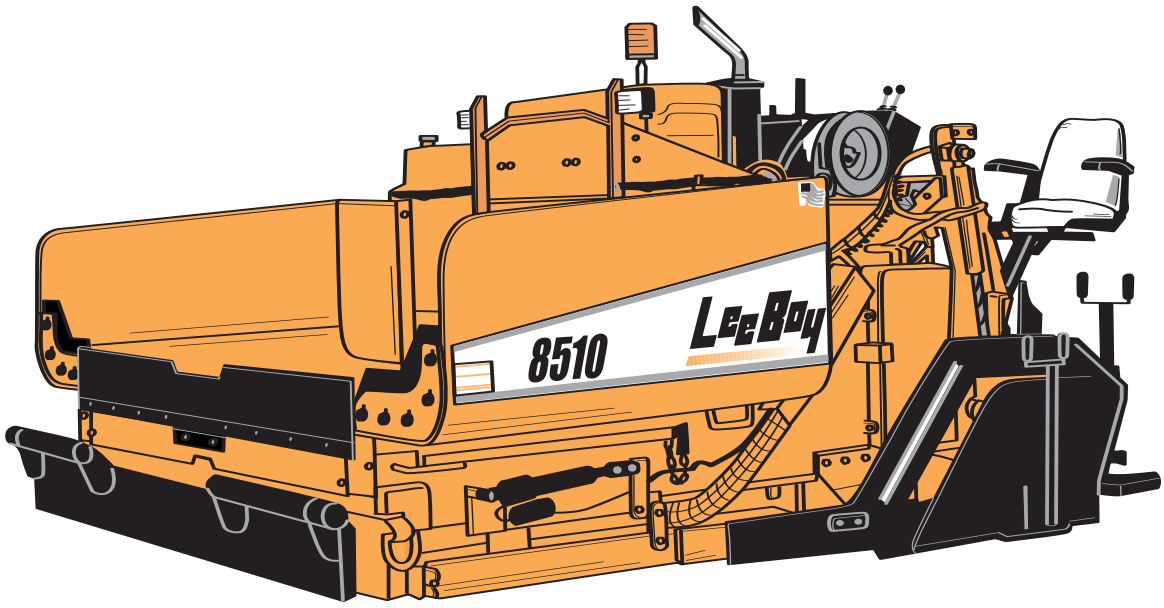
LeeBoy

OPERATIONS, SERVICE AND PARTS MANUAL



8510 CONVEYOR PAVER
Manual No. 986947
For Units with Serial No. 44987 and higher
Published 10-03-06

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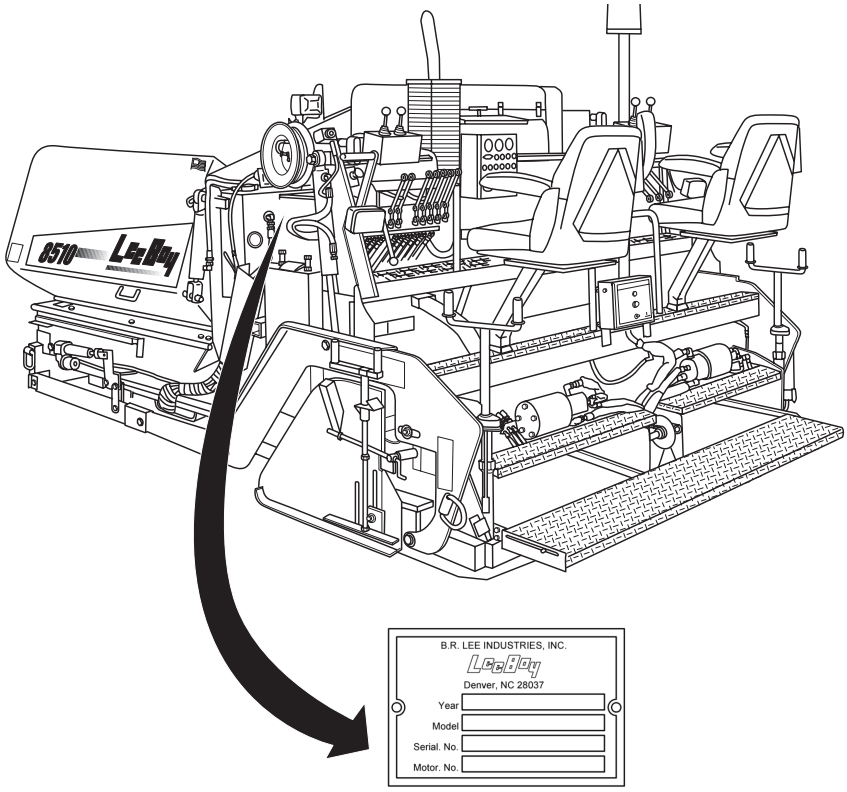
USERS' REFERENCE GUIDE



DELIVERY DATE_____

UNIT SERIAL NUMBER_____

ENGINE TYPE_____

ENGINE NUMBER_____

DEALER'S NAME AND ADDRESS

_____

_____

PHONE NUMBER_____

EQUIPMENT HOURS_____

SERVICE MANAGER _____

500 Lincoln County Parkway Ext.
Lincolnton, NC 28092
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LIMITED WARRANTY
POLICY AND PROCEDURES

WARRANTY

1. If a defect in material or workmanship is found and the authorized dealer is notified during the warranty period, LeeBoy will repair or replace any part or component of the unit or part that fails to conform to the warranty during the warranty period.
2. The warranty date will begin upon the completion of the warranty form by the initial customer and will expire after twelve (12) months have passed. The Warranty Card should be filled out within (10) days of delivery of the unit.
3. Engines are warranted by their manufacturers and may have warranty coverage that differs from that of LeeBoy.
4. Replacement parts furnished by LeeBoy are covered for the remainder of the warranty period applicable to the unit or component in which such parts are installed.
5. LeeBoy has the right to repair any component or part before replacing it with a new part.
6. All new replacement parts purchased by a LeeBoy dealer will carry a six (6) month warranty. Remanufactured parts purchased by a LeeBoy dealer will carry a ninety (90) day warranty.

ITEMS NOT COVERED

LeeBoy is not responsible for the following:

1. Charges for travel time, mileage, or overtime.
2. Charges related to transporting the product to and from the place at which warranty work is performed.
3. Airfreight charges related to transporting repair parts to the place at which warranty work is performed.
4. All used units or used parts of any kind.
5. Repairs due to normal wear and tear, or brought about by abuse or lack of maintenance of the equipment, except for premature failures, conveyor chains, polytrack pads, and track rails.
6. Attachments not manufactured or installed by LeeBoy.
7. Liability for incidental or consequential damages of any type including, but not limited to lost profits or expenses of acquiring replacement equipment.
8. Miscellaneous charges.

LIMITATIONS

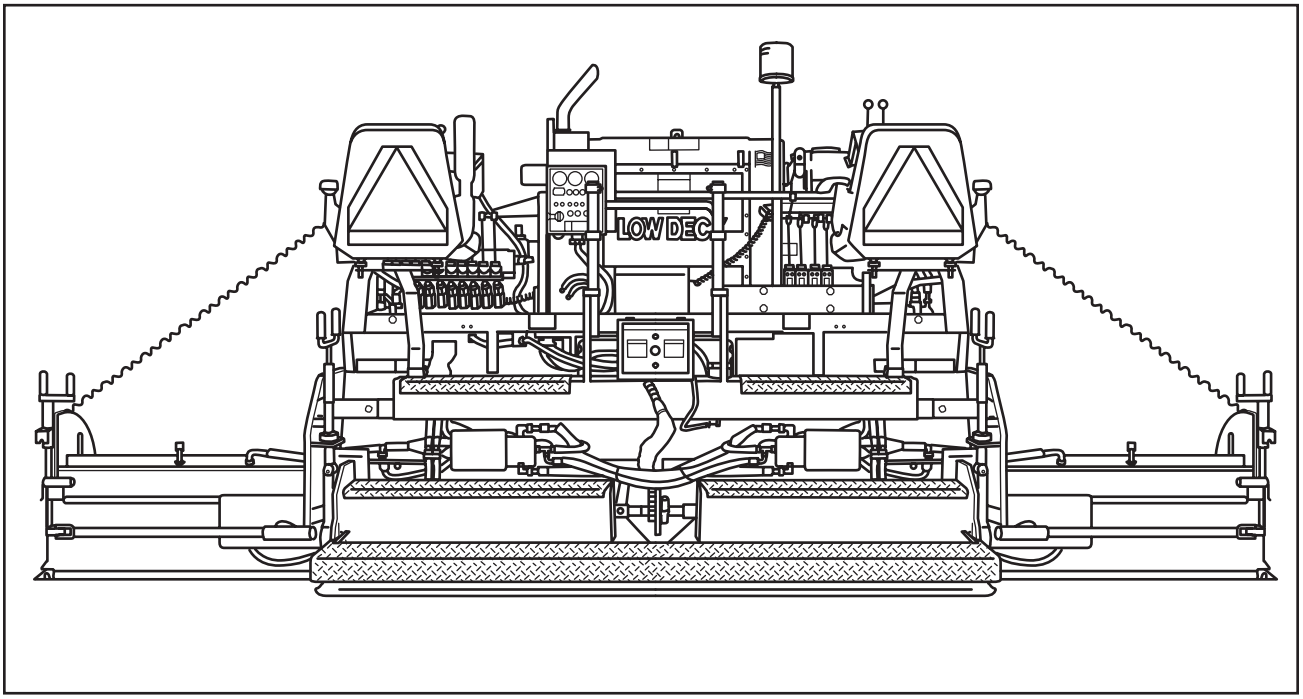
LeeBoy has no obligation under this warranty for:

1. Any defects caused by misuse, misapplication, negligence, accident or failure to maintain or use in accordance with the most current operating instructions.
2. Unauthorized alterations.
3. Defects or failures caused by any replacement parts or attachments not manufactured by or approved by LeeBoy.
4. Failure to conduct normal maintenance and operating service, including without limitation, providing lubricants, coolant, fuel, tune-ups, inspections or adjustments.
5. Unreasonable delay, as established by LeeBoy, in making the applicable units or parts available upon notification of a service notice ordered by LeeBoy.
6. The warranty responsibility on all engines rests with the respective manufacturer.
7. LeeBoy may have support agreements with some engine manufacturers for warranty and parts support.

OTHER WARRANTIES

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESSED STATUTORY AND IMPLIED WARRANTIES APPLICABLE TO UNITS ENGINES, OR PARTS WITHOUT LIMITATION, ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE OR PURPOSE. IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT OR WARRANTY, OR ALLEGED NEGLIGENCE OR LIABILITY WITHOUT FAULT, SHALL LEEBOY BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOSS OF PROFIT OR REVENUE, COST OF CAPITAL, COST OF SUBSTITUTED EQUIPMENT, FACILITIES OR SERVICES DOWNTIME COSTS, LABOR COSTS OR CLAIMS OF CUSTOMERS, PURCHASERS OR LESSEES FOR SUCH DAMAGES.

8510 CONVEYOR PAVER
OPERATION, SERVICE AND PARTS MANUAL

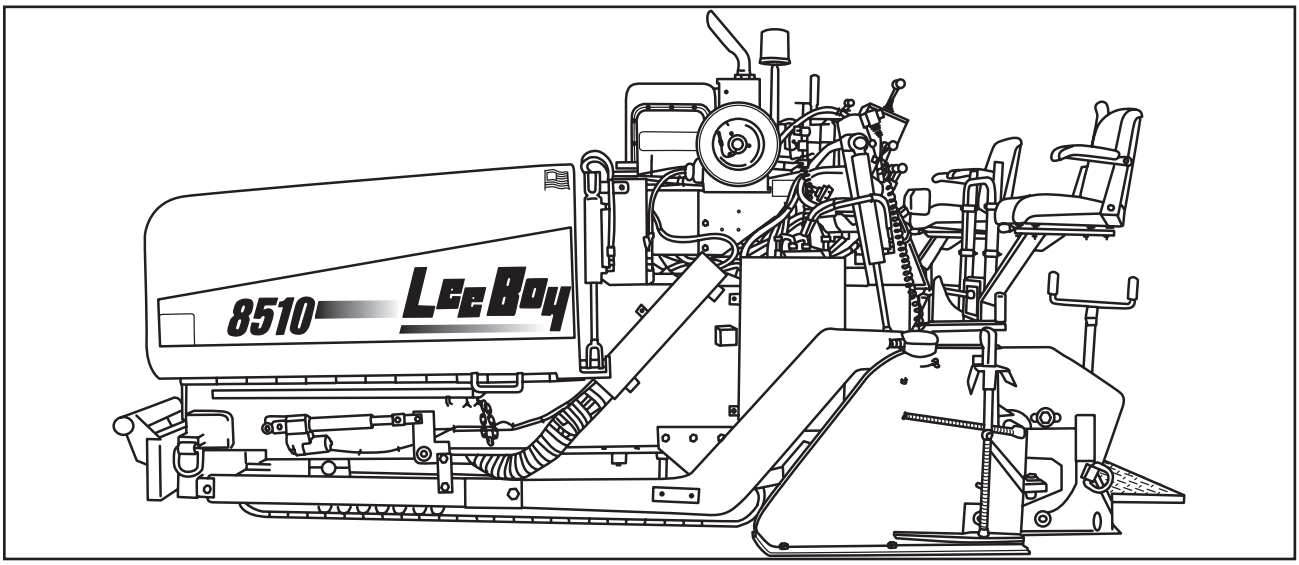


REAR VIEW

This manual should be used with all related supplemental books, engine and transmission manuals, and parts books. Related Service Bulletins should be reviewed to provide information regarding some of the recent changes.

If any questions arise concerning this publication or others, contact your local LeeBoy Distributor for the latest available information.

Contents of this manual are based on information in effect at the time of publication and are subject to change without notice.



SIDE VIEW

8510 CONVEYOR PAVER

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Section 1
INTRODUCTION & SAFETY

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FORWARD

The LeeBoy 8510 Conveyor Paver is a maneuverable asphalt paver designed for job-site productivity and superior mat quality with the Legend Screed System. It is equipped with electric and manual thickness controls and an 8 ft to 15 ft (2.8 m to 4.5 m) wide screed. The 8510 Conveyor Paver is capable of placing bituminous base, binder and surface courses, such as lime or Portland cement, stabilized sub-base, and graded aggregate materials up to a thickness of 6 inches. The Paver has a production rate of approximately 250 tons per hour.

The 8510 Conveyor Paver can handle jobs as small as driveways and small parking lots, or as large as secondary roads and large parking areas. The 8510 Conveyor Paver features heavy-duty construction, larger augers and larger receiving hopper for increased production. The 8510 Conveyor Paver features dual joystick steering with either high deck or low deck configuration. The 8510 Conveyor Paver is equipped with either propane fired burners or optional electric screed heat on its Legend Screed System for enhanced mat quality.

This manual contains the correct operation and routine maintenance procedures needed by the owner/operator for the safe and efficient use of the Leeboy 8510 Conveyor Paver. In order to maximize the performance and efficiency of the Paver, it is VERY IMPORTANT that the owner/operator and maintenance personnel read this manual thoroughly before operating or servicing the machine.

Always keep this manual in a convenient place for instant reference and NEVER attempt to make repairs or adjustments that you do not fully understand. If you require additional information or service, contact your authorized Leeboy dealer. Always give your dealer the Serial Number of your machine when ordering parts or when requesting service or other information.

The technical information found in this manual was correct at the time it was approved for publication. However, due to a continuous program of research and development, some procedures, specifications and parts may be altered in a constant effort to update and improve our products.

Leeboy reserves the right to make design or specification changes without prior notification and to make improvements without incurring an obligation to add them to any machine in existence. Please contact your local authorized Leeboy dealer if you require further assistance.

RECEIVING THE 8510 CONVEYOR PAVER

The Paver was inspected thoroughly at the factory. However, road hazards or vandalism may occur during transport and result in damage. Inspect the machine as outlined below and perform necessary repairs before placing the machine in service.

1. Check engine oil level as shown in the manufacturer's manual.
2. Check fuel tank, cooling system, engine oil, and hydraulic reservoir for proper levels and contaminants. If contaminants are suspected, flush and fill the system.
3. Read this manual and understand the contents.
4. Check all hydraulic functions and repair or adjust as necessary. Have any repairs or adjustments performed by a qualified mechanic or consult local dealer.
5. Check for missing parts. If parts are missing or Paver is damaged, consult the local dealer.

OVERVIEW OF THE MANUAL

GENERAL INFORMATION

This manual contains a description of the 8510 Conveyor Paver and its major components, specification information, a description of the controls, operating procedures, maintenance and replacement procedures, and parts lists for the 8510 Conveyor Paver.

INTRODUCTION AND SAFETY

Important Safety precautions related to specific areas of the machine and workplace are included to insure your safety, the safety of those around you, and the correct operation of the machine.

SPECIFICATIONS

Refer to SPECIFICATIONS, Section 2 in this manual, for all major system specifications and detailed information on this machine's components and controls.

OPERATION

Refer to OPERATION, Section 3 in this manual, for information needed to operate the 8510 Conveyor Paver safely. The operator of this equipment should READ, UNDERSTAND, and FOLLOW the operating instructions. Cautions are provided in the front of this manual and in the OPERATION section.

CAUTION: **Do not attempt to operate the 8510 Conveyor Paver unless fully trained in machine operation. Only authorized personnel should operate the 8510 Conveyor Paver. All instructions provided in this manual, and on the machine decals must be followed to prevent damage to the equipment and/or injury to operating personnel.**

MAINTENANCE AND TROUBLESHOOTING

Refer to MAINTENANCE, Section 4 of this manual, for all maintenance and repair procedures, as well as charts and tables containing important machine-specific information.

CAUTION: **All maintenance instructions provided in this manual should be followed to insure the safety of the personnel performing the maintenance and to prevent damage to the machine.**

PRECAUTIONARY INSTRUCTIONS

This manual provides important information to familiarize you with safe operating and maintenance procedures. Even though you may be familiar with similar equipment, you MUST read and understand this manual before operating this unit.

Safety is everyone's business and is one of your primary concerns. Knowing the guidelines covered in the following paragraphs and throughout Section 1 will help provide for your safety, the safety of those around you, and the machine's proper operation.

LOOK FOR THESE SYMBOLS WHICH POINT OUT ITEMS OF EXTREME IMPORTANCE TO YOU AND YOUR COWORKERS. READ AND UNDERSTAND THE WARNINGS. HEED AND FOLLOW THE INSTRUCTIONS.

Note the use of the words DANGER, WARNING, CAUTION and ATTENTION with the message. The appropriate word for each message has been selected using the following guidelines:

DANGER: **An immediate and specific hazard which WILL result in severe personal injury or death if the proper precautions are not taken.**

WARNING: **A specific hazard or unsafe practice which COULD result in severe personal injury or death if proper precautions are not taken.**

CAUTION: **Unsafe practices which COULD result in personal injury if proper practices are not taken, or as a reminder of good safety practices.**

ATTENTION: **Equipment on the machine could be damaged through improper performance of an operation, maintenance or repair procedure.**

MATERIAL SAFETY DATA SHEETS

In addition, some machines use or contain hazardous chemicals which may require a specific Material Safety Data Sheet (MSDS). If such information is necessary for the safe operation of this machine, those MSDSs are included on the following pages.

SAFETY DECALS

KNOW and UNDERSTAND the content and position of each safety decal.

KEEP the safety decals and signs CLEAN and legible.

REPLACE safety decals and signs that are missing or have become illegible. When replacing or painting machine parts, REPLACE safety decals as necessary. Refer to Decal Installation in Section 4, Maintenance.

OBTAIN replacement decals or signs from your dealer. Refer to the Illustrated Parts List in this manual for a list of part numbers.

The illustrations on this page will aid you in determining the proper location of decals. If you need more explicit instructions for their placement, contact your dealer.

NOTE: It is the responsibility of the owner and operator to make sure that all decals are readable and located on the machine as designated by the manufacturer.

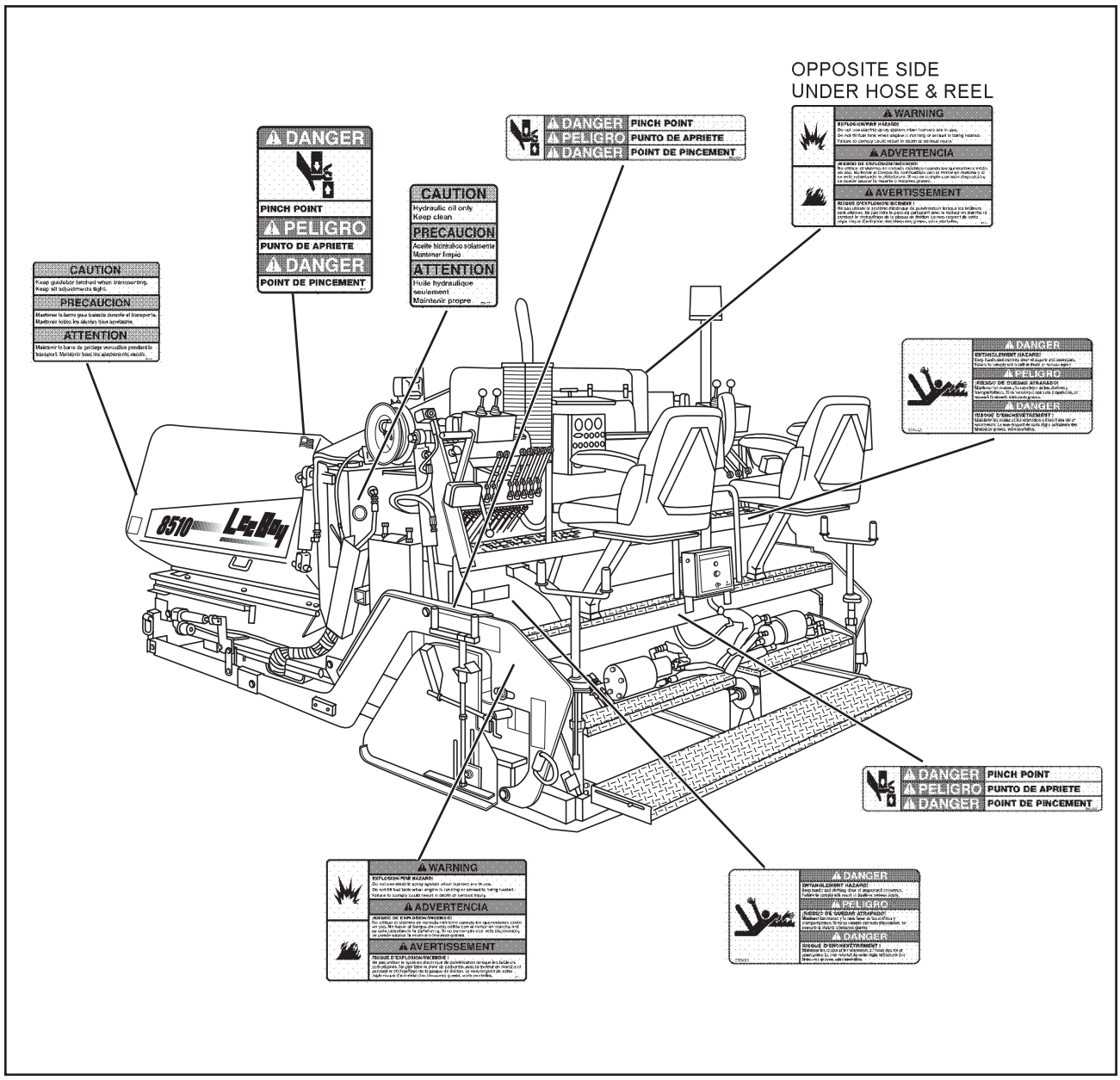

FIGURE 1-1. DECALS and DECAL LOCATIONS

SAFETY

PRE-START INSPECTION

INSPECT machine. Have any malfunctioning, broken or missing parts corrected or replaced before using the machine.

READ and UNDERSTAND the operator's manual as well as all instruction and safety decals.

Have a FIRST AID KIT available and know how to use it.

Have a charged FIRE EXTINGUISHER within reach. Have the correct type for your situation:

TYPE A: Wood, paper, textile, rubbish.

TYPE B: Flammable liquid.

TYPE C: Electrical equipment.

CHECK hydraulic hoses daily for wear and leaks. Replace if damaged.

CHECK engine, transmission, and hydraulic oil levels. Fill to the correct level as necessary.

FILL the fuel tank with the engine off. NEVER fill fuel tank near an open flame, or when smoking.

CHECK for frayed or worn electrical wires and loose or corroded connections.

CHECK tires for wear, cuts, and damage.

INSPECT wheels for loose, damaged, or missing hardware. TIGHTEN as necessary. Refer to the Bolt Torque Charts in Section 4.

CHECK pedals and levers for freedom of movement.

MAKE SURE operator's compartment, steps, and hand holds are free of grease and debris.

CHECK steps and supports for damage. Repair as necessary.

CHECK protective devices, shields, and seat belt for wear or damage.

MAKE SURE all lights, reflectors and other protective devices are clean and operate correctly.

CHECK that all safety decals and signs are in place and readable. These are as important as any other equipment on the machine.

SAFETY STOP

DANGER: Never work under the hopper without placing safety prop in position. See Figure 1-2.

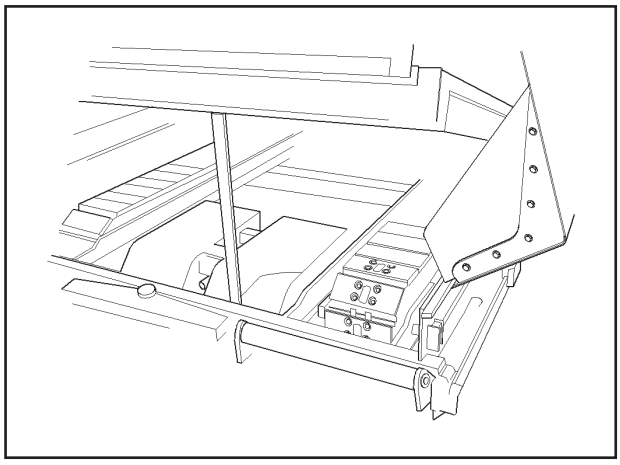

FIGURE 1-2. SAFETY PROP

OPERATING SAFETY

WEAR OSHA required safety equipment when operating the machine.

WEAR appropriate ear protection when exposed to loud noise.

DO NOT wear loose fitting clothing, rings or wrist watches that could catch on moving parts.

ADJUST the seat and FASTEN the seat belt before starting the machine.ALWAYS make sure no person or object is in your line of travel BEFORE starting.

DO NOT allow riders on the machine.

KNOW and UNDERSTAND the job site traffic flow patterns. Work SLOWLY in tight areas and when turning.

DRIVE at speeds compatible with road, weather, and job site conditions.

AVOID steep hills, rough terrain, and sharp turns if possible.

ALWAYS look BEFORE changing your direction of travel.

DO NOT run engine in a closed building for long periods of time.

DO NOT start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on the ground. Start engine only from operator's seat, with all controls in neutral.

DO NOT leave the engine running without operator present.

USE recommended hand holds and steps with at least three points of support when getting on and off the machine. Face the machine and NEVER jump off or dismount while the machine is moving.

STOPPING SAFETY

ALWAYS park the machine on solid, level ground. If this is not possible, always park at a right angle to the slope.

USE proper flags, barriers and warning devices especially when parking in areas of traffic.

GENERAL MAINTENANCE SAFETY

NEVER work on the machine with the engine running.

DO NOT change the engine governor settings.

DO NOT work under the machine unless the machine is supported by approved jacks and jack stands.

ALWAYS replace damaged or lost decals.

REINSTALL safety devices, guards or shields after servicing or adjusting the machine.

CLEAN the service area. KEEP tools and parts off the floor. BE SURE electrical outlets and tools are properly grounded. USE adequate light for the job.

BATTERY SAFETY

DISCONNECT battery cables when working on the electrical system or when welding on the unit.

IF battery needs a charge, be sure battery charger is off when making connections.

BE SURE the correct battery polarity is observed (negative (-) to negative (-) and positive (+) to positive (+), when connecting a battery charger or jumper cable.

DO NOT tip batteries more than 45 degrees. Electrolyte solution is caustic and explosive.

HANDLING FLUIDS SAFELY

NEVER fill the fuel tank with the engine running.

DO NOT smoke while refueling the machine.

DO NOT fill fuel tank to capacity. Allow room for expansion.

DO NOT use hands to find hydraulic leaks. High-pressure fluid can penetrate the skin, causing severe injury.

TRANSPORT

FOLLOW all local regulations regarding transporting equipment on public roads and highways.

KNOW and USE all required signal devices, including tail lights, slow moving vehicle signs, and warning beacons. Provide an escort when necessary.

BE SURE the lights and reflectors are clean, in good repair and can be seen clearly by all overtaking and oncoming traffic.

Refer to OPERATION, Section 3, for more detailed instructions.

STORAGE

STORE the machine in an area away from human activity.

BE SURE the unit is stored in an area that is firm, level and free of debris.

STORE the machine inside a building, or cover it with a weather-proof tarpaulin and support the wheels securely.

Refer to MAINTENANCE, Section 4, for more detailed instructions.

Section 2
SPECIFICATIONS

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Section 2
SPECIFICATIONS

GENERAL INFORMATION

Tables 2-1 through 2-7 list the engine and system specifications for the 8510 Conveyor Paver.

TABLE 2-1. ENGINE SPECIFICATIONS

ITEM	CHARACTERISTIC
ENGINE	
Model and Manufacturer	Hatz, 4L41C (Silent Pak)
Type	4 Cycle diesel
Number of Cylinders	Four
Bore & Stroke	4.02 in. (102 mm) x 4.13 in. (105 mm)
Engine Oil Type	10W-40
Capacity	12 Quarts (11.3 liter)
ENGINE COOLING SYSTEM	
Type	Air Cooled
ENGINE FUEL	
Type Used	Diesel Fuel
Fuel Capacity	20 gallons (75.7 liters)
FUEL FILTER	
Type	Hatz Diesel
FUEL INJECTORS	
Quantity and Type	Four, close nozzle

TABLE 2-2. ELECTRICAL SPECIFICATIONS

ITEM	CHARACTERISTIC
BATTERY	
Number Per Machine	One maintenance free
Ampere Hour Rating	1100 CCA
Voltage	12 Volts
ALTERNATOR	
Type and Voltage	Valeo, 12 Volt, negative ground
Output Amperage	50 Amps
Fan Belt Tension	Automatic belt tension mechanism keeps serpentine belt under tension at all times
STARTER	
Manufacturer	(See Engine Starter plate)
Voltage and Type	12 Volt, negative ground
Rating	2.7 kW

TABLE 2-3. DIMENSION SPECIFICATIONS (See Figure 2-1)

ITEM	SPECIFICATION
Overall Length	12′ 4″ (376 cm)
Overall Height	6′ 6″ (198 cm)
Overall Width (hopper wings in)	8′ 6″ (259 cm)
Overall Width (hopper wings out)	10′ (305 cm)
Weight	15,600 lbs (7,076 kg)

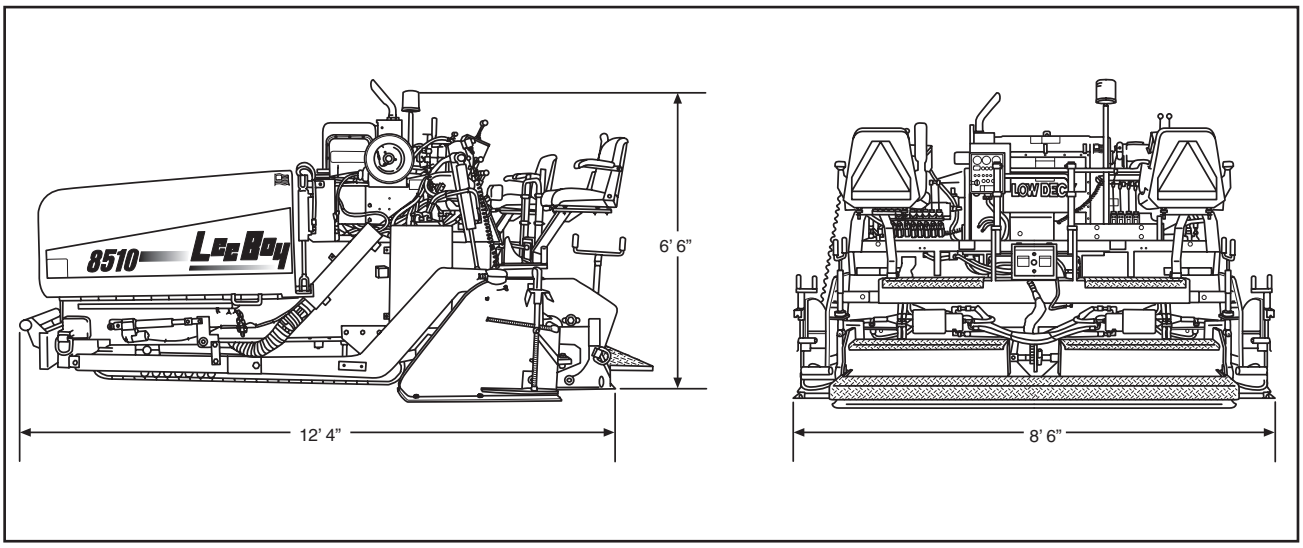

FIGURE 2-1. OUTLINE DIMENSIONAL DRAWING

TABLE 2-4. PERFORMANCE SPECIFICATIONS

ITEM	SPECIFICATION
SPEED	
Travel	240 FPM (0.073 KPM)
Paving	140 FPM (0.043 KPM)
EFFECTIVE COVERAGE	
Basic Screed Width	8 ft. (2.44 m)
Maximum Screed Width	15 ft. (4.57 m)

TABLE 2-5. MACHINE SYSTEM CAPACITY SPECIFICATIONS

ITEM	SPECIFICATION
Fuel	20 gallons (75.7 liters)
Engine Lubrication Oil	12 quarts (11.35 liters) (with lubrication oil filter)
Hydraulic Oil Reservoir	40 gallons (151.4 liters)
Torque Hubs	32 ounces (0.946 liters) each

TABLE 2-6. MACHINE HYDRAULIC PRESSURES

ITEM	SPECIFICATION
Drive	3700 PSI (255 Bar)
Conveyors	2400 PSI (165 Bar)
Augers & Cylinders	2000 PSI (138 Bar)

TABLE 2-7. TYPES OF LUBRICANTS

ITEM	SPECIFICATION
Engine Oil	15W-40
Hydraulic Oil	VG 32 or AWAT (All Weather All Temperature)
Torque Hub Grease	50 WT Gear Lube
Grease	Shell Avania EP Grease or Equivalent
Chain Lube	Chain Lube

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GENERAL INFORMATION

This section provides the Operating instructions for the 8510 Conveyor Paver. Before starting or operating the machine, it is important to READ, UNDERSTAND, and FOLLOW all Operating instructions, Danger, Warning, and Caution messages in this manual as well as all Safety information contained in Section 1 of this manual.

DANGER: **Failure to observe the Operating instructions, Danger, Warning, and Caution messages in this manual can cause serious injury or death. Only authorized personnel, who are fully trained in the machine operation, can operate the 8510 Conveyor Paver.**

This machine should be kept in good mechanical condition at all times.

WARNING: **Do not operate a machine needing repair. Put an information tag on the instrument panel that says, "DO NOT OPERATE". Remove the key from the ignition switch. Repair all damage at once. Minor damage can result in major system failures.**

OPERATING CONTROLS, INDICATORS, AND GAUGES

WARNING: **Do not start or operate the 8510 Conveyor Paver before reading, understanding, and following all information given in this section and shown on the machine. The operator must read and understand the function of all controls, indicators, and gauges before starting the engine. Serious injury or death can result if these procedures are not followed.**

The operating controls for the 8510 Conveyor Paver are shown in Figures 3-1 through 3-5. Their functions are listed in Tables 3-1 through 3-5.

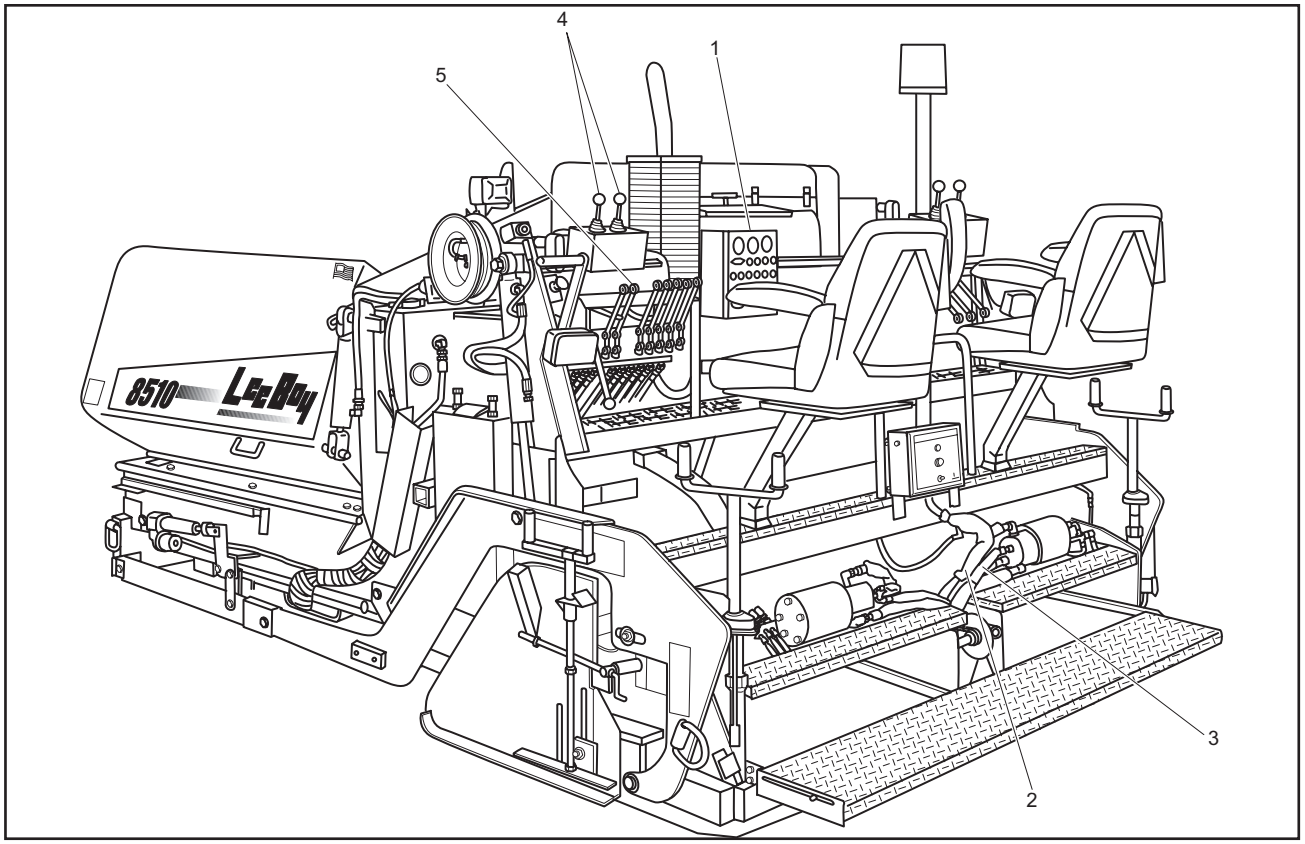

FIGURE 3-1. LOCATION OF OPERATION PANELS AND CONTROLS

TABLE 3-1. LOCATION OF OPERATION PANELS AND CONTROLS

FIG. REF	ITEM NO.	CONTROL NAME	TYPE	FUNCTION
3-1	1	Instrument (dash) Panel		Contains switches, indicators, and gauges (see Figure 3-2).
3-1	2	Left Burner Control		Controls flow of propane to left screed burner.
3-1	3	Right Burner Control		Controls flow of propane to right screed burner.
3-1	4	Steering and Speed Control Module		Handles control the Speed and Steering Control (see Figure 3-3).
3-1	5	Hydraulic Controls		Contains the hydraulic controls that operate the Screed and other Functions (see Figure 3-4).

