the switch towards the operator.

8. Cutter Bump Adjustment: Turn the knob clockwise to increase the distance the cutter wheel drops when you activate the cutter wheel lift control and counter-clockwise to decrease the cutter wheel drops.

9. Swing Left / Right: To swing the cutter wheel to the left, push the joystick or switch, away from the operator. To swing the cutter wheel to the right, pull the joystick or switch, towards the operator. The swing is stationary when the joystick or switch is in the center location. For the swing to be operated using the tether control, make the Swing / Blade select switch is in swing position.

10. Drive Joystick: With an Omnex transmitter, to move the machine forward, push the joystick away from the operator. To reverse the machine, pull the joystick towards the operator. To steer the machine to the left, push the joystick to the left. To steer the machine to the right, push the joystick to the right. The machine is stationary when the joystick is in the center location.

11. Link Light: A yellow light will be flashing when the transmitter is successfully linked to the receiver.

12. Batteries (not shown): Omnex transmitters require (4) AA batteries (if the batteries are dead, the engine will shut down).

13. Swing / Blade Select: To turn the cutter head on, push the switch away from the operator. To turn the cutter head down, pull the switch towards the operator.

14. Swing Left - Blade Down / Swing Right - Blade Up: With the tether control, to swing the cutter wheel to the left or lower the grading blade, push the switch, away from the operator. To swing the cutter wheel to the right or lift the grading blade, pull the switch, towards the operator. The swing or blade is stationary when the switch is in the center location. The function this switch controls will depend on where the Swing / Blade

15. Steer Right / Left: With the tether control, to steer the machine to the left, push the switch, away from the operator. To steer the machine to the right, pull the switch, towards the operator. The steering is stationary when the switch is in the center location.

16. Drive Forward / Reverse: With the tether control, to drive the machine forward, push the switch, away from the operator. To reverse the machine, pull the switch, towards the operator. The drive is stationary when the switch is in the center location.

CONSULT THE ENGINE MANUFACTURER'S MANUAL FOR SPECIFIC CONTROLS, OPERATION, & MAINTENANCE FOR TYPICAL ENGINES

1) **Ignition Switch:**
Turn the ignition switch key clockwise one stop (on position) to turn the electrical system on. The key should remain in the on position while the engine is running. Turn the key fully clockwise (start position) this will start the engine. To shut off the engine, return the key to the off position.

2) **On/Off Switch - Push Button Start:**
Some gasoline engines may have a Toggle Switch or an On/Off Switch combined with a push button to start the engine. First turn the On/Off Switch or Toggle Switch to the on position, then depress and hold the Push Button Start until the engine starts, then release the button. To shut off the engine, return the On/Off Switch or Toggle Switch to the off position.

3) **Ignition Switch With Preheat:**
The typical diesel engine may have a preheat system to assist in starting the engine during cold weather. To activate the preheat system, continue to hold the ignition key in the preheat position for 15 to 20 seconds, then attempt to start the engine. If the engine fails to start within 15 seconds, return the key to the preheat position, hold 10 seconds, and try starting again.

4) **Choke Adjustment (if equipped):**
Some gasoline engines may have a choke adjustment, pull the choke lever out to choke the engine. Push the choke lever in for normal engine operations.

5) **Throttle Adjustment (if equipped):**
Some engines may have a knob or a handle for the throttle adjustment. Typically you would pull the knob out, or turn the handle to increase the engine R.P.M.'s. To decrease you would push in the knob or turn the handle the opposite way.

6) **"Bandit" Lever Lock Cable Throttle System (if equipped):**
The Bandit throttle system has (2) positions, HIGH and LOW. Engine R.P.M. is controlled by moving the lever from one position to the other.

8) **Push Button Or Electric Throttle System (if equipped):**
Some engines may have a push button or electric throttle adjustment. Engine R.P.M. is controlled by pushing a button or switch to raise or lower the R.P.M.

9) **Alternator Warning Light:**
This light will glow when the alternator is not charging, or when the ignition switch is turned on and the engine is not running.

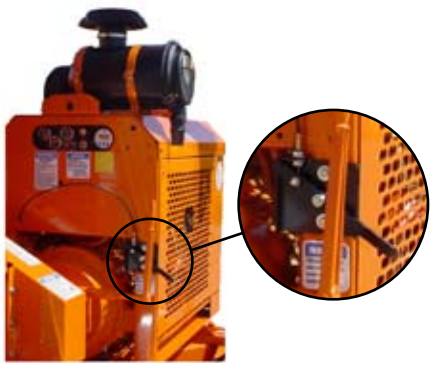
10) **Oil Pressure Warning Light:**
This light will glow when the oil pressure is to low, or when the ignition switch is turned on and the engine is not running.

11) **Engine Temperature Warning Light:**
This light will glow when the engine, or engine coolant, is above normal operating temperature. If this occurs allow the engine temperature to cool down. If the engine is overheating because of a loss of coolant, or a broken fan belt, shut the engine off immediately.

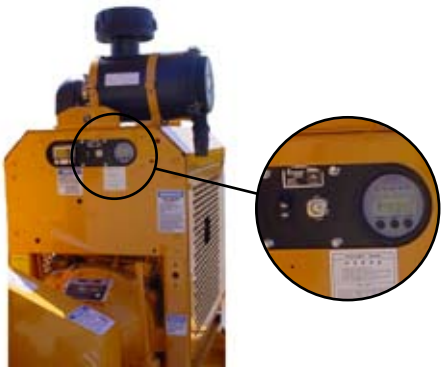
NOTICE

Most engines have an automatic low oil pressure shutdown device, but some engines do not for example the **Lombardini 9LD**. Expensive damage to the engine may occur if the engine oil level and condition is not checked daily. Follow all maintenance procedures specified by the engine manufacturer's manual. Check the fuel level daily, running out and repriming is time consuming. Do not over fill the fuel tank, there must be expansion space in the top of the tank. Inspect hoses, fittings, lines, tanks, etc. for any oil, fuel, engine coolant, etc. leaks daily. Repair or replace any damaged or leaking components.

TYPICAL DIESEL ENGINES



BANDIT THROTTLE SYSTEM



PUSH BUTTON OR ELECTRIC THROTTLE SYSTEM

TYPICAL GASOLINE ENGINE

MACHINE OPERATION

- Check all fluids before starting the machine.
- Make sure to go through the daily start-up and maintenance procedures before operating the machine.
- Drive belts or clutch must be disengaged before starting.
- Make sure the cutter wheel switch is in the “off” position on the remote control.
- Push the remote control power switch to the “on” position.
- Start engine at idle speed and allow for sufficient time for oil to circulate before proceeding.
- Test all controls for proper operation.
- Avoid transversing slopes.

⚠ DANGER

DO NOT OPERATE AROUND WATER, GAS, POWER OR PHONE LINES. IF IN DOUBT, CHECK BEFORE GRINDING.

⚠ DANGER

WEAR ALL PERSONAL PROTECTIVE EQUIPMENT PER ANSI, OSHA AND MANUALS.

⚠ DANGER

KEEP CLEAR OF CUTTING WHEEL, MOVING MACHINE PARTS AND GRINDER DEBRIS FIELD.

Position machine at stump with cutter wheel a slight distance away from stump.

Reduce engine RPM to idle.

Remove the upper frame lock pin.

Raise cutter wheel clear of stump.

Engage the cutter wheel.

Increase engine RPM to full.

Test the controls for proper operation, speed, and unobstructed movement.

The cutter wheel swing speed should be adjusted to a rate that will allow cutter wheel to pass through stump smoothly. If jerking, bouncing or significant drops in engine speed occur, swing rate is too rapid and must be decreased.

Swing speed should be determined and adjusted with the controls in the full open position.

A swing speed control is located on the top or on the side of the control box of the machine to adjust this speed. Turning the dial counter-clockwise will either slow or speed up the swing action, depending on the type of controls (manual or electric) and when the machine was built.

Travel speed should be adjusted to a rate that will allow cutter wheel to approach stump smoothly. If cutter wheel is approaching stump quickly, travel speed is too rapid and must be decreased.

Travel speed should be determined and adjusted with the controls in the full open position.

A travel speed control is located on the top or on the side of the control box of the machine to adjust this speed. Turning the dial counter-clockwise will either slow or increase the travel speed, depending on the type of controls (manual or electric) and when the machine was built.

Lower the spinning cutter wheel to the stump and make a few light passes at the stump to get a feel for the cutting action.

Gradually increase cutting action and work away at the stump by swinging cutter wheel left-to-right-to-left through stump in a sideways motion. Smooth, effortless cutting lengthens machine life, minimizes down time and is more profitable in the long run.

Continue cutting stump by adjusting cutting wheel progressively lower until stump is cut well below ground level.

Swing cutter wheel clear of stump and position machine closer to stump for next series of passes and continue cutting.

Continue in this manner until stump has been removed.

Continue in this manner until stump has been removed.

Continued on the following page.

MACHINE OPERATION (cont.)

Larger stumps may require repositioning machine to remove complete stump.

Raise cutter wheel clear of stump and return to center position.

Reduce engine speed to idle and disengage cutter wheel. **DO NOT TURN OFF MOTOR**. Engine should be allowed to cool slowly at idle for 3-5 minutes to avoid damage.

DO NOT ENGAGE OR DISENGAGE DRIVE BELTS AT A HIGH ENGINE SPEED. Damage to belts and machine will occur.

At low engine RPM, the cutter wheel swing speed control needs to be closed or slowed all the way down for the cutter head to swing. The direction the control knob needs to be turned will depend on the type of controls (manual or electric) and when the machine was built.

Turn off engine.

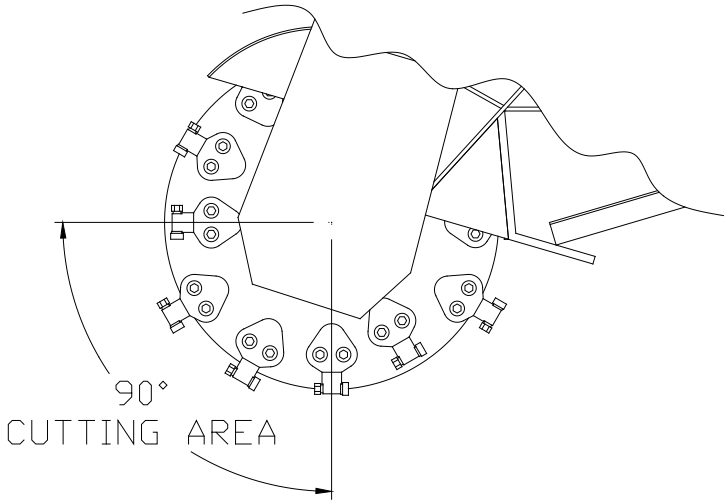
Allow cutter wheel to come to a complete stop before inspecting.

Before hauling, install the upper frame lock pin.

CUTTING AREA

⚠ DANGER

For optimum performance, the stump should be cut with the portion of the cutter wheel shown below. **NEVER UNDERCUT THE STUMP**. Undercutting the stump may cause severe kickback, vibration and component damage. **NEVER CUT THE STUMP FROM THE TOP**. The cutter wheel will throw debris up and toward the operator, instead of down and under the machine.



MOVING A MACHINE WITHOUT POWER

NOTICE

Use this procedure only when the machine will not start or run to help prevent damage to the hydraulic system. With the key in the “off” position and in your possession, follow the steps below:

1. Close the ball valve (see Figure 1) by turning 1/4 of a turn. It will be located in the front of the machine between the hydraulic tank and the control box.
2. Pump the brake release until you can’t pump it any more. The brake release is located inside of the control cabinet on the left side. See Figure 2.
3. The machine is now in freewheel mode, although there will be drag from the drive wheel motors.
4. Reverse step 1 after moving the machine.

Figure 1

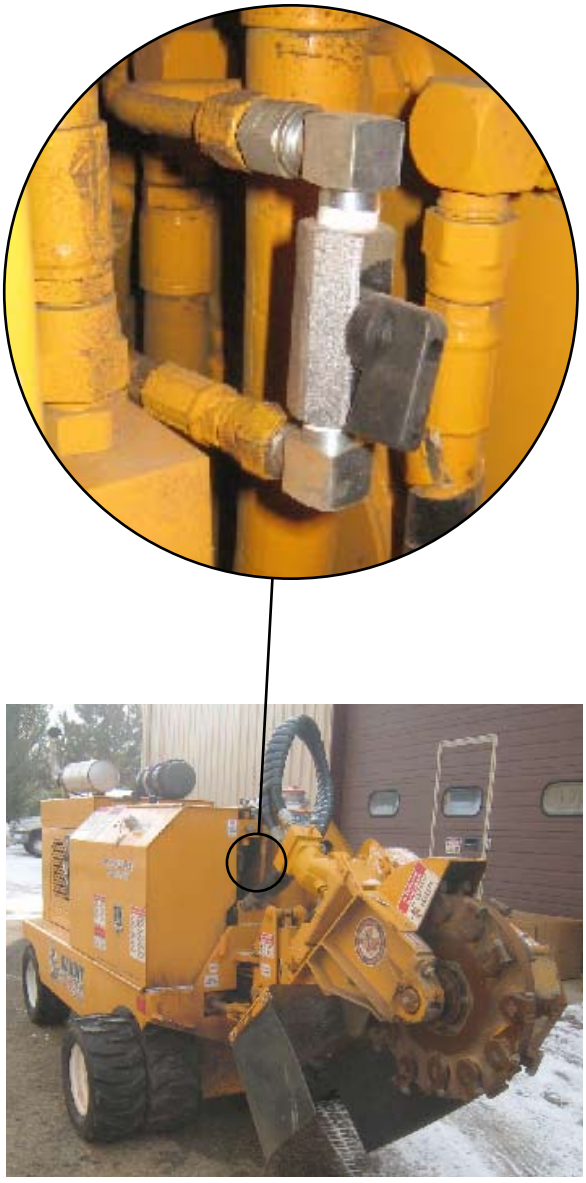
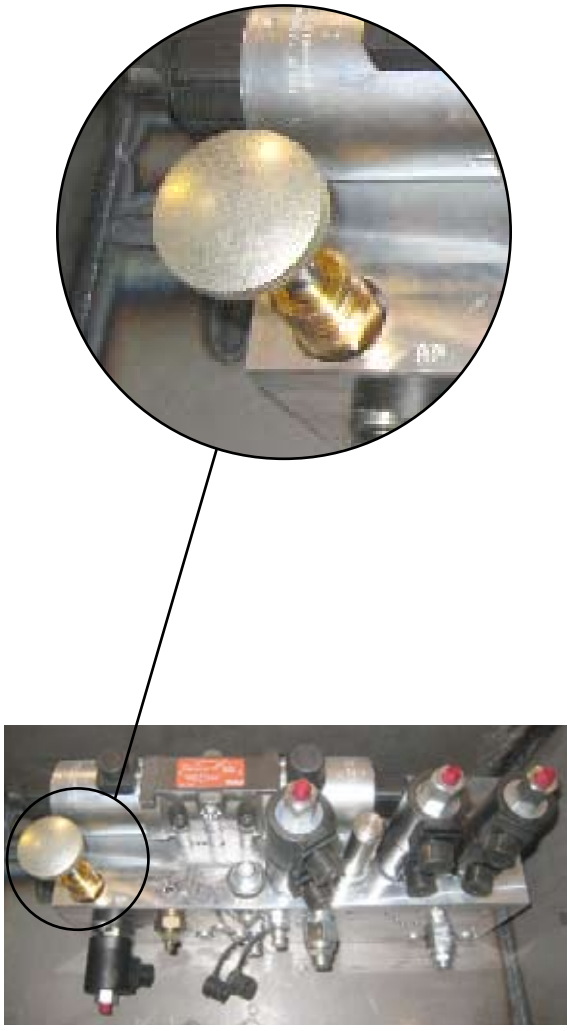


Figure 2



TRANSPORTATION PROCEDURES

⚠ WARNING

BEFORE TRANSPORTING THE MACHINE, INSPECT AND CONFIRM THE FOLLOWING STEPS:

1) The trailer has a cargo weight rating capacity for the weight of the stump grinder. The combined weight of the trailer and the stump grinder can not exceed the load capacity of the tires, axles, hitch coupler system or the GVWR (Gross Vehicle Weight Rating) of the trailer.
2) The towing vehicle is rated for and has the towing capabilities to haul the stump grinder package (includes the stump grinder and a trailer). The towing vehicle must be mechanically sound and capable of handling the towing job.
3) The hitch on the towing vehicle and the coupler on the trailer is a perfect match in size, type, and needed capacity.
4) Both the towing hitch and the coupler are in good mechanical and wear condition, that they are joined together securely, and the coupler/hitch is locked in place.
5) The safety chains have the correct capacity for the equipment being towed.
6) The safety chains are crossed under the coupler/hitch then securely attached to the towing vehicle. The safety chains are long enough to not restrict the turning movement, but short enough to not drag on the road.
7) The electrical plug-in on the towing vehicle and the trailer are wired for the same functions and they fit securely together. The plug-in wire is long enough to not restrict the turning movement, but short enough to not drag on the road. The trailer must have a lighting system and braking system to match and perform correctly off the towing vehicles system. You must meet the Federal and your States' Department of Transportation Code of Regulations concerning lights, brakes, and highway transit.
8) The break-away actuator (if equipped) that is installed on the trailer correctly works and is appropriately attached to the towing vehicle.
9) All lights and brakes on the trailer correctly functions when activated by the systems in the towing vehicle.
10) The tires have been checked for cuts or damaged rims, air pressure is correct, and the axle lug nuts have been checked for correct torque (refer to trailer manual).
11) When the stump grinder is on the trailer, the trailer has the right load capacity, the stump grinder is positioned on the trailer for the correct weight distribution (there should be about 15% of the total stump grinder package weight on the tongue or hitch), the stump grinder brakes are locked, the cutterwheel is resting on the trailer bed, and the stump grinder is securely bound down to the trailer bed per your States binding requirements.
12) Any loose debris, tools or parts have been cleared off or are put away.
13) Close and secure any of the following if equipped: tool box, battery box, engine cowl doors and side panels, radiator debris screens, inspection doors, cabinet doors, housing covers, tank caps and covers, vise, etc.
14) Make sure the load ramps are securely stored for transport.
15) Make sure the stump grinder's engine is not running, the ignition key is in your possession, and all controls are stored correctly and locked in place for transport.
16) The stump grinder package must be hauled level and the towing vehicle must be sized to handle hitch weight and towing weight. The towing vehicle or the combination of towing vehicle and towing package must have enough braking capacity to meet the Federal and your State Department of Transportation requirements.
17) The stump grinder package is now ready for transport. Make sure to obey all local regulation and laws regarding the transporting of this type of machine.
18) Do not drive too fast for road conditions or exceed speed regulations for equipment towing.