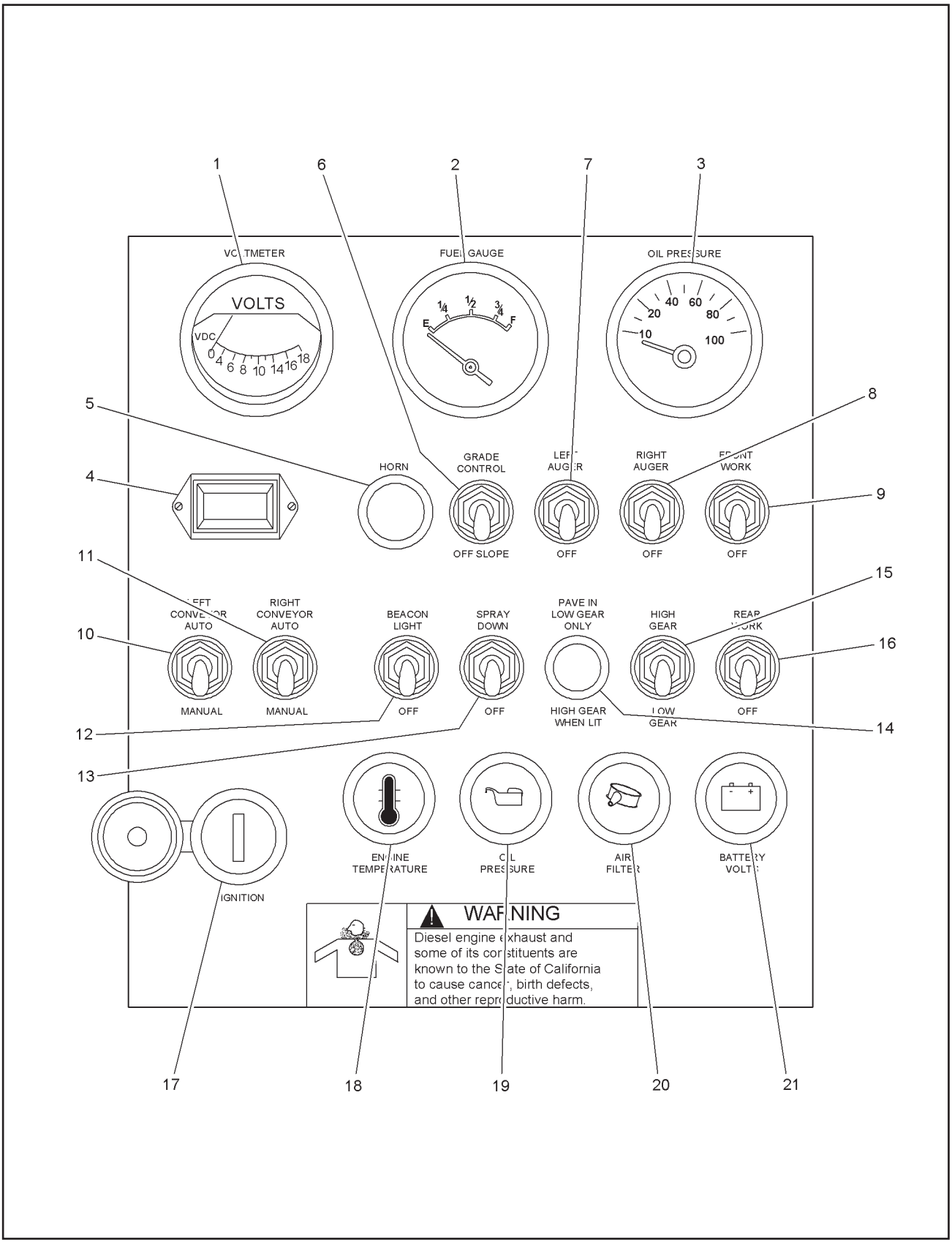

FIGURE 3-2. MAIN DASH PANEL

TABLE 3-2. MAIN DASH PANEL

FIG. REF	ITEM NO.	CONTROL NAME	TYPE	FUNCTION
3-2	1	**Voltmeter**		Indicates battery voltage.
3-2	2	**Fuel Gauge**		Indicates amount of fuel in fuel tank.
3-2	3	**Oil Pressure Gauge**		Indicates the amount of oil pressure.
3-2	4	**Hourmeter**		Meter monitors the working hours of the machine.
3-2	5	**Horn**	Push button switch	Press button to sound the horn.
3-2	6	**Grade Control/Slope**	2-Position toggle switch	When switch is in the GRADE position, power is ON all the time. **NOTE:** When machine is equipped with SLOPE, power is present only when the joystick is in the FORWARD position. With the joystick in NEUTRAL and the switch in SLOPE, all power is turned off.
3-2	7	**Left Sonic Automatic Auger**	2-Position toggle switch	Selects ON or OFF for the automatic operation of left auger. **Auto:** Top position turns ON the Left Auger. **Auto:** Bottom position turns OFF the Left Auger.
3-2	8	**Right Sonic Automatic Auger**	2-Position toggle switch	Selects ON or OFF for the automatic operation of right auger. **Auto:** Top position turns ON the Right Auger. **Auto:** Bottom position turns OFF the Right Auger.
3-2	9	**Front Work Lights**	2-Position toggle switch	Used to turn the work lights on or off.
3-2	10	**Left Conveyor Automatic/Manual**	3-Position automatic center return from MANUAL position	Selects automatic or manual override for left conveyor. Center is OFF position. For automatic operation set switch to AUTOMATIC position. MANUAL position provides override.

TABLE 3-2. MAIN DASH PANEL (CONTINUED)

FIG. REF	ITEM NO.	CONTROL NAME	TYPE	FUNCTION
3-2	11	**Right Conveyor Automatic/Manual**	3-Position switch automatic center return from MANUAL position	Selects automatic or manual override for right conveyor. Center is OFF position. For automatic operation set switch to AUTOMATIC position. MANUAL position provides override.
3-2	12	**Beacon Light**	2-Position toggle switch	Used to turn the beacon light on or off. Set switch to BEACON position to turn the Beacon light on.
3-2	13	**Spray Down**	2-Position toggle switch	Used to turn on the Spray Down System. Set switch to SPRAY DOWN position to turn spray system on.
3-2	14	**High/Low Light**	Indicator light	Illuminates to indicate when HIGH/LOW switch is in the HIGH position.
3-2	15	**High/Low Gear**	2-Position toggle switch	Used to change machine speed. Place switch in HIGH position for travel. (When in TRAVEL red 2-SPEED Light (Item 14) will illuminate.) **IMPORTANT:** High speed is only for traveling. Never pave in high speed.
3-2	16	**Rear Work Lights**	2-Position toggle switch	Used to turn the rear work lights ON or OFF.

TABLE 3-2. MAIN DASH PANEL (CONTINUED)

FIG. REF	ITEM NO.	CONTROL NAME	TYPE	FUNCTION
3-2	17	**Ignition**	3-Position key switch	Controls starting, stopping, and running of engine. Vertical position is OFF. Turn key right one notch for power. Red light will illuminate. Far right is the START position. After engine starts, release key, which will automatically return to the power position. Use protective cover when not in use. **NOTE:** Engine will not start unless speed control is in NEUTRAL.
3-2	18	**Engine Temperature**	Indicator Light	Indicates engine temperature.
3-2	19	**Oil Pressure**	Indicator Light	Indicates low oil pressure.
3-2	20	**Air Cleaner**	Indicator Light	Light illuminates to indicate if air cleaner needs to be cleaned or replaced.
3-2	21	**Battery Volts**	Indicator Light	Light indicates if unit is charging. **NOTE:** If working properly, the light illuminates with the switch, and goes out when the engine cranks. If battery indicator light does not illuminate with key ON, the unit will not charge.

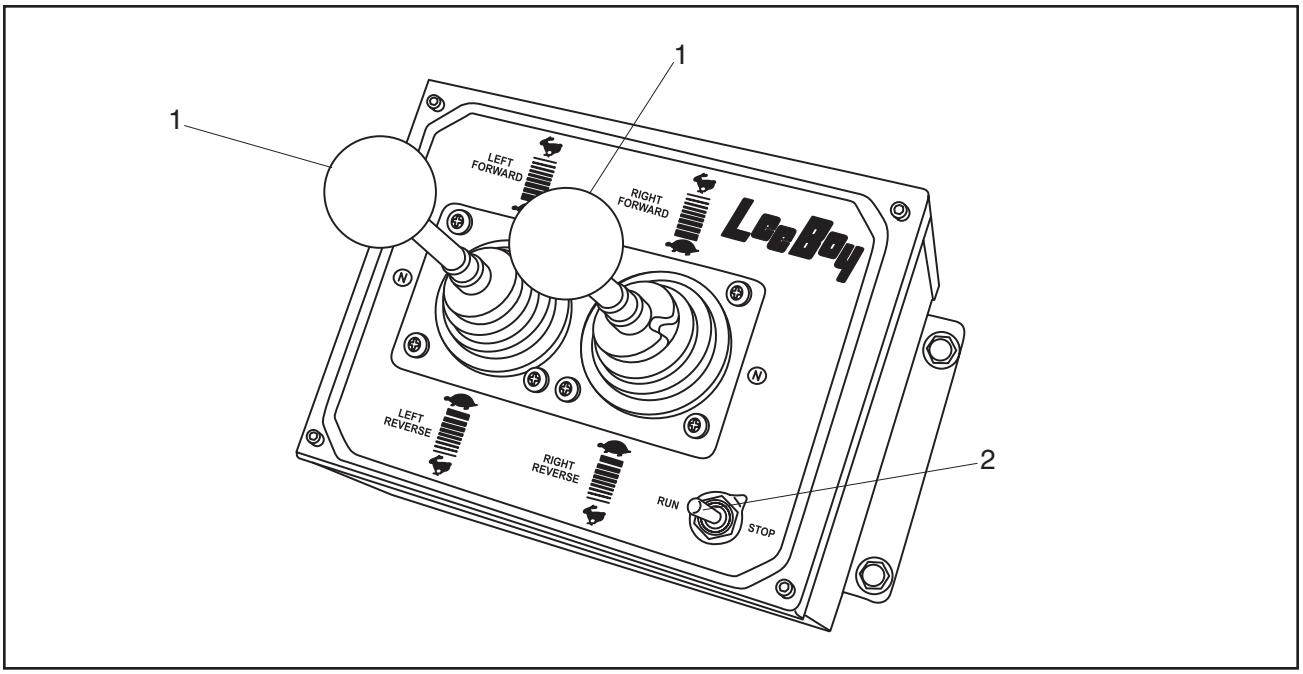

FIGURE 3-3. SPEED AND STEERING CONTROL MODULE

TABLE 3-3. SPEED AND STEERING CONTROL MODULE

FIG. REF	ITEM NO.	CONTROL NAME	TYPE	FUNCTION
3-3	1	**Joystick Electronic Steering**		Levers control the speed and direction of travel forward and reverse. Moving joysticks forward moves machine forward. The further forward the higher the speed. Moving joysticks backward moves machine backwards. The further backwards the higher the speed. When joysticks are centered, the machine is in neutral. **NOTE:** Machine must be in neutral to start machine.
3-3	2	**Run/Stop**	2-Position toggle switch	Controls stopping the machine. When switch is set to STOP the machine stops (pauses). When switch is set to RUN the machine resumes its prior speed. Never use on a hill, use for flat ground only.

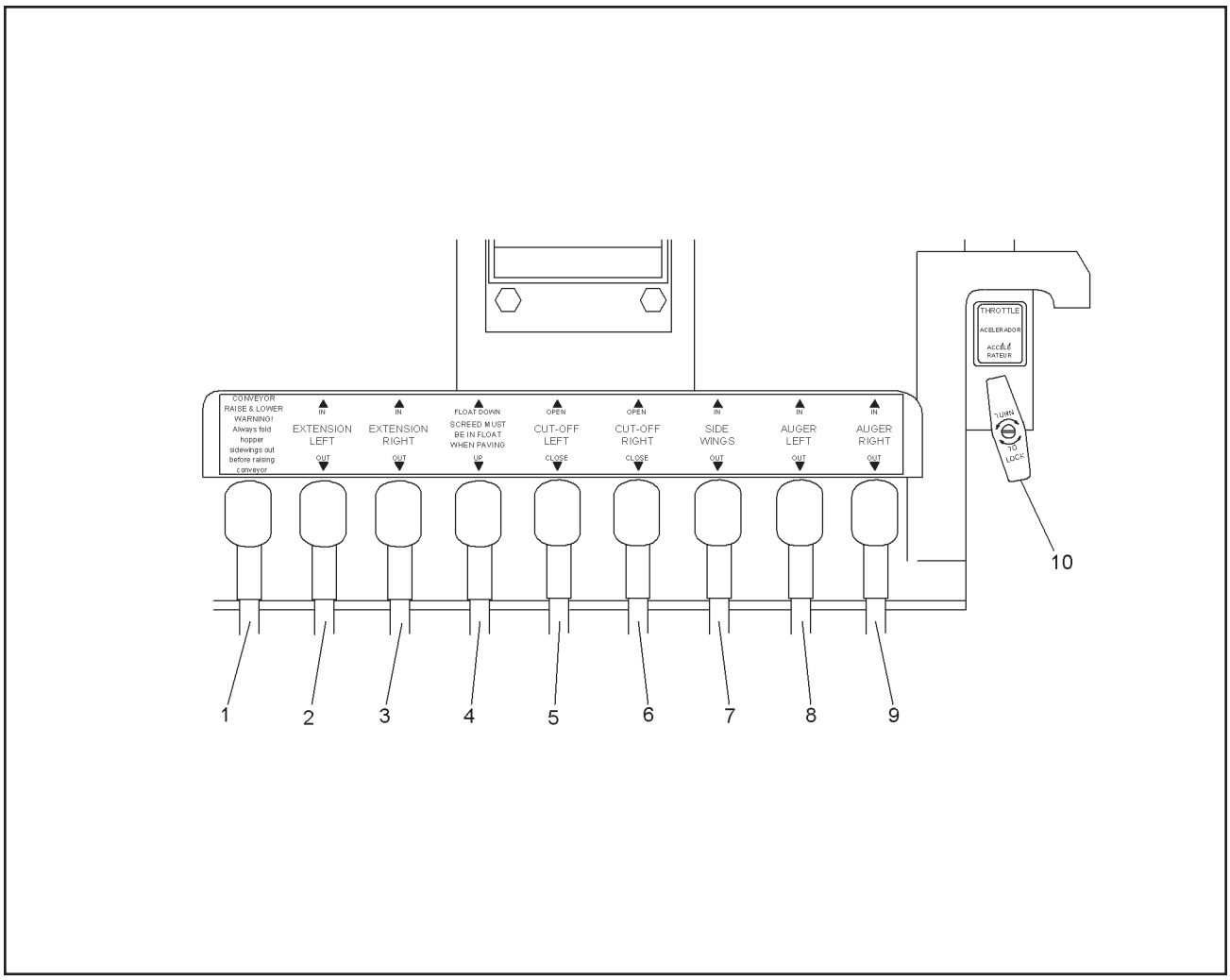

FIGURE 3-4. HYDRAULIC CONTROLS

TABLE 3-4. HYDRAULIC CONTROLS

FIG. REF	ITEM NO.	CONTROL NAME	TYPE	FUNCTION
3-4	**1**	**Conveyor Raise/ Lower**	Up/Down handle	Used to raise and lower the conveyor. Push the lever upwards to raise the conveyor (SEE WARNING). Pull the lever downward to lower the conveyor. **WARNING: Always fold side wings on hopper out before raising conveyor. Place safety prop in place immediately.**

TABLE 3-4. HYDRAULIC CONTROLS (CONTINUED)

FIG. REF	ITEM NO.	CONTROL NAME	TYPE	FUNCTION
3-4	2	**Left Extension**	Up/Down handle	Used to move the left extension in or out. Push the lever upwards to move left extension in. Pull the lever downward to move left extension out.
3-4	3	**Right Extension**	Up/Down handle	Used to move the right extension in or out. Push the lever upwards to move right extension in. Pull the lever downward to move right extension out.
3-4	4	**Screed Raise/Float**	Up/Down handle	Used to raise or float the screed. Push the lever upwards to lower the screed in FLOAT position. Once pushed forward, the lever locks in the FLOAT position. Pull back out of float and push the lever upwards again to raise the screed. **NOTE:** Screed must be in the FLOAT position when paving.
3-4	5	**Left Cutoff Open/Close**	Up/Down handle	Used to open or close the left cutoff. Push the lever upwards to open left cutoff. Pull the lever downward to close left cutoff.
3-4	6	**Right Cutoff Open/Close**	Up/Down handle	Used to open or close the right cutoff. Push the lever upwards to open right cutoff. Pull the lever downward to close right cutoff.
3-4	7	**Side Wings**	Up/Down handle	Used to move the side wings in or out. Push the lever upwards to move side wings in. (Never fold in with full hopper) Pull the lever downward to move side wings out.

TABLE 3-4. HYDRAULIC CONTROLS (CONTINUED)

FIG. REF	ITEM NO.	CONTROL NAME	TYPE	FUNCTION
3-4	8	**Left Auger**	Up/Down handle the left auger on.	Used to turn the left auger on or off. Pull the lever downward to turn
3-4	9	**Right Auger**	Up/Down handle the right auger on.	Used to turn the right auger on or off. Pull the lever downward to turn
3-4	10	**Throttle**	Up/Down handle	Used to set the engine RPM. Pull the lever out for higher RPM. Push the lever in for lower RPM. Turn to lock.

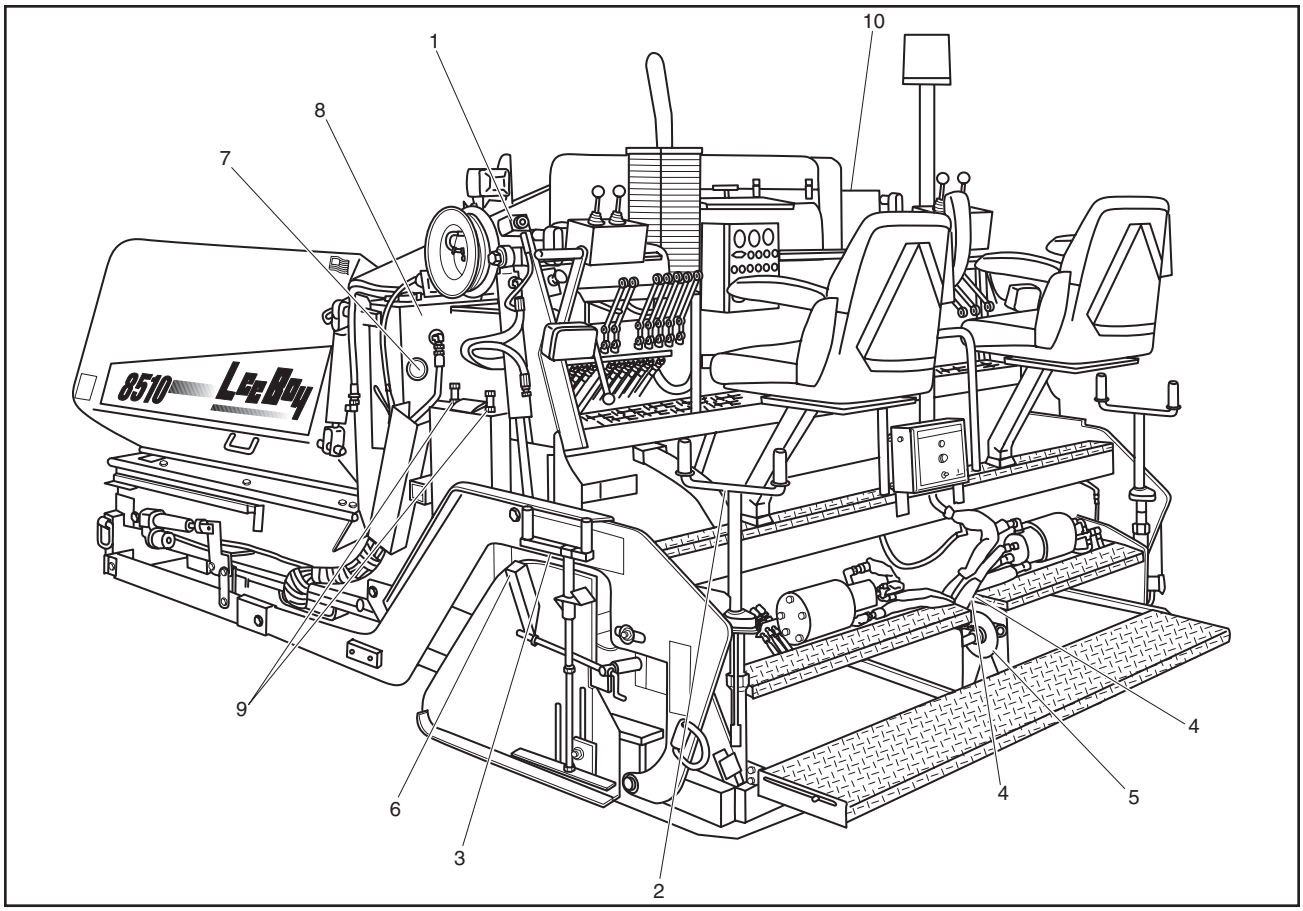

FIGURE 3-5. PAVING CONTROLS

TABLE 3-5. PAVING CONTROLS

FIG. REF	ITEM NO.	CONTROL NAME	TYPE	FUNCTION
3-5	1	Auger Remote Control Head		Used for adjusting the height of material at End Gate. Connected to Sonic Auger Adjustment.
3-5	2	Depth Screw		Sets the depth of the asphalt.
3-5	3	Endgate Depth Screw		Controls the depth of the endgate.
3-5	4	Igniter		Used to light the burners
3-5	5	Crown and Valley		Allows the screed to bend in the middle for crown and valley.
3-5	6	Sonic Auger Sensor Mount		Mounting bracket for Sonic Auger.
3-5	7	Hydraulic Oil Temperature Gauge		Monitors the temperature of the hydraulic fluid.
3-5	8	Oil Level Check Point		Used to check oil level in hydraulic oil tank.
3-5	9	Conveyor Drive Chain Adjustment		Screws with jam nuts for adjusting the conveyor drive chain tension.
3-5	10	Spray Down Hose		Used to lubricate and keep asphalt from hardening on the machine.

PRELIMINARY PROCEDURES

Before starting or operating the machine, it is important to READ, UNDERSTAND, and FOLLOW all Operating instructions, Danger, Warning, and Caution messages in this section, as well as all Safety information contained in Section 1 of this manual.

Recommended fluid types and required quantities are listed in Specifications, Section 2 of this manual.

PRE-START INSPECTION

INSPECT machine. Have any malfunctioning, broken or missing parts repaired or replaced before using the Paver.

CHECK hydraulic hoses daily for wear and leaks. Replace if damaged.

CHECK that all the instruction and safety labels are in place and readable. These are as important as any other equipment on the machine.

READ and FOLLOW all instruction decals.

WEAR OSHA required safety equipment when running the Paver.

CHECK engine, and hydraulic oil levels. Fill to the correct level as necessary.

FILL the fuel tank with the engine off. NEVER fill fuel tank near an open flame or when smoking.

CHECK for frayed or worn electrical wires and loose or corroded connections.

CHECK tires for wear, cuts, and damage. INSPECT wheels for loose, damaged, or missing hardware.

CHECK controls for freedom of movement.

CHECK supports for damage. Repair as necessary.

BEFORE starting engine, clear auger & feeders. Make sure all covers and guards are in place.

ENGINE OPERATION

PRELIMINARY

Before starting the engine:

1. Check fuel level, fuel lines, and tank for leaks.
2. Check crankcase oil level.

ATTENTION: Failure to maintain correct engine oil level is the greatest single cause of engine failures.

3. Check hydraulic oil level. Oil level is determined by petcock on hydraulic oil tank. (AWAT All weather all temperature)
4. Make sure joysticks (Figure 3-8, item 1) are in neutral position.
5. Refer to engine manufacturer's manual for instructions when starting engine for the first time. Follow engine manufacturer's recommendations for fuel and oil.

ENGINE START-UP

NOTE: Joysticks (Figure 3-3) must be in neutral position to start engine.

1. Position joysticks to neutral.
2. Open throttle fully by pulling out throttle cable.

ATTENTION: The use of starting additives, such as ether, is not recommended.

ATTENTION: Do not operate the starter longer than 10-15 seconds. If the engine does not start, allow the starter to cool 2-3 minutes.

3. Insert key into the ignition switch on instrument panel and turn key clockwise (CW) to start position.
4. If equipped with glow-plug option for cold weather start, turn key switch to the right to engage glow plug light. Light will indicate heating is occurring.

NOTE: Do not engage glow plugs for over 2 minutes at a time.

5. When engine starts and is running smooth, throttle back to idle by pushing in the throttle cable until idle speed is reached.

NOTE: Allow engine to warm up for several minutes before moving the Paver. The warm up will give the hydraulic oil time to warm, providing for more efficient operation. In cold weather let hydraulic oil warm to 50°F (10°C) or 60°F (16°C) before moving.

NOTE: For convenience, there is an extra key inside the switch box in case the original key is lost.

STOPPING THE ENGINE

1. Throttle back to idle by pressing throttle cable in until idle speed is reached.
2. Turn ignition key on instrument panel counter-clockwise (CCW) to the OFF position and remove key.

NOTE: If for any reason the engine does not shut down when key is turned to OFF, take pin out of clevis on throttle cable, (at back of engine) and push throttle lever control OFF.

ENGINE START-UP (WITH OPTIONAL STEERING MODULE)

NOTE: Joystick (Figure 3-8A) must be in neutral position to start engine.

1. Position joystick to neutral.
2. Open throttle fully by pulling out throttle cable.

ATTENTION: The use of starting additives, such as ether, is not recommended.

ATTENTION: Do not operate the starter longer than 10-15 seconds. If the engine does not start, allow the starter to cool 2-3 minutes.

3. Insert key into the ignition switch on instrument panel and turn key clockwise (CW) to start position.
4. When engine starts and is running smooth, throttle back to idle by pushing in the throttle cable until idle speed is reached.

NOTE: Allow engine to warm up for several minutes before moving th Paver. The warm up will give the hydraulic oil time to warm, providing for more efficient operation. In cold weather let hydraulic oil warm to 50°F (10°C) or 60°F (16°C) before moving.

NOTE: For convenience, there is an extra key inside the switch box in case the original key is lost.

STOPPING THE ENGINE (WITH OPTIONAL STEERING MODULE)

1. Throttle back to idle by pushing in on the throttle cable until idle speed is reached.
2. Turn ignition key on instrument panel counter-clockwise (CCW) to the OFF position and remove key.

NOTE: If for any reason the engine does not shut down when key is turned to OFF, take pin out of clevis on throttle cable, (at back of engine) and push throttle lever control OFF.

PAVER DRIVING INSTRUCTIONS

DRIVING WITH DUAL JOYSTICKS

General Information

During operation, the Paver is controlled by right- and left-hand joysticks that control the track speed on each side. (See Figure 3-8)

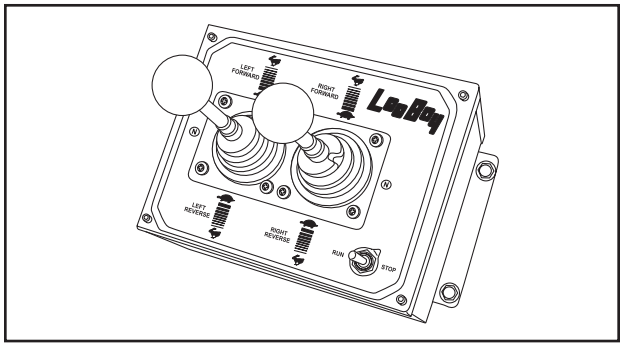

FIGURE 3-8. SPEED AND STEERING CONTROL MODULE

Advancing the joysticks from the neutral position results in forward travel of the Paver. As the joysticks are advanced further from neutral, Paver speed increases.

Pulling the joysticks back from the neutral position reverses the Paver travel. As the joysticks are pulled back further from neutral, Paver speed increases.

Returning the joysticks to the neutral position stops the Paver.

Operating Information

1. Start the Paver. Allow the Paver engine to warm up briefly.
2. To drive the Paver forward, advance both joysticks evenly from the neutral position until the Paver is moving at the desired speed.
3. To drive the Paver in reverse, pull the joysticks back from the neutral position until the Paver is moving in reverse at the desired speed.
4. To turn the Paver left while moving in the forward direction, either advance the right-hand joystick further than the left-hand joystick or pull the left-hand joystick back. This causes the right side of the Paver to move faster than the left-hand side and results in a left turn.
5. To turn the Paver right while moving in the forward direction, either advance the left-hand joystick further than the right-hand joystick or pull the right-hand joystick back. This causes the left side of the Paver to move faster than the right-hand side and results in a right turn.
6. Advancing either joystick while pulling back on the other joystick results in a tighter turn.
7. To stop the Paver, return both joysticks to the neutral position.

DRIVING WITH OPTIONAL STEERING MODULE

General Information

To drive the machine, point the joystick (Figure 3-8A, item 1) straight ahead and lift up on the neutral lock (item 3) on joystick (item 1). Push the joystick forward slowly to reach the desired speed and turn the steering wheel (item 2) slowly to make turns as desired. The more you move the joystick the faster the travel speed.

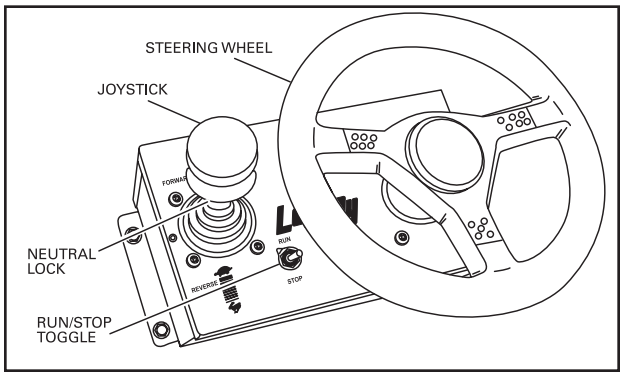

FIGURE 3-8A. SPEED AND STEERING CONTROL MODULE

NOTE: To stop machine, pull joystick back to the neutral position or use PAUSE switch.

Operating Information

1. After the Paver has been started and the motor is warmed up, operation may begin.
2. To drive machine forward lift up on the neutral lock (item 3) on joystick (item 1) and push forward to reach desired speed. To move in reverse pull the joystick backward to reach desired speed. Place joystick in neutral to stop machine.

NOTE: To slow the unit, move joystick closer to neutral or in neutral to stop.

3. To steer the unit, turn the steering wheel (item 2) in the travel direction desired. The further the wheel is turned, the more the machine turns. Slow and easy adjustments are required.

NOTE: All the way left or right will give you counter rotate.

ATTENTION: Turning the wheel too hard can damage the control.

4. The RUN/STOP toggle switch (item 4) on steering module will stop the machine when set to the STOP position. When the machine is stopped with the toggle switch, the machine will resume travel at the last speed of travel when the switch is set to the RUN position.

PAVER PREPARATION

BURNER IGNITION PROCEDURES

General Information

WARNING: Propane gas is extremely volatile and combustible. Use extreme care when using propane gas.

Heating the screed requires extreme care. The propane gas used to heat the screed is volatile and combustible. When treated with respect the propane will not present a problem. Follow the procedures below and refer to Figures 3-9, 3-10 and 3-11.

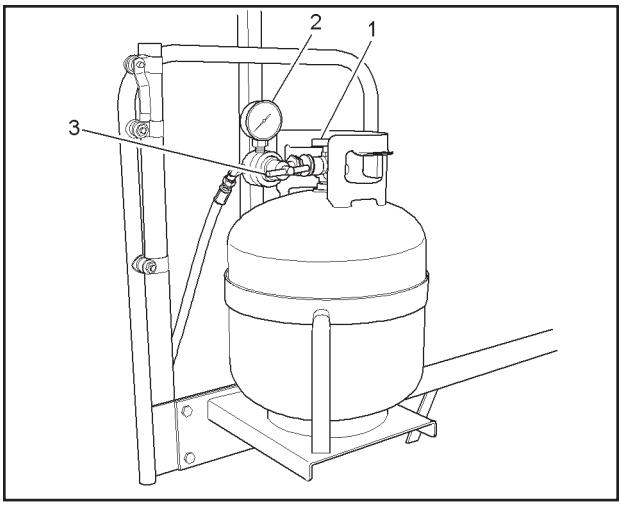

FIGURE 3-9. PROPANE TANK WITH REGULATOR

1. Turn all burner valves OFF (Figure 3-10, items 1, 2, and 3).

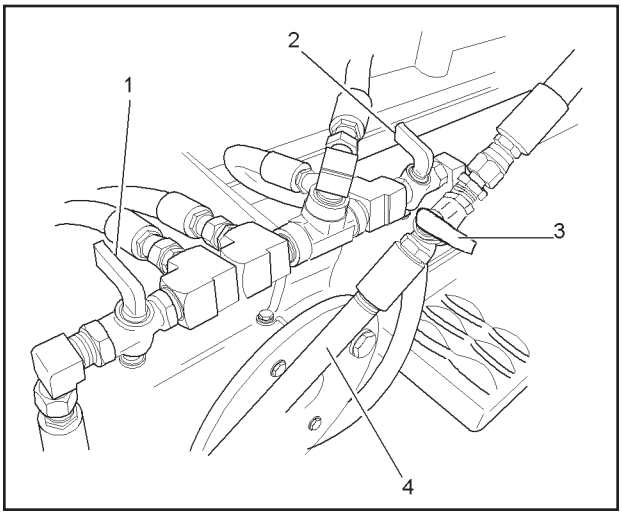

FIGURE 3-10. BURNER VALVES

WARNING: Never open a valve to a burner unless flame is present. A buildup of unburned gas could result in an explosion.

2. Use Igniter burner (Figure 3-10, item 4) to light main burners manually. Hold Igniter burner at end of main left or right burner. To light left burner, turn left valve ON (Figure 3-10, item 1). To light right burner, turn right valve ON (Figure 3-10, item 2).
3. Extension burners are lit manually by removing them from quick coupling connector (Figure 3-11, item 2). Turn ON valve (item 3) for extension burner and use lighter to light. Place burner back into holding socket and repeat this process for opposite side.
4. After screed has heated for about fifteen minutes, turn the burners OFF by rotating the burner valves to the OFF position, as shown in Figure 3-10.

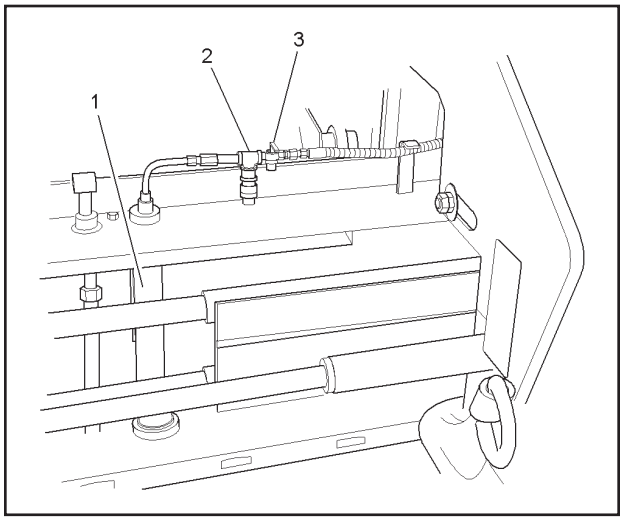

FIGURE 3-11. EXTENSION BURNER QUICK COUPLING CONNECTOR

NOTE: Heating the screed helps prevent hot mix from sticking to the cold screed plate and produces a smooth, tight mat surface. Heating should not only be performed at the beginning of the job, but also if the machine is idle for a long time between loads (allowing screed plate to cool).

NOTE: If paving on a cool windy day, it may be necessary to maintain low heat on the screed. To accomplish this reduce the pressure on the propane tank from 15 lbs. (1 bar) to 2 lbs. (0.14 bar). This will provide a low even heat that will not harm the screed. Do not attempt to regulate the burner with the burner valve.

ATTENTION: Too much heat for too long can warp screed plate, cause extensions to lock up, and cause mat texture problems. A warped screed plate should be replaced.

ATTENTION: If extension lock up occurs, let unit cool before forcing in or out.

Manual Lighting of Burners

WARNING: Propane gas is extremely volatile and combustible. Use extreme care when using propane gas.

Follow these steps when manually lighting the burners. It is important to remember that propane is a volatile and combustible gas and for this reason safety should be a major consideration.

1. Turn OFF all burners valves (see Figure 3-10).
2. Turn main propane valve ON and set regulator (Figure 3-9, item 3) for 15 lbs. (1 bar).
3. Ignite burner with striker (Figure 3-10, item 4).

WARNING: Never open a valve to a burner unless flame is present. A buildup of unburned gas could result in an explosion.

4. Use Igniter burner (Figure 3-10, item 4) to light main burners manually. Hold Igniter burner at end of main left or right burner. To light left burner, turn left valve on (Figure 3-10, item 1). To light right burner, turn right valve on (Figure 3-10, item 2).
5. Extension burners are lit manually by removing them from quick coupling connector (Figure 3-11, item 2). Turn ON valve (item 3) for extension burner and use lighter to light. Place burner back into holding socket and repeat this process for opposite side.

TRUCK HITCH ATTACHMENT (OPTIONAL)

GENERAL INFORMATION

The truck hitch is an optional attachment. It was designed to improve the asphalt laying process. This is mainly accomplished by keeping the truck driver off his brakes, preventing excessive and uneven braking. To engage the hitch with the rear wheels of the asphalt truck, proceed as follows:

1. Extend the arm extensions of the truck hitch by setting the TRUCK HITCH IN/OUT lever to the OUT (Down) position to extend the hitch arms.
2. Slowly drive Paver toward rear of truck until roll on hitch makes contact with the rear tires of the truck.

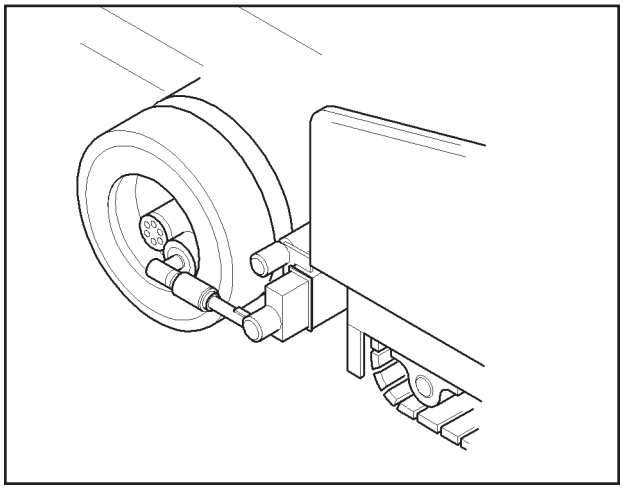

FIGURE 3-12. TRUCK HITCH

3. Set the TRUCK HITCH IN/OUT lever to the IN (Up) position to retract the hitch arms until both guide rollers are fully locked into truck wheel rims (see Figure 3-12).
4. It may be necessary to adjust the roller guides to the inside of the wheel rims.

FEEDER OPERATION

GENERAL INFORMATION

The feeder (conveyor) is a very important part of the Paver and for this reason close attention should be given on integrating its operation into the total operation of the Paver. Use the following procedure for operating the feeder.

ATTENTION: Never use cylinder pressure to lower sides into place after lowering feeder. This may bend sides or break the chains on the sides.

WARNING: Never work on machine with engine running.

ATTENTION: Do not let the Paver sit running with feeders in automatic for any length of time. This may cause the hydraulic oil to over heat.

1. Before raising or lowering feeders, fold side wings in and out by hand. The side wings have a double action motion causing the in and out movement.

ATTENTION: The engine must be shut off when lowering the feeder. (Newer units will not power down.)

2. When lowering feeder, do not lower under pressure. Let the feeder down with engine shut off by placing the CONVEYOR RAISE/LOWER lever in the LOWER (down) position.

CAUTION: Never spray cleaning solvent or release agent on or near screed while it is being heated.

3. Spray the feeder drive chains several times a day with cleaning solvent or release agent.
4. When feeders are running and cutoff gates are shut, there will be spillage the full width of the Paver. This is normal. To help prevent this spillage, work feeders manually when loading hopper and not paving.
5. Irregular movement of the feeder conveyor indicates that a problem may exist with the feeder chain. To eliminate this problem an adjustment to the feeder chain may be necessary. Refer to the paragraph CONVEYOR FLIGHT CHAIN ADJUSTMENT in Section 4.

NOTE: Check adjustments every 100 hours.

CAUTION: Never work on conveyors with engine running.

ATTENTION: Never raise feeder with asphalt in the hopper.

WARNING: Never work under feeder without making sure that feeder is being supported by safety prop and that all unauthorized personnel are clear of the area.

ATTENTION: Never overheat screed. About fifteen (15) minutes before starting to pave is enough time for preheat. On cool days turn propane regulator down to 2 lbs. (0.14 bar). This should prevent screed from warping.

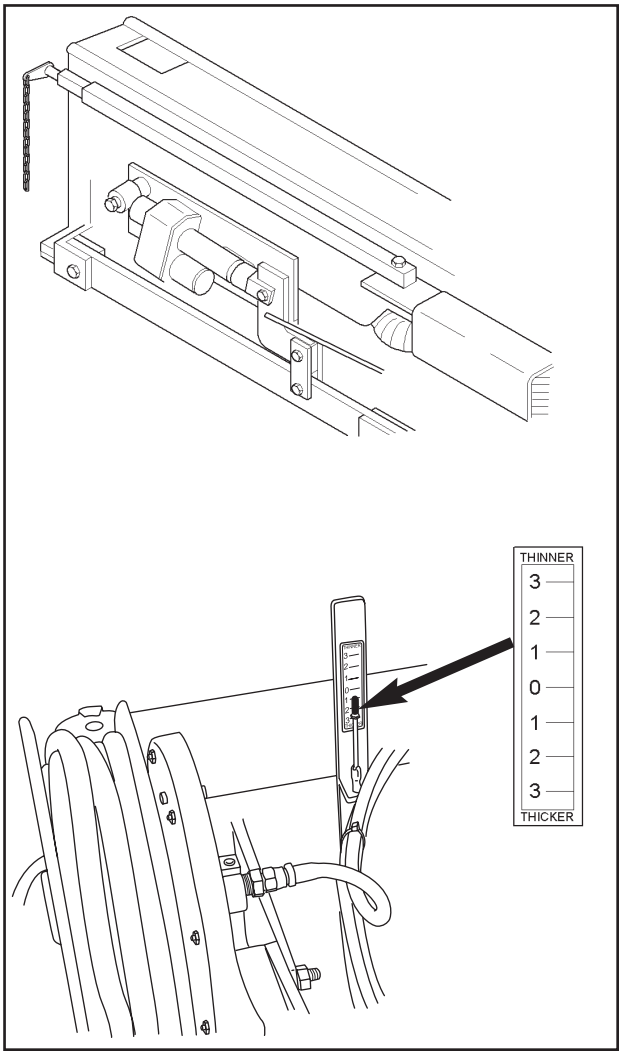

FIGURE 3-13. FLIGHT SCREWS AND SCREED HEIGHT GAUGES

ATTENTION: Never let Paver sit while conveyors are turning. Asphalt from conveyors can fill tracks and cause failure to the bearing or idler.

ATTENTION: To prevent flight chains from sticking inside of conveyor pans, lubricate them sufficiently at the end of the day.

ELECTRIC FLIGHT SCREWS

GENERAL INFORMATION

The electric flight screw is an added convenience to the operator. A gauge is located on both sides of the Paver. These gauges will provide the operator with quick reference to the location of the electric screw. Refer to Figure 3-13 and use the following procedures:

1. Before paving, center the electric flight screws by referring to the screed elevation gauge on each side of the Paver. Raise or lower until rod end of cable is flush with “0” on decal.
2. While paving, refer to both gauges and make minor adjustment to the screed by using the electric flight screw.
3. Grade switch must be on and lever in forward position to work remote switch.

HYDRAULIC CUTOFF GATES

GENERAL INFORMATION

The cutoff gates are one of the most important functions of the Paver. Cutoffs are used primarily to control the flow of asphalt to the screed. Cutoffs can be used when making passes, at the beginning and ending of each pass or pull. The cutoffs have been designed to break away if you accidentally hit a manhole or ridge. This feature will prevent excessive damage to cutoff (tack underneath will break).

ATTENTION: Never back up with cut-off gates open. Cut-off gates are designed to break away from cylinders when hitting a manhole or other hard objects. This break away occurs only in forward gear, not in reverse.

NOTE: The RIGHT CUTOFF OPEN/CLOSE lever and the LEFT CUTOFF OPEN/CLOSE lever control the right and left cutoffs.

Moving the handles upward to the OPEN positions increases asphalt flow to the screed. Moving the handles downward to the CLOSE positions decreases asphalt flow to the screed.

ELECTRIC SPRAY DOWN

GENERAL INFORMATION

The spray down on your machine is used to spray diesel fuel on any part of the machine that comes in contact with the asphalt (see Figure 3-14). Build-up of asphalt will cause damage to components. Spray all areas of machine that have direct contact with asphalt.

CAUTION: Never use spray down when burners are lit. Diesel fuel is flammable and can cause an explosion.

NOTE: When using spray down dispose of cleaning solvent in accordance with environmental regulations.

1. Pull the amount of hose needed from hose reel and set SPRAY DOWN switch to the up position. Squeeze the wand handle and spray. Release wand handle when done spraying.
2. After spraying set SPRAY DOWN switch to the OFF (down) position and wind hose onto reel.

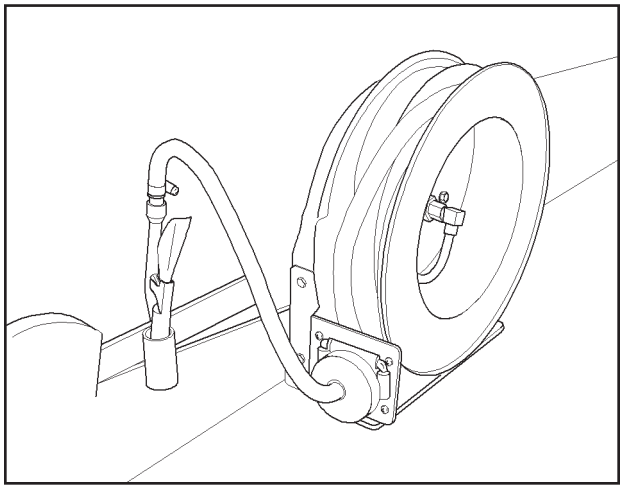

FIGURE 3-14. SPRAY DOWN HOSE AND WAND

AUGERS

AUGER EXTENSIONS

The auger extensions should be attached to the main auger to increase the flow of asphalt. This makes it possible to lay asphalt at a higher rate. To attach the auger extensions proceed as follows:

ATTENTION: Left and right auger extensions must be installed on the correct side of the machine.

1. Identify the right and left auger extensions by observing the L (left) or R (right) on the end of the auger extension shaft (see Figure 3-15.)
2. After identifying the right and left auger extensions, extend the screed extension fully as follows:

WARNING: Engine must be shut off to prevent possible injury when attaching extensions.

3. Shut off engine.
4. Remove bolt, nut, and end cap on end of main auger.
5. Attach the correct side auger extension to the main auger with hardware just removed.

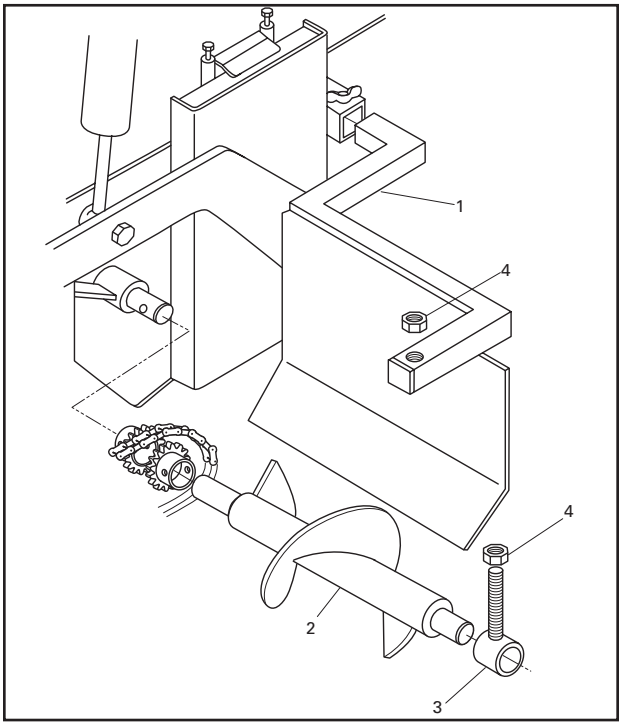

FIGURE 3-15. AUGER EXTENSIONS

6. Secure end of extension auger (Figure 3-15, item 2) to main auger.
7. Install guard (item 1). Make sure extension auger is running flat. If not, adjust with two hex nuts (item 4).
8. Grease at end cap (item 3).
9. Repeat this procedure for opposite side.

SONIC AUGERS

General Information

The sonic augers are used when paving 9 or 10 ft. (2.7 or 3 meters) where augers are capable of running material over top of endgates.

The sonic auger gauges the amount of material in the extensions. To operate the sonic augers turn ON the LEFT AUGER and RIGHT AUGER toggle switches on the main dash panel. The sonic will turn the auger OFF and ON, automatically.

NOTE: It is not necessary to run augers when paving 8 ft. (2.4 m) wide.

Operating Information

1. Set the LEFT AUGER and RIGHT AUGER automatic toggle switches on the main dash panel to the ON position.
2. Pull the auger levers to ON to fill the endgates. The sensors will turn the auger OFF and ON.

NOTE: The sonic auger adjustment dial adjusts the amount of material needed.

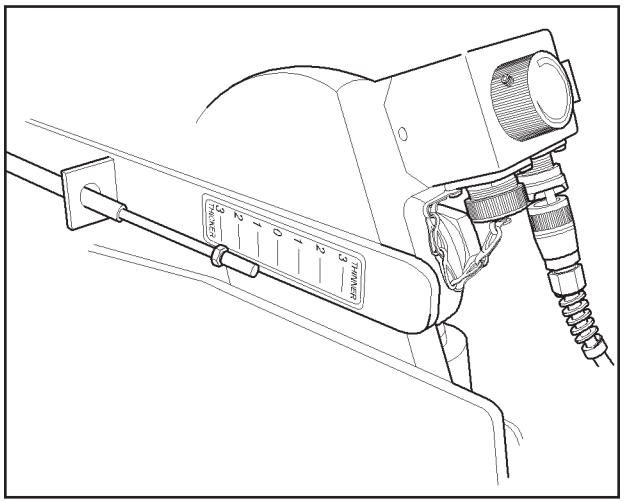

FIGURE 3-16. SONIC AUGER ADJUSTMENT

3. Adjust height of material at endgate with the sonic auger adjustment (see Figure 3-16). Turn the dial to keep the extension full. Be careful not to over run the extension with the material.

NOTE: When running material through augers manually, pave so material flow to extension is adequate and maintained.

4. When Paver stops, set the LEFT AUGER and RIGHT AUGER switches on the main dash panel to the OFF position and push auger levers to OFF.

ATTENTION: To prevent hydraulic oil from overheating while waiting on material or hand work, turn conveyor and augers OFF.

PAVING INSTRUCTIONS

To prevent costly down time, check the Paver thoroughly before each use. Use the list below.

1. Check engine oil (see engine manufacturer's manual), hydraulic oil, torque hub oil and diesel fuel.
2. Refer to Lubrication Chart in Section 4, MAINTENANCE, and lubricate as specified. (Site or weather conditions may necessitate extra lubrication).
3. Check hydraulic hoses, fittings, pumps and motors for leaks, excessive wear or damage.
4. Check the engine neutral start switch. Put the joystick in gear and try to start the engine. The engine should not start.. If it does, shut off machine and repair the neutral start switch.
5. Check all electrical functions before distributing asphalt.

CAUTION: Never spray cleaning solvent or release agent on or near screed while it is being heated.

6. Spray release agent on any part of the Paver that comes in contact with asphalt.
7. Check burner ignition.

GENERAL INFORMATION

The 8510 Conveyor Paver is equipped with electric and manual thickness controls and an 8 ft to 15 ft (2.8 m to 4.5 m) wide screed. The Paver can handle projects as small as driveways and as large as parking areas and secondary roads. This Paver has a production rate of approximately 250 tons per hour.

Before starting to pave, keep the following points in mind:

1. Plan the project so that the narrowest passes are first, (the basic width of the Paver) leaving the widest pass until last.
2. Use a reference guideline. This can be a curb, gutter, adjacent mat or a string line. It is important that the first pass be straight. It will be the guideline for the following passes. Use the guidebar gauges as shown in Figure 3-17.
3. Never run the Paver through a pile of mix that has been dumped in front of the machine. Not only will this effect the level of the mat being laid but damage may result.
4. It is the operator's job to guide the truck up to the Paver and signal the driver when and how much to dump into the hopper. Truck drivers must maintain a light pressure on his brakes to keep truck from dumping material on the roadway.
5. Avoid low hanging limbs, power lines, and other foreign objects that can endanger machine or crew.

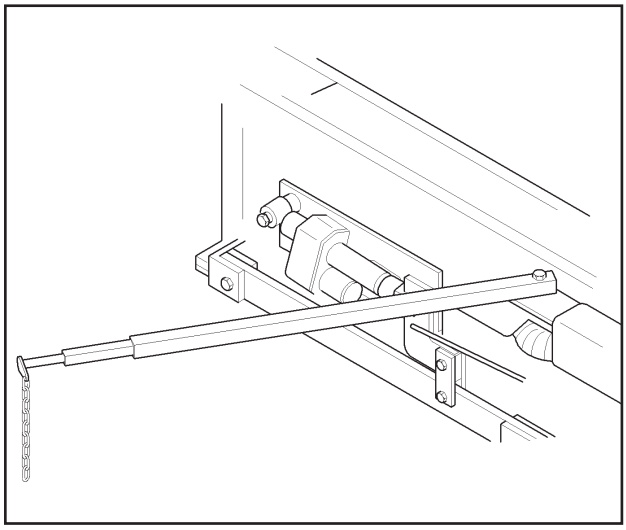

FIGURE 3-17. GUIDE BAR GAUGES

NOTE: If the Paver is equipped with a truck hitch, the truck driver will not be required to maintain pressure on the brake. Refer to the paragraph TRUCK HITCH ATTACHMENT in this chapter for using the truck hitch.

6. Always pave in low range.

NOTE: If paving on cool windy days, it may be necessary to maintain low heat on the screed. To accomplish this, reduce the pressure on the propane tank from 15 lbs. (1 bar) to 2 lbs. (0.14 bar). This will provide a low even heat that will not harm the screed. Do not attempt to regulate the burner with the burner valve.

WARNING: Before starting forward, make certain that no one is in front of the Paver.

WARNING: Avoid low hanging limbs, power lines, and other foreign objects that can endanger machine or crew.

SETTING SCREED TO PAVE

1. Move to the starting position.
2. Extend the screed to the desired width.
3. To set depth, place screed on starter blocks (see Figure 3-18).
4. Level screed with flight screws until neutral position is felt. Neutral position is when the pressure on the flight screw is the same when turning either clockwise or counterclockwise.
5. Set the left or right SCREED LIFT lever to the FLOAT position. This will remove the hydraulic pressure from the cylinder, allowing screed to float.
6. Turn flight screw about one complete turn clockwise.

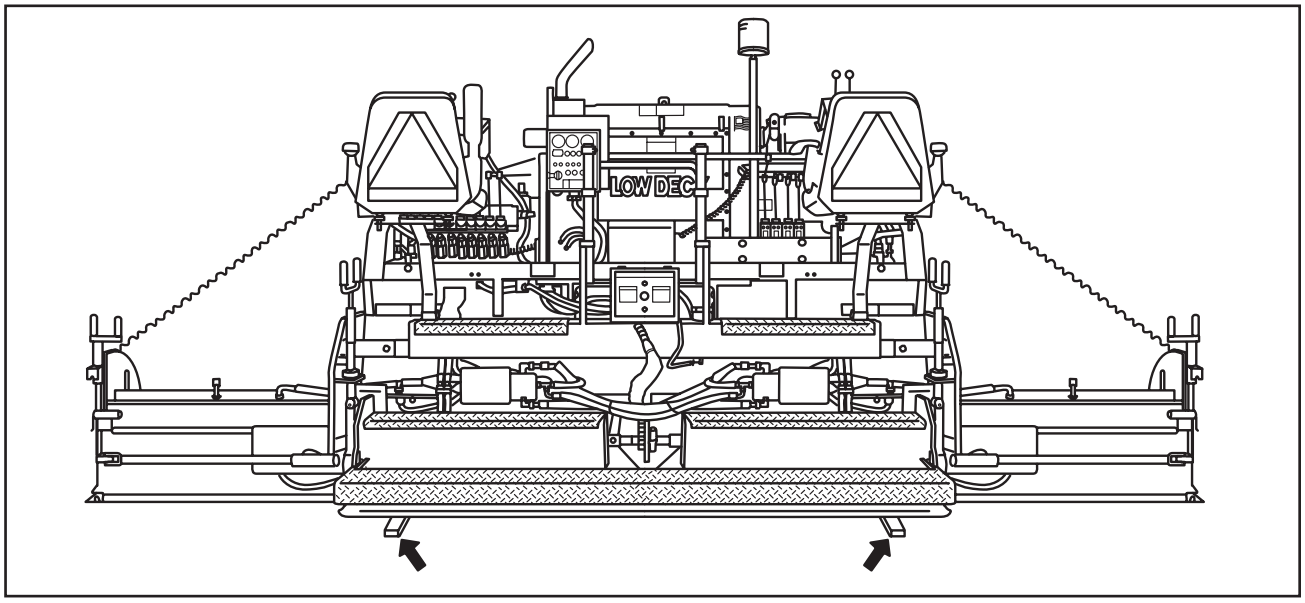

FIGURE 3-18. STARTER BLOCKS

SETTING CROWN AND VALLEY

1. To obtain the crown or valley desired, loosen hex head bolt (see Figure 3-19). Also loosen nut on seat bracket on right side of screed. Remove crown handle and insert into adjuster. Push down for positive crown or pull up for negative valley.

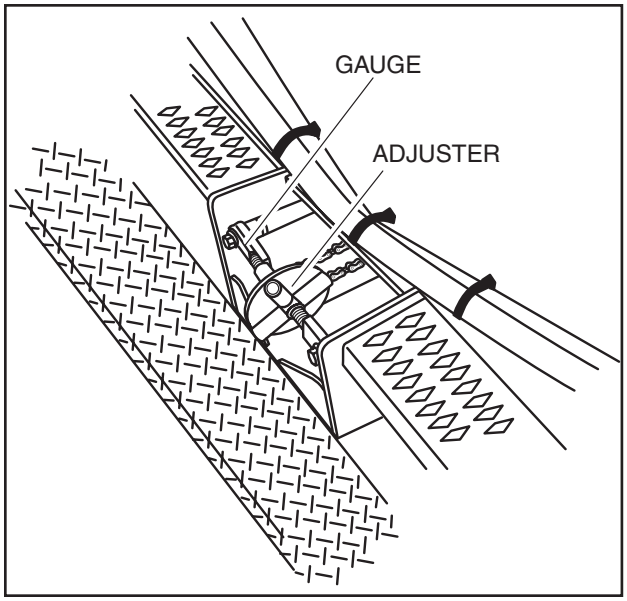

FIGURE 3-19. CROWN ADJUSTMENT

2. Use the gauge located on rear of crown adjuster to indicate when screed is level.
3. Set crown control. The screed plate is a one-piece unit, which is bent to provide the required crown setting (see Figures 3-20 and 3-21).
4. To get exact crown or valley, measure the distance between a flat level surface to the center bottom portion of screed (see Figure 3-20). Make adjustments with crown and valley control.

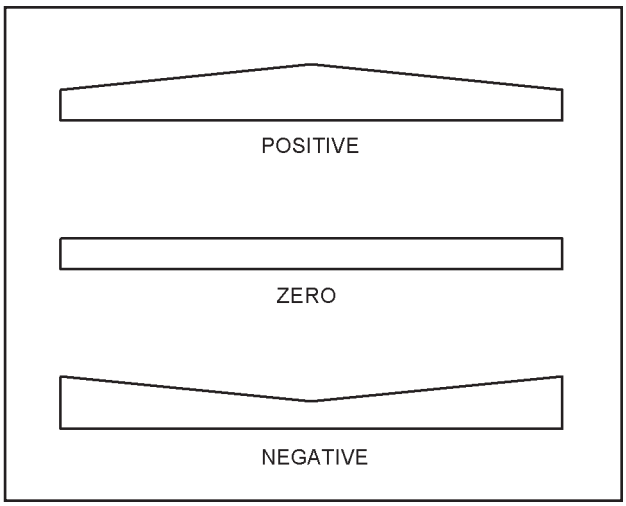

FIGURE 3-21. CROWN SETTINGS

NOTE: Positive crown is when the middle of the mat is raised to permit water to drain to each side. Negative crown is achieved by lowering the center of the screed plate. Negative crown might be used in an alley where drainage down the center of the alley is necessary.

5. Crown may be placed in the leading edge and/or the trailing edge of the screed plate. Leading edge crown aids material flow under the screed plate only. Trailing edge crown puts a crown in the mat.

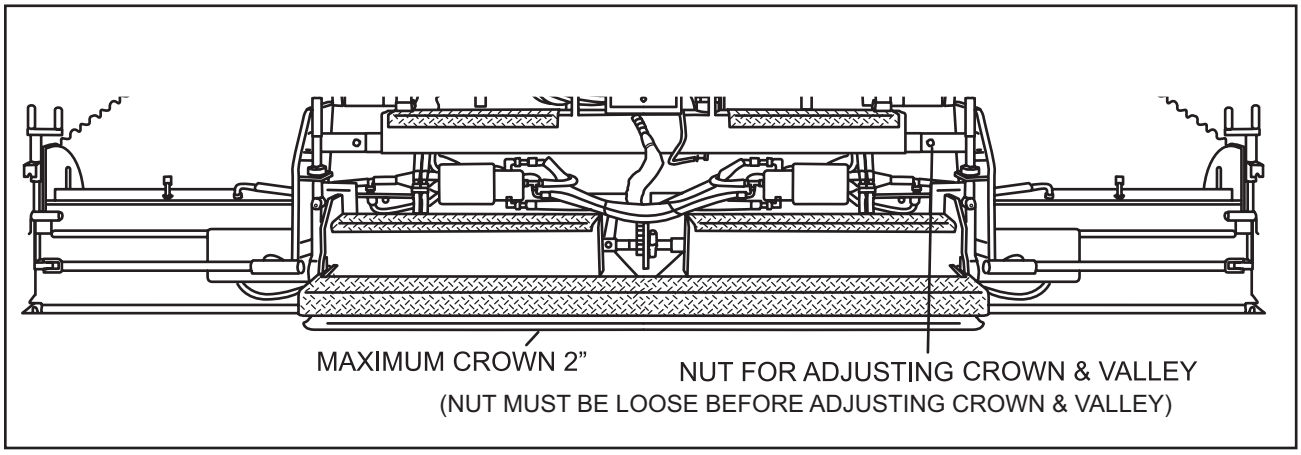

FIGURE 3-20. MAXIMUM CROWN

As an example: trailing edge crown is 0, leading edge crown is 1/8". With this set-up there will not be any crown placed in the mat laid by the Paver, however, material flow under the screed plate will be improved.

Trailing edge crown is set at 0 when the Paver is shipped from the factory. The chain connecting the leading and trailing edge crown control assures that the relationship of the edges remains constant as the trailing edge is changed to meet job conditions.

SETTING SCREED ENDGATES

1. On first pass unlock depth screws and lower endgate to about 1/4 inch (0.6 cm) of desired depth. This should provide a nice square edge (see Figure 3-22).
2. The scale located on each endgate will show proper setting or depth.
3. Tilt adjusters on endgate are to be set so front of endgate tilts down slightly when screed is lifted. This will allow the endgate to set itself to grade.

NOTE: When paving never let end gate carry the weight of the screed. This will cause screed compaction to vary.

4. During operation, if endgates start to dig in at front, adjust the tilt so the endgate tilts back.
5. When making a joint, endgate must be set to '0' on scale or where it fits flush with bottom of screed.

CAUTION: Never spray cleaning solvent or release agent on or near screed while it is being heated.

ATTENTION: Keep shoe clean. When making a joint, spray release agent on runner or joint shoe.

6. On first pass leave about 6 to 8 inches (15 to 20 cm) of unrolled asphalt where joint is being made.
7. In laying a joint, if the joint looks too high or too low, adjust main flight screw on screed about one (1) turn at a time and allow 4 to 5 ft. (1.2 to 1.4 m) of travel to correct itself. (Too much adjustment up or down may cause a roller coaster effect.)
8. If making a cold joint, set endgate down about 1/4 inch (0.6 cm), this will give a nice even edge.

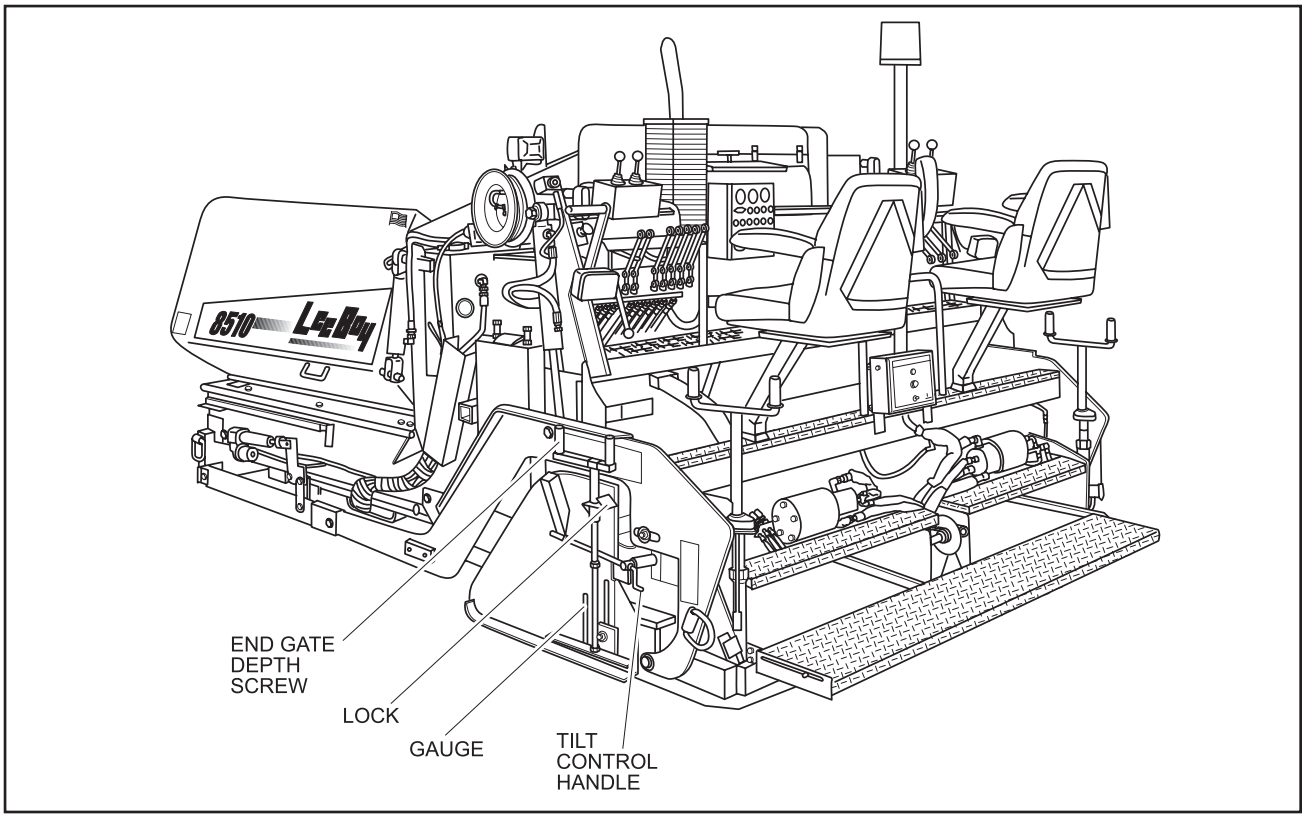

FIGURE 3-22. END GATES

SETTING SCREED EXTENSIONS (USED WHEN PAVING OVER 8 FT. [2.4 M])

The screed extensions should be heated before making adjustments. Use the crown tool to make adjustments. When the adjustment is made the pressure on the rear edge of extended screed is the same as on the rear edge of main screed. The result of making this adjustment will be a smooth mat the length of the screed.

1. Heat screed extension before making adjustment to extended width.
2. Adjust tilt on rear edge of extension by turning T-handle counterclockwise. This is done to give the same amount of compaction and slickness on extension as main screed.
3. If drag occurs, then too much pressure is on the screed extension and the extension is carrying all the weight. Correct this by turning the T-handle clockwise until both the screed and the screed extension produce the same looking mat.

STARTING TO PAVE

1. Follow start-up procedures. See ENGINE START-UP.
2. Position Paver to start of mat. Adjust screed in accordance with SETTING SCREED TO PAVE.
3. Open hopper wings into working position. When first starting to pave allow only a partial load of asphalt to enter the hopper.
4. When material starts to discharge from under screed, the SCREED LIFT RAISE/FLOAT lever on the dash should be set to the FLOAT position.

ATTENTION: Never fold hopper wings fully in when hopper is full of asphalt.

5. Set the LEFT CONVEYOR and RIGHT CONVEYOR AUTO/MANUAL switches to the AUTO position and convey material back to screed.

NOTE: Augers are not needed when paving a basic 8-foot pull.

6. Open cut-off gates under auger and start paving. Move slowly at first so adjustments can be made to screed.

ATTENTION: Never backup with cut-off gates open. Cut-off gates are designed to break away from cylinders when hitting a manhole or other hard objects. This occurs going forward not in reverse.

7. To prevent excessive handwork, about 2 to 3 ft. (0.6 to 0.9 m) from end of pull, set the LEFT CONVEYOR and RIGHT CONVEYOR AUTO/MANUAL switches to the OFF position and set LEFT CUTOFF AND RIGHT CUTOFF switches to the CLOSE position. Return Paver to starting position to begin next pull. Position screed endgate on joint side to 0 ft. or flush with bottom of main screed. Repeat process as done in first pull.
8. The Paver can operate using one side only. However, material from opposite side cannot be augered to the working side. The auger center cover prevents this. It is possible to leave both cut-offs shut and open the end gates on screed. This method is generally used in doing potholes and patching.

TRANSPORTING

WARNING: Work slowly and carefully to avoid accidents. Keep the area clear.

UNLOADING

1. Remove tie down equipment.
2. Make sure:
   a. Screed position - UP
   b. Auger extensions removed
   c. Extendible screed - IN
   d. Gates below augers - CLOSED

CAUTION: Always have a helper on the ground to assist the operator in the unloading procedure.

ATTENTION: Make sure engine is operating at a high enough RPM so that the hydraulic pump is providing sufficient flow to operate all functions properly.

3. Start and warm up engine.
4. Set throttle at 1/2 operating RPM. Set steering control lever so Paver moves very slowly.
5. Be sure that ramp is long enough so that screed does not strike the ramp when unloading.

ATTENTION: Do not let the screed strike the ramp when moving off the ramp. This can break the bearings on the thickness control screws or welds on the leveling arms. A longer ramp or blocks may be necessary to reduce the loading angle.

6. Move Paver forward down the ramp as shown in Figure 3-23.

NOTE: If you have a problem unloading the Paver - STOP - LOOK - THINK.

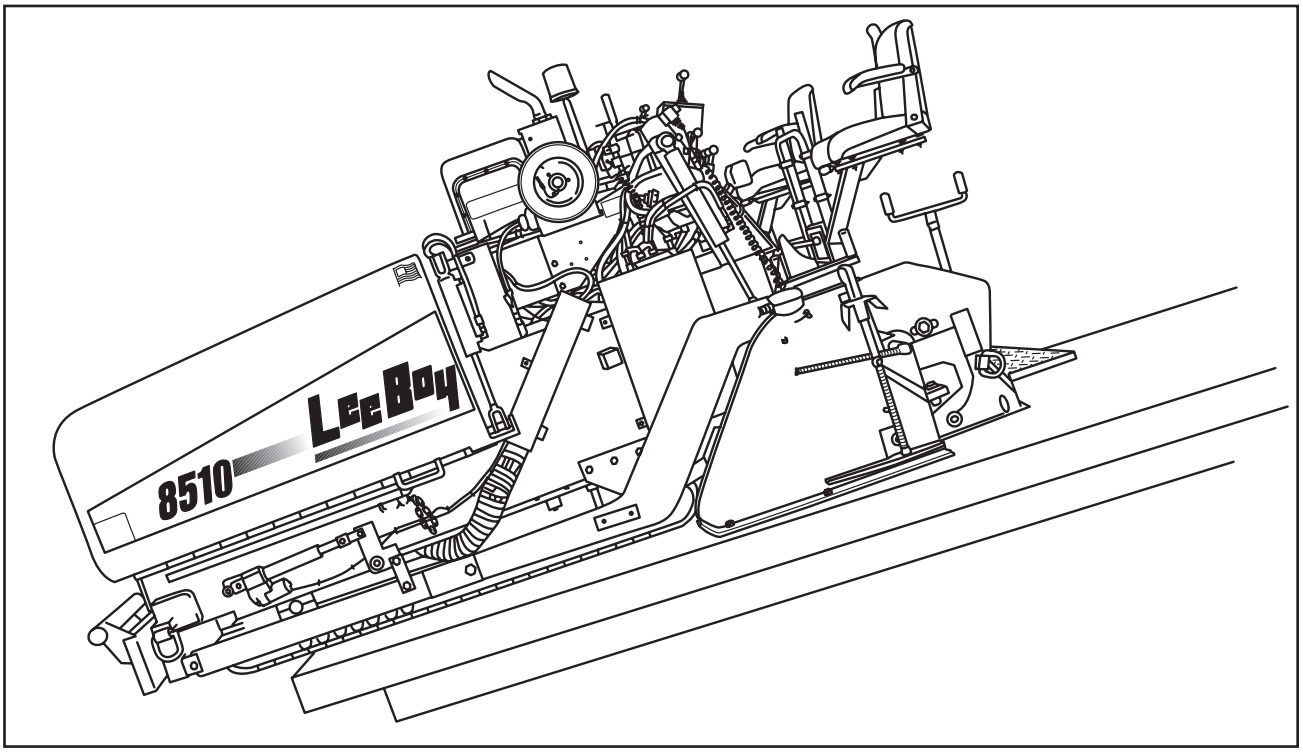

FIGURE 3-23. UNLOADING

LOADING

Trailers used to haul the Paver should have ample capacity to carry the weight of the Paver. Place the trailer in a clear, level area.