LOADING & UNLOADING

⚠ WARNING

BEFORE LOADING OR UNLOADING THE MACHINE INSPECT AND CONFIRM THE FOLLOWING STEPS: When loading or unloading the self-propelled machine on the trailer, use care and caution. The maneuvering of the equipment must be slow, smooth, and intentional, not fast and jerky.

1) Make sure the trailer and towing vehicle are parked on a flat surface. They must be stable on the surface with the brakes locked and/or the wheels chocked to avoid unwanted movement.

2) Position the loading ramps or loading gate securely between the trailer and the ground level. Have them located so that they are in line with the tires or tracks of the machine when it moves.

3) Remove and store the chains and binders used for transporting.

4) Confirm that there are not any obstacles on the trailer bed, around the trailer that may cause restricted movement of the machine or the operator.

5) The only person in the area should be the one that is operating the machine controls, and he/she should be very experienced with the controls on this machine.

6) If you are on streets, roads or public areas, position the warning cones etc, per your company's safety policy.

7) Follow all pre-startup instructions for the machine.

8) Once the engine is running at as low a speed as possible, carefully raise the cutterwheel slightly up off the ground or trailer bed. While loading or unloading the stump grinder, the cutterwheel should not be raised any higher than necessary to just clear whatever is under it. You need to keep the weight center of gravity as low as possible to avoid tipping the machine while it is moving.

9) The cutterwheel end of the stump grinder should always be positioned so that it is toward the rear of the trailer, not the tongue, during transport.

10) When the machine is positioned on the trailer bed, there should be about 15% of the total trailer package weight on the tongue or hitch.

11) Align the machine with the trailer bed, and the loading ramps. The only equipment movement should be slowly, straight on or straight off the trailer.

12) With the engine and the machine at as low of speed as possible, move the machine toward the ramp system. Make sure the alignment is correct throughout the travel, and carefully readjust the cutter wheel height so that it barely clears obstacles as it is going up or down the ramp system.

13) Properly secure the equipment and the area to avoid any possible accidents or dangers.

14) The trailer should be constructed with appropriate chain down positions for the specific sized stump grinder. You must have binders that will withstand the strain of the machine trying to move while it is being transported.

15) The loading ramps or loading gate of the trailer must be constructed to withstand the weight and forces involved in loading and unloading the machine.

MAINTENANCE SECTION

The Bandit is a very simple machine to maintain. If you will follow a regular scheduled preventative maintenance program you should have years of trouble free operation.

⚠ DANGER

Before attempting any type of maintenance disengage clutch, turn off engine, wait for the cutterwheel to come to a complete stop, install the cutter wheel lock pin, place cutter wheel on the ground, disconnect battery, and make sure the ignition key is in your possession.

⚠ DANGER

Do not let anyone operate or maintain this machine until they have thoroughly read this manual, reviewed the equipment decals, watched the equipment video, and has been properly trained. You can purchase additional Bandit manuals, decals and videos for a nominal fee.

NOTICE

Consult your engine manual for proper break-in procedures. Various engines require somewhat different procedures, but basically the engines need to operate at lower R.P.M.'s and loads for a specific time.

NOTICE

Failure to properly break-in your engine may result in poor bearing and piston ring surfaces.

NOTICE

The Bandit has only been run for a short time to test proper hydraulic pressures, possible leaks, etc. The fuel tank will be empty. Fuel is provided through a small auxiliary tank for testing. This immensely helps maintain safety in our manufacturing facility and while shipping.

NOTICE

Expensive damage to the Bandit will occur if proper preparation is not taken before welding on the machine. Be sure to disconnect both battery cables and the engine ECM (engine control module) before welding. Follow the specific Engine MFG. instructions for proper welding and grounding procedures, before attempting to weld on the machine. If welding on the machine, do not ground the welder through the machine bearings, ground near work to be performed.

DAILY START UP & MAINTENANCE

1) Check the safety decals and engine gauges:
Replace any missing or damaged decals and/or engine gauges.

2) Check all safety equipment:
Check for proper operation. Repair or replace as needed.

3) Check entire machine for loose bolts, nuts, parts, or components:
Check entire machine for any loose parts or components. Check for loose nuts or bolts. Torque, tighten, or replace any of the loose components. See page 33 for specific bolt torques.

4) Check all guards:
Check to make sure all guards are in place and installed correctly. Make sure they are secure.

5) Check the cutter wheel and pockets for wear:
Check for elongated bolt holes, secure welds, torqued bolts, excessive wear and impact cracks. If a problem is found contact the grinder manufacturer or an authorized Bandit dealer.

6) Check condition of cutter teeth, pockets, and hardware:
Sharpen or replace your cutter teeth to keep them sharp. Check the condition of your teeth pockets and hardware. Replace if necessary.

7) Check cutter wheel pocket bolts:
All cutter wheel pocket bolts must be factory approved. Bolts must be replaced after a maximum of 4-5 rotations/changes to insure safe clamping ability.

See TORQUE CHART for proper torque.

DAILY START UP & MAINTENANCE cont.

8) Grease cutter wheel bearings daily:
Use an EP-2 Lithium type grease only for all bearings. Purge cutter wheel bearings with grease. You can not over grease these bearings. These bearings are designed with a relief system that will not allow over greasing. In other words, you can not hurt the bearing seals by pumping in too much grease. Most of the failures related to bearings are diagnosed as "contaminations". Contamination is caused by improper lubrication. Wipe off excess grease. **Excessive grease will attract dirt.**

9) Grease bottom pivot bushings:
Grease bottom pivot bushings with 1 to 2 shots of EP-2 Lithium type grease. Wipe off excessive grease. **Excessive grease will attract dirt.**

10) Clean debris from poly chain beltshield :
Inspect poly chain beltshield for debris and clean out any chips. Chip build up will wear, stretch, or break the polt chain belt.

11) Check / adjust the engine and cutter wheel belt tensions and alignment:
The belts will need to be tightened several times in the first few days of operation. A loose belt will slip and glaze over. Once they slip you must replace them. See pages 36 - 37 for procedures. Check the belt sheaves with a straight edge to ensure they are in line.

12) Check hydraulic oil level:
The hydraulic oil reservoir tank level should always remain at 7/8 full. Remember to check DAILY to avoid excessive heat build up.

13) Check for any fluid leaks:
Inspect for any oil, fuel, or hydraulic oil. Check all hoses, fittings, lines, and tanks. DO NOT use fingers or skin to check for hydraulic leaks. Repair or replace any damaged or leaking components.

14) Check the fuel level:
Check the fuel level, running out and repriming is time consuming. Do not over fill, and you must leave fuel expansion space in the top of the tank.

15) Check engine oil and coolant levels:
Follow the engine manufacturer manual recommendations for fluid levels. You MUST follow specific ENGINE MFG. manual recommendations for radiator coolant, additives, lubrication, correct engine speed, ETC.

16) Check radiator, debris screen:
Thoroughly clean radiator fins at least once a day and twice in excessive condition. Make sure debris is not packed between fins. Use pressurized water spray to clean. Do not rely on air pressure. The radiator will only appear to be clean. A partially plugged radiator will not allow the engine to cool properly. Clean cooling fan, shroud on air cooled engines, and the debris screen (if so equipped). Improper service, maintenance, or neglect will cause overheating problems and engine failure.

17) Check oil cooler:
Thoroughly clean cooler fins at least once a day and twice in excessive condition. Make sure debris is not packed between fins. Use pressurized water spray to clean. Do not rely on air pressure. The oil cooler will only appear to be clean. Clean cooling fans and make sure operating correctly.

18) Check air cleaner or precleaner:
Clean or replace element following engine manual recommendations. Also, check and clean the vacuator valve.

19) Check tires:
Check tires for wear, weather checking and damage. Replace if damaged.

20) Check around machine:
Check around the entire machine for tools, cans, saws, etc. All tools not in use should be stored in a tool box.

21) Review all safety procedures on decals, from manual, and from video.

22) Make sure all safety equipment is being worn:
Make sure you are wearing all of your safety equipment: hard hat, face shield, gloves, eye protection, ear protection, etc. per ANSI and OSHA standards.

23) Remember to check EVERYTHING on the checklist.

WEEKLY MAINTENANCE

1) Grease upper frame pivot bushings:
Grease the top and bottom upper frame pivot bushings with 1 to 2 shots of EP-2 Lithium type grease. Wipe off excess grease. **Excessive grease will attract dirt.**

2) Grease steering axle pivot bushing:
Grease steering axle pivot bushing with 1 to 2 shots of EP-2 Lithium type grease. Wipe off excess grease. **Excessive grease will attract dirt.**

3) Grease steering bushings:
Grease steering bushings with 1 to 2 shots of EP-2 Lithium type grease. Wipe off excess grease. **Excessive grease will attract dirt.**

4) Grease cylinder lug pin bushings:
Grease cylinder lug pin bushings with 1 to 2 shots of EP-2 Lithium type grease. Wipe off excess grease. **Excessive grease will attract dirt.**

5) Check set screws in bearings:
Check set screws in cutter wheel bearings for tightness.

6) Check and retighten tank mount bolts:
Check the fuel tank and hydraulic tank mount bolts and retighten.

7) Check alternator and fan belts on engine (as applicable):
Adjust and maintain per the engine manufacturer's manual.

8) Check wheel lug nuts:
Check and keep lug nuts tight, retorque, replace if needed.

MONTHLY MAINTENANCE

1) Grease grading blade bushings (if equipped):
Grease grading blade pivot bushings with 1 to 2 shots of EP-2 Lithium type grease. Wipe off excess grease. **Excessive grease will attract dirt.**

2) Check grinder bearings and grinder sheave:
Check, retighten all bearing bolts and belt sheave bushings to correct torques.

3) Tire air pressure:
Check and keep each tire to rated capacity on tire.

4) Check bearing and bearing lock collars:
Check, retighten bearing lock collars to correct torques.

5) Check hydraulic pressures:
Check, reset and maintain all hydraulic pressure settings to the specified maximum, see page 43. This will give you the best performance from the hydraulic system.

3 MONTH MAINTENANCE

1) Hydraulic oil filter:
Must be replaced after FIRST 10 HOURS OF OPERATION, USE A 10 MICRON FILTER. After first change replace oil filter every 3 months or 400 hours. Located in the hydraulic tank.

2) High pressure and charge filters:
Must be replaced after FIRST 10 HOURS OF OPERATION. After first change replace high pressure and charge filters every 3 months or 400 hours. Three are located under the oil cooler housing cover and the inspection cover between the hydraulic tank and control box.

YEARLY MAINTENANCE

1) Hydraulic oil:
Change hydraulic oil and flush the hydraulic reservoir tank.

2) Hydraulic suction screens:
Change hydraulic suction screens yearly or every 2000 hours.

DAILY START UP & MAINTENANCE CHECK LIST

Each day before starting your machine these checks must be made:

		O.K.	Repaired
1)	Check the safety decals and engine gauges, replace if damaged.	☐	☐
2)	Check, maintain, and service all safety equipment for proper operation.	☐	☐
3)	Check entire machine for loose nuts, bolts, and components.	☐	☐
4)	Check all guards to make sure they are tight and securely in place.	☐	☐
5)	Check the condition of the cutter wheel and teeth pockets.	☐	☐
6)	Check the condition of the cutter teeth, pockets, and hardware.	☐	☐
7)	Properly torque cutter wheel pocket bolts.	☐	☐
8)	Grease (purge) cutter wheel bearings daily.	☐	☐
9)	Grease bottom pivot bushings with 1 to 2 shots.	☐	☐
10)	Clean debris from poly chain beltshield.	☐	☐
11)	Check and / or adjust cutter wheel belt tensions and alignment.	☐	☐
12)	Check and always maintain hydraulic oil level at 7/8 full.	☐	☐
13)	Check all hoses, fittings, lines, and tanks for damage and fluid leaks.	☐	☐
14)	Check fuel level. (Running out and repriming is time consuming).	☐	☐
15)	Check engine oil, coolant levels, and correct engine speed. Follow ENGINE MANUFACTURER'S manual specs. Engine Must Be Level To Check Fluids.	☐	☐
16)	Check radiator and debris screen. Clean as necessary. Clean cooling fan and shroud on air cooled engines.	☐	☐
17)	Check oil cooler and fans. Clean as necessary.	☐	☐
18)	Check air cleaner, precleaner, and vacuator valve. Clean as necessary.	☐	☐
19)	Check condition of the tires.	☐	☐
20)	Check around the entire machine for any foreign objects, tools, cans, saws, etc.	☐	☐
21)	Review all safety procedures on decals, from manual, and from video.	☐	☐
22)	Wear all applicable safety equipment: hard hat, face shield, gloves, eye protection, ear protection, etc.	☐	☐
23)	Remember to check EVERYTHING on the checklist.	☐	☐

WEEKLY CHECK LIST

		O.K.	Repaired
1)	Grease upper frame pivot bushings with 1 to 2 shots.	☐	☐
2)	Grease steering axle pivot bushings with 1 to 2 shots.	☐	☐
3)	Grease steering bushings with 1 to 2 shots.	☐	☐
4)	Grease cylinder lug pin bushings with 1 to 2 shots.	☐	☐
5)	Check set screws in bearings.	☐	☐
6)	Check and retighten fuel / hydraulic tank mount bolts.	☐	☐
7)	Check alternator and fan belts on engine.	☐	☐
8)	Check and retighten wheel lug nuts.	☐	☐

MONTHLY CHECK LIST

		O.K.	Repaired
1)	Grease grading blade pivot bushing with 1 to 2 shots (if equipped)	☐	☐
2)	Check grinder bearings and grinder sheaves.	☐	☐
3)	Check and fill tires to rated pressures.	☐	☐
4)	Check bearing and bearing lock collars.	☐	☐
5)	Check hydraulic pressure. Set to specified PSI (bar).	☐	☐

3 MONTH CHECK LIST

		O.K.	Repaired
1)	Replace hydraulic oil filter after first 10 hours, then quarterly or every 400 hours. Located in the hydraulic tank.	☐	☐
2)	Replace high pressure and charge filters after first 10 hours, then quarterly or every 400 hours. Three are located under the oil cooler housing cover and the inspection cover on between the hydraulic tank and the control box.	☐	☐

YEARLY CHECK LIST

		O.K.	Repaired
1)	Change hydraulic oil and flush the hydraulic tank.	☐	☐
2)	Replace the hydraulic suction screens annually or every 2000 hours.	☐	☐

BOLT TORQUE CHART

(THESE TORQUES ARE BASED ON DRY, CLEAN THREADS)

DESCRIPTION	BOLT SIZE	TORQUE (FT.-LBS.)	TORQUE(Nm)
Cutter Wheel Green Tooth Pocket Bolts	5/8" - 18 NF	125 - 150	169 - 203
Cutter Wheel Green Tooth Nut		45 - 62	61 - 84
Cutter Wheel Bushing	9/16" - 12 NC	84	114
Grinder Bearing Bolts	5/8" - 11 NC	190	258
Grinder Bearing Set Screws		57	77
Engine Hold Downs	1/2"-13 NC	95	129
Hydrostatic Motor Cog Bushing		35	47
Cutter Shaft Cog Bushing		84	114
Steering Motor Coupler Bolts	1/2"-13 NC	60	81
Lug Nuts	1/2"-20 NF	90 - 120	122 - 163

Before tightening bolts be sure you have the correct size bolt for the correct amount of torque.
Use only factory approved knives and hardware.