ATTENTION: Paver must be loaded screed end first to prevent damage. If the Paver is loaded hopper end first, the weight of the operator on the walkway will tend to tip the paver onto the screed (see Figures 3-24 and 3-25).

1. Move Paver to base of ramp. Line up tracks with the ramp.
2. Make sure:
   a. Screed position - UP
   b. Auger extensions removed
   c. Extendable screed - IN
   d. Gates below auger - CLOSED

NOTE: Always have a helper on the ground to assist the operator in moving the Paver onto the transport.

3. Be sure that ramp is long enough so that screed does not strike the ramp when loading.

ATTENTION: To prevent an excessive jolt to the undercarriage and throughout the Paver, reduce traveling speeds to a minimum before the Paver tracks come in contact with loading ramps or an abrupt change in the surface. If encountered, the track drive sprocket or possible other components may be damaged because of the excessive jolt.

4. Back the Paver onto the ramp. Set throttle at 1/2 operating RPM and steering control lever so Paver moves very slowly onto the ramp.
5. With the steering control lever slowly guide the Paver up the ramp.
6. Position the Paver on the trailer centered from side to side.
7. Lower screed to deck.
8. Shut down engine.
9. Secure Paver to transport as directed by regulations.

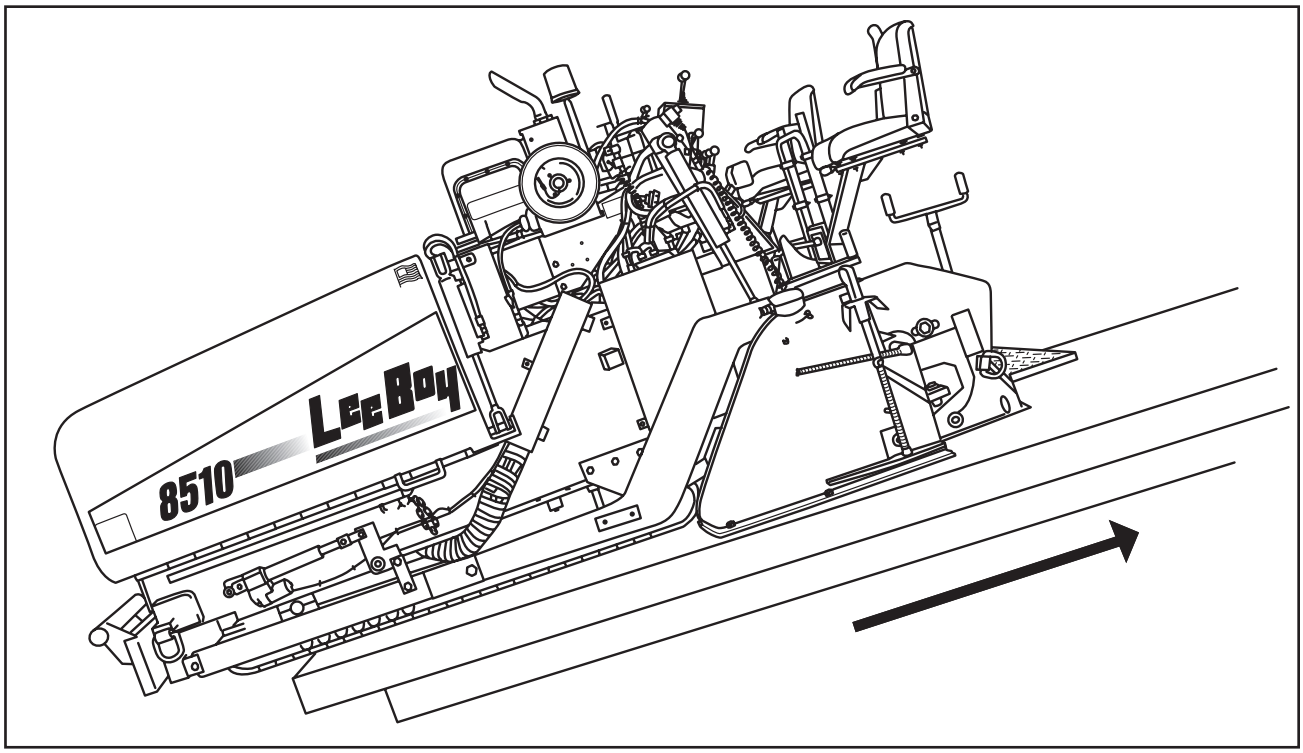

FIGURE 3-24. CORRECT LOADING POSITION

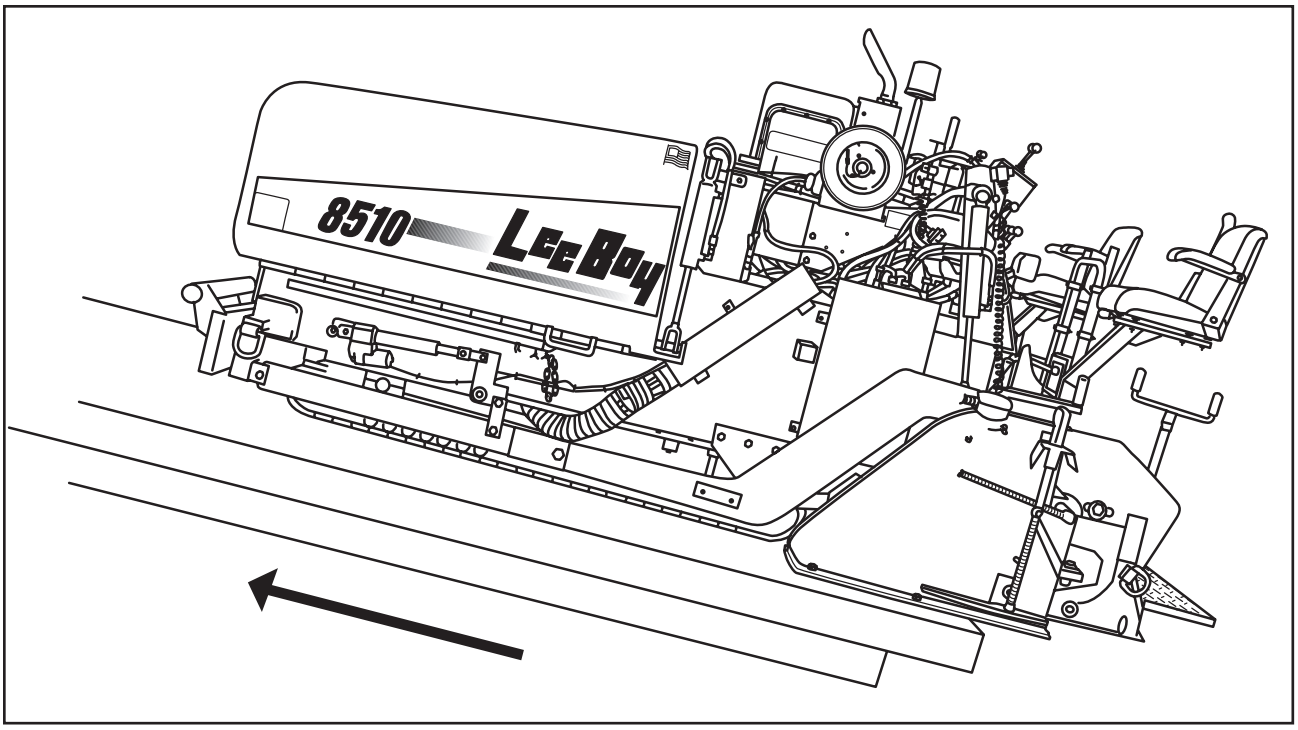

FIGURE 3-25. INCORRECT LOADING POSITION

TIE DOWN PROCEDURE

1. Attach tie down chains to the hopper end of Paver at the D-rings (see Figure 3-26).
2. Attach tie down chains to the screed end of Paver at the D-rings (see Figure 3-26).
3. Place chocks at wheels or tracks.
4. Make sure all chains are tight before moving.

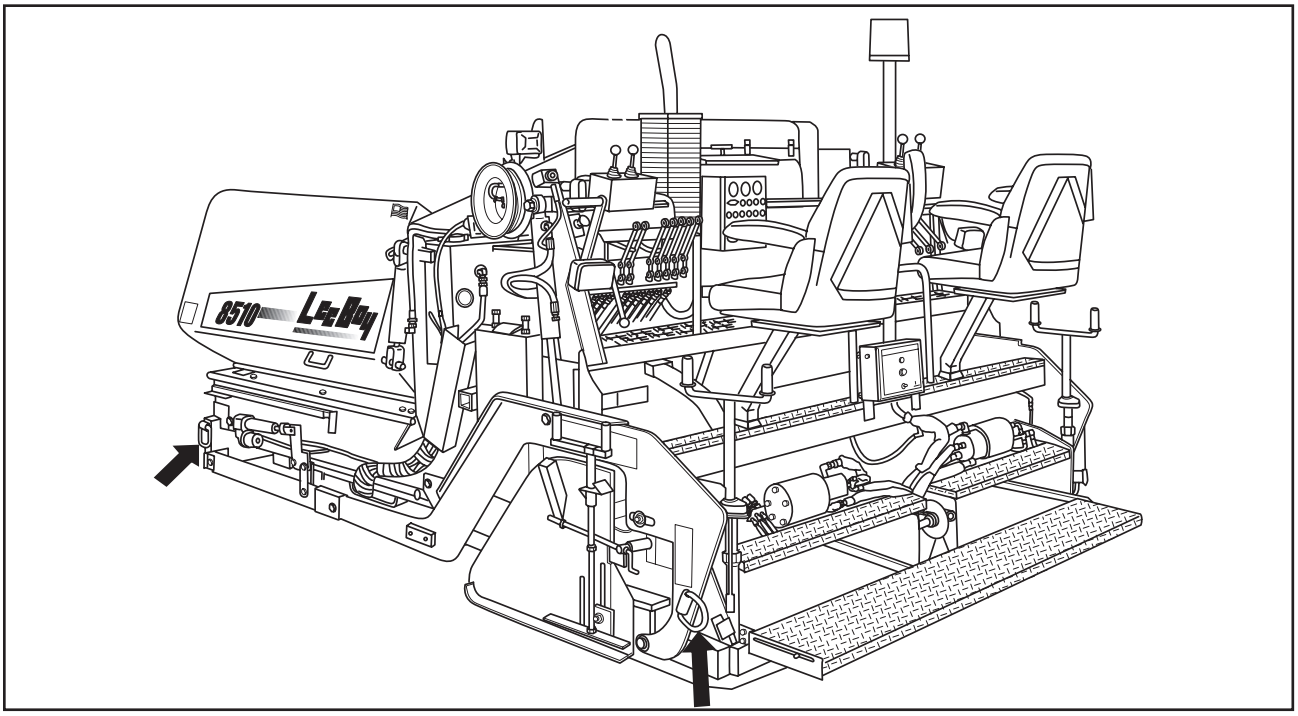

FIGURE 3-26. TIE DOWN POINTS

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Section 4
MAINTENANCE

GENERAL INFORMATION

This section gives the necessary procedures for routine and general maintenance on the 8510 Conveyor Paver. Before starting any Maintenance program on the machine, it is important to READ, UNDERSTAND, and FOLLOW all Maintenance instructions, Danger, Warning, and Caution messages in this section, as well as all Safety information contained in Section 1 of this manual.

DANGER: **Failure to observe the Maintenance instructions, Danger, Warning, and Caution messages in this manual can cause serious injury or death.**

NOTE: **By following a careful service and maintenance program for your machine, you will insure many years of trouble free operation.**

PROPERLY MAINTAINED EQUIPMENT IS SAFE EQUIPMENT! The user of this product is responsible for inspecting the machine daily, and for having parts replaced or repaired when continued use would cause damage or excessive wear to other parts. General daily inspection of the machine should include inspection for missing guards, loose bolts, fluid leaks, worn or damaged hoses and debris or dirt accumulations which could cause a potential service or safety problem.

ROUTINE MAINTENANCE

GENERAL INFORMATION

Maintenance must be a planned program that includes periodic machine inspection and lubrication procedures.

The maintenance program must be done based on the machine's "Operating Hours", recorded on the hour meter, or on a "Periodic Schedule'', which is done at daily, weekly, monthly, or yearly intervals.

ATTENTION: **When performing routine maintenance such as 50, 100, 250, 500, or 1000 hours, always include previous routine maintenance hours to the higher hourly schedule.**

Table 4-1, Maintenance Interval Chart, lists recommended maintenance procedures and time intervals between machine maintenance inspections and lubrication procedures. Tables 4-3 and 4-4 list recommended torque values for fittings and fasteners commonly used on this machine.

MACHINE LUBRICATION

Proper lubrication is necessary to maintain the machine at top efficiency. Refer to Table 4-2, Lubrication Chart. All lubrication points are shown in Figures 4-1 through 4-3.

TABLE 4-1. MAINTENANCE INTERVAL CHART

8 HOURS or DAILY		
Engine Oil Level	Check	15W-40
Engine Coolant	Check	50/50 Antifreeze
Engine Air Filter	Check	310060
Engine Fuel Filter (Main)	Check	310080
Engine Fuel Filter (In-Line)	Check	310090
Hydraulic Oil	Check	VG32
Hydraulic Filter (Charge)	Check	290030
FIRST 50 HOURS		
Torque Hubs	Check	50W Gear Lubricant
Engine Oil	Replace	15W-40
Engine Oil Filter	Replace	310070
50 HOURS or WEEKLY		
Engine Air Filter	Check	310060
FIRST 100 HOURS		
Hydraulic Oil	Replace	VG32
Hydraulic Filter (Charge)	Replace	290030
Hydraulic Strainer	Clean	36123
100 HOURS or MONTHLY		
Engine Belt	Check	320090
Chains	Check	Adjust
250 HOURS or QUARTERLY		
Engine Air Filter	Replace	310060
Engine Oil	Replace	15W-40
Engine Oil Filter	Replace	310070
500 HOURS or SEMI-ANNUALLY		
Engine Fuel Filter (Main)	Replace	310080
Engine Fuel Filter (In-Line)	Replace	310090
Engine Coolant	Replace	50/50 Antifreeze
Hydraulic Oil	Replace	VG32
Hydraulic Filter (Charge)	Replace	290030
Hydraulic Strainer	Replace	36123
Torque Hubs	Fill	50W Gear Lubricant

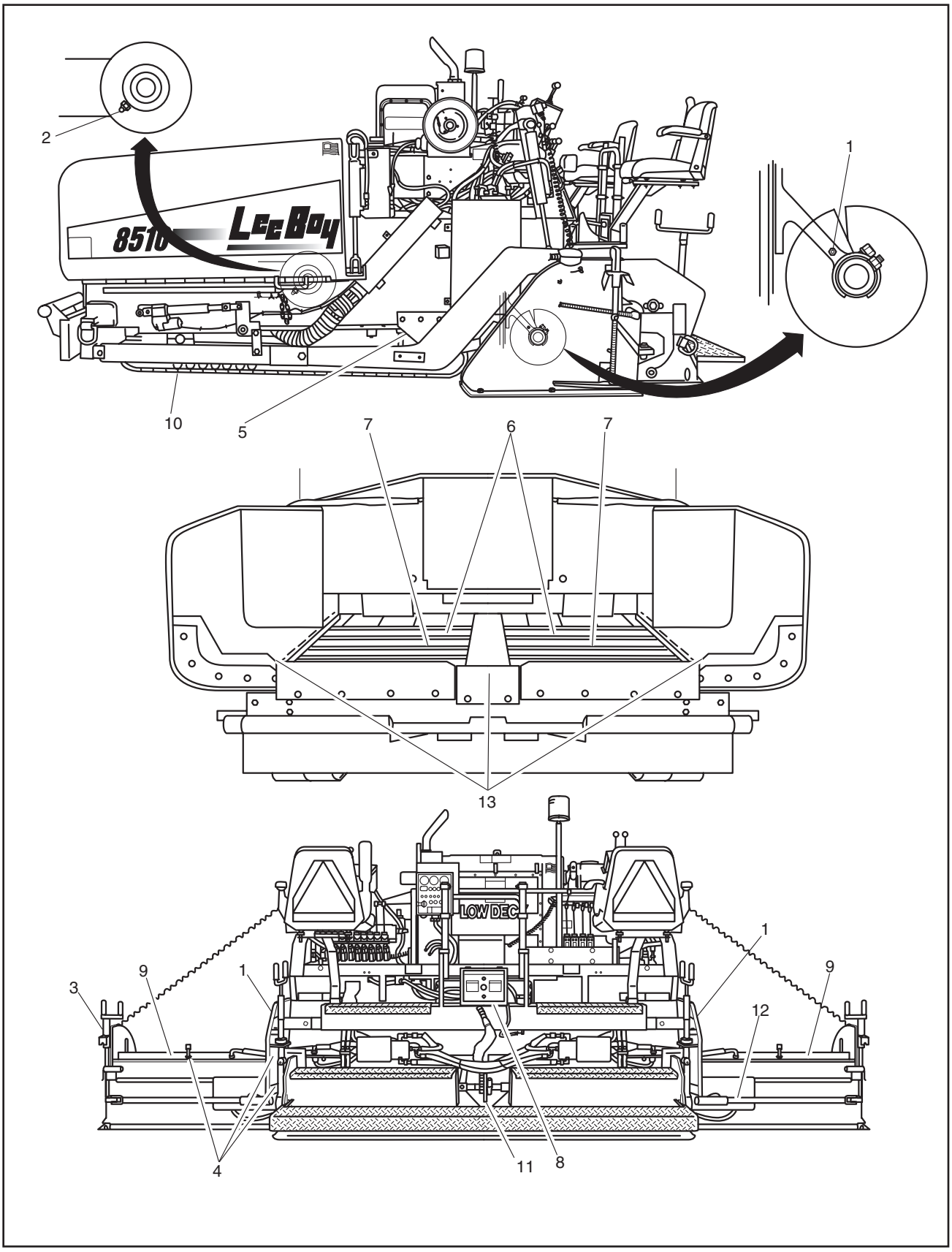


FIGURE 4-1. LUBRICATION POINTS

TABLE 4-2. LUBRICATION CHART

Item No.	TYPE Lube	Description and Location	Interval
1	A	AUGER, grease fitting on end mount (end of day)	Daily
2	A	CONVEYOR PIVOT, front of screed each side under Conveyor Deck	Monthly
3	A	DEPTH SCREW (grease first in lock position, unlock and turn 180° and grease)	Weekly
4	A	FLANGE BEARING & FITTING, on flight screw plus FLANGE BEARING, on T-Handle of extension, (both sides)	Weekly
5	A	PILLOW BLOCK BEARING, on rear axle	3 Months
6	B	CONVEYOR CHAIN, left and right side	Daily
7	B	CONVEYOR AND AUGER, as shown	Daily
8	B	AUGER CHAIN, middle of Paver	Daily
9	B	SCREED EXTENSIONS, left and right (clean surface)	Daily
10	B	TRACKS, between track pads	Daily
11	A	SCREED CROWN, on chain	Weekly
12	A	EXTENSION SLIDES AND RODS	Daily
13	B	Any part of the machine that comes in contact with the asphalt	Daily

LEGEND

A	GREASE WITH SHELL AVANIA EP GREASE 2 OR EQUIVALENT
B	SPRAY WITH RELEASE AGENT, CLEANING SOLVENT OR CHAIN LUBE

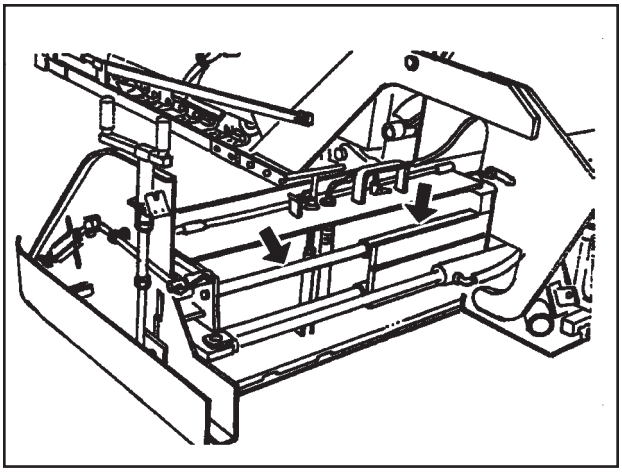


FIGURE 4-2. EXTENSION SLIDE LUBRICATION POINTS

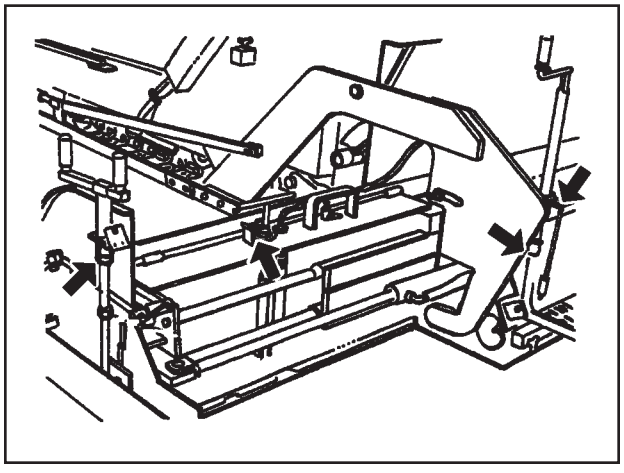


FIGURE 4-3. SCREED LUBRICATION POINTS

TABLE 4-3. TORQUE SPECIFICATIONS FOR STANDARD INCH FASTENERS

The following table lists torque values for standard fasteners and is intended as a guide for average application involving typical stresses and machined surfaces. Values are based on physical limitations of clean, plated and lubricated hardware. Check tightness of bolts periodically, using this table as a guide. When using locking fasteners, increase torque values by 5%.

CAUTION: Replace original equipment with hardware of equal grade. When an individual torque value is specified, it should be followed instead of values given in this table.

		CAPSCREWS: SAE GRADE 5				CAPSCREWS: SAE GRADE 8			
SIZE	THREAD	TORQUE FT. LBS.		TORQUE N•m		TORQUE FT. LBS.		TORQUE N•m	
		Dry	Lubed	Dry	Lubed	Dry	Lubed	Dry	Lubed
1/4	20 UNC	8	6	11	9	12	9	16	12
	28 UNF	10	7	13	10	14	10	19	14
5/16	18 UNC	17	13	24	18	25	18	33	25
	24 UNF	19	14	26	20	27	20	37	28
3/8	16 UNC	31	23	42	31	44	33	59	44
	24 UNF	35	26	47	36	49	37	67	50
7/16	14 UNC	49	37	67	50	70	52	95	71
	20 UNF	55	41	75	56	78	58	105	79
1/2	13 UNC	75	57	100	77	105	80	145	110
	20 UNF	85	64	115	86	120	90	165	120
9/16	12 UNC	110	82	145	110	155	115	210	155
	18 UNF	120	91	165	125	170	130	230	175
5/8	11 UNC	150	115	205	155	210	160	285	215
	18 UNF	170	130	230	175	240	180	325	245
3/4	10 UNC	265	200	360	270	375	280	510	380
	16 UNF	295	225	405	300	420	315	570	425
7/8	9 UNC	430	320	580	435	605	455	820	615
	14 UNF	475	355	640	480	670	500	905	680
1	8 UNC	645	485	875	655	910	680	1230	925
	14 NF	720	540	980	735	1020	765	1380	1040
1-1/8	7 UNC	795	595	1080	805	1290	965	1750	1310
	12 UNF	890	670	1210	905	1440	1080	1960	1470
1-1/4	7 UNC	1120	840	1520	1140	1820	1360	2460	1850
	12 UNF	1240	930	1680	1260	2010	1500	2730	2050
1-3/8	6 UNC	1470	1100	1990	1490	2380	1780	3230	2420
	12 UNF	1670	1250	2270	1700	2710	2040	3680	2760
1-1/2	6 UNC	1950	1460	2640	1980	3160	2370	4290	3210
	12 UNF	2190	1650	2970	2230	3560	2670	4820	3620

TABLE 4-4. TORQUE SPECIFICATIONS FOR STANDARD METRIC FASTENERS

The following table lists torque values for metric fasteners and is intended as a guide for average application involving typical stresses and machined surfaces. Values are based on physical limitations of clean, plated and lubricated hardware. Check tightness of bolts periodically, using this table as a guide. When using locking fasteners, increase torque values by 5%.

CAUTION: Replace original equipment with hardware of equal grade. When an individual torque value is specified, it should be followed instead of values given in this table.

NOMINAL SIZE & PITCH	CLASS 8.8 (GRADE 5 EQUIVALENT)				CLASS 10.9 (GRADE 8 EQUIVALENT)			
	TORQUE FT. LBS.		TORQUE N•m		TORQUE FT. LBS.		TORQUE N•m	
	Dry	Lubed	Dry	Lubed	Dry	Lubed	Dry	Lubed
M4 x 0.7	2.27	1.70	3.07	2.30	2.27	2.31	4.17	3.13
M5 x 0.8	4.58	3.43	6.20	4.65	6.22	4.67	8.43	6.33
M6 x 1	7.75	5.83	10.5	7.90	10.60	7.97	14.3	10.8
M8 x 1.25	18.89	14.17	25.6	19.2	18.95	19.26	34.8	26.1
M10 x 1.25	39.11	29.52	53.0	40.1	53.87	40.59	73.0	55.0
M12 x 1.75	64.94	48.71	88.0	66.0	88.56	66.42	120.0	90.0
M14 x 2	103.32	77.49	140.0	105.0	140.22	107.01	190.0	145.0
M16 x 2	162.36	121.77	220.0	165.0	221.40	166.05	300.0	225.0
M20 x 2.5	317.34	236.16	430.0	320.0	428.04	321.03	580.0	435.0
M24 x 3	516.12	409.59	740.0	555.0	754.38	557.19	1010.0	755.0
M27 x 3	797.04	597.78	1080.0	810.0	1084.86	811.80	1470.0	1100.0
M30 x 3.5	1084.86	811.80	1470.0	1100.0	1476.00	1107.00	2000.0	1500.0

MAINTENANCE SCHEDULE

GENERAL INFORMATION

Preventive maintenance on the 8510 Conveyor Paver will provide years of trouble-free operation. Adjustments can be performed in the field with ordinary hand tools. Engine preventive maintenance, other than oil, air, and fuel filter changes, is not covered in this section. Refer to the engine manufacturer's manual for engine service information.

NOTE: Changing oil and cleaning the machine should only be done in an area designed to contain the oil and chemicals involved in any maintenance requirement. Discard these by-products in accordance with environmental regulations.

NOTE: For your convenience there is an oil drain hose located in the toolbox.

CAUTION: Do not substitute fasteners of any kind unless the fasteners are equal in size and grade to original equipment. See Tables 4-5 and 4-6 for torque specifications.

ATTENTION: When performing routine maintenance such as 50, 100, 250, 500, or 1000 hours, always include previous routine maintenance hours to the higher hourly schedule.

PREPARING THE MACHINE FOR MAINTENANCE

When performing maintenance, perform the following steps before leaving the operator's position, unless the maintenance procedure instructs otherwise.

1. Park the machine on a flat even surface.
2. Lower all attachments to ground level.
3. Place transmission in neutral.
4. Run engine at 1/2 speed (RPM) without load for 3 to 5 minutes.
5. Reduce engine speed (RPM) to slow idle.
6. Place ignition switch in the OFF position.

WARNING: If maintenance must be performed with engine running, do not leave machine unattended.

CHECKS AND ADJUSTMENTS

1. Check for loose, damaged, missing or corroded parts. Repair or replace as required.
2. Check for damaged, loose, or missing decals. Replace decals as required.
3. Cleaning the Paver at the end of the working day while the machine is still hot is very important. A Paver that is continuously left with mix in it is going to increase maintenance costs. Scrape off mix and spray cleaning solvent or release agent on the screed plate, hopper, etc., any place that has come in contact with the mix. Spray down the conveyors while they are running. All cleaning should be performed while the machine is hot.

CAUTION: Never spray cleaning solvent or release agent on or near screed while it is being heated.

ATTENTION: If mix is allowed to remain in the machine overnight, possible damage can result on start-up the next day. Poor housekeeping will increase maintenance costs.

4. Raise Conveyors (See Adjustments - RAISING CONVEYORS) and clean mix off all flat surfaces. This operation is quick and simple when the Paver is still hot. Immediately after raising conveyors place the safety prop in proper position.

CHECKING OIL LINES AND FITTINGS

1. Refer to PREPARING MACHINE FOR MAINTENANCE and park machine.
2. Check the machine for indications of oil leakage around oil lines, hoses, and fittings.
3. Tighten fittings as necessary. Replace hoses and fittings as needed.

CHECKING AIR INTAKE HOSES

Check air intake hoses from the engine to the air cleaner assembly. Check for cracked, dry rotted, loose, worn, or damaged hoses, tubes, and clamps. Tighten, repair, or replace parts as needed.

RAISING CONVEYOR

1. Fold sidewings all the way in, then remove bolts on sidewings.
2. Grab top of wings and pull out 5 to 6 in. (13 to 15 cm), then pull bottom handle out till wing knuckles out (see Figure 4-4).

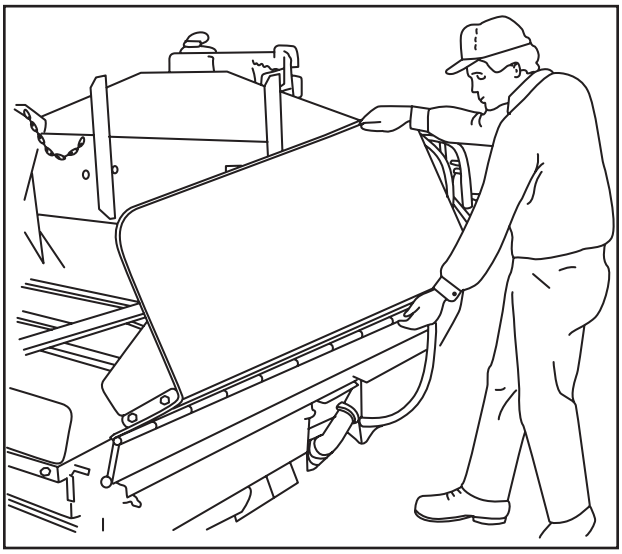


FIGURE 4-4. SIDEWINGS

NOTE: Engine must be running to raise conveyor.

3. Raise conveyor by pushing the CONVEYOR RAISE/LOWER handle upward to the RAISE position and hold until conveyor is fully raised (see Figure 4-5).

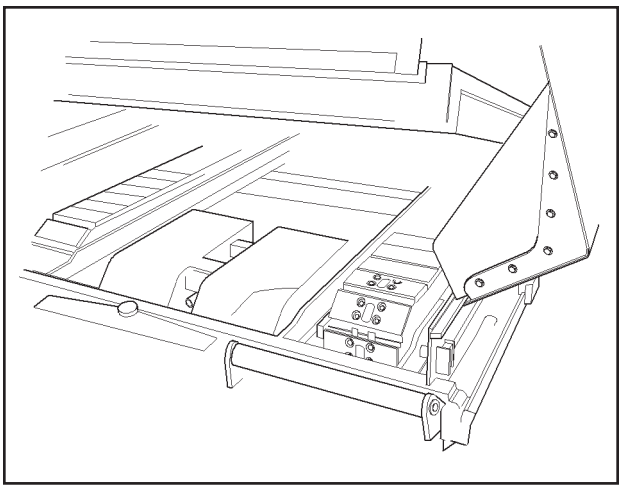


FIGURE 4-5. HOPPER RAISED

WARNING: Never work under hopper without safety prop in position.

4. Immediately after raising the hopper, place the safety prop in position (see Figure 4-6, item 1).

NOTE: Engine should be turned off when lowering.

5. With engine turned Off and Key Off, lower the conveyor onto the safety prop by pulling the CONVEYOR RAISE/LOWER handle downward to the LOWER position and hold until conveyor is fully lowered and is resting securely on the safety prop. This will provide a margin of safety preventing the safety prop from accidentally being dislodged.

WARNING: Use extreme care when working under conveyors. Clear the area of untrained personnel. Be sure safety prop is properly placed into support position.

CAUTION: Before raising or lowering conveyors, fold sidewings into the full "In" position.

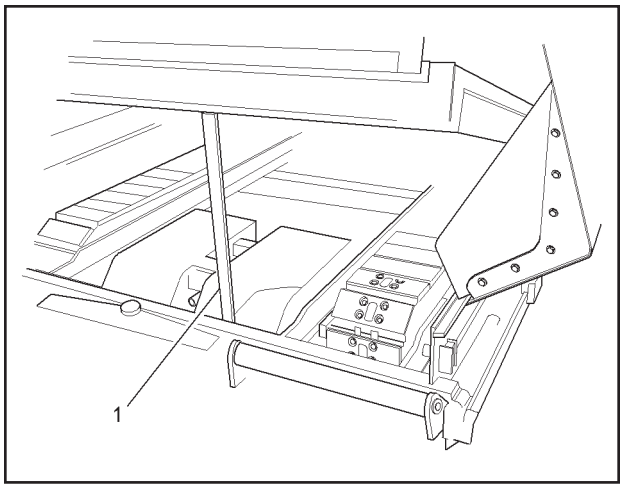


FIGURE 4-6. SAFETY PROP IN POSITION

LOWERING CONVEYOR

ATTENTION: Remove all tools or foreign objects before lowering conveyor.

1. Before lowering the conveyor, make sure that the area under the conveyor is clear of tools or foreign objects.
2. Release safety prop (see Figure 4-6, item 1) carefully. If conveyor has dropped firmly down onto safety prop, it will be necessary to raise the conveyor. After raising the conveyor, lower the safely prop as instructed.
3. Lower conveyor by pulling the CONVEYOR RAISE/LOWER handle downward to the LOWER position and hold until conveyor is fully lowered.
4. Clean area where side wings fold down.
5. Fold side wings back with same in and out knuckle motion used to raise the side wings.
6. Reinstall the hold down bolts on each side wing.

ATTENTION: Never pave with hold down bolts out. Sidewings may lift, letting asphalt get into flight chains.

CONVEYOR FLIGHT CHAIN ADJUSTMENT

ATTENTION: For cold weather, keep conveyor flight chain properly oiled with cleaning solvent or release agent. This will prevent conveyor from sticking inside of conveyor pan. Neglect could result in conveyor bars bowing if conveyor sticks.

NOTE: The conveyor should run smooth when conveyor chain is properly adjusted. These chains should be adjusted every 100 hrs. to maintain smooth operations. If irregular movement of the conveyor occurs, this is generally a sign that an adjustment is needed.

Use the following procedure to make adjustment:

1. Raise conveyors. Put keys in safe place.
2. Secure safety prop (see Figure 4-6, item 1) to prevent conveyor from accidentally lowering.

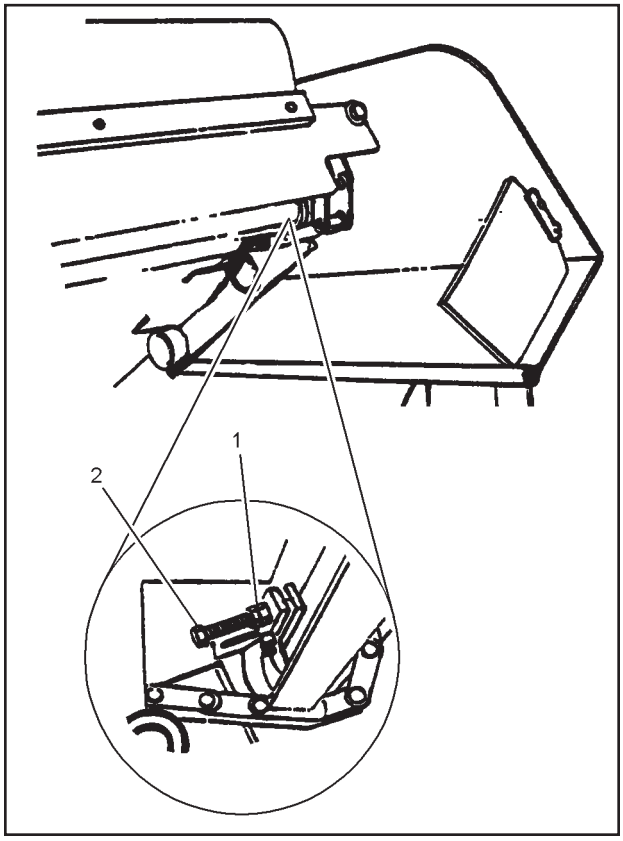


FIGURE 4-7. ADJUSTING BOLT

3. Loosen the locknut (see Figure 4-7, item 1) and bolt holding the Adjustment Roller assembly.
4. Turn adjustment bolts (item 2) alternately on both sides of the conveyor. The pressure on the chain will be noticeable as the bolts are tightened. (Turn one bolt one half turn, then the other bolt one half turn. Continue alternating tightening until chains are tight).
5. After the conveyor chain tension is set, tighten lockout (item 1) and bolt holding assembly.
6. If the adjustment bolts (item 2) have been run out, it will be necessary to remove a link in the conveyor chains and add a half link. This will bring the adjustment bolts back to full travel.
7. Repeat steps 1 through 4 for the opposite side.

AUTOMATIC TRACK ADJUSTMENT

NOTE: Failure to maintain adequate throttle setting may cause improper adjustment to track.

ATTENTION: When backing the machine with a load, maintain at least a three-quarter throttle setting. Failure to do so may cause improper track tension, resulting in poor performance and machine damage.

Hydraulic adjustment cylinders are automatic and provide even tension on track that prevents excessive wear to Paver undercarriage. This feature will require the operator, when backing with load, to maintain at least one-half throttle setting. Hydraulic pressure below one-half throttle is not adequate to maintain track adjustment.