PAINT CARE

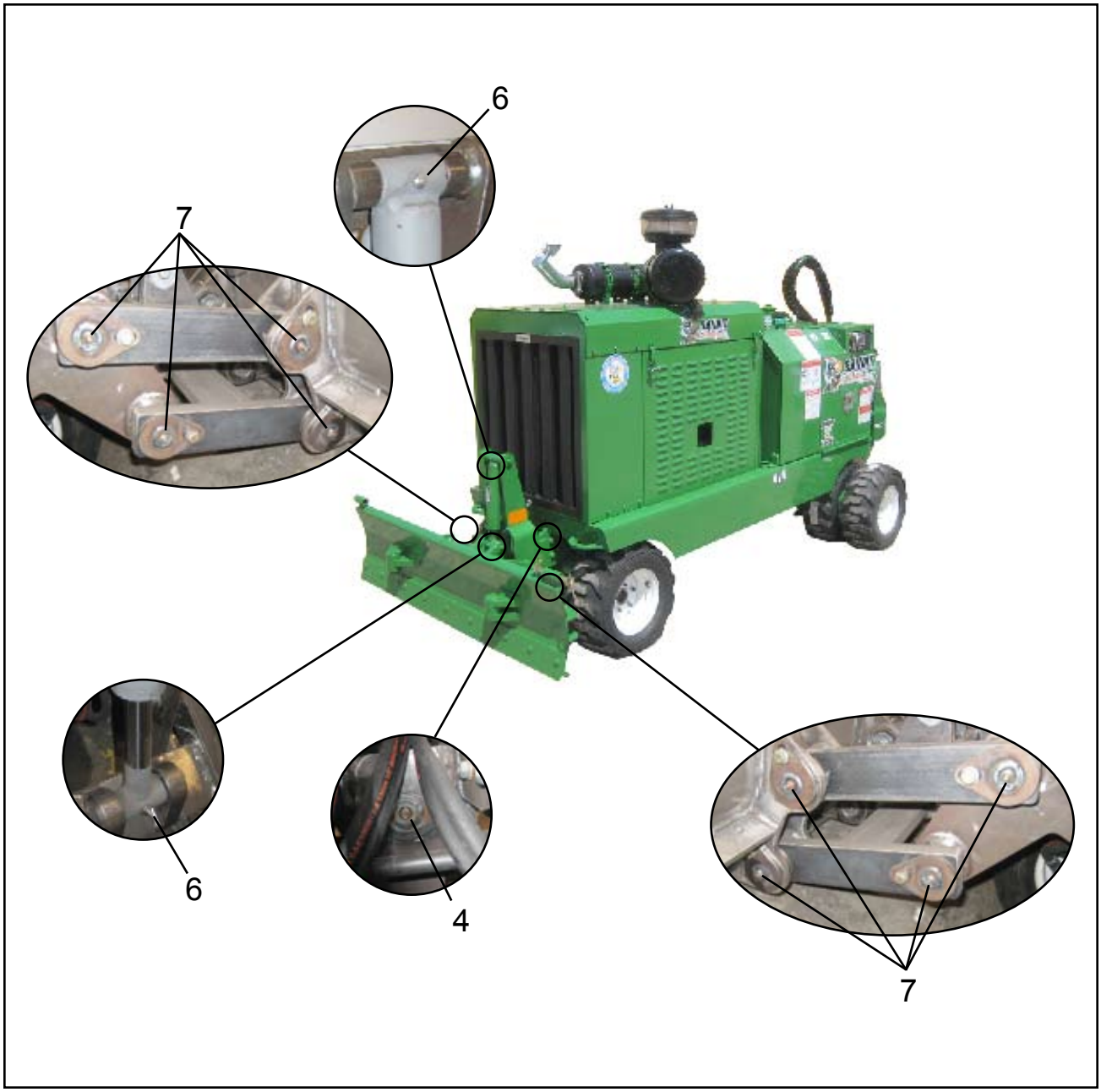
To help keep up the appearance of your Bandit Equipment and reduce the possibility of surface rust follow these steps:

1) The machine should be washed on a regular basis with a non-abrasive mild detergent and then rinsed thoroughly. Do not pressure wash sensitive areas like: decals, gauges, electronic devices, autofeed control, etc.
2) If a stone chip, paint scratch, or paint crack occurs - it should be repaired immediately. Simply sand the edges of the damaged paint area, mask off the surrounding area and apply primer and paint to the dry, clean, and warm surface. This will help keep the damaged area from spreading or getting worse.
3) If you are unable to sand and mask the area, there are containers of primer and paint available. A small brush can be used to touch up the area.
4) Also, primer and most colors of paint are available in aerosol spray cans to simply spray over the effected area after it is cleaned, dry, and warmed. This method is not as reliable as the process in step #2.

It is also reported that some equipment owners polish their machine at least yearly, and keep good mud flaps on their towing trucks.

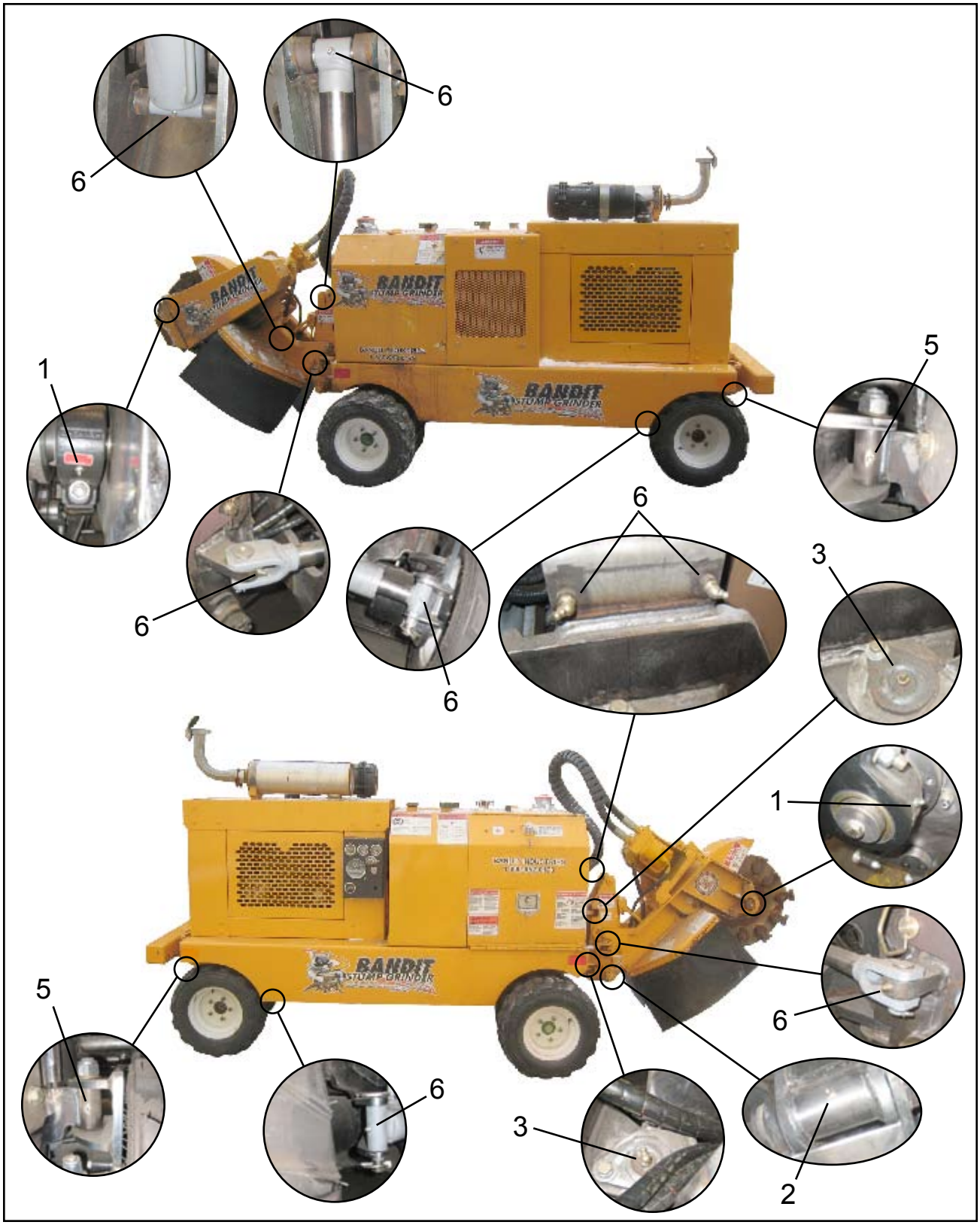
LUBRICATION CHART

		CHECK			
#	DESCRIPTION	DAY	WEEK	MONTH	PROCEDURE
1	Grinder Bearings	X			Purge bearings daily - wipe off excess
2	Bottom Pivot Bushings	X			1 to 2 shots of grease - wipe off excess
3	Upper Frame Pivot Bushings		X		1 to 2 shots of grease - wipe off excess
4	Steering Axle Pivot Bushings		X		1 to 2 shots of grease - wipe off excess
5	Steering Bushings		X		1 to 2 shots of grease - wipe off excess
6	Cylinder Lug Pin Bushings		X		1 to 2 shots of grease - wipe off excess
7	Grading Blade Bushings			X	1 to 2 shots of grease - wipe off excess



NOTICE Use as a reference only, locations may vary depending on options or component manufacturer. Lubrication point instructions are described on the machine, in the Lubrication & Coolant Section and Maintenance Section of this manual, or component manufacturer's manual.

LUBRICATION CHART



NOTICE Use as a reference only, locations may vary depending on options or component manufacturer. Lubrication point instructions are described on the machine, in the Lubrication & Coolant Section and Maintenance Section of this manual, or component manufacturer's manual.

BELT TENSION

GENERAL RULES FOR TENSIONING

1. Check tensioning during the first 2 through 48 hours of run-in operation especially.
2. Over tensioning or under tensioning shortens belt and bearing life.
3. Keep belts free from foreign materials that may cause the belt to slip.
4. Make V-drive inspection on a periodic basis. Never use belt dressing as this will damage the belt and cause early failure.
5. Belts should never be forced over the sheave. Allow enough room for belts to slip on.
6. Always make sure sheaves are aligned properly.

NOTICE It is a good practice to rotate the belts during tensioning. Then recheck deflections. The belts may need to be tightened again.

DO NOT IGNORE THIS MAINTENANCE RULE!

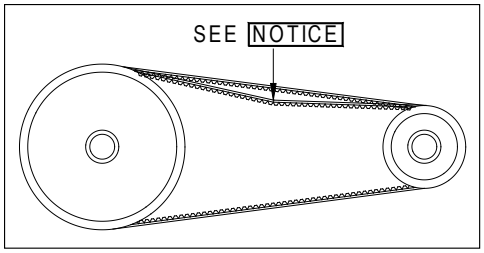
New belts stretch very soon and must be adjusted several times in the first few hours of operation. Adjust after one hour of operation, then every four hours until the belts quit stretching.

Failure to do this will cause the belts to burn and fly off. **THIS FAILURE IS NOT COVERED BY WARRANTY!**

CUTTER WHEEL BELT (Poly Chain Belt)

Special care needs to be taken with your cutter wheel belt. Alignment, tension, and cleanliness of this belt is very important. The cutter wheel belt needs to be checked for tension approximately every 70 to 100 hours of use. The cutter wheel belt must be running true. If the belt runs on an angle, it will cause belt failure. When replacing the cutter wheel belt, do not try to pry the belt on over pulley, this can break the fibers in the cutter wheel belt.

1. Follow all pre-maintenance shut down procedures.
2. Remove the cutter wheel belt guard.
3. Remove the old belt and replace with a new one, if replacing.
4. To adjust tension of the belt, loosen the 4 bolts on both of the motor pivot caps and the motor mount bolts.
5. Adjust the tensioner to slightly less than the desired tension.
6. Tighten the motor mount bolts.
7. Tighten the jam nuts on the tensioner bolt.
8. Tighten the bolts on both of the motor pivot caps.
9. Check the belt to make sure it is in the specified tension.
10. Check cutter wheel belt sheaves or sprockets, with a straight edge to ensure that they are in line.
11. Replace the cutter wheel belt guard.



NOTICE **Poly Chain Belt**

New: 3/8” (9.5 mm) deflection at 36-40 lbs. (16.3-18.1 kg) of force.

Used: 3/8” (9.5 mm) deflection at 29-33 lbs. (13.2-15.0 kg) of force.

CUTTER WHEEL BELT (Poly Chain Belt) cont.

Poly Chain Sprocket Alignment and Installation

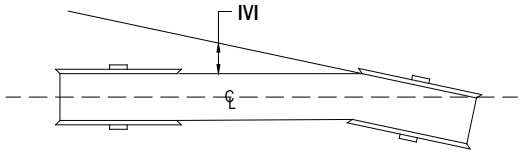
Sheave or sprocket alignment is very important. Proper alignment allows the load to be transformed equally across the belt width, which reduces wear and improves belt life.

1. Place a straight edge on the outside of the drive sheave or sprocket, making sure that the straight edge touches the outside and inside of the sheave or sprocket.

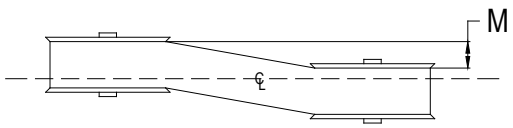
2. Move the sheave or sprocket until the straight edge touches both outside edges and inside edges.

3. Make sure the sheaves or sprockets are properly aligned. Alignment should be within 1/4 degree. This is the maximum “M” dimension of .05” per foot (1.3 mm per 305 mm) center distance.

ANGULAR MISALIGNMENT



PARALLEL MISALIGNMENT



Sheave or Sprocket Installation

1. Inspect the bore of the sheave or sprocket and the bushings tapered surface. Remove any oil, dirt or grease.

2. Place bushing in the sheave or sprocket inserting screw loosely.

3. Place key in key set and slide sheave or sprocket to its desired location with the screw head facing outside. If bushing goes on hard check shaft for burrs, remove if necessary.

4. Check for proper alignment of belts and evenly tighten bolts to recommended torque (SEE PAGE 33).

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Engine will not start. (See Engine MFG. manual for further information.)	1. Loose ground cable. 2. Loose hot cable. 3. Dead battery. 4. Cutter wheel was engaged before the machine engine was started. 5. Batteries in remote are dead. 6. Kill switch on remote is activated.	1. Clean and tighten. 2. Clean and tighten. 3. Recharge or replace. 4. Switch cutter wheel to off, make sure key switch is off, and then restart the machine. 5. Replace. 6. Twist and pull out.
Cutter wheel vibration.	1. Tooth missing. 2. Pocket out of balance. 3. Improper tooth arrangement. 4. Bad cutter wheel shaft bearing.	1. Replace missing teeth. 2. Always replace pockets in pairs across from each other. 3. Install correctly with like pairs of teeth directly across from each other. 4. Replace.
Belt squeal.	1. Belt tension too loose. 2. Belt out of alignment.	1. Tighten or replace. 2. Align pulleys.
Belt jumping off.	1. Engaging or disengaging belt at high engine RPM. 2. Belt keeper too far from belt. 3. Belt out of alignment.	1. Only engage or disengage belts at low engine speed or need replacement. 2. Adjust belt keeper closer to belt. 3. Make sure sheaves aligned properly.
Cutter wheel throwing teeth.	1. Bad pocket. 2. Dirt in pocket.	1. Replace pocket. 2. Clean pocket and replace missing teeth.
Cutter wheel breaking teeth.	1. Operator hitting rocks.	1. Avoid rocks, stone, etc.
Cutter wheel stops turning.	1. Belt or clutch not engaged. 2. Belt loose. 3. Engine belt broke. 4. Cutter wheel belt broke. 5. Sheared key in shaft. 6. Broke cutter wheel shaft.	1. Adjust belt assembly or clutch. 2. Tighten. 3. Replace. 4. Replace. 5. Replace. 6. Replace.
Roar in machine when cutter wheel is engaged.	1. Belt guards rubbing on motor shaft or cutter wheel shaft. 2. Cutter wheel or jack shaft bearings going bad.	1. Reposition guards off of shafts. 2. Replace bearings.
Bearing will not take grease.	1. Grease fitting clogged.	1. Replace.
Machine will not respond to remote.	1. Weak or dead batteries in remote. 2. Remote not turned on before starting the machine engine. 3. Machine is out of range of the remote. 4. Broken or damaged antenna. 5. Remote power switch was turned off.	1. Replace. 2. Turn off engine, turn remote power on, and then start engine. 3. Move closer to the machine and make sure there are no obstructions between operator and machine. 4. Replace. 5. Shut down and restart the machine.