CONVEYOR DRIVE CHAIN ADJUSTMENT

1. Lower conveyors and operate them.
2. Look at drive chain through the top of the frame. If drive chain has excessive loose motion in it, adjustment is necessary.

WARNING: Turn off unit while adjusting chains.

3. If adjustment is necessary, loosen the locknuts (see Figure 4-8, item 2) on the chain adjuster. Turn the chain adjuster (item 1) until the whip in the drive chain disappears.
4. Retighten locknuts (item 2) when adjustment is made.
5. Perform the same check on the opposite conveyor drive chain.

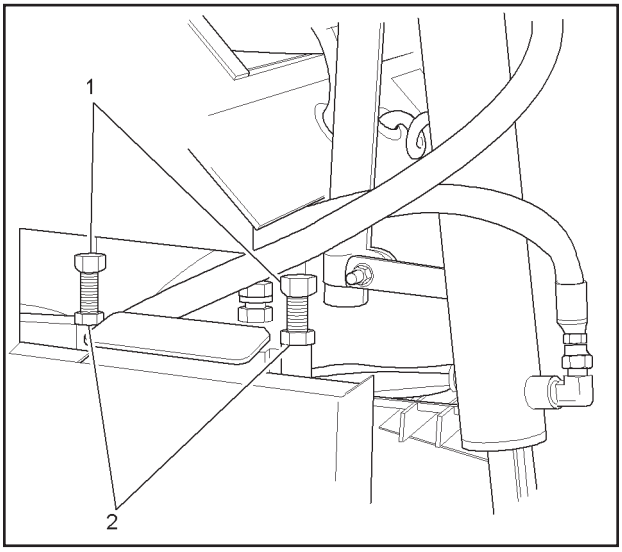


FIGURE 4-8. CONVEYOR CHAIN ADJUSTING BOLTS

TORQUE HUB ADJUSTMENT

Hydraulic Motor

Low Gear

NOTE: The low gear adjustment screw is located on bottom of drive motor.

The adjustment must be made to the slow side drive motor only. Only make small changes at a time and recheck Paver. Proceed as follows:

NOTE: The 2-SPEED HIGH/LOW switch on the main dash panel must be in the LOW position.

1. With Paver running, set the 2-SPEED HIGH/LOW switch to the LOW position.
2. Locate adjustment screw on the bottom of the hydraulic motor.

NOTE: Low gear adjustment is a flat screw.

3. Adjust screw in small increments of about 1/4 turn then recheck tracking.

High Gear

NOTE: The high gear adjustment screw is located on top of drive motor.

Tracking adjustment on the high side gear is performed by adjusting the screw on top of hydraulic motor. The adjustment on the motor for the fast track must be screwed in to equalize track speed.

NOTE: If hydraulic motor has not been previously set, ten revolutions of the adjustment screw may be required before noticing any difference in travel.

NOTE: The 2-SPEED HIGH/LOW switch on the main dash panel must be in the HIGH position.

1. With Paver running, set the 2-SPEED HIGH/LOW switch to the HIGH position.
2. Adjust screw on top of hydraulic motor until back pressure from spool is felt on adjustment screw. This indicates adjustment is close.

NOTE: High gear adjustment is an Allen screw.

3. Finalize adjustment by making one quarter turns at a time until correct adjustment is made.

Torque Hub Lubrication

1. Check oil level in the torque hub, by removing the plug at the 3 o'clock position. If oil comes out, no oil is needed. Insert plug and tighten.
2. If oil does not come out, remove the plug at the 12 o'clock position and fill torque hub with 50 WT gear lubricant until oil starts to appear at the other hole.
3. Replace both plugs and repeat process on other torque hub (see Figure 4-9).

NOTE: The torque hub on the right side is rotated one (1) bolt hole different than the left side.

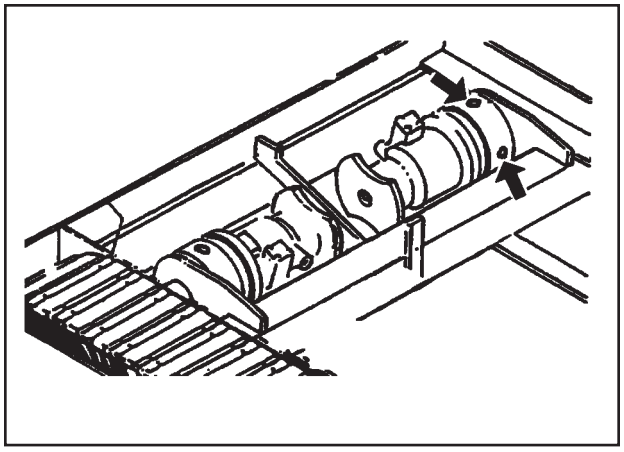


FIGURE 4-9. TORQUE HUB LUBRICATION

AUGER DRIVE CHAIN ADJUSTMENT

1. The auger chains should be just snug, not loose. To tighten chains, loosen bolts (see Figure 4-10, items 1 & 2) in slots provided for take up.
2. To adjust chains for the right auger, use bolts (1). For left auger adjustment use bolts (2).
3. Use a pry bar under hydraulic motor mount and pry to tighten chain. Twist auger forward and rearward by hand to feel play in chain (1/4 in. [0.6 cm] of play in chain is recommended).
4. Tighten adjustment bolts to a torque of 209 ft. lbs. (283 N•m).

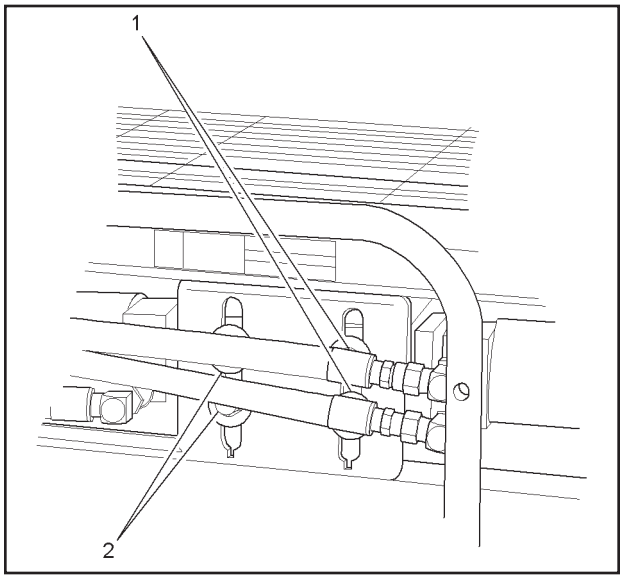


FIGURE 4-10. AUGER CHAIN ADJUSTING BOLTS

OVERRIDING HATZ FUEL SOLENOID VALVE

ATTENTION: If blower belt breaks and engine shuts down, hold button in at rear of belt tightener to make it run. Do not run more than two or three minutes or engine will overheat and lock up.

Make sure the engine is full of oil and the blower belt is not broken before performing the manual override.

NOTE: If the manual override lever is used, the automatic shutdown system will not operate. The machine manufacturer and the engine manufacturer will accept no liability for consequential damage, and the warranty is invalidated. For this reason, operate the engine only in a genuine emergency and for a very short period of time after engaging the manual override lever.

NOTE: Do not run without the engine cover.

To override, remove the top cover on the engine. Look on the oil filter side of the engine and find the fuel solenoid and extra fuel housing above the oil filter. On top of the housing is a small lever. Break the lead seal on the right side of the lever and turn the lever clockwise to lock in. The engine will now run until you unlock the override lever.

TRACK TENSION

Pressure Check

All part item numbers in the following procedure refer to the parts list for the SPROCKET DRIVE TRACK SYSTEM and the associated drawing in the parts manual.

NOTE: Relief pressure is set at 700 PSI at track tension manifold (45).

CAUTION: Do not tamper with adjustment part of relief cartridge.

Track Tension Release

1. Locate manifold (45) under hopper to release track tension.
2. Back relief cartridge out of the aluminum block about three turns or until pressure release is heard.
3. Make sure cartridge is tightened before moving machine.

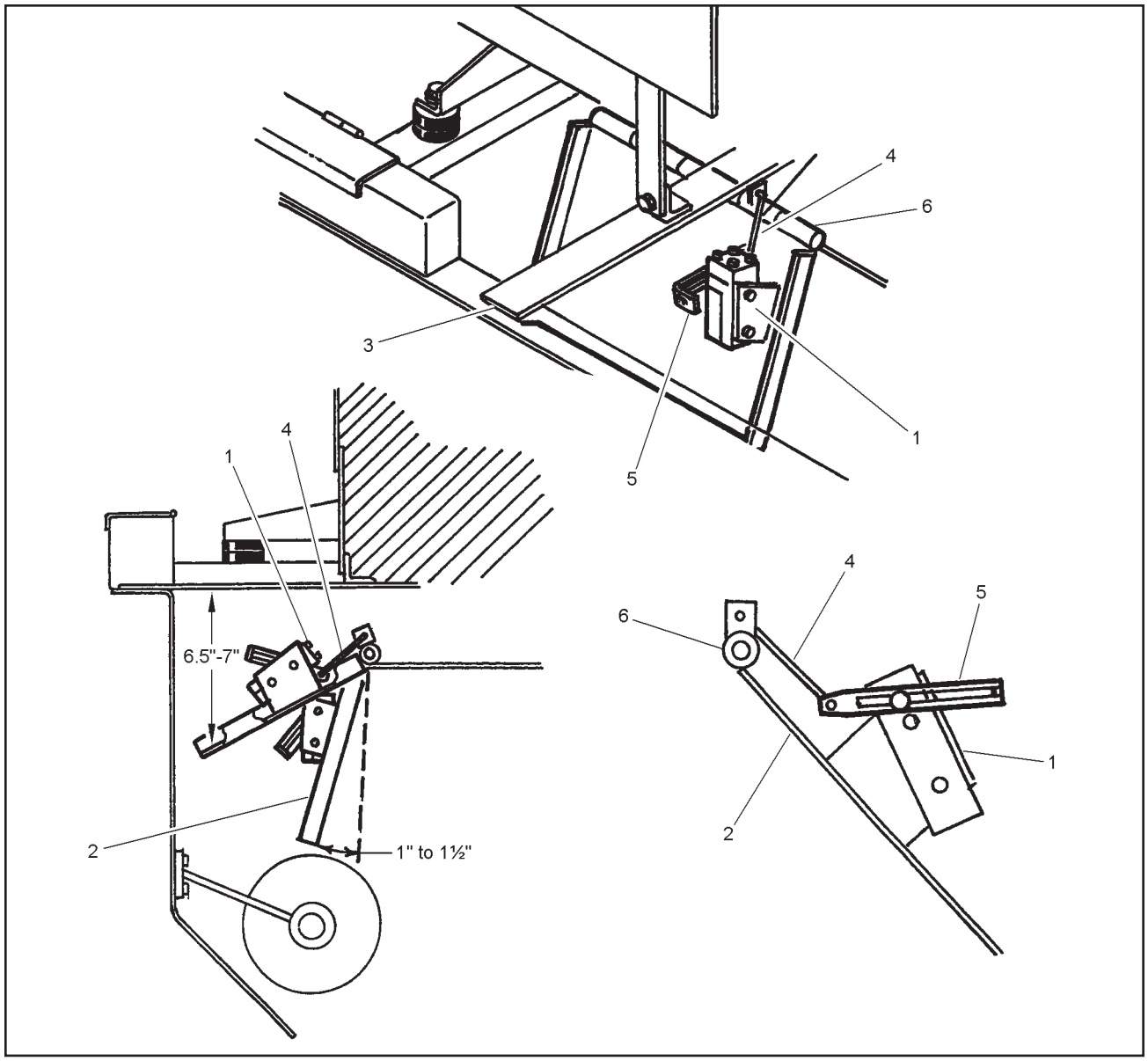


FIGURE 4-11. CONVEYOR MICRO-SWITCH LOCATION

CONVEYOR LIMIT SWITCH ADJUSTMENT

In order for the conveyor's start and stop to occur at the correct position, small adjustments may be necessary to the micro-switch (see Figure 4-11, item 1) located on the conveyor flap (item 2). There are two positions of the conveyor flap: one upper, shutting the conveyor OFF, and one lower, turning the conveyor ON. Read the following procedures carefully, referring to the figures as needed.

1. Raise the conveyor flap (item 2) 6-1/2 to 7 in. (16.5 to 17.8 cm) from bottom of the tank mount support (item 3). Secure conveyor flap so it remains in this position. If micro-switch clicked OFF within the 6 1/2 to 7 in. (16.5 to 17.8 cm) limit, no further adjustment is required to the upper travel.
2. If the micro-switch (item 2) did not click OFF, adjustment is needed. Remove the linkage (item 4) attaching the actuator arm (item 5) to the eyelet on the flap pivot housing (item 6).

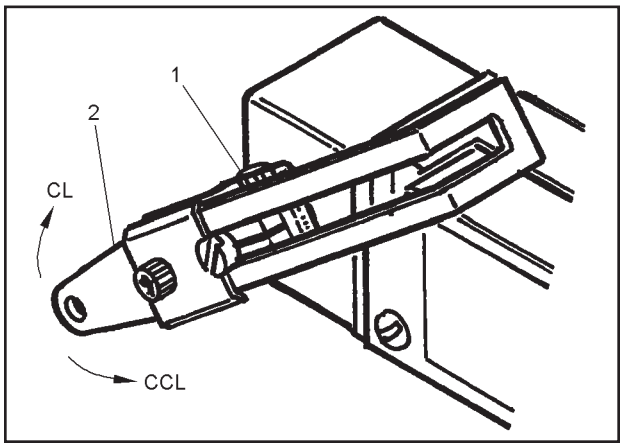


FIGURE 4-12. SETSCREW “A” LOCATION

3. Loosen setscrew “A” (Figure 4-12, item 1), on the actuator arm (item 2). Reposition this arm by either rotating it clockwise or counterclockwise depending where the micro-switch clicked OFF during the conveyor flaps’ upward travel.
4. When the click OFF occurs between the 6-1/2 to 7 in. (16.5 to 17.8 cm) limit, tighten setscrew and connect linkage.
5. If the lower flap travel does not fall into the lower limits, loosen setscrew “B” slightly (Figure 4-13, item 1) on the actuator arm (item 2).

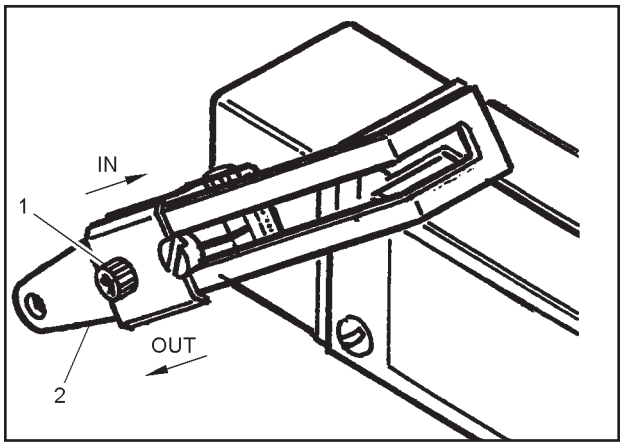


FIGURE 4-13. SETSCREW “B” LOCATION

NOTE: The setting from the factory is 1 in. (2.54 cm) from the center of the setscrew “B” to the eyelet on the actuator arm.

6. To bring the travel limits into tolerance, slide the actuator arm in the direction desired. This may require several adjustments before the correct position is obtained. When the actuator arm is in the correct position, tighten setscrew “B”. No further adjustment is necessary.

SCREED EXTENSION TOP GUIDE ADJUSTMENT

All part item numbers in the following procedure refer to the parts list for the EXTENDABLE SCREED ASSEMBLY (Part I) and the associated drawing in the parts manual.

1. Using the SCREED LEFT EXTENSION and RIGHT EXTENSION IN/OUT handles, run the screed extension in by pushing the lever fully upward.
2. Locate the five 1/2″ bolts (41) that hold top guide (40) on. These bolts are located Inside of cylinder cover at top and in center crown.
3. Loosen bolts holding guide and drive guide down tight against slide (19) by using a blunt punch. Stick punch through slots in 1/8″ shield covering top of extensions.
4. Tighten the five 1/2″ bolts (41) securing guides (40) to a torque of 75 ft. lbs. (100 N•m).

NOTE: Guide should be greased daily to prevent wear.

5. Run extension out and grease guide with multi-purpose grease before working.

ENGINE SYSTEM

GENERAL INFORMATION

The following engine maintenance information will cover most general engine maintenance procedures.

For additional engine maintenance information, refer to the engine manufacturer's manual.

ENGINE LUBRICATION OIL

Checking The Engine Lubrication Oil Level

The engine lubrication oil must be kept at a level above the "ADD" mark, but not above the "FULL" mark, on the engine lubrication oil dipstick.

To accurately check the engine lubrication oil level, put the machine in a "level" position and stop the engine. Clean the area around the engine lubrication oil dipstick before removing the dipstick from the engine. Wait five minutes, after engine shutdown, before removing the dipstick from the engine and checking the oil level.

NOTE: The above procedure will allow the oil to return to the oil pan and to remove the possibility of filling the engine with too much lubrication oil, by allowing the oil to return to the oil pan.

WARNING: Stop the engine before checking the engine lubrication oil level. With the engine running, hot oil can be thrown causing serious injury.

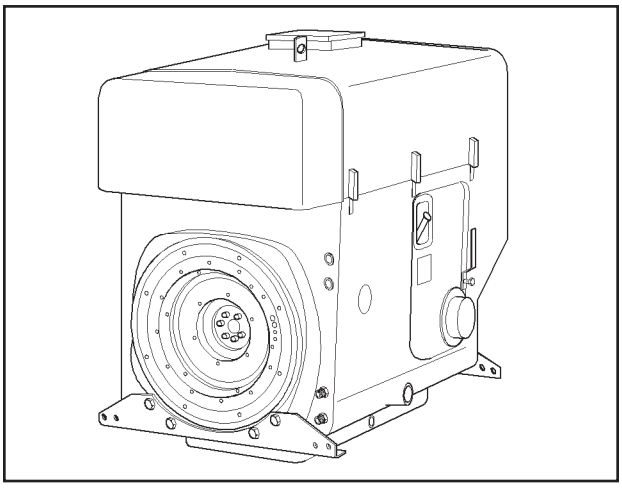


FIGURE 4-14. HATZ ENGINE

Changing The Engine Lubrication Oil

The engine lubrication oil must be changed according to the interval given in the engine manufacturing manual.

NOTE: The color of the engine lubrication oil is not an accurate indication of the need for a engine lubrication oil change. The use of an engine lubrication oil "analysis service" is the only alternate reason for not following the required engine lubrication oil change schedule.

WARNING: Do not change the engine lubrication oil when the engine and lubrication oil are hot. Change when warm only. Hot oil can cause serious injury.

ATTENTION: Do not change the engine lubrication oil with the engine running. Serious engine damage or failure will occur. Clean the area around the engine lubrication oil dipstick and oil filler cap before removing the dipstick or oil filler cap.

Stop the engine. Wait 5 minutes and proceed as follows:

1. Clean the area around the engine lubrication oil drain plug found on the engine oil pan.
2. Place a container, having a capacity sufficient to hold the drained oil, directly under the engine lubrication oil drain plug.
3. Carefully remove the engine lubrication oil drain plug.
4. Using hose and fitting from the tool box, drain all of the engine lubrication oil into the container.
5. Clean, install and carefully tighten the lubrication oil drain plug.

ATTENTION: Do not over tighten the drain plug.

6. Fill the engine with 12 qts (11.3 liters) of oil, using the correct engine lubrication oil.

NOTE: For the correct type of lubrication oil see the engine manufacturer's manual.

7. Install the engine lubrication oil dipstick.

ATTENTION: Do not start the engine before changing the engine lubrication oil filter. Follow the procedures given in this section and in the current Hatz engine manual.

Changing The Engine Lubrication Oil Filter

The engine lubrication oil filter must be changed when the engine lubrication oil is changed.

WARNING: Do not change the engine lubrication oil when the engine and lubrication oil are hot. Change when warm only. Hot oil can cause serious injury.

ATTENTION: Do not change the engine lubrication oil filter with the engine running. Serious engine damage or failure will occur.

With the engine stopped and filled with new engine lubrication oil, proceed as follows:

1. Wipe the area around the engine lubrication oil filter element and its mounting base, with a clean cloth.
2. Place a container under the filter element.
3. Use a filter removal wrench to loosen and remove the filter element by turning it in a counterclockwise direction of rotation. Drain and discard the removed filter element.

NOTE: Be sure the used rubber gasket is removed and discarded with the filter element.

4. Wipe the inside area of the lubrication oil filter head using a clean lint free cloth.
5. Put clean engine lubrication oil on the rubber gasket area of the new filter element. Fill the new filter element with correct, new, and clean oil.
6. Install the new filter element onto the filter head. Carefully tighten the filter element, by hand only.

NOTE: Tighten the filter element as directed on the filter element, by the filter manufacturer.

FUEL SYSTEM

Fuel Tank

Keep the fuel tank full to prevent condensation from forming. Fill the fuel tank at the end of each day.

The fuel level is indicated on the dash panel fuel gauge and indicates the amount of fuel in the tank.

WARNING: Diesel fuel is highly explosive. Do not expose fuel to sparks or flames. Do not smoke while performing maintenance on the engine fuel system.

Engine Fuel Filters

Refer to the engine manufacturer's manual for additional information on engine service. Use manufacturer's recommendations for engine fuel filter replacement and bleeding the fuel system.

1. Stop the engine and allow it to cool.
2. Put a container under the fuel filter, before removing the filter element.
3. Wipe the area around the fuel filter element and the element mounting head, using a clean lint free cloth.
4. Use a filter removal wrench to loosen and remove the element, by turning the element in a clockwise direction. Drain and discard the removed element.
5. Wipe the inside area of the filter head with a clean, lint free cloth. Fill the new fuel filter element with clean fuel. Put clean fuel on the element rubber gasket.
6. Install the new fuel filter element onto the filter head. Carefully tighten the element by hand only.

ATTENTION: Tighten the fuel strainer or the fuel filter element as directed by the filter manufacturer. Do not over tighten the fuel filter element onto the filter head.

7. Start the engine and check for ANY fuel leaks.

WARNING: Stop the engine immediately if any fuel leakage is noted. Do not start the engine until the leakage problem is corrected.

Engine Air Filter

The engine inlet air filter assembly uses a replaceable filter element. Check the air cleaner regularly.

ATTENTION: The air filter element should be replaced monthly for a machine that is operated under normal conditions, or more often for a machine that is operated under severe conditions.

CAUTION: Do not service the air cleaner element while the engine is running.

Use the following procedures to service the air cleaner element:

1. Remove the two screws and plate securing each air filter cover at the top of the engine.
2. Remove the air filter covers.
3. Remove the air filter elements from the engine and discard.
4. Clean the inside of the air cleaner body with a clean cloth.

ATTENTION: Never operate the engine without an air cleaner element. Severe engine damage can occur.

5. Carefully install the new air filter elements into the intake at the top of the engine.
6. Install the covers over the filters.
7. Secure each cover with the two screws and plate.
8. Start the engine using all the correct starting procedures given in Section 3, OPERATION of this manual. Check that engine runs smoothly.

BATTERY SYSTEM

WARNING: Batteries contain sulfuric acid and produce explosive gases which can cause serious injury. Do not allow flames or sparks to come near the battery. Do not smoke when servicing a battery.

WARNING: Electrolyte solution is an acid. When charging or working near a battery, always shield your face and protect your eyes with approved safety gear. If acid contacts skin or eyes, flush immediately with water for a minimum of 15 minutes and get prompt medical attention. If acid is swallowed, call a physician immediately.

The Paver's electrical system is a 12-volt negative ground system. The battery is located on the right side of the operator's platform behind the disconnect switch (see Figure 4-15). Keep sparks and flames away from the battery. Electrolyte gas is highly flammable.

NOTE: When replacing the battery, discard the old battery according to local environmental regulations.

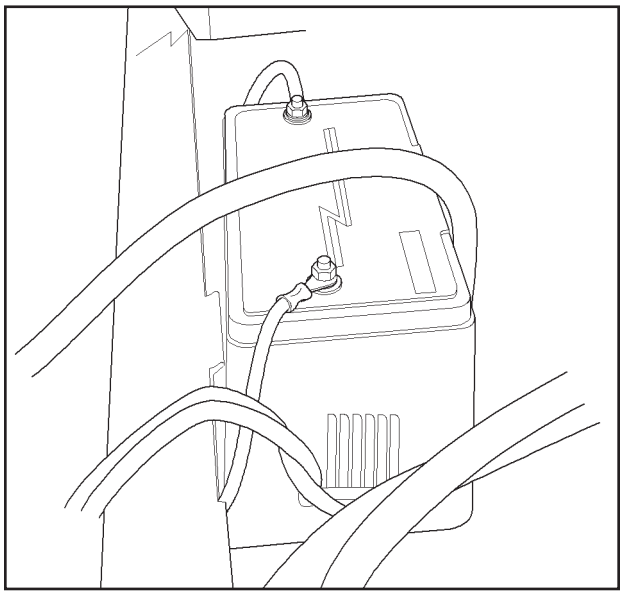


FIGURE 4-15. BATTERY

ATTENTION: When servicing the electrical system or welding on the machine, always turn the MASTER switch to the OFF position to disconnect the ground from the battery to prevent damage to the machine's electrical system.

Be certain that the terminals and battery posts are thoroughly cleaned and that the battery cable terminals are tight. Dirty or loose connections can create high electrical resistance and permit arcing, which will quickly burn and pit terminals and posts.

ATTENTION: The electrical system is a negative ground system. Connect the positive (+) cable to the positive (+) post of the battery. Connect the ground cable to the negative (-) post of the battery. Disconnect the negative (-) cable first and connect it last. Reversed polarity can damage the electrical system.

Keep the battery clean by washing it off whenever dirt builds up is excessive. If corrosion is present around terminal connections, remove them and wash with ammonia solution or a solution consisting of 1/4 lb. (0.11 kg) baking soda added to one quart of warm water. Make certain the vent caps are tight to prevent solution from entering the cells. After cleaning, pour clean water over the battery and surrounding area to wash the solution away. Check vent cap breather openings to make sure they are open.

Be sure to keep the battery fully charged during cold weather to keep it from freezing. Freezing weather has little affect on a fully charged battery.

WARNING: When using a booster battery, do not attach the negative (-) cable from the booster battery to the negative (-) post of the dead battery. A spark could occur and cause an explosion of gases.

When connecting a booster battery, if necessary for cold weather starting, connect one end of the first jumper cable to the positive (+) terminal of the dead battery and the other end to the positive (+) terminal of the booster battery. Connect one end of the second jumper cable to the negative (-) terminal of the booster battery and the other end to the frame of the machine with the dead battery.

The alternator supplies electrical current for charging the battery and ample electrical power to the electronic controls. The built-in regulator in the alternator controls the voltage output. If for any reason the wires must be disconnected from the alternator, mark them so that they can be reconnected properly. Use the following precautions to prevent damage to the alternator and/or regulator:

1. Never polarize an alternator. Never ground any alternator terminals or circuits.
2. Always disconnect the battery before disconnecting or connecting the alternator. Never disconnect the alternator with it operating. Be certain the wiring is properly connected before connecting the battery.
3. Always connect a booster battery in the proper polarity. Negative (-) to negative (-) and positive (+) to positive (+).

HYDRAULIC SYSTEM

GENERAL INFORMATION

The hydraulic motors and the hydraulic cylinders use the same hydraulic oil reservoir and hydraulic oil supply.

CHECKING THE HYDRAULIC OIL LEVEL

Check the hydraulic oil level daily by removing the petcock on the reservoir (Figure 4-16, item 1). Check the oil level when the hydraulic oil is at normal operating temperature only.

WARNING: Do not loosen, or remove, the hydraulic oil reservoir filler cap when the hydraulic oil is hot. Always loosen the filler cap slowly to relieve any pressure in the hydraulic oil reservoir.

The hydraulic reservoir oil must be able to flow from the petcock to be at the correct level. If the hydraulic oil level is below the petcock, filtered hydraulic oil must be added to the hydraulic oil reservoir until the oil level is at least to the petcock.

ATTENTION: The hydraulic system requires clean, contaminant-free oil. Take care when working with the hydraulic system to insure it is completely clean. Use VG #32 or AWAT hydraulic oil.

ATTENTION: Do not over fill the hydraulic oil reservoir.

Keep the oil in the hydraulic oil reservoir at the correct level. An air space is designed into the hydraulic oil reservoir and allows for oil expansion,

at warm temperatures. The hydraulic oil reservoir will have a low pressure in it at system operating temperatures.

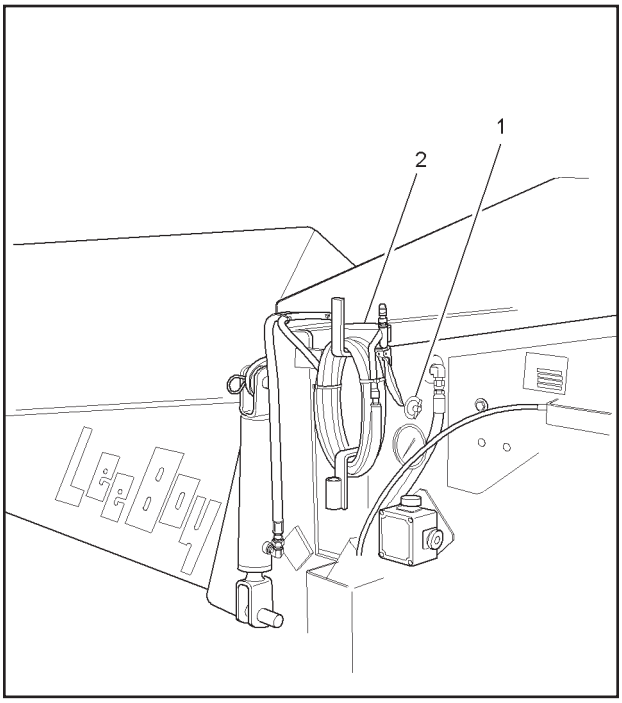


FIGURE 4-16. HYDRAULIC OIL TANK

CHANGING THE HYDRAULIC OIL

Changing the hydraulic oil removes the accumulation of dirt, water and mechanical wear particles from the hydraulic oil reservoir and system. The chemical structure of the hydraulic oil also changes after continuous use in the system and new, clean, and filtered oil is a must to help insure further correct operation of the hydraulic system.

ATTENTION: Hydraulic oil which has oxidized or which contains contamination, of any type, can shorten the expected service life of any, or all, of the components in the hydraulic system.

Use the following procedures to change the hydraulic oil in the hydraulic oil tank.

1. Stop the engine. Allow the hydraulic oil to cool, until it is at a warm temperature only. Slowly loosen, and then remove, the hydraulic oil reservoir filler cap (Figure 4-16, item 2). Put a clean, lint free cloth over the reservoir fill tube opening and secure in place with tape.

WARNING: Do not drain the hydraulic oil from the reservoir when it is hot. Hot hydraulic oil can cause serious injury. Drain at a warm temperature only.

NOTE: All three reservoir tanks together plus hoses hold approximately 40 gallons.

2. Carefully remove the plugs from the bottom of the hydraulic tanks. Use a drain collection device, of sufficient capacity to collect the hydraulic oil. Allow all of the hydraulic oil to drain from the reservoirs and into the container.

ATTENTION: Do not fill the hydraulic oil reservoir with new hydraulic oil until the strainer has been serviced.

3. Install the hydraulic oil reservoir drain plug, and tighten securely.
4. Carefully remove the cloth from the hydraulic oil reservoir fill tube opening.
5. To be sure the bottom oil tank is properly filled, proceed as follows:
   a. Remove the strainer on the top tank.
   b. Fill the top hydraulic oil tank with the correct, filtered hydraulic oil until tank is full. Use VG #32 or AWAT hydraulic oil.
   c. Crank engine and let pump transfer oil from top tank to bottom tank.
   d. Monitor oil level in top tank. When oil level is below one-half full, shut off engine and refill top tank.
   e. Repeat this process until proper level is obtained.

ATTENTION: Do not overfill the hydraulic oil reservoir.

ATTENTION: Never let tank run dry. Pump damage will occur.

6. Check the oil level in the hydraulic oil reservoir, again. Add oil if needed.
7. Install the hydraulic oil reservoir filler cap onto the reservoir filler neck and tighten securely.

8. Start the engine using the correct procedures given in Section 3, OPERATION of this manual. Check the hydraulic system for any leaks.

WARNING: Never use your hands to check for hydraulic leaks. Hydraulic fluid under pressure can pierce the skin and is dangerous. Wear safety glasses and use a piece of wood or cardboard to locate leaks. If hydraulic oil has pierced the skin, get immediate medical attention.

CAUTION: Stop the engine immediately if any hydraulic leak is noted. Do not start the engine until any problem noted has been corrected.

CHANGING THE HYDRAULIC OIL STRAINER

The oil strainer is mounted in the oil filler opening under the filler cap (Figure 4-16, item 2).

WARNING: Do not remove the hydraulic oil cap from the reservoir when it is hot. Hot hydraulic oil can cause serious injury. Allow hydraulic oil to cool to a warm temperature.

1. Remove the hydraulic oil filler cap.
2. Remove the three screws securing the strainer, then remove the strainer and the gasket.
3. Install a new gasket, aligning the three holes in the gasket with the mounting holes on the reservoir.
4. Install the new strainer, aligning the holes in the strainer with the mounting holes of the gasket and secure the strainer with the three screws.
5. Fill the hydraulic oil reservoir with the correct, filtered hydraulic oil until oil flows from the petcock (Figure 4-16, item 1).

ATTENTION: Do not overfill the hydraulic oil reservoir.

6. Check the oil level in the hydraulic oil reservoir, again. Add oil if needed.
7. Install the hydraulic oil reservoir filler cap onto the reservoir filler neck and tighten securely.

REMOVAL AND INSTALLATION PROCEDURES

TRACK COMPONENT REPLACEMENT

All part item numbers in the following procedure refer to the parts list for the SPROCKET DRIVE TRACK SYSTEM and the associated drawing in the parts manual.

Rear Axle Assembly or Track

1. Raise conveyor and locate track tension manifold (45), then back the relief cartridge out of aluminum block about 3 turns or until you hear pressure release.
2. Rotate track so that master link is at the rear bottom of front idler (28) and then remove master pin (16). Once the master pin is removed, back machine until the track lays flat on the ground.
3. Jack machine up on side that needs repair.
4. Remove cutoff cylinder mounting bracket.
5. Remove the two 5/8″ capscrews (12) and lockwashers (11) attaching pillowblock bearing (10). Axle assembly (7) will pry off of torque hub (2) onto the ground.

NOTE: Always place some axle grease into the splines on axle when installing.

6. Replace sprocket (8) or axle (7) then place back on machine.
7. Torque bolts attaching pillowblock bearing (10) to 180 ft. lbs. (244 N•m).
8. Lower sprocket back down toward track chain, keeping sprocket about 1″ out of chain.

NOTE: LeeBoy uses a 4 ft. (1.2 m) long x 11/16 in. (2 cm) dia. rod with a 2 in. (5.08 cm) leg on one end and a handle on the other end to pull on and reach in over the axle and into chain so that when you spin the sprocket the track can be pulled around with the help of the machine.

9. Pull track to front of machine so that track laying on ground can be hooked on to, then reverse sprocket to rotate track to top so that master pin (16) will go in at rear of idler (28).
10. Tighten tension relief, start machine, and rotate the track to make sure it is correct. When finished remove the jack.

IDLER

All part item numbers in the following procedure refer to the parts list for the SPROCKET DRIVE TRACK SYSTEM and the associated drawing in the parts manual.

1. Raise conveyor and locate track tension manifold (45), then back the relief cartridge out of the aluminum block about three turns or until you hear the tension pressure release.
2. Rotate track so that the master link is at the rear bottom of the front idler (28), then remove the master pin (16). Once master pin is removed, back up the machine until the track clears the front idler.
3. Jack up the machine on the side needing to be repaired.
4. Remove the clip pin from the cylinder rod and idler bracket.
5. The idler will slide straight out.
6. Remove idler bracket and bolt to new idler.
7. Install idler making sure cylinder and clip pin are in correct position.
8. Lower sprocket back down toward track chain, keeping sprocket about 1 in. (2.54 cm) out of chain.

NOTE: LeeBoy uses a 4 ft (1.2 m) long x 11/16 in. (2 cm) dia. rod with a 2 in. (5.08 cm) leg on one end and a handle on the other end to pull on and reach in over the axle and into chain so that when you spin the sprocket the track can be pulled around with the help of the machine.

9. Pull track to front of machine so that track laying on ground can be hooked on to, then reverse sprocket to rotate track to top so that master pin (16) will go in at rear of idler (28).
10. Tighten tension relief, start machine, and rotate the track to make sure it is correct. When finished remove the jack.

CYLINDER

All part item numbers in the following procedure refer to the parts list for the SPROCKET DRIVE TRACK SYSTEM and the associated drawing in the parts manual.

1. Raise conveyor and locate the track tension manifold (45). Then, back the relief cartridge out of the aluminum block about three turns, or until you hear the tension pressure release.
2. Rotate the track so that the master link is at the rear bottom of the front idle (28). Then remove the master pin (16). Once the master pin is removed, back the machine until the track clears the front idler.
3. Jack up the machine on the side needing to be repaired and remove the front track roller.
4. Remove the clip pin from the cylinder rod and the idler bracket.
5. The idler will slide straight out at this time.
6. Grab the cylinder and pull it toward the front so that you can remove the hose from the cylinder bottom.
7. Replace the cylinder or repack the seal kit and install in machine.
8. Install the idler making sure the cylinder and the clip pin are in correct position.
9. Lower sprocket back down toward track chain, keeping sprocket about 1 in. (2.54 cm) out of chain.

NOTE: LeeBoy uses a 4 ft (1.2 m) long x 11/16 in. (2 cm) dia. rod with a 2 in. (5.08 cm) leg on one end and a handle on the other end to pull on and reach in over the axle and into chain so that when you spin the sprocket the track can be pulled around with the help of the machine.

10. Pull track to front of machine so that track laying on ground can be hooked on to, then reverse sprocket to rotate track to top so that master pin (16) will go in at rear of idler (28).
11. Tighten tension relief, start machine, and rotate the track to make sure it is correct. When finished remove the jack.