HYDRAULIC SECTION

HYDRAULIC SECTION

⚠ WARNING

DO NOT GO NEAR HYDRAULIC LEAKS!

High pressure oil easily punctures skin causing serious injury, gangrene, or death. If injured, seek emergency medical help. Immediate surgery is required to remove oil. DO NOT use fingers or skin to check for leaks. Lower load or relieve hydraulic pressure before loosening fittings.

⚠ WARNING

DO NOT operate this machine unless all hydraulic control devices operate properly. They must function, shift and position smoothly and accurately at all times. Faulty controls can cause personal injury!

HYDRAULIC FLUID REQUIREMENTS

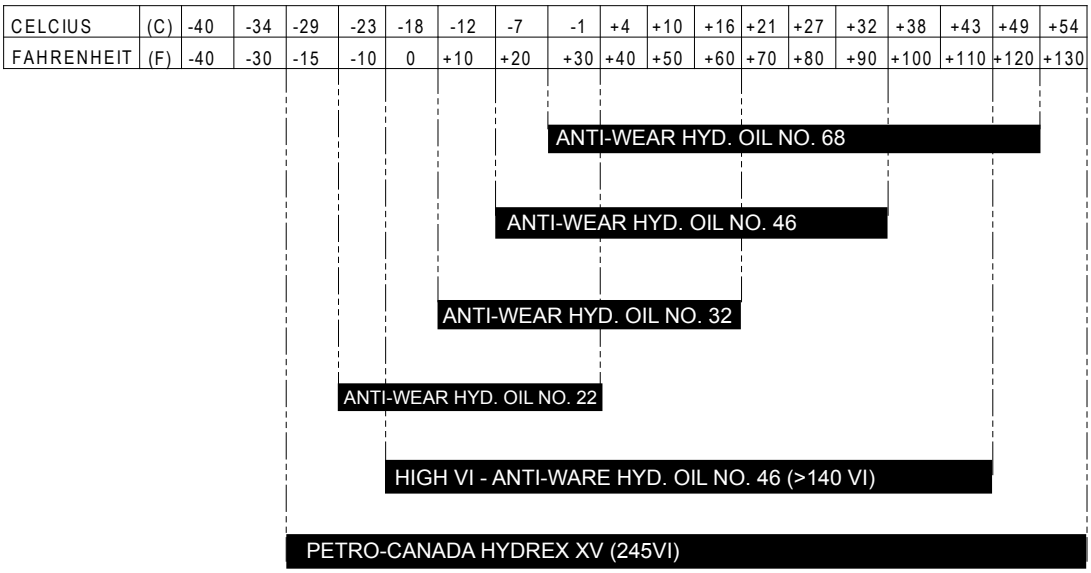
This machine is equipped with “Petro-Canada Hydrex XV” hydraulic fluid. It is recommended to replace with the same. “Petro-Canada Hydrex XV” is an all season hydraulic fluid. This is a premium performance, long life anti-wear, hydraulic fluid, designed for all season use in heavy duty hydraulic systems. “Petro-Canada Hydrex XV” allows year round use under wide extremes of temperature. It allows the hydraulic system to start at temperatures as low as -40°C/-40°F, under no load conditions and it improves lubrication of hydraulic components at high operating temperatures. It will also help protect against hydraulic failures during the wide temperature swings of spring and fall. To find the closest “Petro-Canada Hydrex XV” dealer call 1-888-284-4572.

Multi Viscosity motor oils are not recommended to mix with “Petro-Canada Hydrex XV” hydraulic oil. AW oils may mix with “Petro-Canada Hydrex XV” hydraulic oil. The following are specifications and authorizations of compatible oils. Only a high quality anti-wear (AW) hydraulic oil containing foam, corrosion, rust and oxidation inhibitors should be used. This viscosity grade depends on the oil temperature in service, based on the climate and operating conditions.

	Hydrex XV	ISO 22, AW	ISO 32, AW	ISO 46, AW	ISO 68, AW	ISO 100, AW
Viscosity Index	>235	>95	>95	>95	>95	>95
Flash Point	>240°C /464°F	>200°C /395°F	>210°C /410°F	>220°C /430°F	>220°C /430°F	>240°C /464°F
Oxidations Stability (ASTM D0943)	>9,000 Hours	>3,000 Hours	>3,000 Hours	>3,000 Hours	>3,000 Hours	>3,000 Hours
Cold Start-up, No Load, Max	-40°C/-40°F	-34°C/-29°F	-26°C/-14°F	-19°C/-3°F	-9°C/16°F	-4°C/24°F

HYDRAULIC SECTION

Alternate hydraulic oils are available, but they do not equal the performance or longevity of the “Hydrex XV” oil. Consult the following information supplied by the oil distributor.



Note: The above chart is a suggested guide for viscosity of hydraulic fluids at start up ambient temperature. The load, demand, and cleanliness of the equipment will affect actual oil temperatures which can increase dramatically above ambient air temperatures during operation. The actual viscosity needed is based on oil temperature during operation and not air temperature. Compare your fluid specifications with the specifications below to verify compliance.

When choosing a hydraulic fluid - these maximum and minimum specifications must be met:

Minimum Viscosity during operation = 12 cSt
Maximum No-Load Viscosity at start-up = 2000 cSt

Hydraulic fluids vary in their resistance to oxidation at elevated temperatures, their ability to protect against metal-to-metal contact under increasing temperature, and their ability to separate water from the fluid. Viscosity is temperature dependant. Fluids with high viscosity-index (VI) will thin out slower at higher temperature and thicken slower at colder temperatures allowing a wider operating range. Choose a fluid that has test results in these areas for best results.

Based on the varying temperatures of the area where Bandit equipment is used, and the high demand and loads placed on this equipment, Bandit has filled each hydraulic system with Petro-Canada’s Hydrex XV All Season Hydraulic Fluid for maximum protection and performance.

Contact Petro Canada at (888) 284-4572 to find a dealer near you.

NOTICE

Some equipment and components such as fluid engagement clutch’s (PTO’s) have their own lubrication requirements. Consult their manufactures manual for that information.

HYDRAULIC SECTION

THE BANDIT HYDRAULIC SYSTEM

The Bandit is equipped with a very efficient, simple hydraulic system. Each component is capable of withstanding a specified PSI (bar) and still operate for a very long time.

If the simple rules mentioned below are followed, the hydraulic components will last for years:

•After you have operated a new machine for approximately an hour shut down the machine and recheck all hydraulic fittings for tightness and leaks.

• Avoid hydraulic pump cavitation. Low oil levels or cold start-ups will cause the hydraulic pump to cavitate. Cavitation will ruin the pump and possibly the entire hydraulic system. Cavitation only has to happen once. This will start the pump on its way to ruin. Allow hydraulic system to turn slowly for several minutes in cold weather in order for hydraulic system to warm up. Cavitation is not covered under warranty.

• Do not increase the relief valve settings beyond specified PSI (bar). This will cause damage to hydraulic components. Do not set any other hydraulic component past it's specified pressure or this will cause damage to the hydraulic components.

• Keep hydraulic oil clean. Dirty oil will cause excessive wear and loss of hydraulic power.

• Replace the hydraulic oil filter(s) after first 10 hours and with each 400 hours of operation or 3 months.

• Replace hydraulic oil & suction screen(s) at least once yearly. This is also a very good time to flush and clean the tank. Replace hydraulic oil immediately if it is contaminated or looks "milky". See pages 40 - 41 for hydraulic oil requirements.

• If the Bandit's hydraulic system is kept clean and the hydraulic pressures are not increased beyond the specified PSI (bar), the maximum use and life should be received from the Bandit grinder hydraulic system.

• If a problem is encountered, it will more than likely be located in the relief valve or something as simple as belts slipping, check these first.

• Do not close the hydraulic shut-off valve for more than 3 to 4 seconds. Hydraulic shut-off valve handle must be completely turned on at all times unless checking hydraulic pressure. Pressure gauge should be safely stored and installed only when checking pressure. Follow above instructions or this will cause unwarranted damage to the hydraulic components.

• Never close the ball valves on the hydraulic tank suction ports (if equipped) while the machine is running, this will ruin the hydraulic pump and components. Close the ball valves for service purposes only.

• Some component manufacturers require different specific hydraulic lubrication, such as gear boxes, undercarriage drives, etc. Refer to their manuals and maintenance section of this manual.

⚠ WARNING

It is very important after you have operated a new machine for approximately an hour to shut down the machine and recheck all hydraulic fittings. Retighten as needed.

DO NOT GO NEAR HYDRAULIC LEAKS! High pressure oil easily punctures skin causing serious injury, gangrene, or death. Avoid burns from fluid. Hot fluid under pressure can cause severe burns. DO NOT use fingers or skin to check for leaks. Lower load or relieve hydraulic pressure before loosening fittings. Relieve all pressure in the system before disconnecting the lines, hoses, or performing other work. Use a piece of cardboard to find leaks. Never use your bare hands. Allow system to cool down to ambient temperature before opening any coolant or hydraulic oil system.

In cold weather situations let your hydraulic system idle for approximately 15 minutes to allow the system to warm up to operating temperature.

⚠ WARNING

DO NOT operate this machine unless all hydraulic control devices operate properly. They must function, shift and position smoothly and accurately at all times. Faulty controls can cause personal injury!

NOTICE

When returning hydraulic components for warranty make sure to box up all warranted parts to avoid additional damage while shipping. **Do not disassemble any hydraulic components which are to be warranted.** Anything which has been disassembled or tampered with will not be warranted. Items being returned must be clean. All hydraulic components must have all hosing ports plugged. Failure to plug ports will allow debris to enter components which will void warranty.

HYDRAULIC SECTION

⚠ DANGER

Before attempting any type of maintenance disengage clutch (if equipped), turn off engine, wait for the cutter head to come to a complete stop, place cutter head on the ground, switch the battery disconnect to the off position, and make sure the ignition key is in your possession.

NOTICE

DO NOT UNDER ANY CIRCUMSTANCES OVER-SET THESE RELIEF PRESSURES, BECAUSE IT WILL CAUSE DAMAGE TO COMPONENT PARTS AS WELL AS HYDRAULIC PARTS.

NOTICE

These Typical Hydraulic Flows And Relief Pressure Settings Are With The Engine At Full RPM. All Settings Are Subject To Change!

⚠ CAUTION

After the initial start-up of the machine and after any replacement of hydraulic components, that fittings and hoses should be re-checked for leaks and clearances.

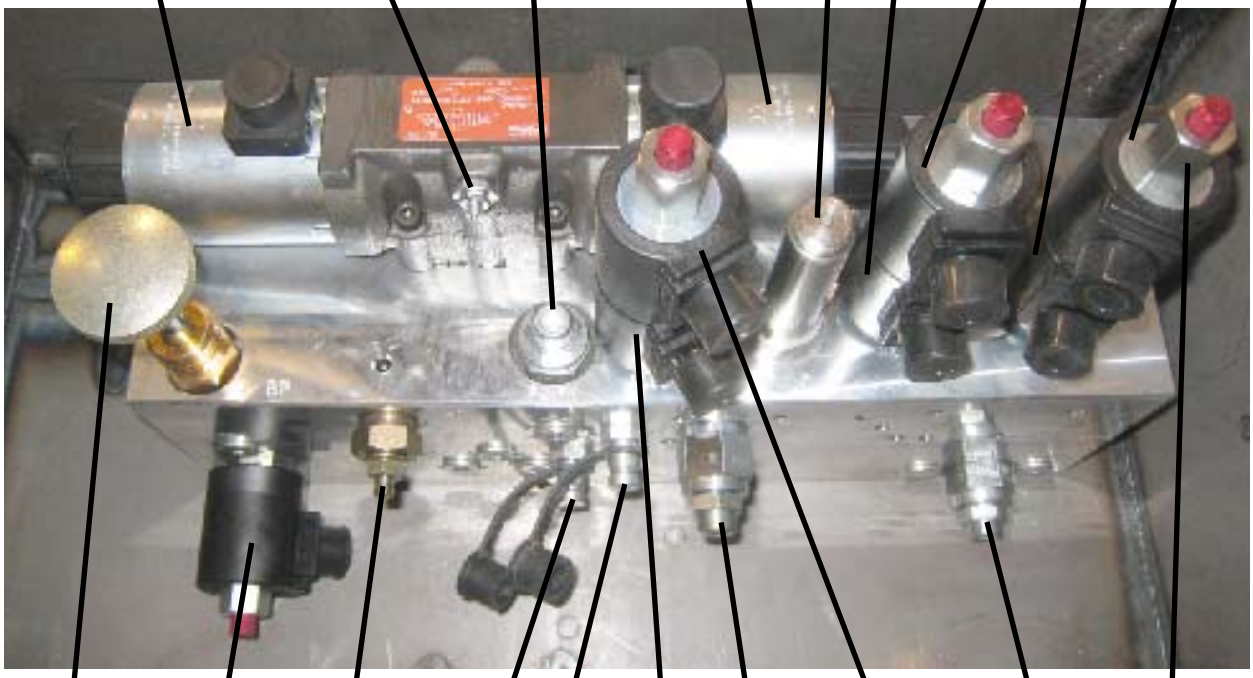
TYPICAL HYDRAULIC RELIEF PRESSURE SETTINGS
TYPICAL HYDRAULIC FLOWS AND RPM SETTINGS
(Approximate, For Reference Only, Engine At Full RPM)

Equipment Model	2890SP
Cutter Head Pump GPM (LPM)	53 (200)
Double Pump GPM (LPM)	12 + 4 (45 + 15)
Cutter Wheel On / Off (bar)	5400 (372)
Main Relief PSI (bar)	2800 (193)
Cutter Wheel Charge Pressure PSI (bar)	380 (26)
Cutter Wheel Swing Left / Right PSI (bar)	2000 (138)
Cutter Wheel Up / Down PSI (bar)	2350 (162)
Forward / Reverse PSI (bar)	2650 (183)
Steering PSI (bar)	1600 (110)
Optional Grading Blade PSI (bar)	1800 (124)

CHECKING HYDRAULIC PRESSURE

Figure 1

Manifold Valve Assembly: located in the control box



Torque solenoid retainers nut to maximum of 20 in.-lbs. (2.2 Nm)

NOTICE Valves may not be exactly as shown, depending on options.

CHECKING HYDRAULIC PRESSURE

NOTICE

DO NOT UNDER ANY CIRCUMSTANCES OVER-SET THESE RELIEF PRESSURES, BECAUSE IT WILL CAUSE DAMAGE TO COMPONENT PARTS AS WELL AS HYDRAULIC PARTS.

⚠ WARNING

Before attempting to check any pressures, make sure engine is shut off, ignition key is removed and in your possession, hydraulic oil is clean, hydraulic tank is 7/8 full, and the machine has been pre-run to warm the hydraulic oil. To correctly check relief valve pressure, the pressure gauge MUST be installed correctly.

CHECKING MAIN DRIVE PRESSURE

1. Make sure all the controls are in the off position.
2. Disconnect the drive hydraulic lines that are connected to ports DL1 and DL2 on the back of the manifold valve assembly. Caps go on the adapters in the manifold and plug the hoses.
3. Install a 3000 psi pressure gauge into the test port 1.
4. Start engine and adjust engine to full throttle.
5. Activate the drive forward remote switch and then read the pressure gauge which should be 2650 psi (183 bar). Only activate the function for 4-5 seconds to set pressure or you may damage the hydraulics.
6. Adjust relief if necessary. Turn the relief clockwise to increase pressure and counter-clockwise to decrease the pressure.

CHECKING AUXILIARY FUNCTION PRESSURE

1. Make sure all the controls are in the off position.
2. Install a 3000 psi pressure gauge into the test port 1.
3. Leave all hydraulic hoses connected.
4. Start engine and adjust engine to full throttle.
5. Activate the cutter head up remote switch until the cylinder bottoms out and then read the pressure gauge which should be 2350 psi (162 bar). Only activate the function for 4-5 seconds to set pressure or you may damage the hydraulics.
6. Adjust the auxiliary relief if necessary. Turn the relief clockwise to increase pressure and counter-clockwise to decrease the pressure.
7. Remove the pressure gauge from test port 1 and install on test port 2.
8. Activate the steering remote switch until the cylinder bottoms out and then read the pressure gauge which should be 1600 psi (110 bar). Only activate the function for 4-5 seconds to set pressure or you may damage the hydraulics.
9. Adjust the steer relief if necessary. Turn the relief clockwise to increase pressure and counter-clockwise to decrease the pressure.
10. Activate the swing remote switch until the cylinder bottoms out and then read the pressure gauge which should be 1800-2000 psi (124-138 bar). Only activate the function for 4-5 seconds to set pressure or you may damage the hydraulics.
11. Adjust the swing relief if necessary. Turn the relief clockwise to increase pressure and counter-clockwise to decrease the pressure.