ROLLERS

All part item numbers in the following procedure refer to the parts list for the SPROCKET DRIVE TRACK SYSTEM and the associated drawing in the parts manual.

1. Raise the conveyor and locate the track tension manifold (45). Then back the relief cartridge out of the aluminum block about 3 turns or until you hear the tension pressure release.
2. Jack the machine up on the side needing the repair.
3. Remove the rollers that are faulty and replace them with new ones. Torque bolts to 90 ft. lbs. (122 N•m).
4. Tighten the tension relief. Then start the machine and rotate the track to make sure it is correct. When finished remove the jack.

RUBBER TRACK REPLACEMENT

All part item numbers in the following procedure refer to the parts list for the SPROCKET DRIVE TRACK SYSTEM in the parts manual.

Removal

1. Jack unit off ground 2'.
2. Properly support the unit.
3. Remove the hoses at the bulkhead on right side of unit.
4. Cap and plug all the hoses.
5. Unbolt the drive motor and leave on unit.
6. Support the track assembly with a forklift.
7. Unbolt the 2 clamps on the front of track undercarriage.
8. Lower the whole track assembly down and lay on it's side.
9. Remove the rubber band.

Installation

1. Install the new one. where old one was removed.
2.. Replace the track assembly back into the unit.
3. Install the hoses and clamps.
4. Reinstall the motor and torque the bolts to proper specs.
5. Lower unit and test.

ATTENTION: Make sure hose connections are clean before removing and also before installing.

TORQUE HUB REPLACEMENT

All part item numbers in the following procedure refer to the parts list for the SPROCKET DRIVE TRACK SYSTEM in the parts manual.

Removal

1. Jack the Paver up about 24 in. (61 cm) off of ground on jackstands
2. Raise conveyor and place safety prop in position.

NOTE: Do not disconnect hoses from the hydraulic drive motor.

NOTE: Seal (49) and snap ring (50) should only be removed when replacement is necessary.

3. Remove the two capscrews (6) and lockwashers (5) attaching the hydraulic drive motor (4) to the torque hub drive (2). Slide the motor, hydraulic motor seal (49), snap ring (50), and o-ring (3) out and place the drive motor up on frame out of the way.

NOTE: Performing the next step eliminates the need to remove the track and axle assembly (7).

4. Weld a brace to go from rear of frame across axle top against frame at another location. Place about a 1 in. (2.54 cm) weld at each location to hold axle in place.
5. Remove the twelve 5/8″ bolts from torque hub and pry torque hub out onto a floor jack. Also remove the torque hub drive shaft seal (48).

Installation

NOTE: The torque hub on the right side is rotated one (1) bolt hole different than the left side.

1. Put wheel bearing grease on axle splines of new or replacement torque hub (2).
2. Install torque hub drive shaft seal (48).
3. Insert spline of torque hub into axle (7) and align the twelve mounting holes for the torque hub.
4. Attach the torque hub to the frame with the twelve 5/8″ bolts.
5. Torque bolts to 230 ft. lbs. (311 N•m).
6. Install o-ring (3).
7. Attach seal (49) and spacer with snap ring (50) (only if previously removed).
8. Attach hydraulic motor (4) with lockwashers (5) and capscrews (6).
9. Torque capscrews to 78 ft. lbs (106 N•m).
10. Remove the welds.
11. Lower the Paver off the jackstands.

WARNING:  **Never use your hands to check for hydraulic leaks. Hydraulic fluid under pressure can pierce the skin and is dangerous. Wear safety glasses and use a piece of wood or cardboard to locate leaks. If hydraulic oil has pierced the skin, get immediate medical attention.**

12. Start the engine using the correct procedures given in Section 3, OPERATION in this manual. Check the hydraulic system for any leaks.

ATTENTION:  **Stop the engine immediately if any hydraulic leak is noted. Do not start the engine until any problem noted has been corrected.**

REAR CONVEYOR SHAFT REPLACEMENT

All part item numbers in the following procedure refer to the parts list for the CONVEYOR DRIVE ASSEMBLY in the parts manual.

Removal

1. Rotate flight chains (12) until C-188 master link (13) is located. When located, rotate the master pin to the rear of the conveyor drive sprocket.

NOTE: If the shaft (8) is broken, the front shield with rubber needs to be removed, then push against the outer edge of the conveyor bars to make the chains rotate.

2. Remove grating walkway from Paver so that you can reach in to the center of conveyor at rear, or lay in under engine platform to reach center.
3. Push back the rubber shield at the center of the conveyor at the rear so that the snap ring (9) can be removed off the shaft.
4. Run screed extension out fully on side to be changed.

NOTE: The front screed arm bolt may need to be removed to tilt arm out of the way.

5. Remove the chain guard and 80 chain that drives the conveyor.

NOTE: The flight chains can be loosened to allow the shaft to come out easier.

6. Remove capscrew (1) and countersunk washer (2) then remove the outer 80 drive sprocket (3).
7. Remove the four capscrews (10) and washers (11), then remove conveyor mounting plate with bearing (4).

NOTE: Do not remove the master pin on the inner C-188 chain. Let the sprocket and chain stay together.

8. Remove C-188 master link (13) and lay the chain away from the sprocket on the outer side.
9. The rear shaft (8) and outer C-188 sprocket (5) will pull straight out at this time.

Installation

1. Slide the new shaft (8) in and align the inner C-188 sprocket (6) onto the spline shaft.
2. Install the snap ring (9) on and fasten the rubber shield back.
3. Install the outer C-188 sprocket (5), be sure that the teeth are in line with the inner C-188 sprocket.
4. Install the pivot bearing plate (4) using the four capscrews (10) and lockwashers (11).
5. Apply loctite on capscrew head (1).
6. Attach the outer drive sprocket (3) with capscrew (1) and countersunk washer (2).
7. Put 80 chain on and lubricate the chain.
8. Adjust chain for about 1/4 in. (0.64 cm) play.
9. Place chain guard back on.
10. Hook screed arm in place.
11. Adjust main flight chains and let the conveyors run for a short period of time. Then recheck the chain adjustment.
12. Place grating back on when finished.

ATTENTION: Conveyors should be adjusted about every 100 hours to avoid damage to the conveyor rear shafts and the chains.

ATTENTION: Keep the conveyors clean and well lubricated.

NOTE: If the conveyor or flight chains are adjusted all the way out, locate the master link and remove it. Remove 1 block link and 2 sidebars on each chain, then replace with C-188 1/2 links. (There is not enough room to take a link out without installing a 1/2 link).

AUGER AND INNER BEARING REPLACEMENT

All part item numbers in the following procedure refer to the parts list for the AUGER ASSEMBLY in the parts manual.

Removal

1. Remove rear grating over auger assembly.
2. Run screed extension all the way out.

NOTE: This provides room to stand in behind auger back to remove top portion of auger cover. Auger cover is in three pieces with a small tack to hold cover together while building.

3. Remove four nuts holding cover (6) on and pry cover apart.
4. Clean asphalt build up from around cover. (Heating asphalt may be required).
5. Remove middle and bottom portion of cover by laying on conveyor under engine.
6. Rotate augers so that master link (21A) is centered at front.
7. Loosen auger chains (21) by sliding auger motors (1) down from backside after loosening the two bolts securing mounting brackets.
8. Remove auger endmounts (8 or 9) so that augers can be removed through opening in sides.
9. Remove augers (19 or 20) and lay augers on the ground in the same position as removed. This will help insure proper installation of the new augers.
10. Check inner auger bearing (12) and replace at this time if faulty.

Installation

ATTENTION: When installing the new augers be sure to align augers the same as the removed augers. It is very easy to install augers backwards.

1. Install new augers (19 or 20) making sure that wearplates are on correct side so that material augers outward.
2. Tighten bearing setscrew to help hold auger shaft from moving outward.
3. Slide auger collar (6) on end of auger shaft and bolt endmount (9) back on. Torque mounting screws to 78 ft. lbs. (106 N•m)
4. Push collar (6) all the way in against endmount (9) and attach with setscrews (25) (four setscrews, two on outside and two on inside).
5. Replace bronze bushing (7) in the endmounts.
6. Place auger chains back on and adjust auger motors (1) up to tighten chains. Run adjuster bolt to tighten auger chain (make sure chains have approximately 1/4″ of slack).
7. Make sure motor is level then tighten top and bottom bolts. to a torque of 150 ft. lbs. (155 N•m). Do the same for the other side.
8. Lubricate chains.
9. Place auger cover (6) back in place making sure slot for auger shaft is sealed shut.
10. Place grating back on over auger.
11. Run augers and make sure everything is correct.

NOTE: Auger chains can be lubricated each day by spraying oil or chain lube in through slots where auger motor is adjusted.

SCREED EXTENSIONS, SLIDES OR BUSHING REPLACEMENT

All part item numbers in the following procedure refer to the parts lists for the EXPANDABLE SCREED ASSEMBLY PART I AND PART II in the parts manual.

Removal

1. Remove cylinder covers (7 and 8, PART II).
2. Run screed extension out completely.
3. Remove cylinder pin (lower screed) (25, PART I).
4. Remove the four 1/2″ bolts (20), lockwashers (21), and flat washers (22) in extension rods (17) holding the extension (4 and 4A) on.
5. After bolts have been removed, pull extension (4 and 4A) out of the way.
6. Pull extension rods (17) out of slide (19).
7. Loosen five bolts (41), lockwashers (42) and flat washers (43) attaching top guide. This will let main slide (19) come out easily. At this time bushings (2) can be replaced or main slide can be replaced.

NOTE: When replacing bushings, the bushings need to be honed if extension rods (17) do not slide in.

Installation

1. Clean area where slides (19) are installed, and lubricate before sliding the slide back in.
2. Loosen guide (40) and drive guide down tight against slide by using a blunt punch. Stick punch through slots in 1/8″ shield covering the top of extensions.
3. Slide extension rods (17) back into slide (19).
4. Secure rods (17) with capscrew (20), lockwasher (21), and flat washers (22).
5. Make sure extension is mounted flush with bottom of screed plate.
6. Hook cylinders (23) back to extensions using pin (25) and put cylinder cover (7 and 8, PART II) back on.
7. Run extension out and grease the extension well before operating “in” and “out”.

SCREED WEARPLATE REPLACEMENT

All part item numbers in the following procedure refer to the parts lists for the EXPANDABLE SCREED ASSEMBLY PART I AND PART II in the parts manual.

Removal

1. Run screed extension all the way in.
2. Remove the cylinder covers, (7 and 8, PART II) the walkboards (9), and the screed lids (6).
3. Remove the ten 3/8″ bolts holding the wearplate (5, PART I) to the screed frame on each side.
4. Clamp the center portion of the screed frame so that when the screed frame is raised up off the worn wearplate the clamp will hold the frame in place.
5. Raise the screed up and remove the worn wearplate.
6. Clean all material buildup from the screed frame before bolting in the new wearplate.

Installation

1. Set the new wearplate down level on 3 blocks, placing one block in the center and one at each end. Make certain the extensions are raised all the way up to prevent extensions from holding the screed frame off the wearplate.
2. Lower the screed frame down on the new wearplate.

NOTE: Do not tighten the bolts in the next step until all the bolts are installed.

3. Install five bolts in one side at the front to hold the wearplate.
4. Once the front bolts are installed install the rear bolts.
5. When all of the bolts have been started make sure the screed frame and the wearplate are flat.
6. Torque bolts to 55 ft. lbs. (74 N•m). Start inside and move outward by rotating from the left to the right side. This will keep the screed relaxed.
7. Place the screed lids, the walkboards and the cylinder covers back on the screed.

EXTENSION WEARPLATE REPLACEMENT

All part item numbers in the following procedure refer to the parts lists for the EXPANDABLE SCREED ASSEMBLY PART I AND PART II in the parts manual.

Removal

1. Run the extensions all the way out.
2. Remove the endgates by removing the tilt screw and 7/8″ nut on each side. The endgate will tilt forward out of the holder and slide off the 7/8″ bolt.
3. Disconnect the extension adjuster (7) from the wearplate (5), by removing lockout (13), washer, and capscrew (12).
4. Remove the front extension hinge shield.
5. Slide the hinge pin (44) out and the wearplate (5) will fall off.

Installation

1. Hold the new wearplate (5) in place and slide the hinge pin (44) in place.
2. Fasten the extension adjuster (7) back to the wearplate (5) with lockout (13), washer, and capscrew (12).
3. Put the front hinge shield back on.
4. Install endgate and tilt screw back on the Paver.

TANDEM SERVO PUMP REPLACEMENT

Refer to PUMP COMPONENTS SUNDSTRAND ELECTRONIC STEERING in the parts manual.

Removal

1. Label and disconnect the hoses to the tandem propulsion hydraulic pump, plugging the hoses and capping the fitting on the hydraulic pump.
2. Label and disconnect the hoses to the tandem auxiliary hydraulic pump, plugging the hoses and capping the fitting on the hydraulic pump.

NOTE: If Tandem Auxiliary Pump is not bad leave hoses attached and slide out of Main Pump.

WARNING: Pump assembly is very heavy and must be properly supported with a sling before loosening mounting bolts.

3. Place a sling around the pump assembly to provide support.
4. Remove the two screws attaching pump assembly to the pump plate cover.
5. Slide the pump assembly off of the splined shaft.
6. Using the sling, lift pump assembly with auxiliary pump assembly out of Paver and place on a flat surface.
7. Remove the two screws attaching the tandem auxiliary hydraulic pump to the tandem propulsion hydraulic pump.
8. Remove the o-ring from between the pumps.

Installation

1. Place a small amount of hydraulic oil on the o-ring and install o-ring between the pumps.
2. Carefully support auxiliary pump and align the mounting holes in the auxiliary pump with the mounting on pump.
3. Attach the pumps with the two mounting screws.
4. Torque the screws to 89 ft. lbs. (121 N•m).

WARNING: Pump assembly is very heavy and must be properly supported with a sling before lifting into Paver.

5. Support the complete pump assembly with a sling and lift assembly into the Paver.
6. Carefully slide pump assembly onto splined shaft and align mounting holes with the pump plate cover mounting holes (grease splines before installing).
7. Attach the pumps with the two mounting screws.
8. Torque the screws to 89 ft. lbs. (121 N•m).
9. Remove plugs and caps and connect hydraulic hoses to pumps are previously labeled.
10. Check hydraulic oil level in tank and add hydraulic oil if necessary.
11. Start the Paver.
12. Check to be sure there is no hydraulic oil leaks.

2-SPEED HYDRAULIC MOTOR REPLACEMENT

All part item numbers in the following procedure refer to the parts lists for the SPROCKET DRIVE AND TRACK SYSTEM in the parts manual.

Removal

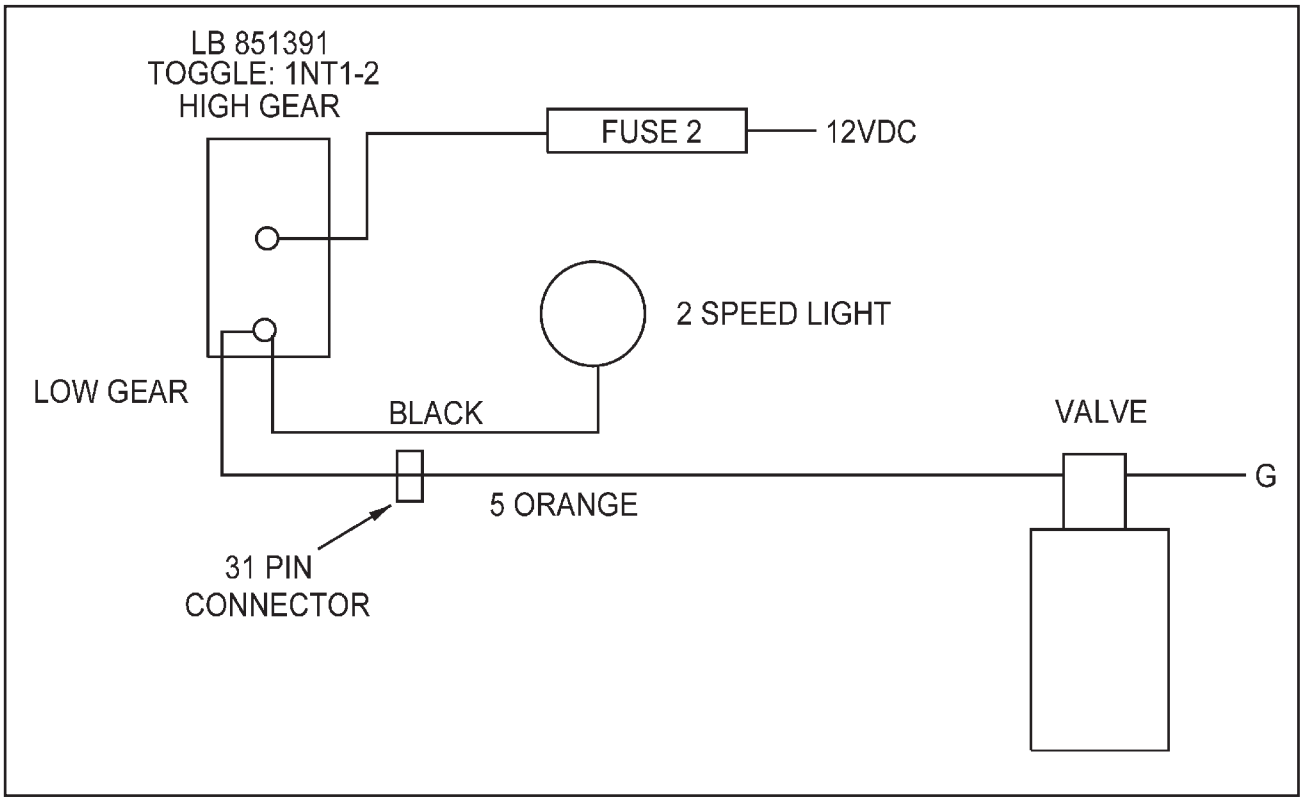
1. Turn the Paver off.
2. Check to be sure there is no hydraulic pressure.
3. Label and disconnect the hoses to the hydraulic motor (4), plugging the hoses and capping the fitting on the hydraulic motor.
4. Support hydraulic motor, then remove the two capscrews (6) and lockwashers (5) attaching the hydraulic motor to the torque hub and carefully remove the motor from the torque hub.
5. Remove the o-ring (3).
6. Drain the hydraulic oil from the hydraulic motor. Discard or repair the hydraulic motor as appropriate.

Installation

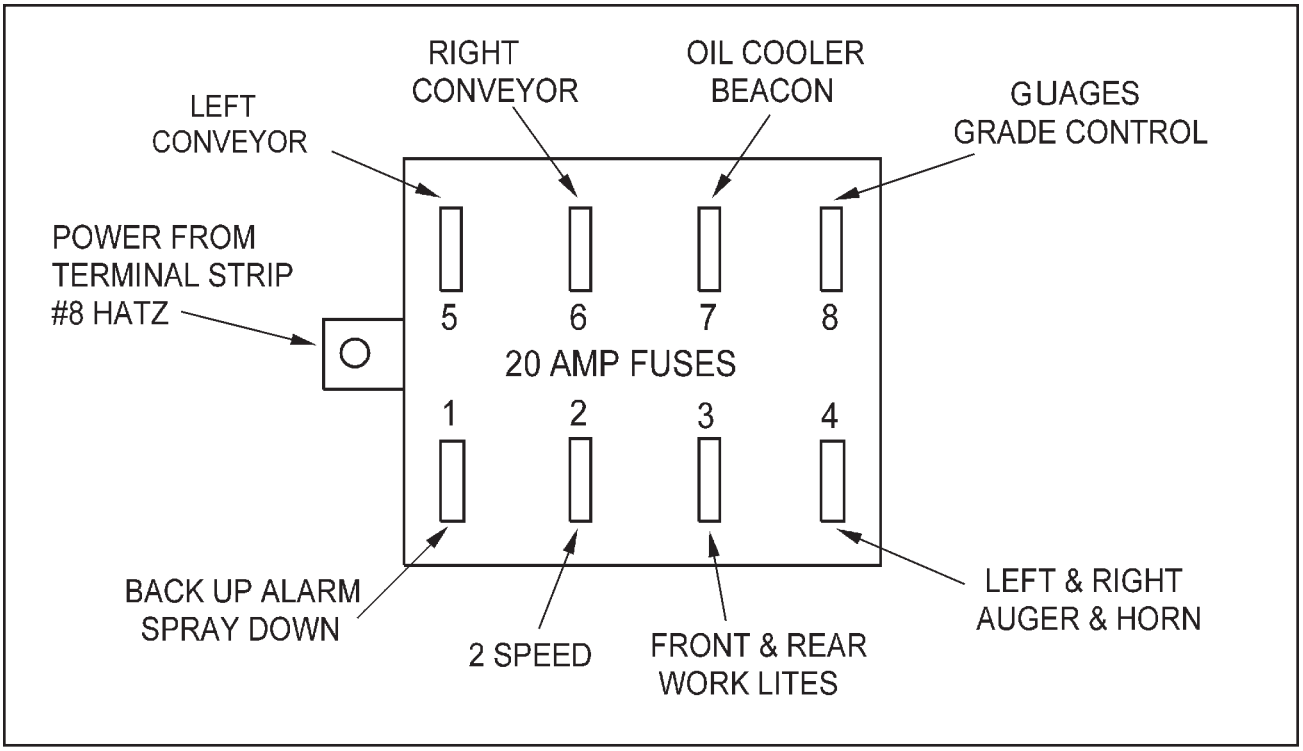
1. Lubricate a new seal (3) with hydraulic oil and install on torque hub.
2. Attach hydraulic motor to torque hub using two capscrews (6) and lockwashers (5).
3. Torque capscrews (6) to 120 ft. lbs (163 N•m).
4. Remove plugs from hydraulic hoses and connect the hydraulic hoses in accordance with the labels.
5. Operate Paver and check for leaks.

NOTE: When installing motor dry, crank and let run for approximately 10 minutes to work air out of system before engaging to move.

SCHEMATICS



2 SPEED WIRING DIAGRAM



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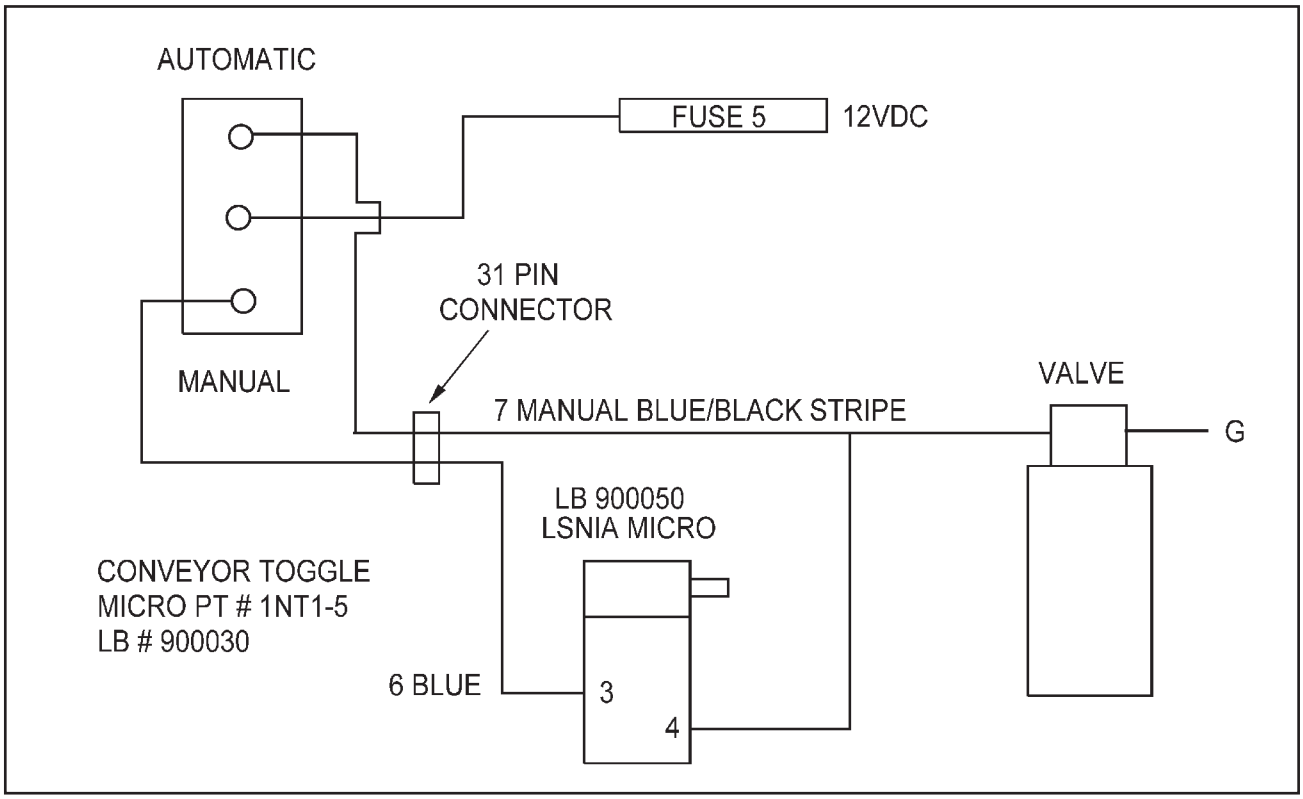
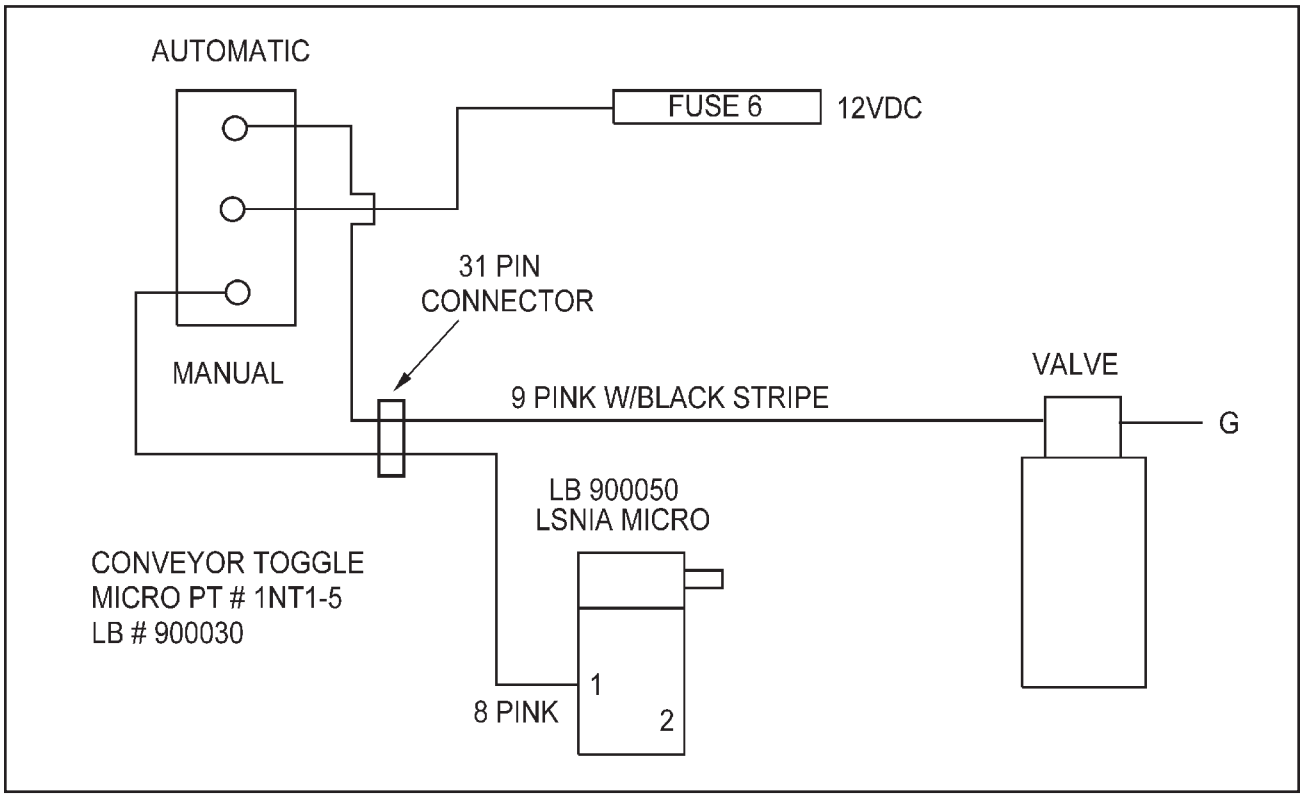
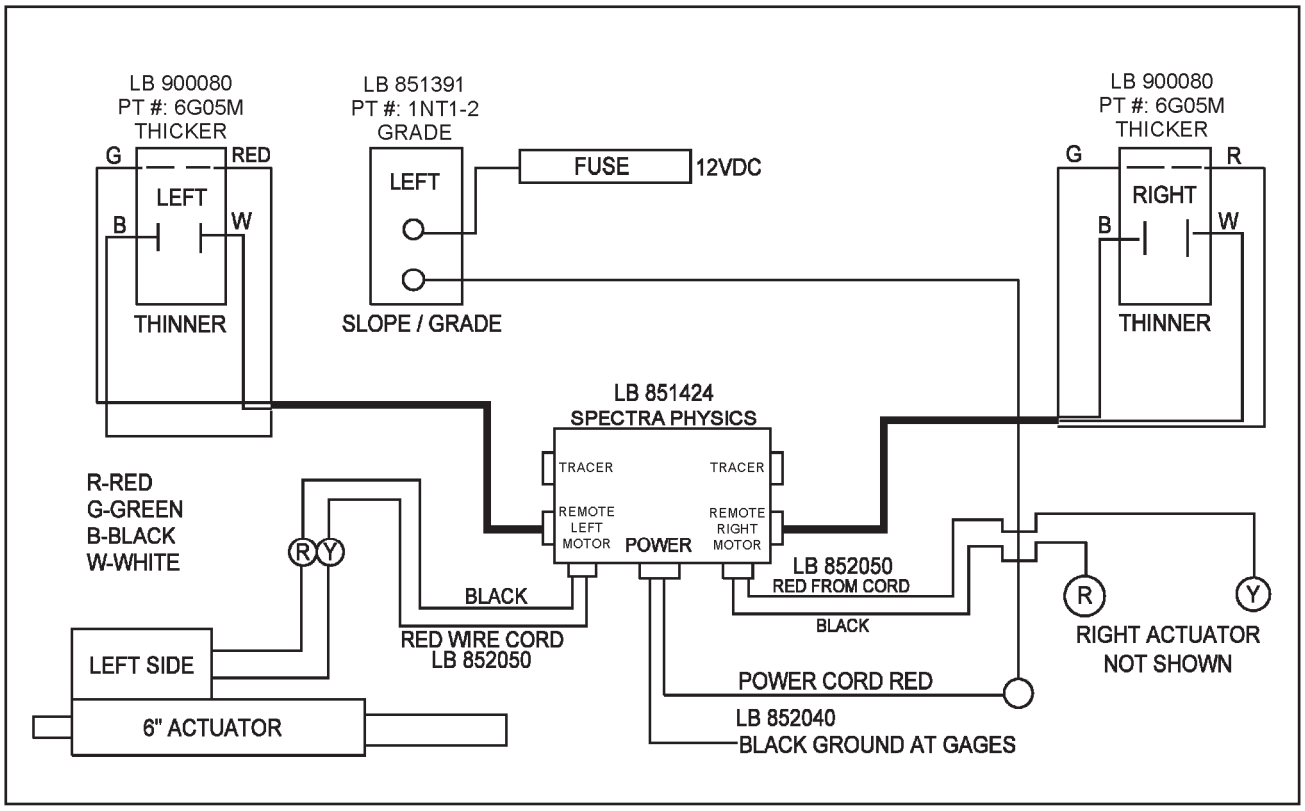


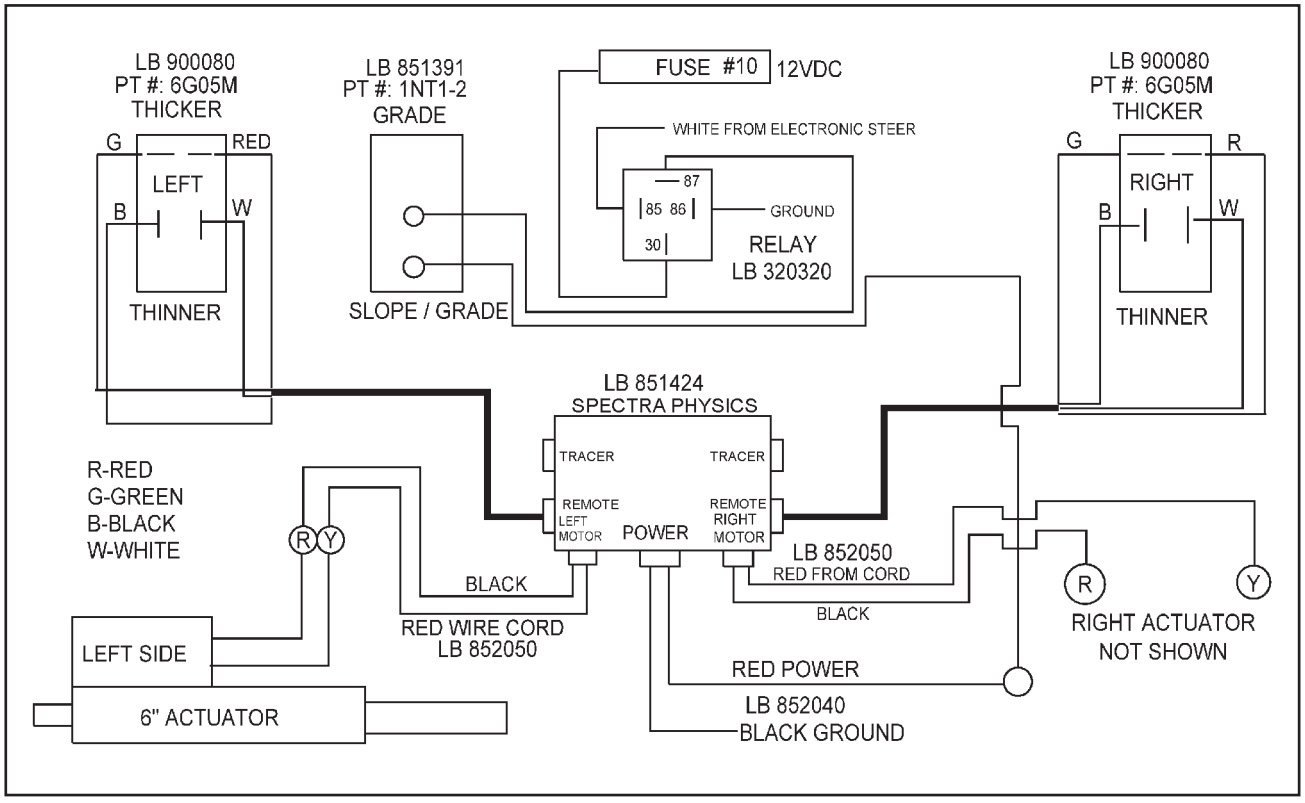
LEFT CONVEYOR WIRING DIAGRAM



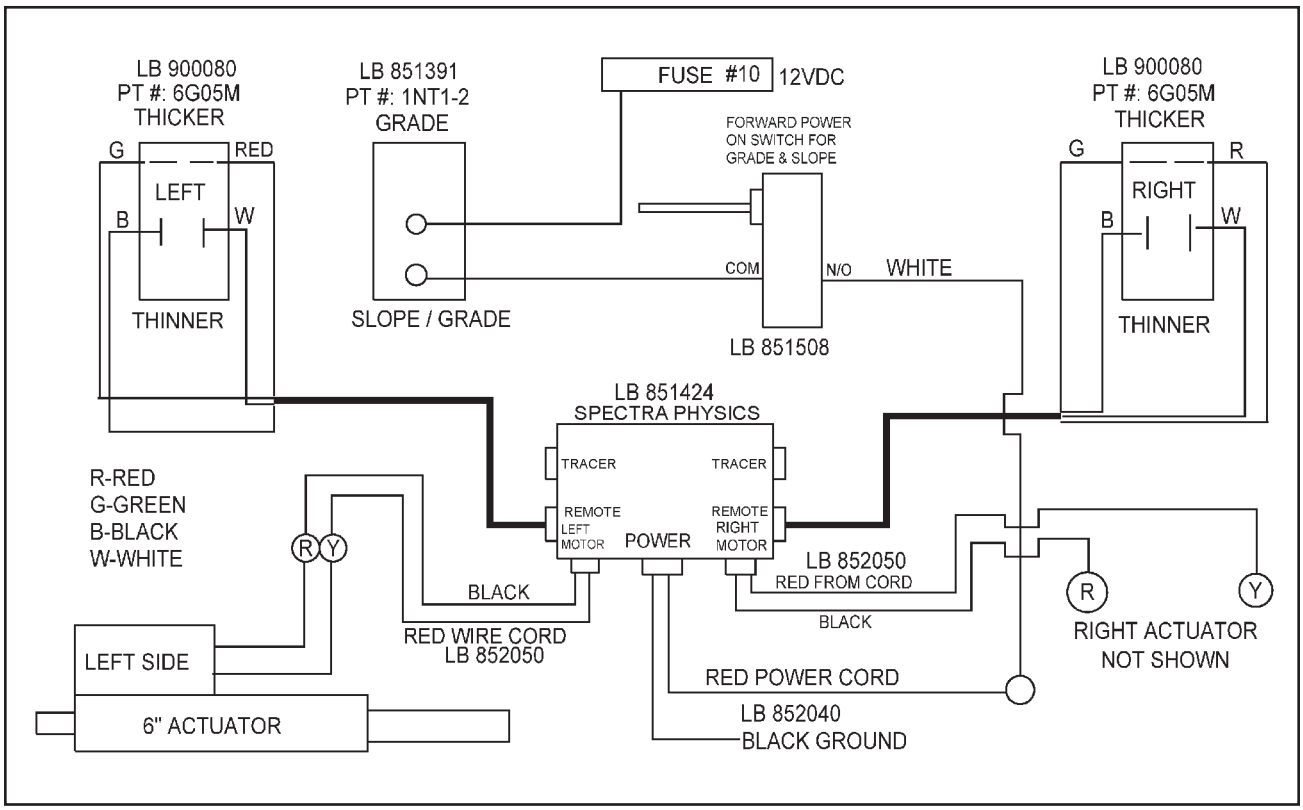
RIGHT CONVEYOR WIRING DIAGRAM



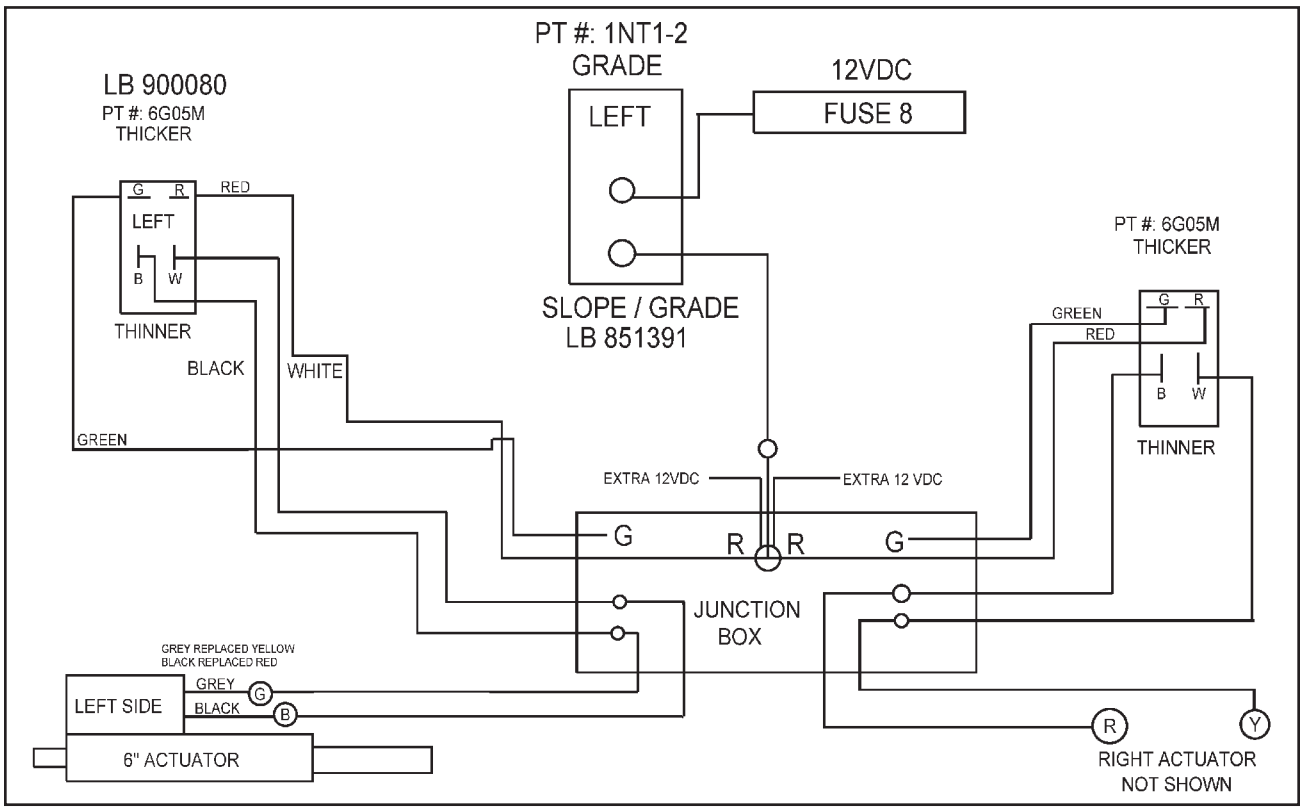
SPECTRA GRADE CONTROL L/B DRIVE WIRING DIAGRAM