TROUBLE SHOOTING

BEFORE ATTEMPTING ANY TYPE OF MAINTENANCE DISENGAGE CLUTCH, TURN OFF ENGINE, WAIT FOR THE CUTTER WHEEL TO COME TO A COMPLETE STOP, INSTALL THE CUTTER WHEEL LOCK PIN, DISCONNECT BATTERY, AND MAKE SURE THE IGNITION KEY IS IN YOUR POSSESSION.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Hydraulic oil very hot, causing system to operate slowly	1. Dull teeth. 2. Low oil level. 3. Worn pump, poor oil quality. 4. Damaged hose. 5. Oil suction screen or filter plugged. 6. Binding. 7. Oil cooler plugged. 8. Oil cooler fan stopped.	1. Replace teeth. 2. Fill 7/8 full minimum. 3. Replace. 4. Replace. 5. Clean or replace. 6. Repair. 7. Clean or replace. 8. Repair or replace.
Hydraulic system loss of power.	1. Low oil level. 2. Poor oil quality. 3. Bad cylinder. 4. Bad pump. 5. Bad motor. 6. Relief stuck open.	1. Fill 7/8 full minimum. 2. Replace. 3. Replace or repair. 4. Replace. 5. Replace or repair. 6. Clean or replace.
Swing cylinder loss of power.	1. Cutterhead speed adjustment screw turned wide open. 2. Bad cylinder.	1. Screw in speed adjustment screw to close bypass. Readjust for “no bounce” cutting. 2. Replace or repair.
Cutter head swings faster one way then the other.	1. Counter balance valve is out of adjustment. 2. Bad cylinder.	1. Adjust counter balance valve to equalize swing speed. 2. Replace or repair.
Cutter head does not stay in up position, creeps down	1. Counter balance valve is out of adjustment. 2. Bad cylinder.	1. Adjust counter balance valve or replace counter balance cartridge. 2. Replace or repair.

NOTICE

When returning hydraulic components for warranty make sure to box up all warranted parts to avoid additional damage while shipping. **Do not disassemble any hydraulic components which are to be warranted.** Anything which has been disassembled or tampered with will not be warranted. Items being returned must be clean. All hydraulic components must have all hosing ports plugged. Failure to plug ports will allow debris to enter components which will void warranty.

CORRECTING HYDRAULIC PROBLEMS

BEFORE ATTEMPTING ANY TYPE OF MAINTENANCE DISENGAGE CLUTCH, TURN OFF ENGINE, WAIT FOR THE CUTTER WHEEL TO COME TO A COMPLETE STOP, INSTALL THE CUTTER WHEEL LOCK PIN, DISCONNECT BATTERY, AND MAKE SURE THE IGNITION KEY IS IN YOUR POSSESSION.

COMPONENT	PROCEDURE
Checking for defective pump	1. Do not attempt to check your hydraulic pump without first consulting your local dealer or Bandit Industries.
Checking for defective motor	1. If everything checks out as correct, it may be time to check the hydraulic motor. 2. Do not attempt to check your hydraulic motor without first consulting your local dealer or Bandit Industries.

NOTICE

When returning hydraulic components for warranty make sure to box up all warranted parts to avoid additional damage while shipping. **Do not disassemble any hydraulic components which are to be warranted.** Anything which has been disassembled or tampered with will not be warranted. Items being returned must be clean. All hydraulic components must have all hosing ports plugged. Failure to plug ports will allow debris to enter components which will void warranty.

CUTTER WHEEL SECTION

DO NOT OPERATE MACHINE WITHOUT A FULL SET OF TEETH. OPERATING MACHINE WITHOUT A FULL SET OF TEETH CAN CAUSE EXCESSIVE VIBRATION AND PREMATURE BEARING FAILURE.

Use only original equipment manufacturer's teeth. The use of any other aftermarket teeth may cause damage or premature failure to the drive train.

There are twenty-four (24) teeth and pockets to a complete set on a model 2890XP. Twenty-four (24) teeth, two (2) straight pockets, two (2) reverse pockets, and twenty (20) angle pockets.

Do Not operate machine with extremely worn or broken teeth.

A locking pin is provided to hold the cutter wheel in position during tooth removal and reinstallation. Locking pin will only lock on outer teeth. **NEVER USE HAND ON CUTTER WHEEL TO HOLD IN PLACE WHILE CHANGING TEETH. BE SURE TO REMOVE LOCKING PIN BEFORE OPERATING THE MACHINE.**

TOOTH ARRANGEMENT

Inspect pockets, teeth and bolts for damage and replace as required.

When replacing pockets, always replace new pockets across from each other (180°) in order to prevent vibration.

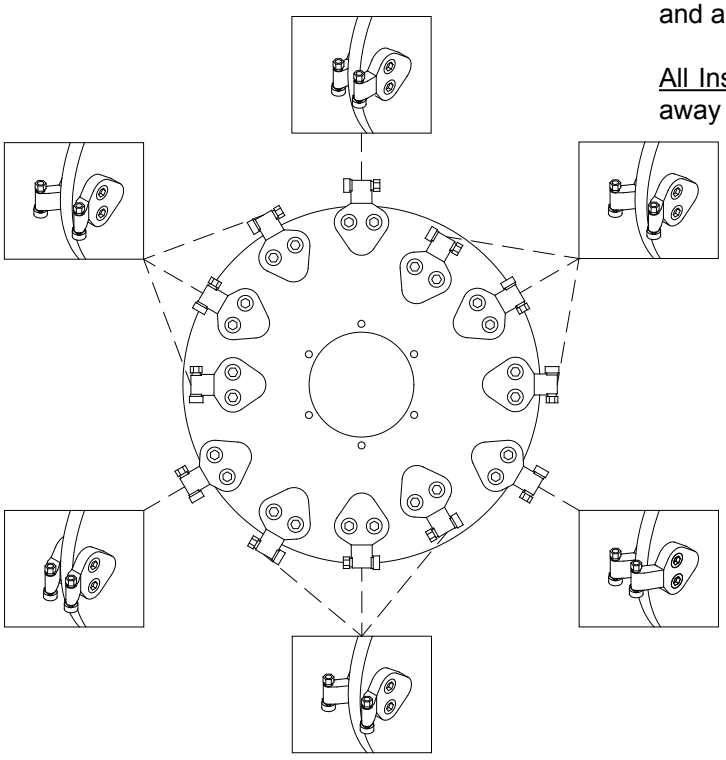
Replacement teeth must be carbide tipped and of like design as provided with the machine.

Use anti-seize on threads to help prevent bolts from "freezing up" in cutter wheel pockets.

When replacing complete set of teeth, be sure to duplicate original factory tooth arrangement. Typically a 1/2" allen key socket is required to change or torque the teeth. Torque pocket bolts to 125-150 ft.-lbs. (169-203 Nm). Torque tooth nut to 45-62 ft.-lbs. (61-84 Nm).

Outside Pockets require a mixture of straight, reverse, and angle pockets. There are three outside pockets on each side of the cutter wheel. One will have straight pockets on each side of the cutter wheel. One will have a threaded reverse pocket and a c'bored angle pocket. The other will have a c'bored reverse pocket and a threaded angel pocket.

All Inside Pockets require an angle pocket mounted away from the cutter wheel.



MODEL 2890SP

Red Tooth With Nut:	900-9907-01
Angle Pocket - Threaded:	900-9907-10
Angle Pocket - C'bored:	900-9907-09
Straight Pocket - Threaded:	900-9907-11
Straight Pocket - C'bored:	900-9907-47
Reverse Pocket - Threaded:	900-9907-49
Reverse Pocket - C'bored:	900-9907-48
Pocket Bolt:	900-9907-13
24 Tooth Kit:	900-9907-20

NOTICE Parts may not be exactly as shown.

LUBRICATION & COOLANT

1) Engine: Follow original equipment manufacturers requirements for both changing oils and filters, refer to engine manual specifications.

2) Engine Coolant: Refer to engine manufacturers manual specifications.

3) Hydraulic Reservoir Tank: Completely change hydraulic oil, suction screens, and flush the tank annually. Change hydraulic oil filter in the tank AFTER FIRST 10 HOURS OF OPERATION. Then change high pressure and charge filters every 400 hours or 3 months thereafter. There is three (3) filters located under the oil cooler housing cover and the inspection cover between the hydraulic tank and the control box. Maintain hydraulic oil level 7/8 full. See hydraulic oil requirements below. Check hydraulic oil level in tank daily.

4) Hydraulic Fluid Requirements: See pages 40 - 41 for hydraulic fluid requirements.

5) Cutter Wheel Bearings: Use an EP-2 Lithium type grease only for all bearings. Purge cutter wheel bearings daily with grease you can not over grease these bearings. These bearings are designed with a relief system that will not allow over greasing. In other words, you can not hurt the bearing seals by pumping in to much grease. Wipe off excess grease. **Excessive grease will attract dirt.**

Most of the failures related to bearings are diagnosed as “Contamination”. Contamination is caused by improper lubrication.

Especially important is proper lubrication when the grinder is setting idle. The bearings must be fully purged when shut down. Then the bearings must be again fully purged each thirty (30) days and the machine allowed to run for approximately 10 minutes. Then fully purged again before the machine is put back into operation. Failure to do this will ruin the bearings. Bearings corrode when the machine is setting idle.

The second largest cause of bearing failure is operating them at high speeds when the grease is cold. This causes the bearing race to turn on the shaft. Naturally this ruins the bearing as well as the shaft. Allow the bearings to turn at slower speeds for at least five minutes. Also check the bearing lock collar set screws for tightness each 30 days. Loose set screws allow the race to turn on the shaft. Failed bearings diagnosed as contamination or cold starts at high speed are not covered by warranty of the bearing manufacturer.

6) Bottom Pivot Bushings: Grease bottom pivot bushings daily. Use one (1) or two (2) shots of EP-2 Lithium type grease. Wipe off excess grease. **Excessive grease will attract dirt.**

7) Upper Frame Pivot Bushings: Grease upper frame pivot bushings weekly. Use one (1) or two (2) shots of EP-2 Lithium type grease. Wipe off excess grease. **Excessive grease will attract dirt.**

8) Grease Steering Axle Pivot Bushings: Grease steering axle pivot bushings weekly. Use one (1) or two (2) shots of EP-2 Lithium type grease. Wipe off excessive grease. **Excessive grease will attract dirt.**

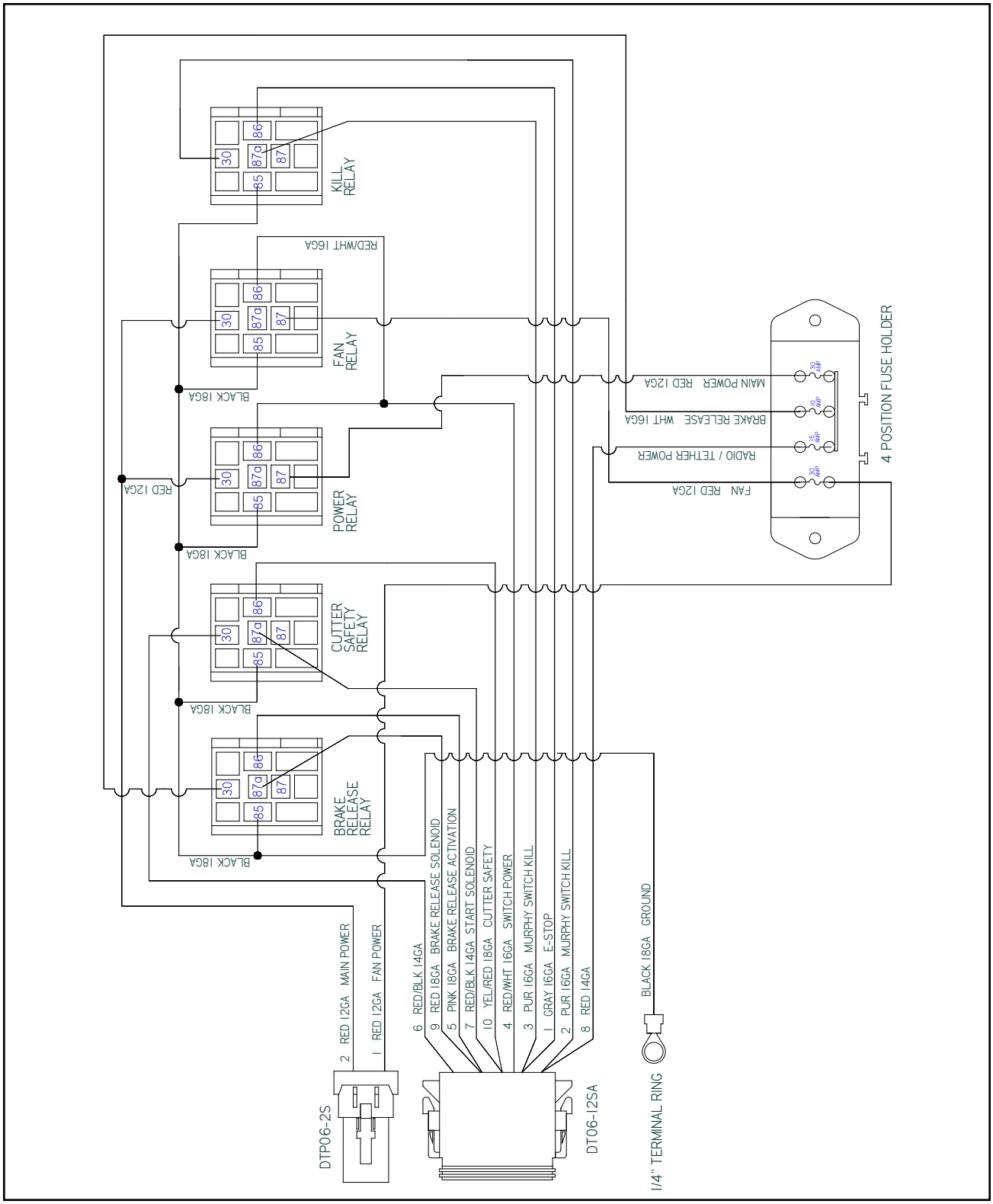
9) Grease Steering Bushings: Grease steering bushings weekly. Use one (1) or two (2) shots of EP-2 Lithium type grease. Wipe off excessive grease. **Excessive grease will attract dirt.**

10) Cylinder Lug Pin Bushings: Grease cylinder lug pin bushings weekly. Use one (1) or two (2) shots of EP-2 Lithium type grease. Wipe off excess grease. **Excessive grease will attract dirt.**

11) Grading Blade Pivot Bushings (if equipped): If the machine is equipped with an optional grading blade, grease grading blade pivot bushings monthly. Use one (1) or two (2) shots of EP-2 Lithium type grease. Wipe off excess grease. **Excessive grease will attract dirt.**

2890SP ELECTRICAL SCHEMATIC (989-8000-30)
RELAY BLOCK CONNNECTOR HARNESS

SPECIFIC SCHEMATIC FUNCTION MAY VARY DEPENDING
ON OPTIONS OR COMPONENT MANUFACTURER.



REPLACEMENT PARTS SECTION

Depending on what replacement parts you are ordering
the following information will be needed:

GRINDER COMPONENTS	ENGINE COMPONENTS	CLUTCH COMPONENTS
Serial Number	Brand	Brand
Model Number of Grinder	Engine Serial Number	Serial Number
	Engine Spec. Number	Assembly Number of Clutch

NOTICE

When ordering any replacement parts you should have the serial number (S/N) and model of the machine to ensure that you receive the correct replacement part. See page 6 for typical serial number & work order number locations.

NOTICE

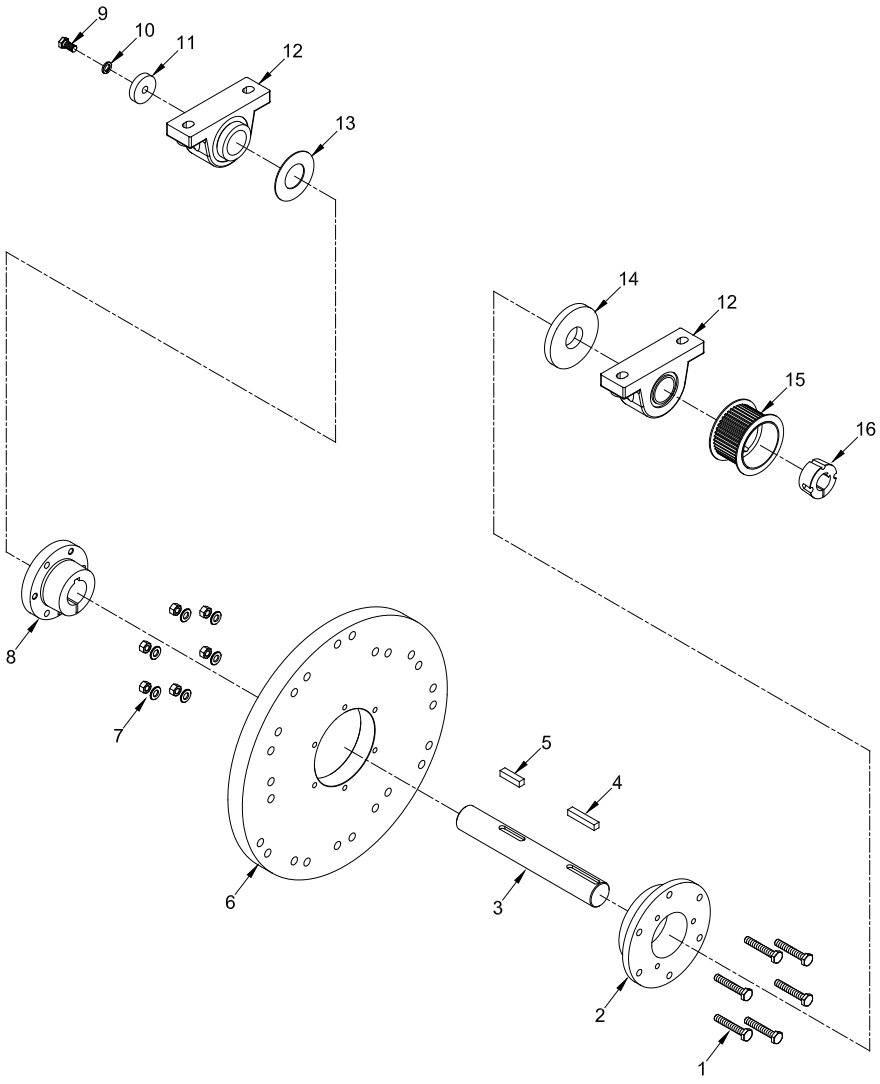
All nuts, bolts, washers, and many other components can be ordered by physical description.

NOTICE

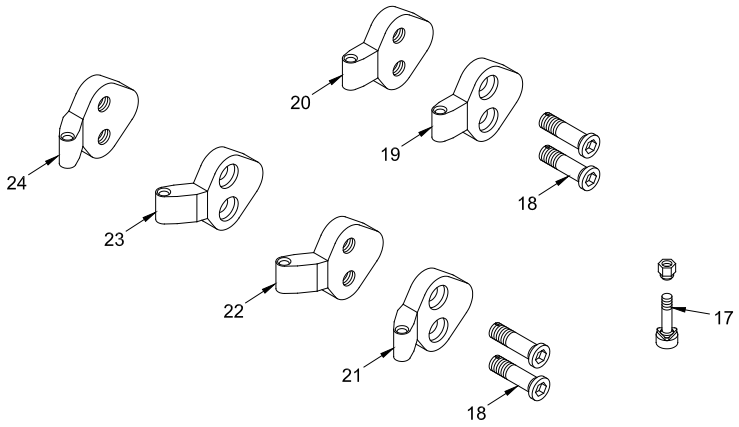
Some of the components shown in this section are for optional equipment and may not apply to every machine.

NOTICE

Bandit Industries Inc. reserves the right to make changes in models, size, design, installations and applications on any part without notification.



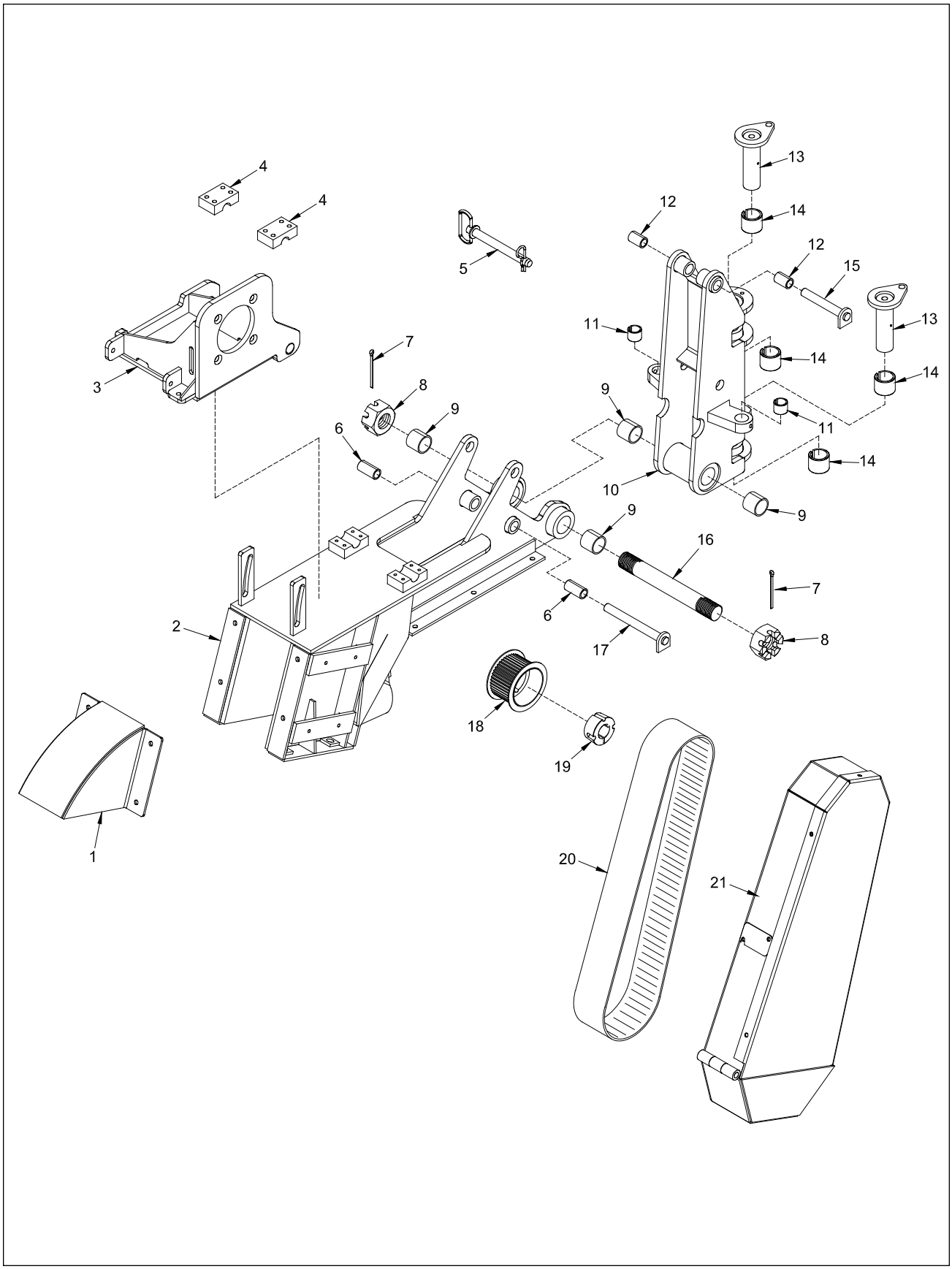
GREEN TEETH



NOTICE Parts may not be exactly as shown.

LOCATION	PART NUMBER	DESCRIPTION
1.	900-4909-32	1/2”-13NC x 3” Hex Head Bolt (Full Thread)
2.	989-301351	Cutter Wheel Mount Hub
3.	989-300753	Cutter Wheel Shaft
4.	989-300755	1/2” Key x 2 3/4”
5.	989-300754	1/2” Key x 2”
6.	992-3001-48	Cutter Wheel - 24 Tooth
7 a.	900-4906-84	1/2”-13NC Automation Lock Nut
b.	900-4909-18	1/2” Mill Carb Washer
8.	900-1908-86	Bushing For Mount Hub
9.	900-4906-70	1/2”-13NC x 1” Hex Head Bolt
10.	900-4906-86	1/2” Lock Washer
11.	989-300006	Cutter Wheel Shaft Washer
12.	900-1914-23	Cutter Wheel Bearing
13.	989-301354	Cutter Wheel Spacer
14.	989-301355	Cutter Wheel Spacer
15.	900-1911-39	Sprocket For Poly Chain Belt Drive
16.	900-1906-01	Bushing For Poly Chain Belt Drive
17.	900-9907-01	Red Tooth With Nut
18.	900-9907-13	Green Pocket Bolt
19.	900-9907-47	Straight Pocket - Counter Bored
20.	900-9907-11	Straight Pocket - Threaded
21.	900-9907-09	Angle Pocket - Counter Bored
22.	900-9907-10	Angle Pocket - Threaded
23.	900-9907-48	Reverse Angle Pocket - Counter Bored
24.	900-9907-49	Reverse Angle Pocket - Threaded
25.	900-9907-20	24 Green Teeth Kit - Includes Pockets & Bolts
26.	900-9904-57	1/2” Allen Key Socket For 1/2” Drive (Not Shown)

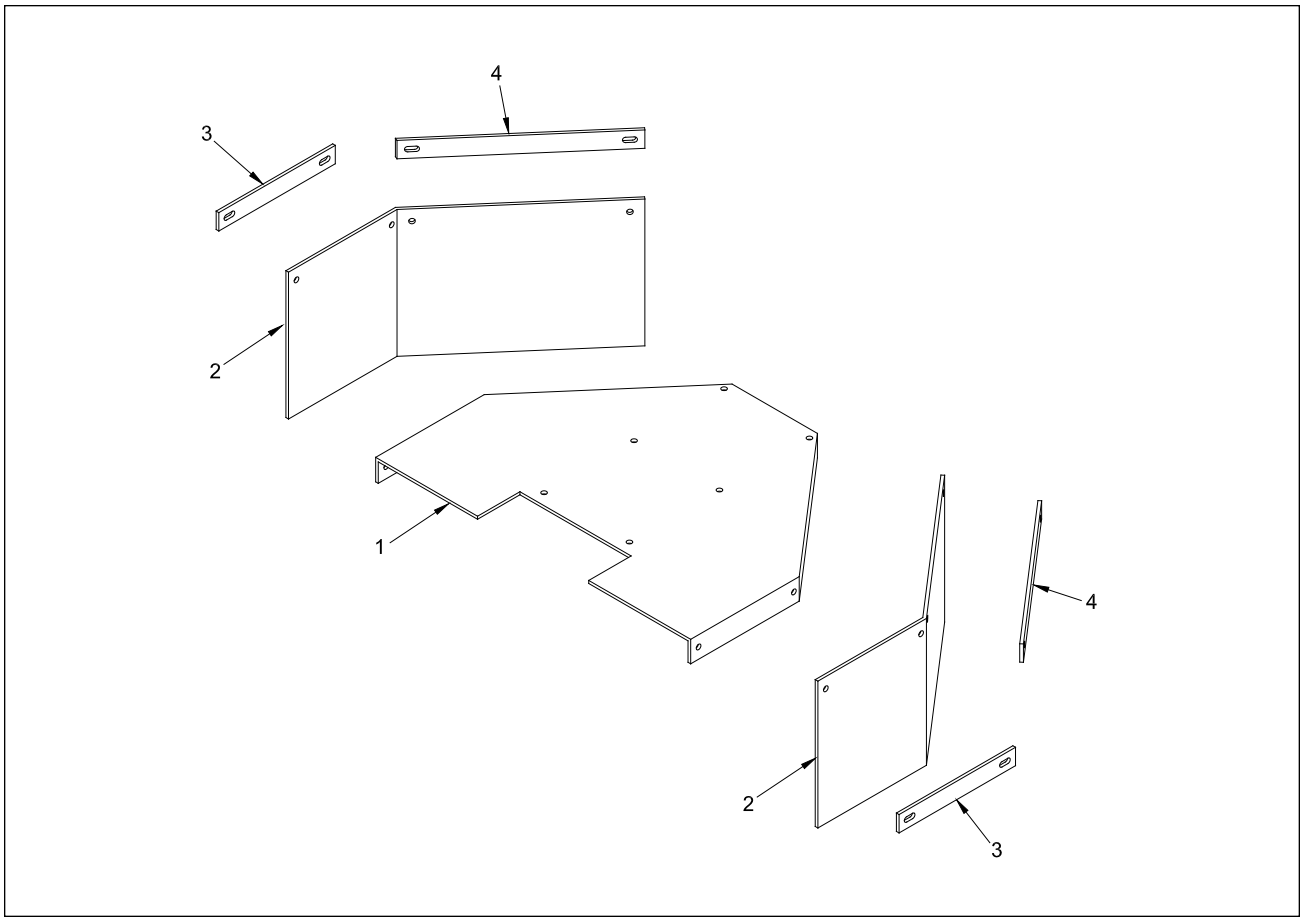
NOTICE **Nuts, bolts, washers, and all other components can be ordered by physical description.**



NOTICE Parts may not be exactly as shown.

LOCATION	PART NUMBER	DESCRIPTION
1.	989-2000-88	Cutter Wheel Guard
2.	989-200006	Upper Frame Assembly (Includes 6 & 9)
3 a.	989-100097	Hydrostatic Motor Mount
b.	900-4912-51	Jack Screw Adjuster 5/8”-18NF x 6 1/2” Hex Head Bolt
c.	900-4907-06	5/8”-18NF Hex Nut (Not Shown)
4.	989-300497	Pivot Mount Top For Hydrostatic Motor Mount
5.	900-4907-44	Lock Pin For Upper Frame
6.	900-1912-83	Split Bushing - 1” OD x 3/4” ID x 2”
7.	900-4907-60	3/16” x 3” Cotter Pin
8.	900-4907-23	1 1/2”-6NC Slotted Hex Nut
9.	900-1908-37	Split Bushing - 1 3/4” OD x 1 1/2” ID x 1 1/2”
10.	992-2000-26	Pivot Ass’y - Must Specify For 2890SP
11.	900-1911-59	Split Bushing - 1 1/4” OD x 1” ID x 1”
12.	900-1912-83	Split Bushing - 1” OD x 3/4” ID x 2”
13.	989-200038	Pivot Pin Assembly - 1 1/2” Diameter
14.	900-1912-84	Split Bushing - 1 3/4” OD x 1 1/2” ID x 1”
15.	989-200022	Top Pin For Cutter Lift Cylinder
16.	989-300982	Cutter Lift Pivot Pin
17.	989-200023	Bottom Pin For Cutter Lift Cylinder (Start 5/06)
18.	900-1915-28	Hydrostatic Motor Sprocket
19 a.	900-1911-03	Hydrostatic Motor Bushing (Start 1/10)
b.	900-1902-04	Hydrostatic Motor Bushing (Pre 1/10)
20.	900-1915-11	Poly Chain Belt
21 a.	989-1001-83	Beltshield Assembly
b.	989-2000-90	Beltshield Clean Out Door Only
c.	989-3014-28	Beltshield Slot Cover

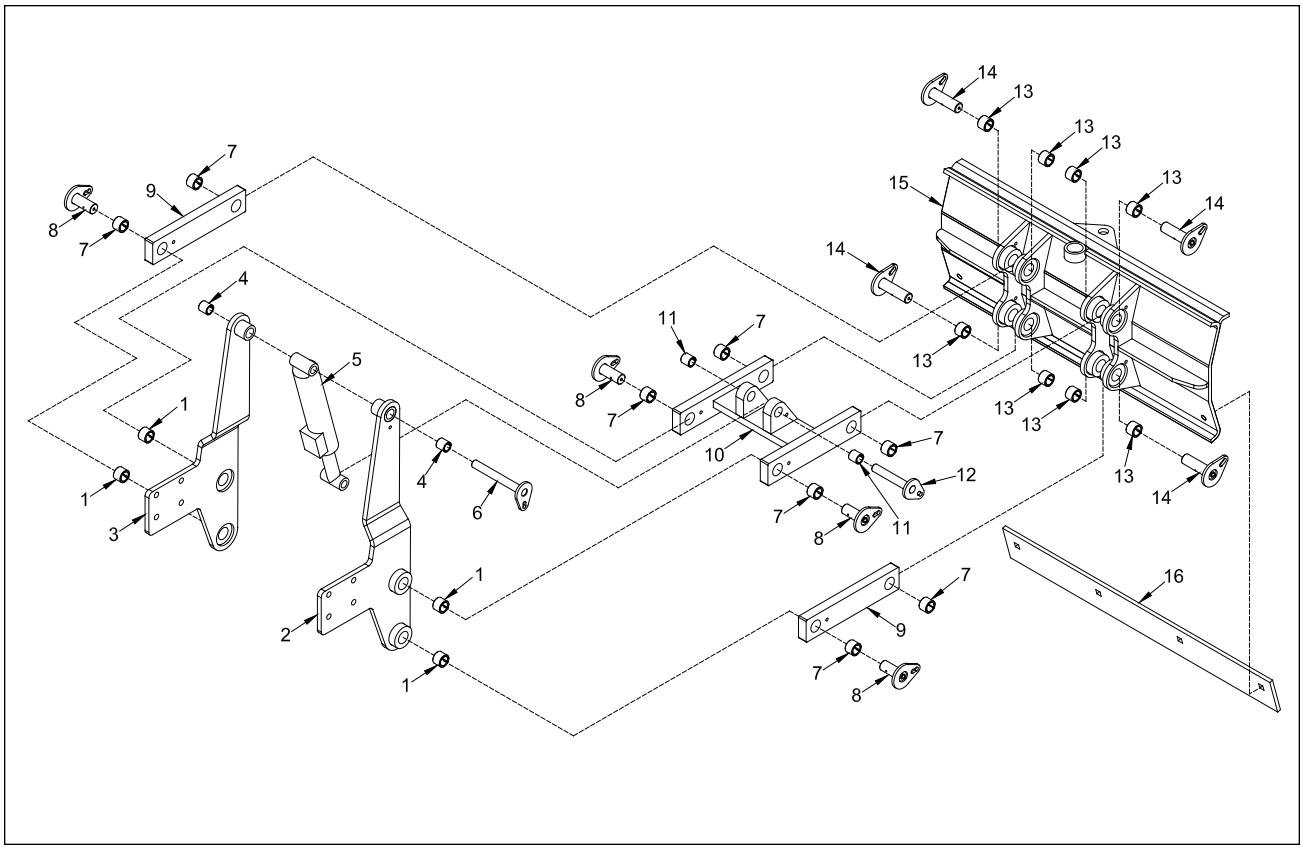
NOTICE **Nuts, bolts, washers, and all other components can be ordered by physical description.**



LOCATION	PART NUMBER	DESCRIPTION
1.	992-3000-97	Chip Pan
2.	992-3001-53	Chip Pan Curtain
3.	992-3001-14	Chip Pan Strap
4.	989-300861	Chip Pan Strap

NOTICE **Nuts, bolts, washers, and all other components can be ordered by physical description.**

NOTICE Parts may not be exactly as shown.