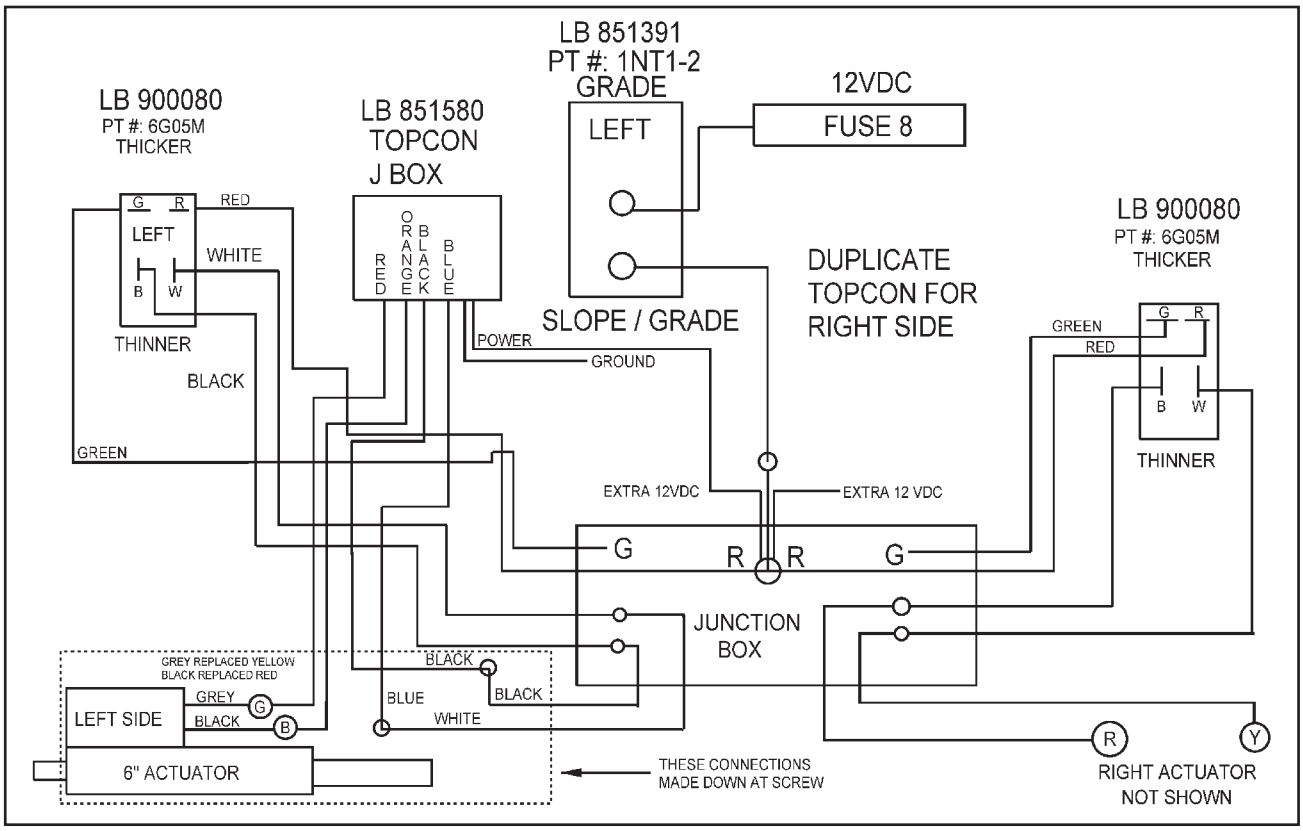
SPECTRA GRADE CONTROL (with Slope add-on) ELECTRONIC STEERING WIRING DIAGRAM



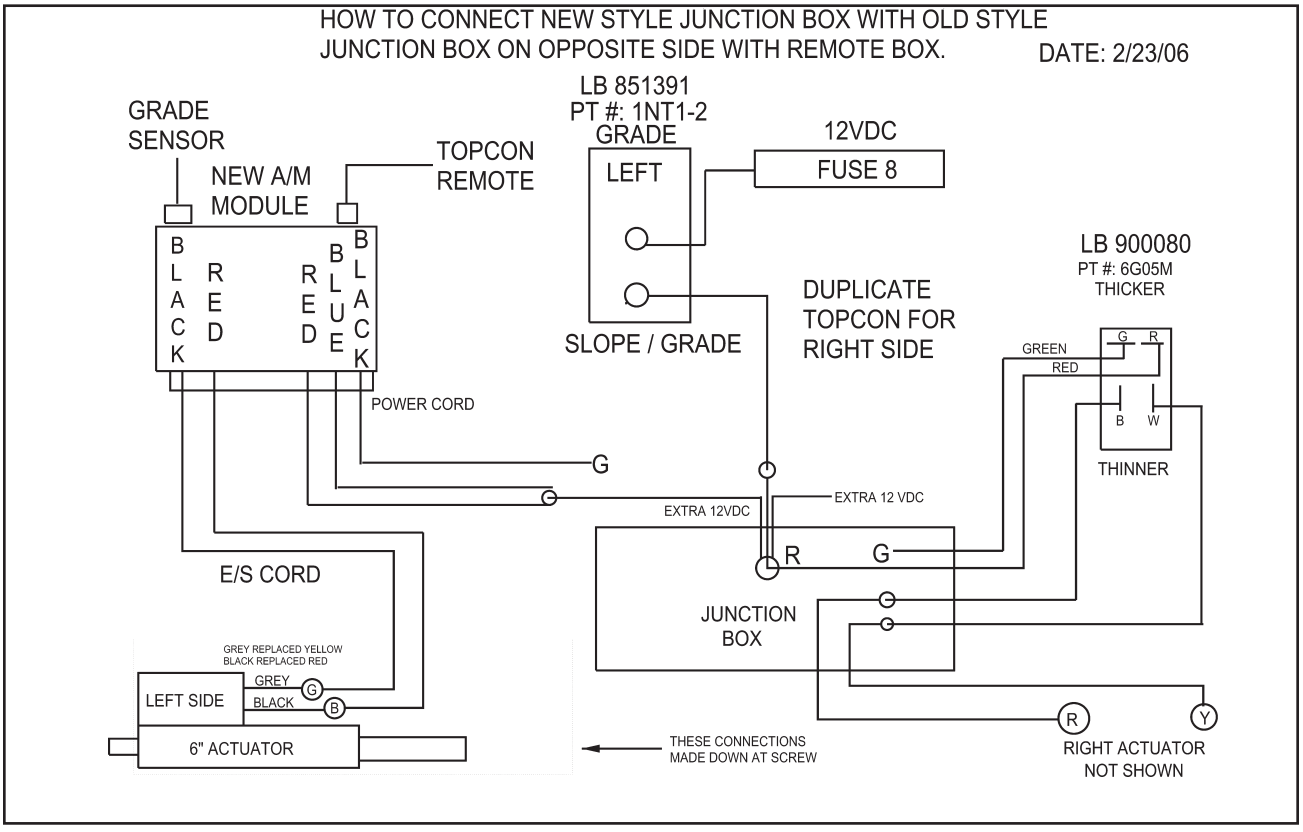
SPECTRA GRADE CONTROL (with Slope add-on) L/B DRIVE WIRING DIAGRAM



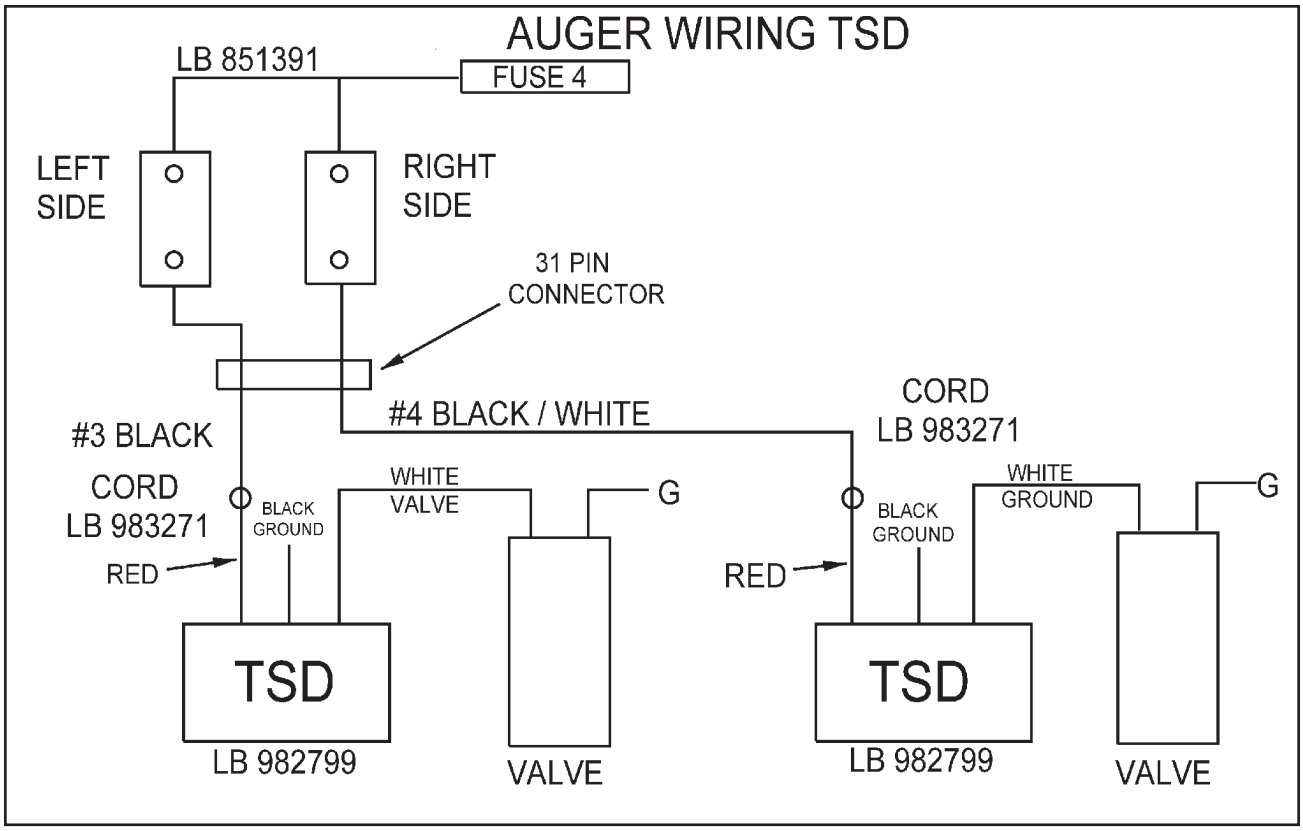
STANDARD GRADE CONTROL L/B DRIVE WIRING DIAGRAM



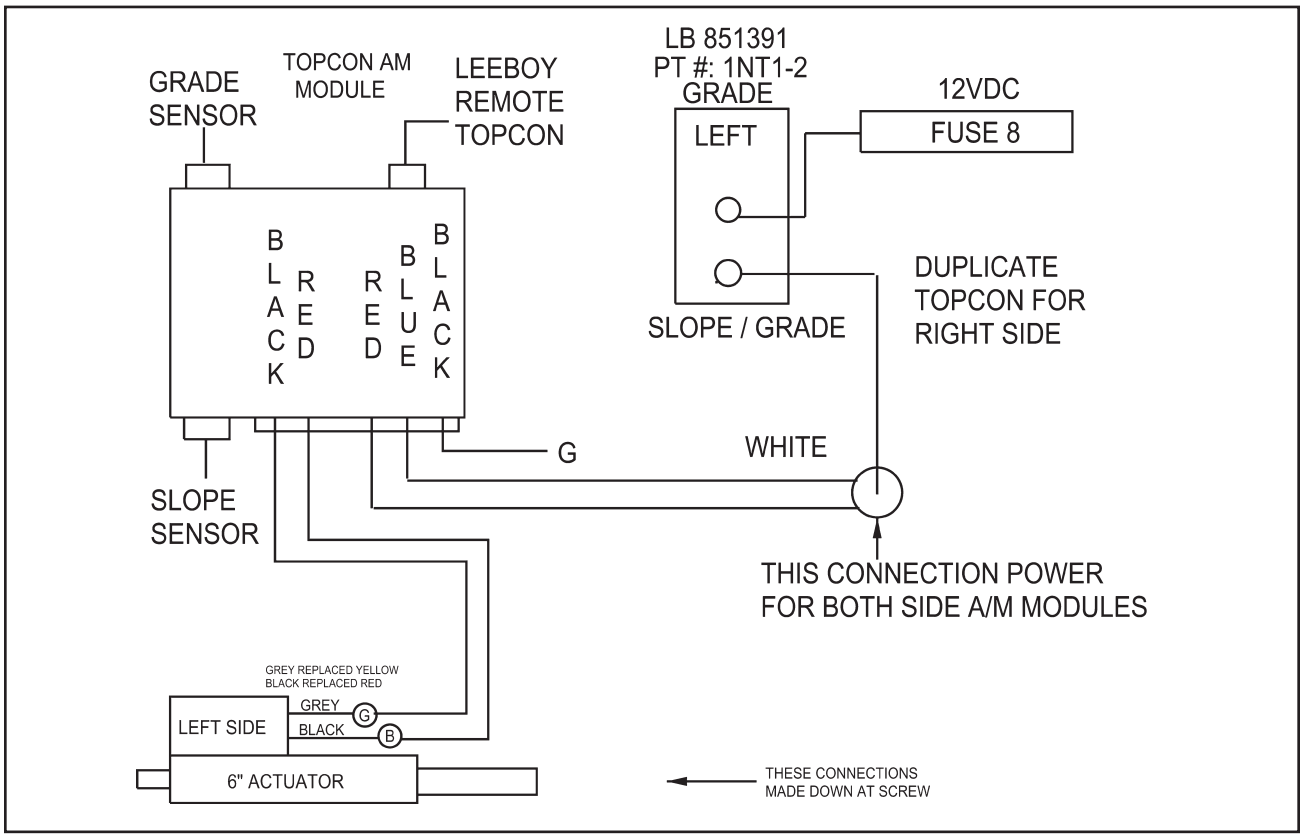
STANDARD GRADE CONTROL L/B DRIVE TOP-CON WIRING DIAGRAM



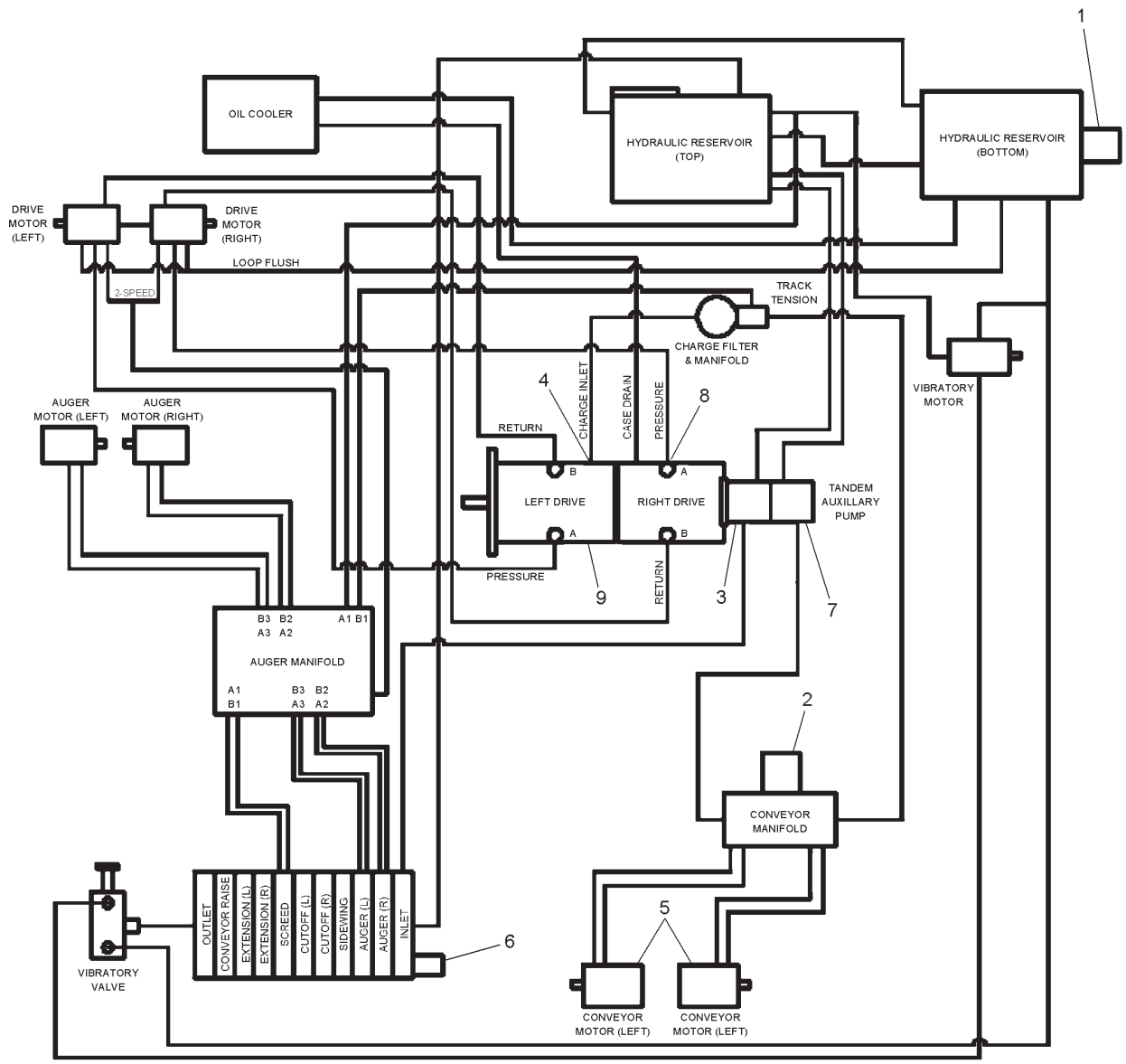
8510 GRADE CONTROL (STANDARD) L/B DRIVE



TSD AUGER WIRING DIAGRAM

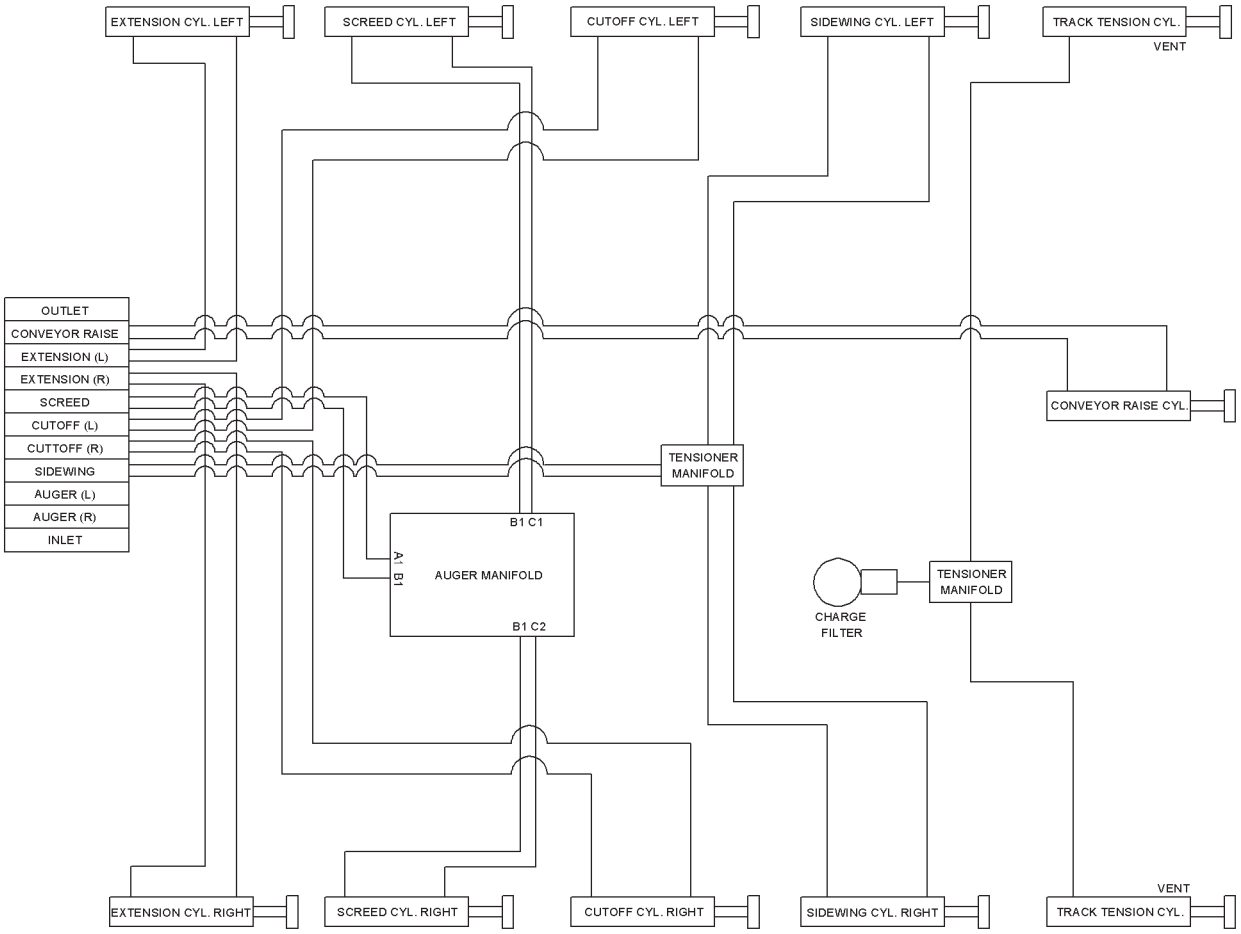


8510 GRADE CONTROL WIRING WITH NEW AM MODULE TOPCON

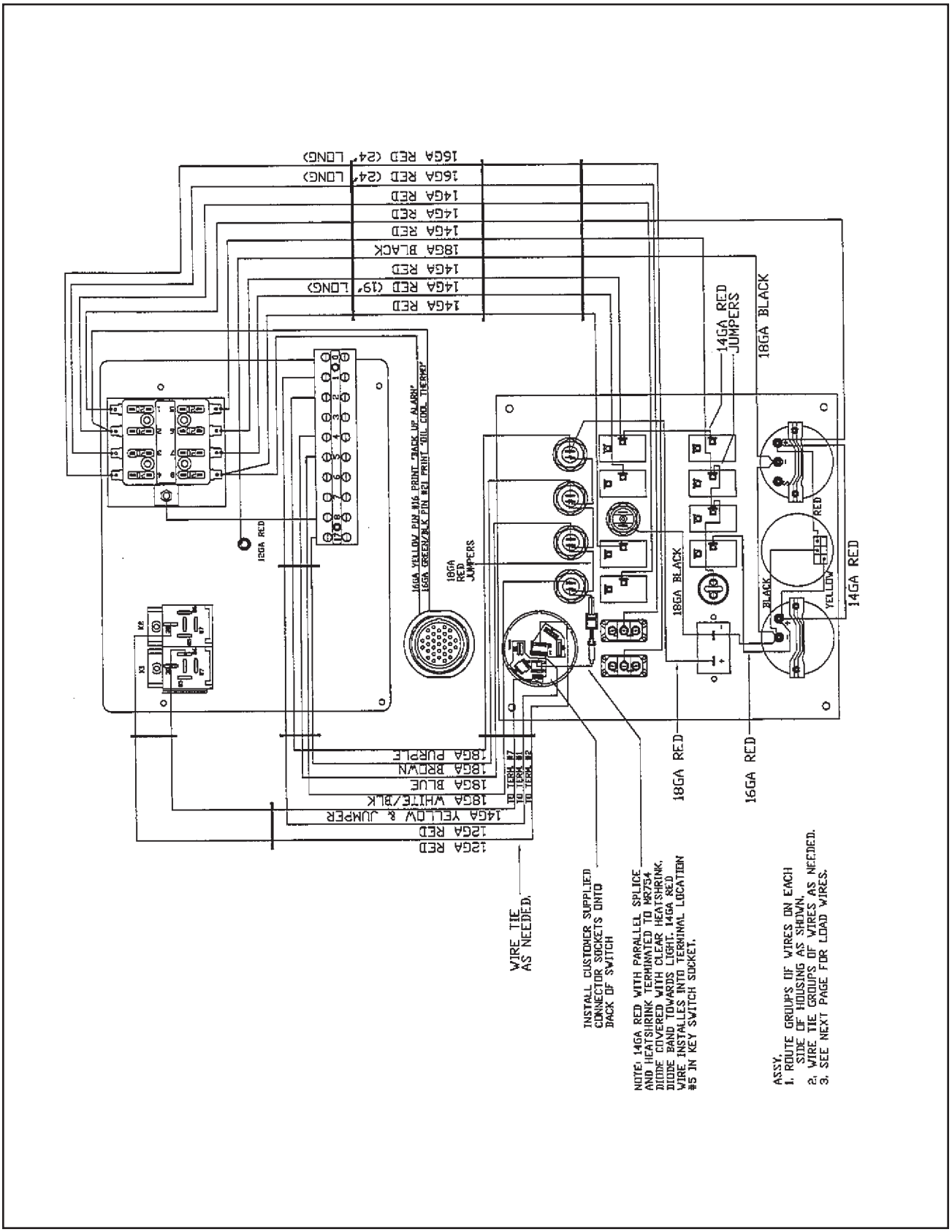


	DESCRIPTION	PSI
1	TRACK RELEASE	700
2	CONVEYOR RELIEF	2200
3	CONVEYOR	2200
4	CHARGE PRESSURE	350
5	CONVEYOR	2200
6	RELIEF	2000
7	PIGGYBACK AUGER	2000
8	DRIVE RIGHT	3300
9	DRIVE LEFT	3300

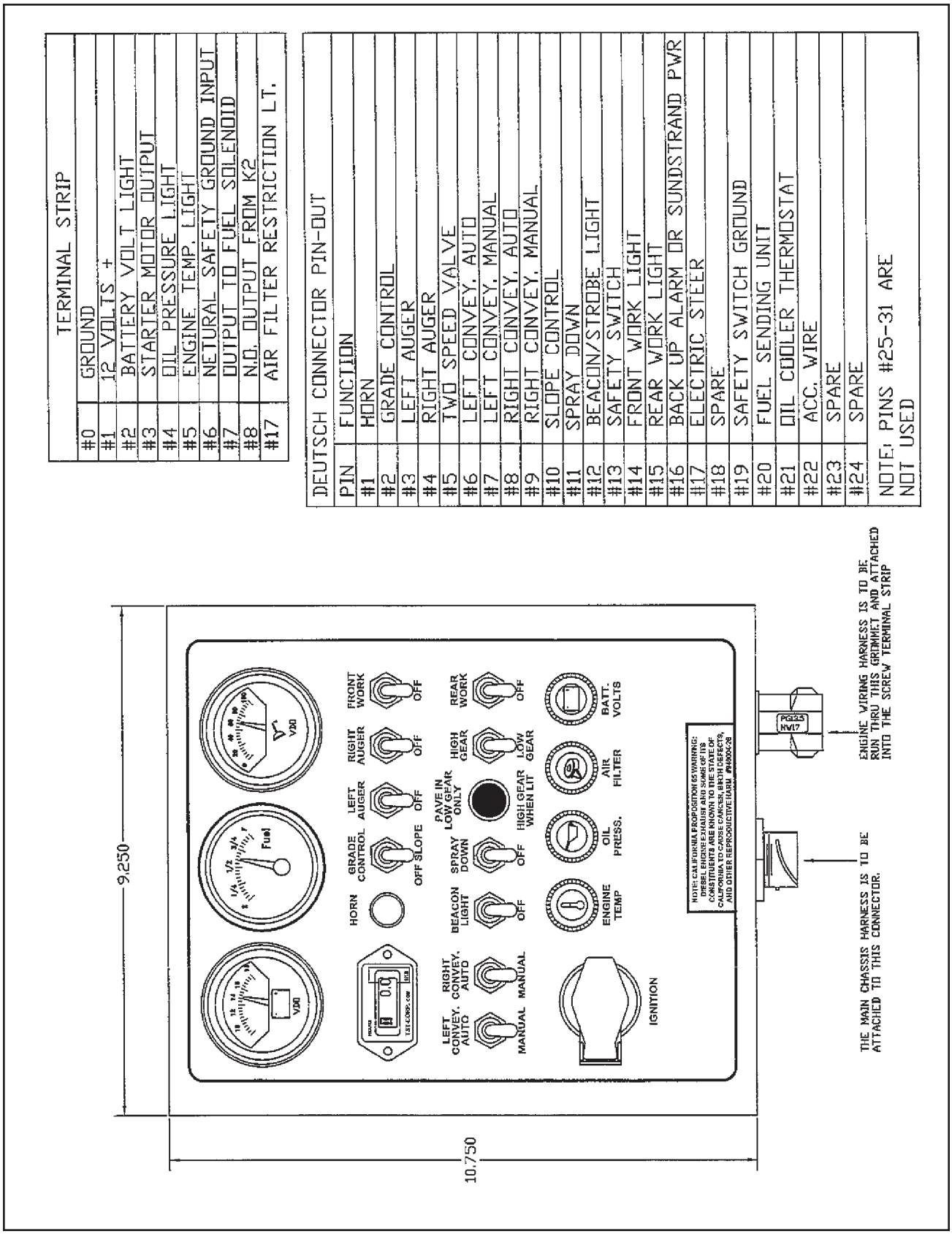
HYDRAULIC SCHEMATIC (Sheet 1 of 2)



HYDRAULIC SCHEMATIC (Sheet 2 of 2)



MAIN DASH PANEL CONTROLS, INDICATORS, AND GAUGES (Sheet 1 of 2)



MAIN DASH PANEL CONTROLS, INDICATORS, AND GAUGES (Sheet 2 of 2)

TROUBLESHOOTING

GENERAL

The troubleshooting chart below identifies the most common symptoms of failure. Use this chart to help identify the failed component. Figure 4-19 shows an Engine Wiring Diagram.

A separate troubleshooting guide is provided for the optional Steering Control System. Figure 4-17 shows a Wiring Diagram and Figure 4-18 shows a Troubleshooting Logic Procedure.

TROUBLESHOOTING CHART

SYMPTOM	CAUSE	REMEDY
Engine does not start	Defective battery or low battery charge	Replace or charge battery as applicable
	Joystick Control not centered	Center steering levers to switch
	Insufficient fuel supply	Fill fuel tank
	Fault in engine	Refer to Hatz engine manual
	Safety switch faulty	Replace
	Wires not making good connection on solenoid	Make sure wires are tight
	Plug in switch box unplugged	Plug back
	Solenoid plunger sticking	Clean plunger
	Fuel solenoid coil defective	Replace coil
	Blower belt broken	Replace belt
	Starter or solenoid faulty	Replace or rebuild
	Neutral switch defective	Replace
	Hatz start relay faulty	Replace
Engine cuts off and will not start. (Turns over but will not start)	Low fuel	Add fuel to fuel tank
	Blower belt broken	Replace belt
	Faulty fuel solenoid	Replace solenoid
Low Battery	Faulty alternator	Replace or rebuild
	Idiot light, bad bulb	Replace bulb

TROUBLESHOOTING CHART (Continued)

SYMPTOM	CAUSE	REMEDY
Machine will not move	RUN/STOP switch faulty	Check RUN/STOP switch
	Electrical cord Faulty	Check electrical cord.
	Check that LEDs on microcontroller are providing correct display	Check that lights illuminate as follows:
		Two green lights illuminated all the time.
		One yellow light flashing one time per second.
		Status light not illuminated. If status light is flashing check error code list.
(Electronic Steering Option)	STEER LEFT/RIGHT switch on dash in incorrect position	Check the STEER LEFT/RIGHT switch is in the direction of the box being used
Machine will not run straight	One of the hydraulic drive motors is out of adjustment	Readjust motors
	Micro needs to be set	Use Palm Pilot to set micro. (Dealer only adjustment)
	Steering control not centered	Center steering control
	Travel pump defective	Replace pump or rebuild
	Steering out of adjustment.	Calibrate +1
(Electronic Steering Option)	STEER LEFT/RIGHT switch on dash in incorrect position	Check the STEER LEFT?/RIGHT switch is in the direction of the box being used
Machine does not change speed when 2-SPEED HIGH/LOW SWITCH is toggled	Defective switch	Replace switch
	Defective solenoid	Replace solenoid
	Defective drive motor	Replace drive motor
Tracks not running smooth	Tracks too loose	Tighten tracks
	Too low engine RPM to hold track tension	Rev engine to full RPM and throttle back to one-half
	Track rollers worn	Replace
	Track tension pressure	Check pressure. Relief pressure should be set to 700 PSI.
Machine will not pull on one or both sides	Faulty hydraulic motor	Adjust
	Pump pressure too low	Pump pressure should be 3700 PSI
	Faulty torque hub	Rebuild or replace
	Axle spline stripped	Replace axle

TROUBLESHOOTING CHART (Continued)

SYMPTOM	CAUSE	REMEDY
Engine runs but no hydraulics	Engine rpm too low	Increase engine speed
	Pump drive coupling faulty	Replace
	Defective pump	Replace
Auger hanging up or will not turn	Chain too loose	Adjust
	Chain broke	Replace
	Faulty motor	Replace
	Solenoid valve defective	Replace solenoid
	Asphalt set up around auger	Keep clean and oiled
Screed extensions binding	Asphalt set up around extension	Keep clean and oiled
Screed extension loose (work up and down)	Out of adjustment	Adjust hold downs on extensions
Screed leaving streak down center of pavement	No lead crown in screed	Crown leading edge of screed
	Screed worn out	Replace
	Extensions set too low	Adjust extension. Always start out in the morning with extensions all the way up, no down pressure
	Screed not heated properly	Set propane pressure at 15 PSI for about 5 to 8 minutes.
Screed leaving ripples	Extension set too low	Readjust extensions
	Extensions work up and down	Adjust top guide
	Extension rod bushings worn	Replace bushings
Flight screw locking up	Twisting screed too far	Give screed time to react
	Screw seized	Replace screw
Flight screw bearing damage	Twisting screed too far	Give screed time to react
	Loading and unloading	Check ramps for easy access
Flame coming out of end of screed	Raw gas from burners	Adjust burners in or out of hole
		Turn cutoff valve slowly to OFF, when flame goes out turn valve back on fully

TROUBLESHOOTING CHART (Continued)

SYMPTOM	CAUSE	REMEDY
Hydraulic oil running out of breather cap	Hydraulic oil tank over filled	Drain 5 to 6 in. (12.7 to 15 cm) from top of tank
	Air in bottom of tank	Bleed if you don't have vent hose
	Oil over heated	Slow Paver down about 10% to 15%
		Check oil cooler and thermostat
Hydraulic pump cavitating or lost power	Low level in hydraulic tank	Fill
	Clogged filters	Replace
	Suction hose loose	Retighten
	Charge pump worn	Rebuild
Feeder does not work on one or both sides	Defective AUTOMATIC/MANUAL switch	Replace handle/hyd. components
	Solenoid defective	Replace solenoid
	Feeder drive chain broken	Repair chain
	Defective conveyor motor	Replace motor
	Rear conveyor shaft broken	Replace conveyor shaft
Feeder flight bars hang up	Flight chains too loose	Adjust. If adjusted all the way and a link is removed you must install a 1/2 link.
	Feeder drive chain too loose	Adjust every 100 hours
Loss of power to drives feeder or augers	Relief out of adjustment	Check pressure. Drive - 3700 PSI, feeders 2400 PSI, augers and cylinders 2000 PSI
	Piston groups worn out	Replace
	Auxiliary pump worn out	Replace

ELECTRONIC STEERING CONTROL SYSTEM TROUBLESHOOTING GUIDE

This section outlines a strategy that can be used to solve problems in the optional Steering Control System. A common technique used in problem solving is exchanging components. However, a very important element necessary to the timely and successful conclusion of this activity is the correct selection of the malfunctioning component. A thorough understanding of the entire system and an elimination process leading to the malfunctioning component is absolutely necessary before starting the exchange activity.