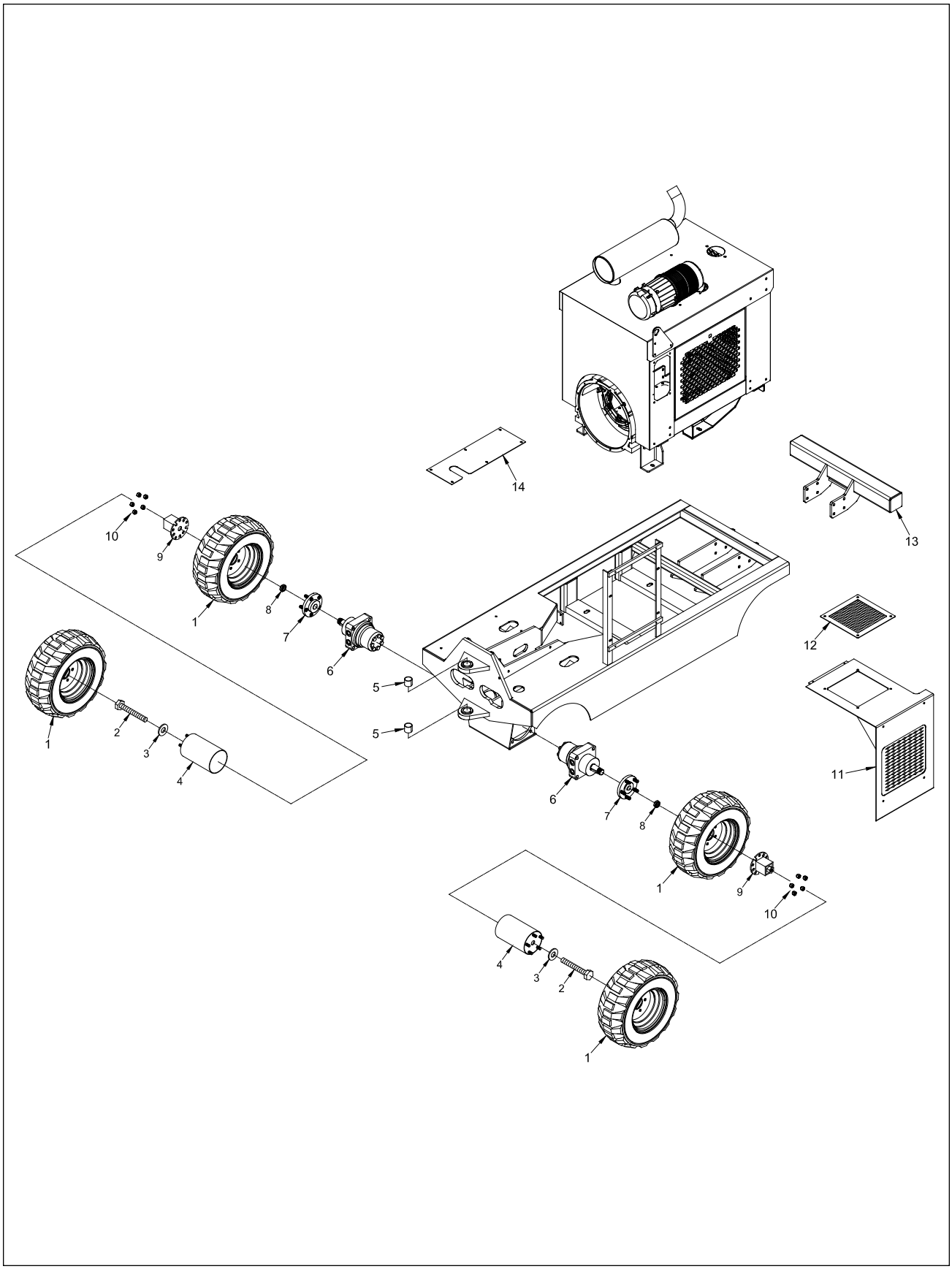


LOCATION	PART NUMBER	DESCRIPTION
1.	900-1902-42	Split Bushing - 1 1/4” OD x 1” ID x 1”
2.	992-2000-32	Scrape Blade Mount - Road Side (Includes #1 & 4)
3.	992-2000-33	Scrape Blade Mount - Curb Side (Includes #1 & 4)
4.	900-1912-83	Split Bushing - 1” OD x 3/4” ID x 2”
5.	900-3941-35	Cylinder For Scrape Blade
6.	992-2000-24	Upper Cylinder Pin
7.	900-1902-42	Split Bushing - 1 1/4” OD x 1” ID x 1”
8.	989-2001-04	Blade Pin - Arm To Mount
9.	989-300636	Scrape Blade Arm (Includes #7)
10.	992-2000-22	Scrape Blade Middle Arm (Includes #7 &11)
11.	900-1908-38	Split Bushing - 1” OD x 3/4” ID x 1”
12.	992-2000-23	Lower Cylinder Pin
13.	900-1902-42	Split Bushing - 1 1/4” OD x 1” ID x 1”
14.	989-2001-03	Blade Pin - Arm To Blade
15.	989-100091	Scrape Blade Assembly (Includes #13 &16)
16.	989-300625	Scrape Blade Wear Bar

NOTICE **Nuts, bolts, washers, and all other components can be ordered by physical description.**

NOTICE Parts may not be exactly as shown.

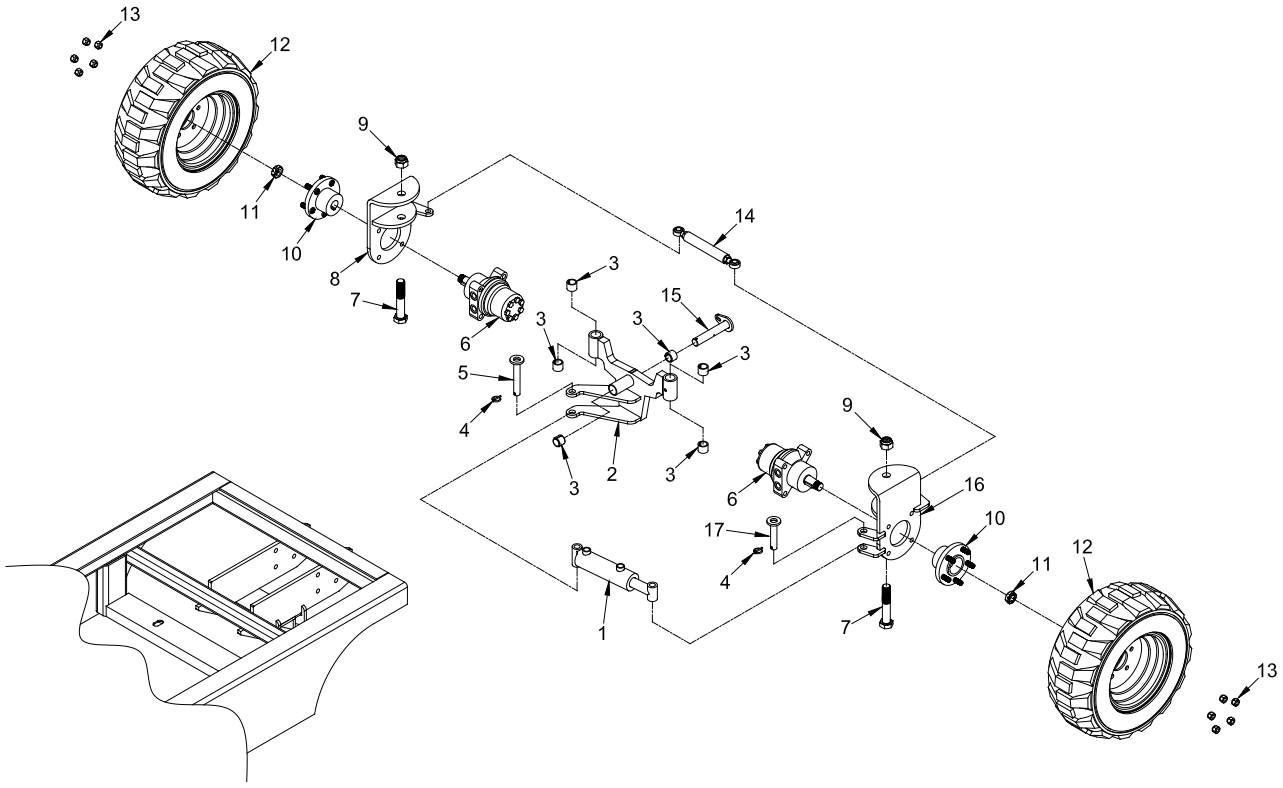
Bandit



NOTICE Parts may not be exactly as shown.

LOCATION	PART NUMBER	DESCRIPTION
1 a.	900-5908-54	20.5” x 8” - 10” Tire & 5 Bolt Rim (Specify Left Or Right)
b.	900-5908-52	20.5” x 8” - 10” Industrial Lug Tire Only
c.	900-5908-53	10” x 6”, 5 Bolt Rim Only
2.	900-4913-38	1”-8NC x 5 1/2” Hex Head Bolt
3 a.	900-4900-79	1” Flat Washer
b.	900-4908-99	1” Lock Washer (Not Shown)
4 a.	992-2000-62	Dual Wheel Spacer (Start W/O 43744)
b.	992-2000-06	Dual Wheel Spacer (Pre W/O 43744)
c.	992-1000-41	Dual Wheel Spacer Kit - Includes 2, 3, 4a, & 9a (Start W/O 43744)
d.	992-1000-03	Dual Wheel Spacer Kit - Includes 2, 3, 4b, & 9b (Pre W/O 43744)
5.	900-1908-37	Split Bushing - 1 3/4” OD x 1 1/2” ID x 1 1/2”
6.	900-3928-36	Hydraulic Motor With Brake
7 a.	992-1000-30	Wheel Hub Assembly
b.	900-5905-97	1/2”-20NF Stud Only
8.	900-3938-50	1”-20UNEF Hex Slotted Nut
9 a.	992-2000-62	Dual Wheel Hub (Start W/O 43744)
b.	992-2001-42	Dual Wheel Hub (Pre W/O 43744)
10.	900-4914-00	1/2”-20NF Lug Nut
11.	992-2000-42	Cooler Housing Cover
12.	992-2000-37	Cooler Access Door
13.	992-2000-27	Rear Bumper Assembly
14.	992-3001-47	Inspection Cover

NOTICE **Nuts, bolts, washers, and all other components can be ordered by physical description.**



NOTICE Parts may not be exactly as shown.

LOCATION	PART NUMBER	DESCRIPTION
1.	900-3937-68	Steering Axle Cylinder
2.	992-2000-15	Steering Axle Assembly (Includes 3)
3.	900-1902-42	Split Bushing - 1 1/4” OD x 1” ID x 1”
4.	900-4907-28	Lynch Pin
5.	993-200023	Steering Cylinder Pin - 4” Long
6.	900-3941-16	Hydraulic Motor - Steering Axle
7.	900-4913-38	1”-8NC x 5 1/2” Hex Head Bolt
8.	992-2000-18	Right Steering Motor Mount Assembly
9.	900-4900-80	1”-8NC Nylon Insert Hex Lock Nut
10 a.	992-1000-30	Wheel Hub Assembly
b.	900-5905-97	1/2”-20NF Stud Only
11.	900-3938-50	1”-20UNEF Hex Slotted Nut
12 a.	900-5908-54	20.5” x 8” - 10” Tire & 5 Bolt Rim (Specify Left Or Right)
b.	900-5908-52	20.5” x 8” - 10” Industrial Lug Tire Only
c.	900-5908-53	10” x 6”, 5 Bolt Rim Only
13.	900-4914-00	1/2”-20NF Lug Nut
14 a.	992-1000-40	Tie Rod Assembly
b.	900-4912-76	Tie Rod End - Right
c.	900-4912-75	Tie Rod End - Left
d.	992-3000-89	Tie Rod Only (No Ends)
e.	900-4909-51	5/8”-18NF Hex Jam Nut
15 a.	992-2000-16	Steering Axle Pivot Pin
b.	900-4911-75	3/16” x 2” Cotter Pin (Not Shown)
c.	900-4913-89	3/8”-16NC x 3/4” Hex Head Bolt (Not Shown)
d.	900-4906-62	3/8” Lockwasher (Not Shown)
e.	900-4906-65	3/8” Flat Washer (Not Shown)
16.	992-2000-17	Left Steering Motor Mount Assembly
17.	993-200022	Steering Cylinder Pin - 5 1/8” Long

NOTICE **Nuts, bolts, washers, and all other components can be ordered by physical description.**

1.

2.

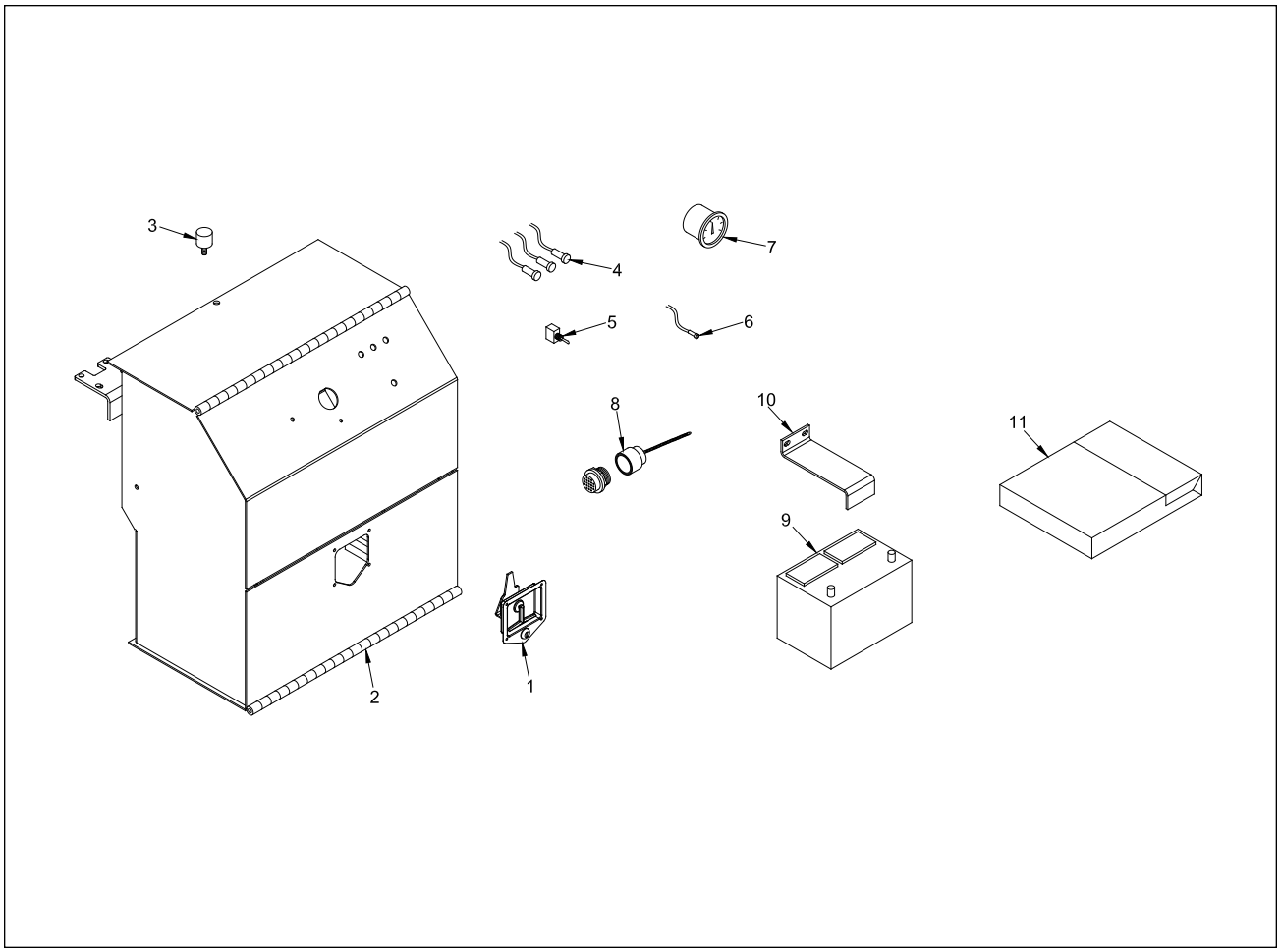
3.

4.

5.

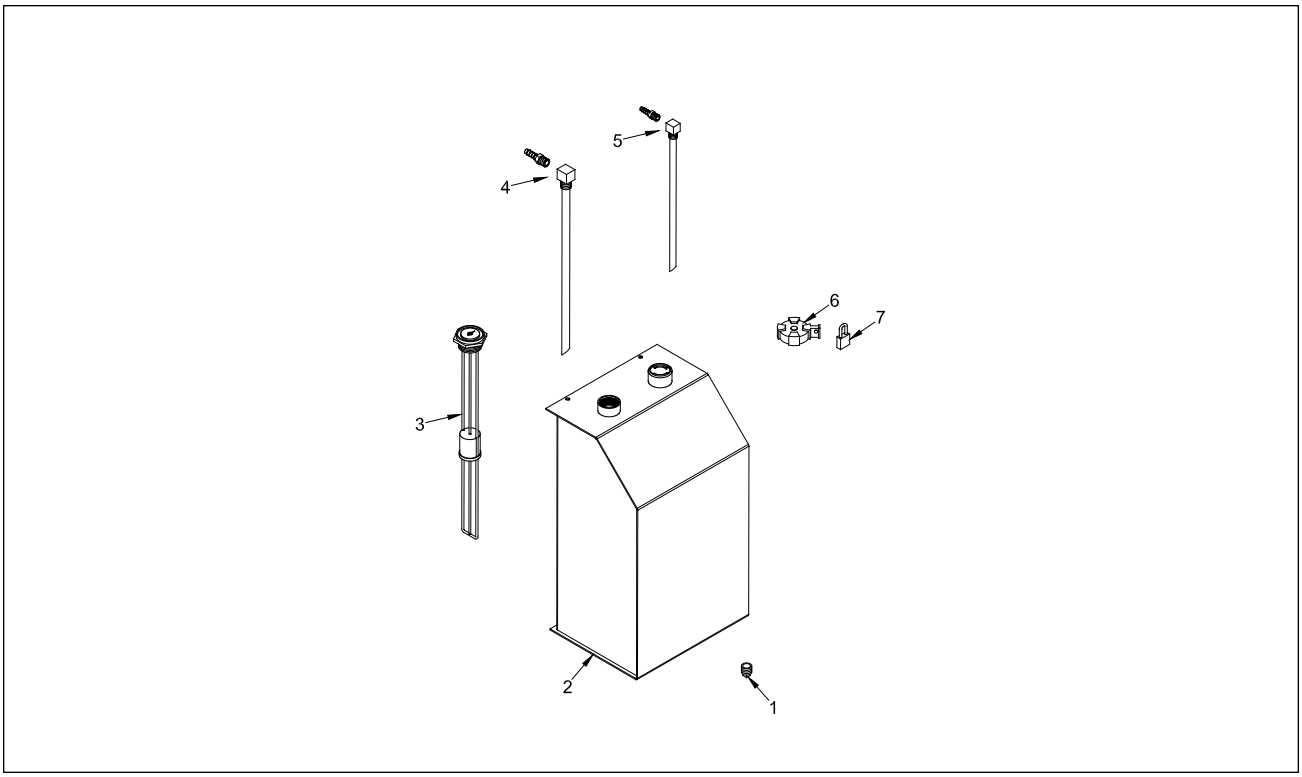
LOCATION	PART NUMBER	DESCRIPTION
1.	900-2919-05	Transmitter - Omnex
2.	900-2919-06	Receiver - Omnex
3.	900-2921-00	Tether
4.	900-2908-63	Cap For Tether Jack (Not Shown)
5.	900-2908-98	12V Relay
6.	900-2919-79	Radio Remote Kit - Omnex (includes 1 & 2)

NOTICE Parts may not be exactly as shown.



LOCATION	PART NUMBER	DESCRIPTION
1 a.	900-4908-19	“T” Handle Latch
b.	CH545	Key For “T” Handle Latch
2 a.	992-2000-11	Radio Control Box Ass’y (Specify Kubota or Cat Engine)
b.	992-2000-53	Manual Control Box Ass’y (Specify Kubota or Cat Engine)
3.	900-9905-35	Rubber Stop
4.	900-2917-80	Filter Clog Indicator Light - Amber
5 a.	900-2910-47	Remote / Tether Toggle Switch
b.	900-2909-81	Rubber Boot For Toggle Switch (Not Shown)
6.	900-2917-10	Remote Link Light - Green
7 a.	900-2909-79	Tach / Hour Meter
b.	900-2903-76	Hour Meter
8 a.	900-2908-63	Cap And Chain For Tether Jack
b.	900-2911-08	Tether Jack
9.	900-6900-02	660 CCA Battery
10.	992-3001-27	Battery Strap
11.	900-9902-07	Manual Holder

NOTICE Parts may not be exactly as shown.

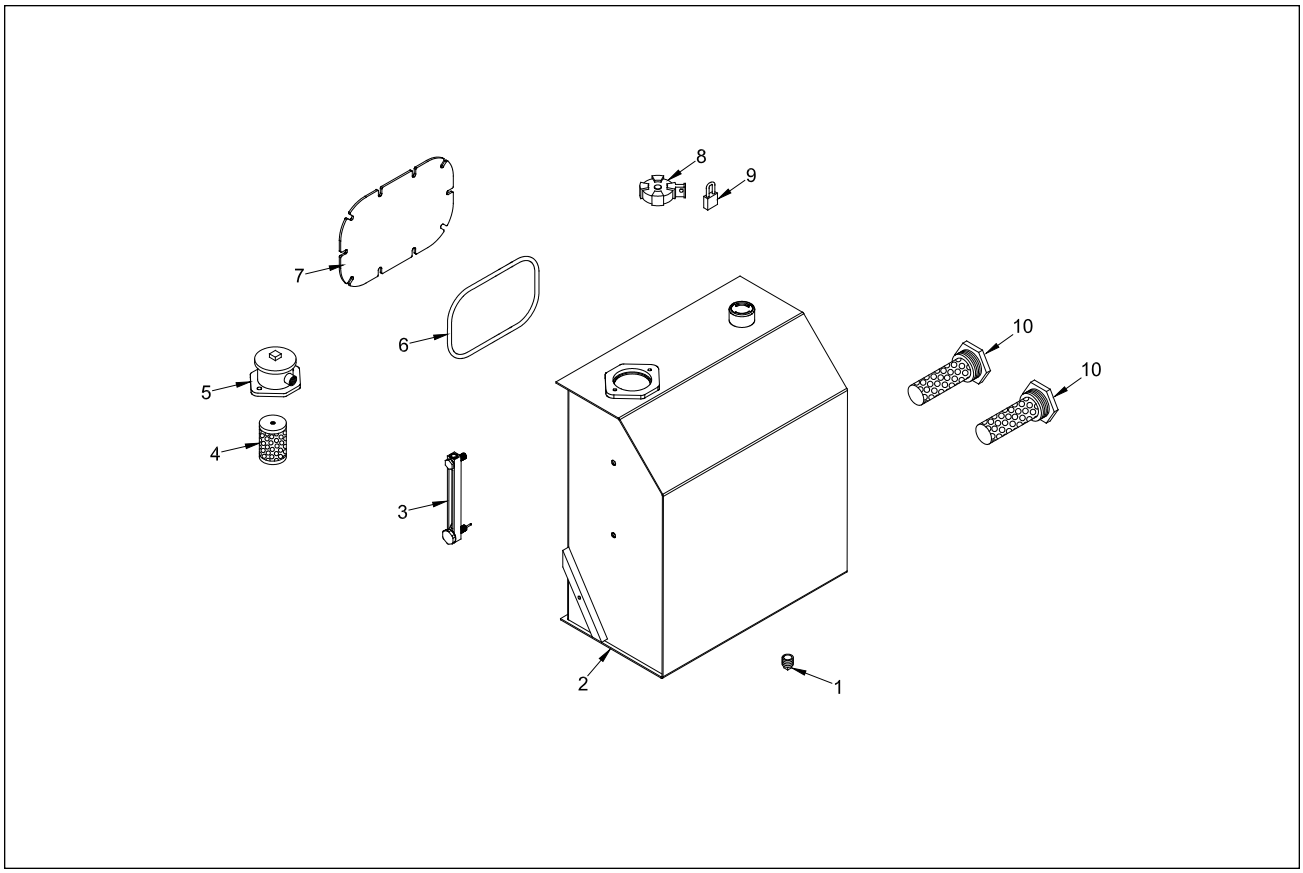


LOCATION	PART NUMBER	DESCRIPTION
1.	900-3922-60	Magnetic Drain Plug
2.	992-2000-03	Fuel Tank Assembly
3 a.	900-2903-95	Rochester Sight Gauge For Fuel Tank - 24”
b.	900-2903-55	Face For Sight Gauge Only
4 a.	900-3926-84	Suction Drop Pipe Ass’y w/o Barb (1/2” NPTF x 3/8” NPTF)
b.	900-3926-83	3/8” NPTF To 1/2” Hose Barb
c.	900-3926-82	3/8” NPTF To 3/8” Hose Barb
d.	900-3931-53	3/8” NPTF To 5/16” Hose Barb
5 a.	900-3909-00	Return Drop Pipe Ass’y w/o Barb (3/8” NPTF x 1/4” NPTF)
b.	900-3925-48	1/4” NPTF To 3/8” Hose Barb
c.	900-3909-01	1/4” NPTF To 5/16” Hose Barb
d.	900-3909-02	1/4” NPTF To 1/4” Hose Barb
6 a.	900-3941-31	Fuel (Diesel) Locking Fill Cap - Green
b.	900-3941-30	Fuel (Gasoline) Locking Fill Cap - Black
c.	900-3935-06	Keeper For Fuel & Hydraulic Locking Fill Cap (Not Shown)
7 a.	900-4912-40	Padlock With Short Shackle For Tank With Locking Cap
b.	P812	Key For Padlock (Not Shown)

NOTICE Components vary with fuel type.
Specify gas or diesel when ordering fuel tank components.

NOTICE Tank assemblies vary with options.
Specify all options when ordering.

NOTICE Parts may not be exactly as shown.



LOCATION	PART NUMBER	DESCRIPTION
1.	900-3922-60	Magnetic Drain Plug
2.	992-2000-02	Hydraulic Tank Assembly With Internal Hydraulic Filter
3.	900-3901-78	Level / Temperature Gauge
4.	900-3926-51	Filter Element Only
5 a.	900-3925-97	In-Tank Return Filter Assembly - Includes Filter Element
b.	900-3925-98	Drop Tube
c.	900-3925-99	O-Ring For Drop Tube
6.	900-7901-32	Rubber O-ring
7.	989-300911	Clean Out Door - Hydraulic Tank
8 a.	900-4912-40	Padlock With Short Shackle For Tank With Locking Cap
b.	P812	Key For Padlock (Not Shown)
9 a.	900-3941-30	Hydraulic Locking Fill Cap - Black
b.	900-3935-06	Keeper For Fuel & Hydraulic Locking Fill Cap (Not Shown)
10.	900-3900-07	Suction Screen

NOTICE Tank assemblies vary with options.
Specify all options when ordering.

NOTICE Parts may not be exactly as shown.

1.

HYDRAULIC RETURN FILTER

Filter Element Only: 900-3926-51
In-Tank Return Filter Ass'y: 900-3925-97

2.

CUTTER PUMP CHARGE FILTER

Filter Element Only: 900-3944-57
Charge Filter Ass'y: 900-3942-83

3.

DRIVE HIGH PRESSURE FILTER &
AUXILIARY HIGH PRESSURE FILTER

Filter Element Only: 900-3931-99
High Pressure Filter Ass'y: 900-3935-44

4.

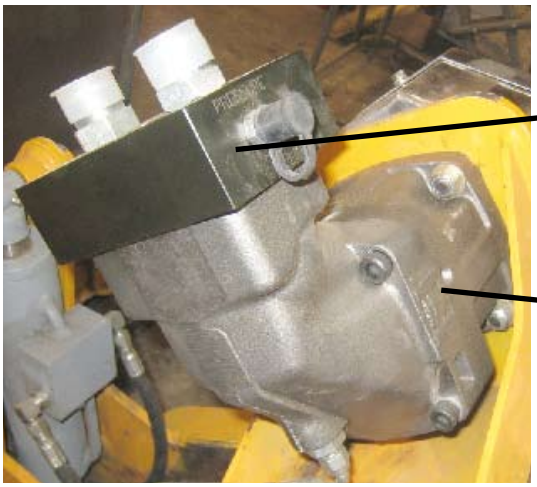
Suction Screen:
900-3900-07

5.

Oil Cooler:
900-3940-94

NOTICE Parts may not be exactly as shown.

1.



Cutter Head Manifold:
900-3943-13

Cutter Head Motor:
900-3946-18

2.

Cutter Head Pump:
Refer To Check Sheet

Drive / Auxiliary Pump:
Refer To Check Sheet

3.

Manifold Valve Assembly:
900-3946-70

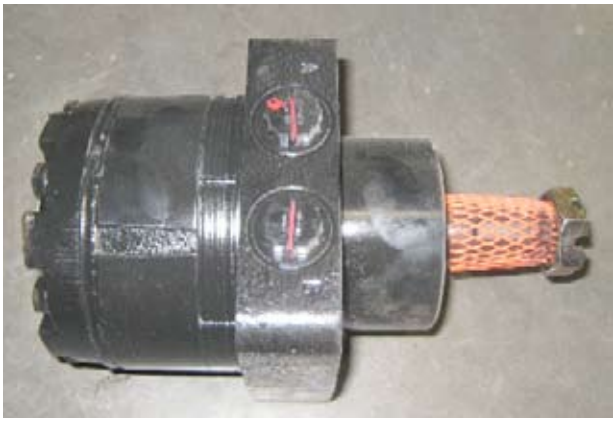
Torque solenoid retainer nuts to maximum of 20 in.-lbs. (2.2 Nm)

NOTICE Parts may not be exactly as shown.

1.

Drive Wheel Motor With Brake:
900-3928-36

2.



Drive Wheel Motor Without Brake:
900-3941-16

3.

Proportionator For Drive Wheel Motors:
900-3932-00

4.

Double Counter Balance: 900-3918-65
Counter Balance Relief Only: 900-3929-09

NOTICE Parts may not be exactly as shown.

1.

Adjustable Flow Control (Drive & Swing):
900-3944-18

2.

1/4” Ball Valve For Brake Release:
900-3943-65

3.

Cutter Head Lift Cylinder: 900-3937-17
Counter Balance Relief: 900-3944-87

4.

Swing Cylinder: 900-3937-18
Counter Balance Relief: 900-3944-87

5.

Steering Cylinder: 900-3937-68

6.

Scrape Blade Cylinder: 900-3941-35
Counter Balance Relief: 900-3944-87

NOTICE Parts may not be exactly as shown.

SERVICE RECORD

DATE	DESCRIPTION	AMOUNT