Reduce the random exchange of components by carefully analyzing the symptoms and then conducting tests to determine which of the elements in the system is likely to be the problem. The technician should use the flow chart below as a guide to locate the problem.

Since it is new, the electronic controller is often the first component targeted for exchange. However, the malfunction of an electronic controller is extremely rare and, therefore, it should be the last component considered for replacement. In fact, the electronic controller has an internal ability to diagnose itself and the connections attached to it. This information can be very helpful in finding the problem area. If the electronic controller is responding to commands and not giving diagnostics that indicate an internal problem, the likelihood that the problem is internal to the electronic controller is remote.

FAULT CODES

When the controller detects a fault condition, it signals the specific fault using the red Status LED. Under normal conditions with no error present, the red LED is off and the yellow LED blinks at a 0.5 Hz rate. If no application code is loaded in the controller, the red LED is off and the yellow LED blinks at a 10 Hz rate. All other errors (those specific to the application) are decoded by observing "blink codes" generated by the red LED.

FAULT CODE CHART

Yellow LED (Mode)	Red LED (Status)	System Status:
10 Hz blink rate	Off	No application loaded
0.5 Hz blink rate	Off	Application loaded and no error
0.5 Hz blink rate	4 bit blink code to describe fault	Application loaded and error

Description of Blink Code Algorithm

If the yellow LED blinks at an unvarying 0.5 Hz rate and the red LED is blinking, the cause of the fault can be decoded from the red LED alone as follows: the red LED will flash a four bit sequence, followed by a pause, followed by the four bit sequence, the pause, and so on. The long flash, symbolized by a "-", lasts approximately one second. The short flash, symbolized by a ".", lasts approximately one-half second. The pause between the four-bit sequences is approximately 3.5 seconds. If more than one fault exists, each fault will be displayed in sequence before being repeated.

BLINK CODE TRANSLATION

Fault Code	Flash Bit Sequence	Device at Fault	Cause of Fault	Machine Response
1	_...	Speed pot, unidirectional command Input	Voltage signal is out of range or input is uncalibrated.	No output from the speed pot will cause machine to stop.
2	._..	Max speed pot, unidirectional command Input	Voltage signal is out of range or input is uncalibrated.	No output from the max speed pot. Machine will stop.
3	_ _..	FNR pot Bi-directional command input	Voltage signal is out of range or input is uncalibrated.	FNR command will return to neutral and machine will stop.
4	.._.	Steer pot Bi-directional command input	Voltage signal is out of range or input is uncalibrated.	Machine will steer straight. at any handle setting.
5	_._.	FNR Object	RPM below 200, or no RPM at all.	Machine will revert to neutral causing the machine to stop.
7	_ _ _.	Left Valve	Uncalibrated.	Machine will revert to neutral causing the machine to stop.
8	…_	Right Valve	Uncalibrated.	Machine will revert to neutral causing the machine to stop.
9	_.._	Right Valve Forward Coil	Open or Short.	Machine will revert to neutral causing the machine to stop.
10	._._	Right Valve Reverse Coil	Open or Short.	Machine will revert to neutral causing the machine to stop.
11	_ _._	Left Valve Forward Coil	Open or Short.	Machine will revert to neutral causing the machine to stop.
12	.._ _	Left Valve Reverse Coil	Open or Short.	Machine will revert to neutral causing the machine to stop.

"." = short flash = 0 "_" = long flash = 1

STEERING SYSTEM WIRING

Wiring Guidelines

1. Protect all wires from mechanical abuse. Wire can be run in flexible metal or plastic conduits.
2. Use 85°C wire with abrasion resistant insulation. 105°C wire should be considered near hot surfaces.
3. Use #18 gauge wire or greater. #14 or #16 wire is preferred.
4. Separate high current wires such as solenoids, lights, alternators, or fuel pumps from control wires.
5. Run wires along the inside of, or close to, metal machine frame surfaces where possible. This simulates a shield, which will minimize the effects of EMI/RFI radiation.
6. Do not run the wires near sharp metal corners. Run the wire through a grommet when rounding a corner.
7. Do not run wires near hot machine components.

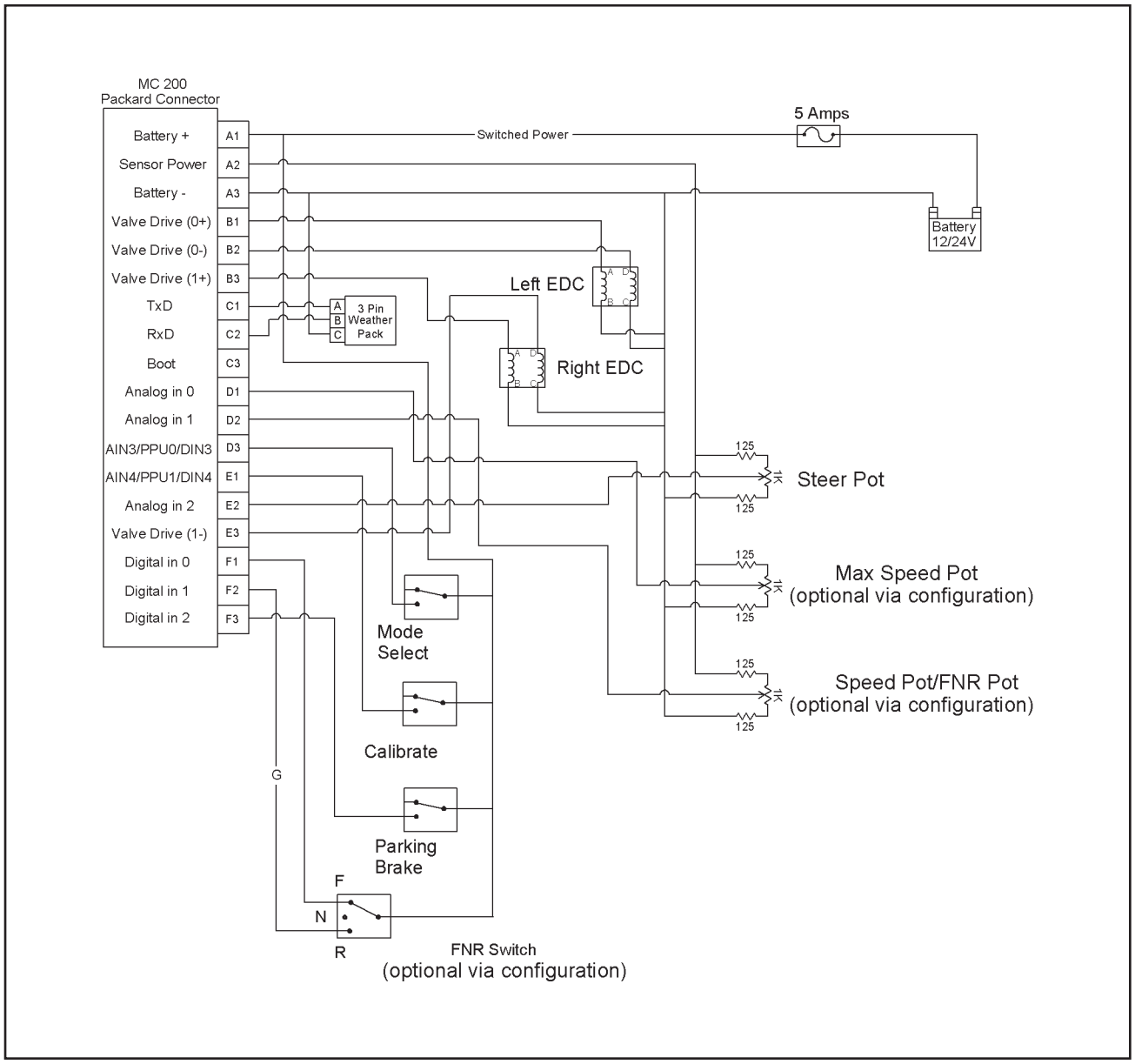


FIGURE 4-17. STEERING WIRING DIAGRAM

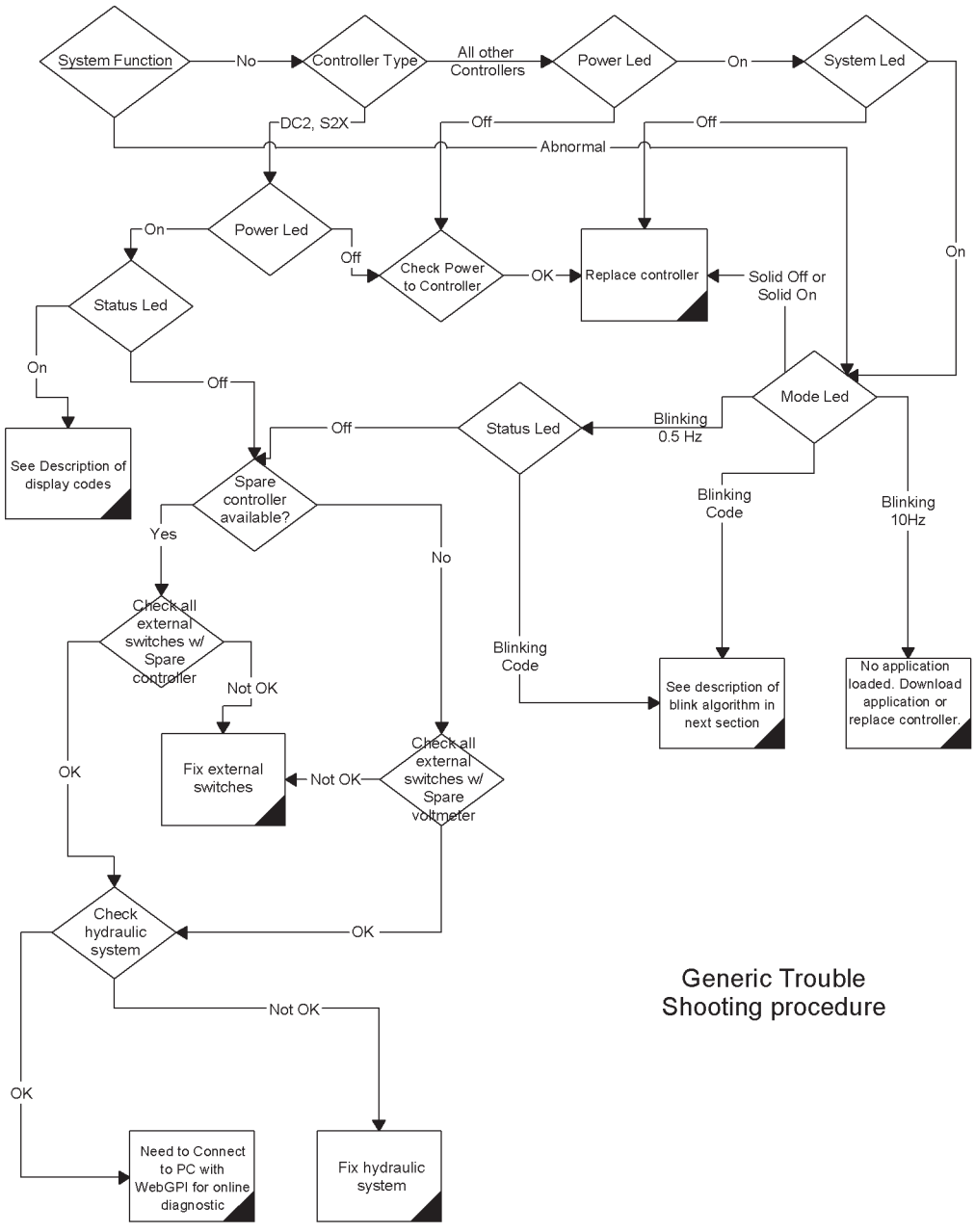


FIGURE 4-18. STEERING TROUBLESHOOTING GUIDE

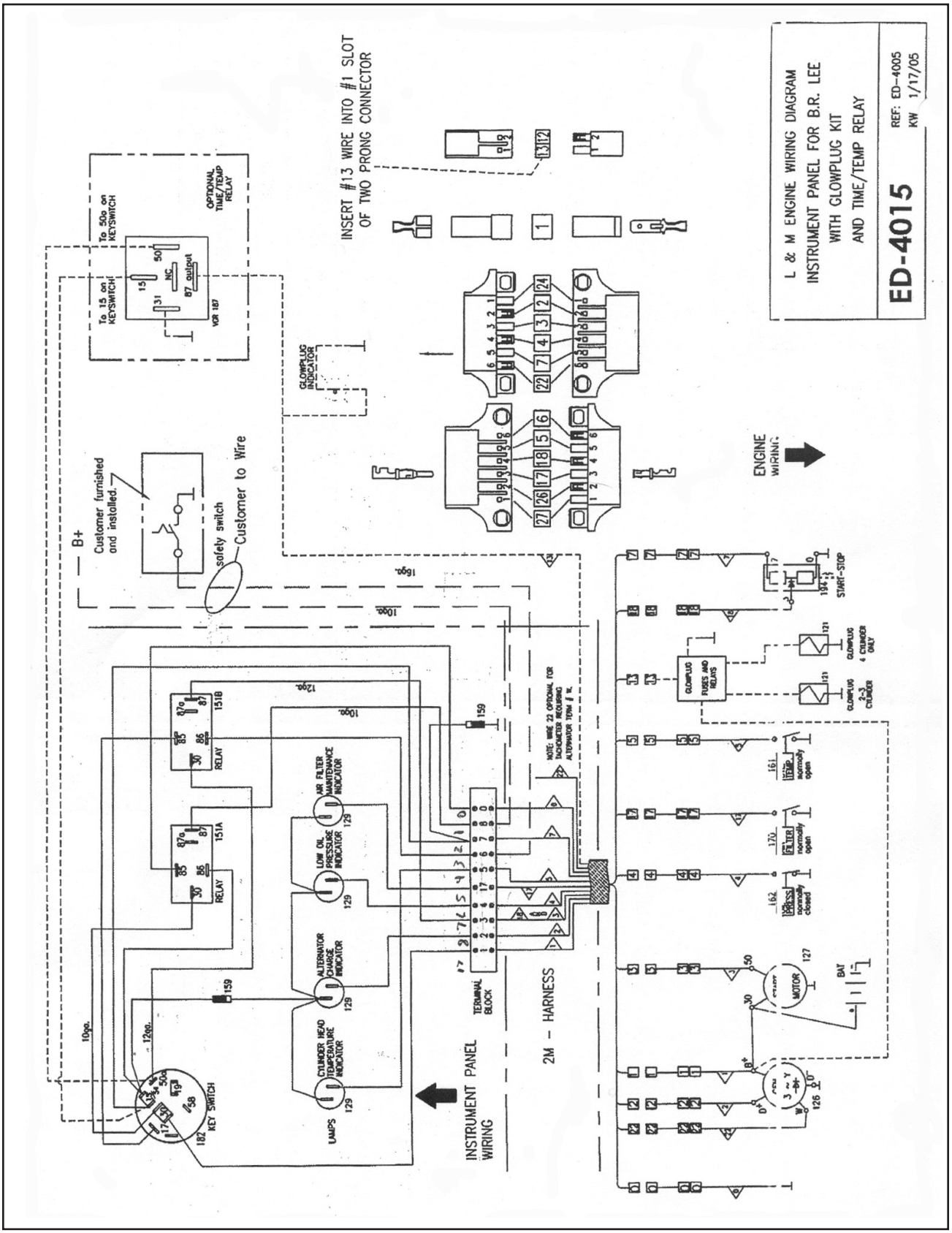


FIGURE: 4-19 ENGINE WIRING DIAGRAM

SA-2793 AUTOMOTIVE CONTROLLER USER GUIDE

DESCRIPTION OF OPERATION

STARTUP

When the key is turned on the status light will come on for approximately 3 second while the Plus One powers up. The status light will turn off when the machine is ready to start. If the light stays on this means that the joystick(s) in the control box are not in neutral and the Plus One will not allow the engine to start. Placing the joystick(s) in neutral will turn off this light and allow the engine to start. If the light starts to blink see the Fault Code table in section IV of this manual.

OPTIMIZATION

After installing this software the steering control box(s) will require optimization as well as calibration (which will be discussed in the next section).

The software will automatically recognize which type of steering control (Dual Joystick or Steering Wheel with Forward/Neutral/Reverse Joystick) is installed and if there is one or two boxes connected. On machines with two boxes; the Plus One will only operate if both boxes are of the same type.

Plus One will not allow the Engine Enable to come on until the Optimization procedure has been done.

Note: If the pumps are the high current (Sauer H1 or Rexroth) perform the pump selection.

PUMP CONTROL OUTPUTS

The Plus One controller is setup to operate dual hydrostatic pumps, three options are built in; the low current outputs for the Sauer 42 series pumps (default setting), high current outputs for the Sauer H1 series pumps and high current output for Rexroth pumps.

If the H1 pumps are used you must switch the Plus One to high current outputs

TO SET FOR HIGH CURRENT OUTPUT:

Turn the machine off. Open the dash board panel and locate the Hi Output connector and plug it into the Hi Output receptacle.

PUMP SELECTION (HIGH CURRENT PUMPS ONLY):

The adjustment of the pump parameters in the PLUS1 controller is to handle the different resistance levels in the two High Current pumps; a Sauer H1 and a Rexroth. This is only done for the High Current pumps; the low current (M4200) pump logic requires no changes. The Maximum PWM, Minimum PWM and Threshold Percentage values for High Current outputs all have to be adjusted to accommodate the valves on the Rexroth pump which have approximately thirty-three percent more resistance that the valves on the H1 pump. The default PLUS1 controller values are for a Sauer H1 pump. The following routine handles the selection of parameters:

1. Turn OFF power to the control system (Key in Stop/Off position)
2. Connect at least one Steering Wheel or Dual Joystick control box
3. Turn all RUN / STOP switches on the control box(or boxes) to STOP
4. Open the control panel and install the Y-adapter that allows connecting the Optimize and Calibrate plugs at the same time
5. Connect the High Current plug to the High Current connection
6. Connect the Optimize plug to the Y-adapter (ensure that the wires In and Out match)
7. Connect the Calibrate plug to the Y-adapter (ensure that the wires In and Out match)
8. Turn ON the power to the control system (Key in ON position)
9. Wait for the Status Light on the control panel to go out (indicates waiting for commands / running OK)
10. Move the Left Joystick on either Dual Joystick box (if more than one is installed) or the Speed/Direction Joystick on either Steering Box (if more than one is installed) to one of the following positions to choose which parameters to load:
    a. All the way Forward – loads the Sauer H1 parameters
    b. All the way Reverse – loads the Rexroth parameters

11. If both Left Joysticks (Dual Joystick boxes) or both Speed/Direction Joysticks (Steering boxes) are moved then NO parameters will be changed; user can only move one Left Joystick or Speed/Direction Joystick
12. Toggle the RUN / STOP switch on the box with the positioned Left Joystick (or Speed/Direction Joystick) to RUN
13. If Parameter Change is successful, the Status Light will flash very rapidly
14. Toggle the RUN / STOP switch used in step 12 to STOP (the Status Light will stop flashing)
15. Turn OFF the power to the control system (Key in OFF position)
16. Disconnect the Optimize and Calibrate plugs from the Y-adapter

After a Parameter Change routine is completed, all Optimize and Calibrate values are reset to default values. Optimize and Calibrate routines will have to be processed again if they were already done before the Parameter Change.

TO OPTIMIZE THE DUAL JOYSTICK STEERING CONTROL BOX:

1. Turn the machine off. Open the dash board panel and locate the Optimize/Calibrate connector and plug it into the Optimize receptacle.
2. Place all joysticks in the center position and move the Run/Stop switch(s) into the Stop position.
3. Turn the power key to the on position (power to the Plus One controller). Outputs are disabled. The status light will blink a slow continuous blink to indicate Optimize Mode.
4. Wait 5 seconds for the Plus One to capture the joysticks in center position.
5. Push joysticks full forward for 5 seconds.
6. Push joysticks full reverse for 5 seconds.
7. If a second control box is present optimize it in the same manner.
8. The status light will stop blinking. Unplug the Optimize/Calibrate connector from the Optimize receptacle and turn off the power key.

TO OPTIMIZE THE STEERING WHEEL WITH FORWARD/NEUTRAL/REVERSE JOYSTICK CONTROL BOX:

1. Turn the machine off. Open the dash board panel and locate the Optimize/Calibrate connector and plug it into the Optimize receptacle.
2. Place all steering wheels and joysticks in the center position and move the Run/Stop switch(s) into the Stop position. **Be sure that the steering wheels are centered!**
3. Turn the power key to the on position (power to the Plus One controller). Outputs are disabled. The status light will blink slowly with no pauses to indicate Optimize Mode.
4. Wait 5 seconds for the Plus One to capture the steering wheel center position.
5. Turn the steering wheel full right and push the FNR joystick full forward for 5 seconds.
6. Turn the steering wheel full left and the FNR joystick full reverse for 5 seconds.
7. If a second control box is present optimize it in the same manner.
8. The status light will stop blinking. Unplug the Optimize/Calibrate connector from the Optimize receptacle and turn off the power key.

CALIBRATION

Calibration (also called straight line tracking) involves 4 steps: Threshold, low, mid and high speed setting. There are separate procedure for calibrating machines with Dual Joystick steering control and Steering wheel with FNR Joystick steering control. On machines with two steering control boxes the calibration will only need to be done with one box. **THIS PROCEDURE WILL SET THE MAXIMUM SPEED OF THE MACHINE.**

TO CALIBRATE THE DUAL JOYSTICK STEERING CONTROL BOX:

Turn the machine off. Open the dash board panel and locate the Optimize/Calibrate connector and plug it into the Calibrate receptacle.

Place all joysticks in the center position and move the Run/Stop switch into the Run position. If two control boxes are present place the other Run/Stop switch to the stop position.

Turn machine on and the status light will blink

rapidly with no pauses to indicate Calibration Mode.

SETTING THE THRESHOLD:

1. Start the engine and run at ½ throttle
2. Move left joystick forward until machine begins to move slightly, then toggle run/stop switch from run to stop and back to run. Return joystick to neutral.
3. Move left joystick reverse until machine begins to move slightly, then toggle run/stop switch from run to stop and back to run. Return joystick to neutral
4. Move right joystick forward until machine begins to move slightly, then toggle run/stop switch from run to stop and back to run. Return joystick to neutral.
5. Move right joystick reverse until machine begins to move slightly, then toggle run/stop switch from run to stop and back to run. Return joystick to neutral.

SETTING THE STRAIGHT LINE TRACKING:

1. Move joysticks forward until machine begins to move forward slowly, adjust Right Joystick forward or reverse as necessary to make sure machine is traveling straight. Toggle Run/Stop switch from Run to stop and back to run
2. Move Left Joystick to approximately 1/2 joystick position, adjust Right Joystick forward or reverse as necessary to make sure machine is traveling straight. Toggle Run/Stop switch from Run to stop and back to run.
3. Move Left Joystick to full forward, adjust the Right Joystick forward or reverse as necessary to make sure machine is traveling straight. When the machine has achieved full speed, reduce joystick position until the machine slows to the desired maximum speed and then toggle Run/Stop switch from Run to stop and back to run.

NOTE: This setting determines the machines maximum speed. Any joystick movement beyond this point will have no effect on the machines forward speed.

4. Repeat for reverse.
5. Bring both joysticks to neutral.
6. Keeping power to the Plus One, unplug the Optimize/Calibrate connector from the Calibrate receptacle (this will write the calibration values to memory).
7. Turn off and restart machine. Run machine to verify acceptable operation. Machine will now operate in typical dual joystick mode with speed and direction of each track controlled by the respective joystick.

CALIBRATION CONT.

TO CALIBRATE THE STEERING WHEEL WITH FORWARD/NEUTRAL/REVERSE JOYSTICK CONTROL BOX:

Turn the machine off. Open the dash board panel and locate the Optimize/Calibrate connector and plug it into the Calibrate receptacle.

Place all steering wheels and joysticks in the center position and move the Run/Stop switch into the Run position. If two control boxes are present place the other Run/Stop switch to the stop position. Turn machine on and the status light will blink rapidly with no pauses to indicate Calibration Mode.

SETTING THE THRESHOLD:

1. Start the engine and run at ½ throttle
2. Turn the steering wheel full left; Move FNR joystick forward until machine begins to move slightly, then toggle run/stop switch from run to stop and back to run. Return joystick to neutral.
3. With steering wheel still at full left; Move FNR joystick reverse until machine begins to move slightly, then toggle run/stop switch from run to stop and back to run. Return joystick to neutral
4. Turn the steering wheel full right. Move FNR joystick forward until machine begins to move slightly, then toggle run/stop switch from run to stop and back to run. Return joystick to neutral.
5. With steering wheel still at full right; Move FNR joystick reverse until machine begins to move slightly, then toggle run/stop switch from run to stop and back to run. Return joystick to neutral.

SETTING THE STRAIGHT LINE TRACKING:

1. Move FNR joysticks forward until machine begins to move forward slowly, adjust the steering wheel as necessary to make sure machine is traveling straight. Toggle Run/Stop switch from Run to stop and back to run
2. Move FNR Joystick to approximately 1/2 joystick position, adjust the steering wheel as necessary to make sure machine is traveling

straight. Toggle Run/Stop switch from Run to stop and back to run.

3. Move FNR Joystick to full forward. When the machine has achieved full speed, reduce joystick position until the machine slows to the desired maximum speed. Adjust the steering wheel as necessary to make sure machine is traveling straight. Toggle Run/Stop switch from Run to stop and back to run. NOTE: This setting determines the machines maximum speed. Any joystick movement beyond this point will have no effect on the machines forward speed.
4. Repeat for reverse.
5. Bring the FNR joystick to neutral and center the steering wheel.
6. Keeping power to the Plus One, unplug the Optimize/Calibrate connector from the Calibrate receptacle (this will write the calibration values to memory).
7. Turn off and restart machine. Run machine to verify acceptable operation.

STEERING/ACCELERATION AND DECELERATION

Steering the machine is done by slowing the left or right track. When a steering wheel with FNR joystick control box is used the steering wheel angle at which counter-rotation starts and the speed limit for counter-rotation are preprogrammed into the PLUS One's memory. This limits the ability to counter-rotate the tracks at high speeds. If the FNR joystick is at 100% forward, as the steering wheel was turned from centered to full right the right track would only slow to 0% forward (at the inflection point) and never counter-rotate. If the FNR joystick is at 50% forward the right track would counter-rotate at 50% reverse (if the speed limit allows it to). You can achieve full counter-rotation at either full left or full right (hard-over) up to the speed limit, at which point the counter-rotating track would decelerate to zero speed (if over the speed limit). The counter-rotating track can never exceed the speed of the forward track. The steering wheel angle of inflection (point at which the controlled track would start to counter-rotate) and the speed limit for allowing counter-rotation can be adjusted with the Service Tool.

Each joystick and steering wheel has been setup with individual profile and ramping to give smooth control.

Ramping for acceleration and deceleration is proportional to the amount of movement of the joystick. This will provide a quicker ramp for direction changes and a slower ramp if the joysticks are moved to neutral. These profiles can be adjusted with the Service Tool.

The steering wheel profile has been setup to give a finer degree of control when the wheel is moved a small amount and more aggressive steering as the wheel is turned more. These profiles can be adjusted with the Service Tool.

The Steering wheel has a center position dead band separate from the joysticks. This dead band is less than that used by the joystick controller and reduces the amount of "play" in the steering wheel. This dead band can be set with the service tool.

STEERING BOX CONTROL SELECTION

The Plus One will only assign control of the machine to a steering control box if all joysticks are in neutral, the steering wheels are centered and the Run/Stop switches are in the Stop position.

The Plus One will assign control to the first box that is switched to the Run position.

If at anytime the Run/Stop switch is set to the Stop position the machine will decelerate to stop and set the brake after 3 seconds. At anytime during operation if the Run/Stop switch on the second control box is set to the Run position the machine will decelerate to stop and set the brake after 3 seconds. Control will be restored to the operator when this switch is set back to Stop (the machine will ramp back to the setting of the operator's controls). This purpose of this is to allow personnel on the opposite side of the machine to pause the machine and then return control to the operator by flipping the Run/Stop switch back to Stop.

Machine control can be switched to the second steering control box by setting all joysticks in neutral, centering the steering wheels, switching both Run/Stop switches to the Stop position and then switching the second box to Run.

NEUTRAL SAFETY LOCKOUT

This is an option built into the Plus One program.

If at anytime the machine is in Neutral with the Run/Stop switch in the Run position, the Plus One will disable the control box after a set period of time. The operator will be required to switch from Run to Stop and back to Run to regain control. This is provided as a safety in the event that the operator leaves his station with the control box still active. When activated the machine will not if the joysticks were accidentally moved without someone at the controls. The length of time until lockout activates can be adjusted with the Service Tool.

The default is set at 30 Minutes.

VIBRATOR/ELECTRIC ACTUATOR RELAY AND BACKUP ALARM OUTPUTS

Anytime one or more joysticks are in the forward position (none can be in reverse) the Vibrator/Electric Actuator Relay +12VDC output is turned on. The output is disabled in a counter-rotate condition.

Anytime a joystick is in the reverse position or a counter-rotate condition exists, the Backup Alarm +12VDC output is turned on.

BRAKE RELEASE/PUMP NEUTRAL BYPASS VALVE

This +12VDC output is turned on when any joystick is not in neutral and the Run/Stop switch is in the Run position. The output is turned off when the joysticks are brought to neutral, the operators Run/Stop switched is switched to Stop or the opposite control box is set to Run. There is a proportional time delay, based on output to the pump coils. The maximum delay is 10 seconds if full outputs to the pumps were present and the minimum delay is 3 seconds. The time delay will start when the joysticks are brought to neutral, the operators Run/Stop switched is switched to Stop or the opposite control box is set to Run.

When the run signal is returned the output is immediately turned on and there is a .2 second delay on outputs to the pump coil. This delay allows time for the brake to release before the propel coils are energized.

CRITICAL FAULTS

The following faults will prevent machine movement:

1. Steering control box not detected.
2. Joysticks not optimized.
3. Pump control coil fault.
4. Brake valve/ Pump neutral bypass coil fault (High current output mode only).
5. Joystick(s) not in Neutral at startup.
6. Joysticks in neutral with Run/Stop switch in Run position safety timeout.

A joystick fault can prevent machine movement if:

- There is only one box present
- The fault happens in the box that has control (Run/Stop switch in Run position)
- The fault occurs when neither box has control

The machine will operate if fault occurs in the box that is not currently in control (i.e. the left box is operating the machine and the right box has a fault). The fault will disable the machine once the controlling box is put in the Stop position. Disconnecting the faulted box will allow control to be restored to the opposite box.

FAULT CODES FOR STATUS LED

(The Status light will also blink the fault codes)

Blink Code	Reason for Fault	Corrective Action
Continuous On (at startup)	Joysticks not in neutral at startup	Place all joysticks in neutral.
Continuous On (while running)	Joysticks in neutral too long with Run/Stop Switch in Run position (safety timeout)	Toggle Run/Stop switch from Run to Stop and back to Run.
Continuous rapid blink	Calibration Mode	Open dashboard panel and unplug the Optimize/Calibrate plug from the Calibrate receptacle.
Continuous slow blink	Optimize Mode	Open dashboard panel and unplug the Optimize/Calibrate plug from the Optimize receptacle.
21	Left Steering Control Box not optimized	Perform Optimize procedure in Section III.
22 or 27	Left Steering Control Box: Left joystick or FNR joystick fault	Voltage <100mv or >4900 mv Check wires to Left joystick or FNR joystick.
23 or 28	Left Steering Control Box: Right joystick or steering wheel fault	Voltage <100mv or >4900 mv Check wires to right joystick or steering wheel.
24	Right Steering Control Box not optimized	Perform Optimize procedure in Section III.
25 or 37	Right Steering Control Box: Left joystick or FNR joystick fault	Voltage <100mv or >4900 mv Check wires to Left joystick or FNR joystick
26 or 38	Right Steering Control Box: Right joystick or steering wheel fault	Voltage <100mv or >4900 mv Check wires to right joystick or steering wheel.
31	Break Release / Pump neutral bypass valve coil	*Only used in high current output mode* The output is open or short circuited Check the coil and wires.
32	Right pump FWD or REV output fault	The output is open or short circuited Check the coil and wires.
33	Left pump FWD or REV output fault	The output is open or short circuited Check the coil and wires.
36	Vibrator/ Electric Actuator relay fault	The output is open or short circuited Check the relay and wires.

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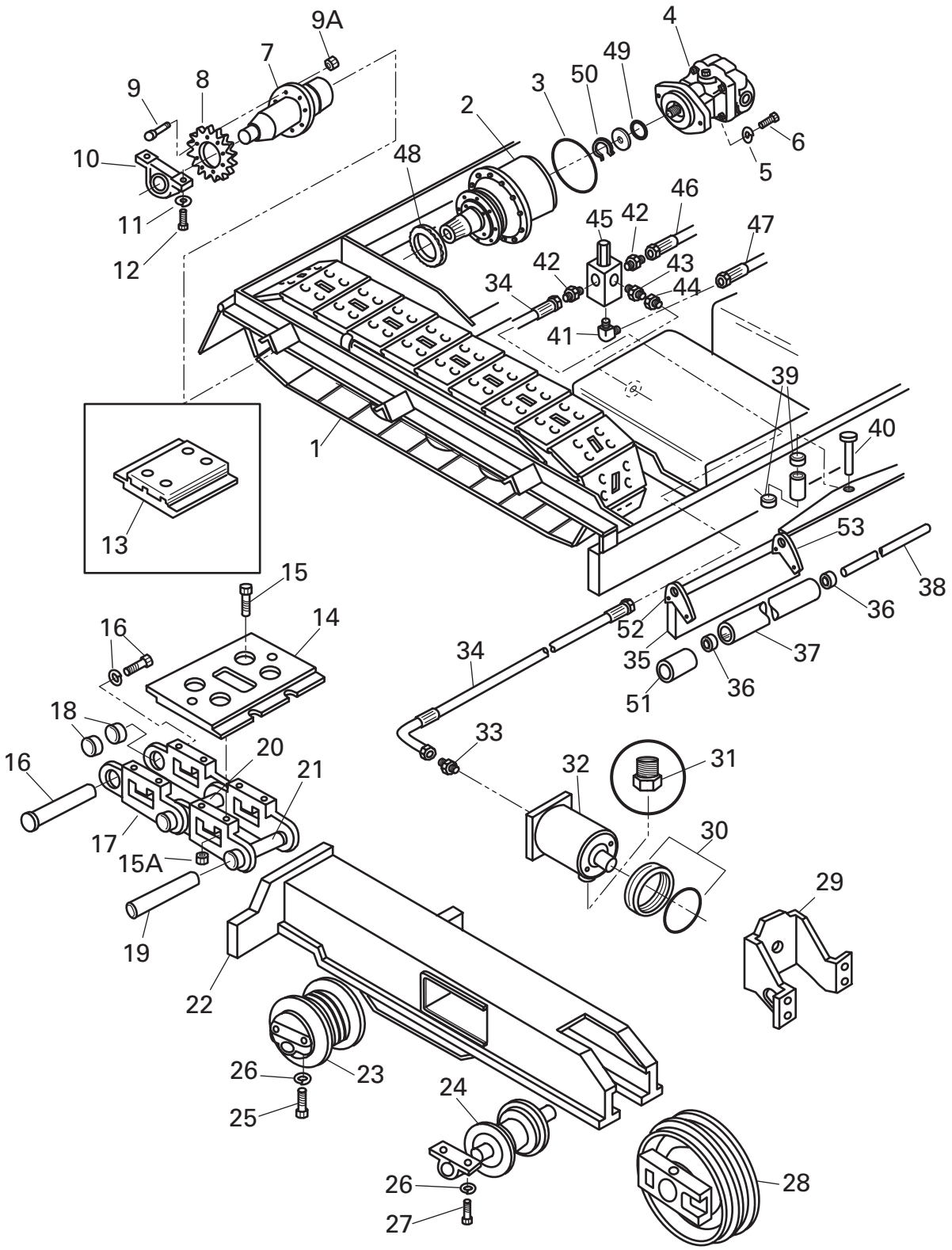

FIGURE 1. SPROCKET DRIVE TRACK SYSTEM (AUTOMATIC HYDRAULIC ADJUSTABLE)

FIGURE 1. SPROCKET DRIVE TRACK SYSTEM (AUTOMATIC HYDRAULIC ADJUSTABLE)

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	851101	TRACK ASSY. W/ CASTED SHOES	2
	851101P	TRACK ASSY., W / POLY PADS	2
	851102	TRACK RAIL (NO PADS)	A/R
2	811360	TORQUE HUB, FINAL DRIVE (1000, 8000 & 8500	2
3	811366	O-RING, TORQUE HUB COVER	2
4	811362	HYD. MOTOR, 2-SPEED	2
5	118-5	LOCK WASHER	4
6	811364	CAP SCREW	4
7	851103	AXLE; MAIN	2
8	811350	SPROCKET, TRACK DRIVE (17 TOOTH)	2
9	811352	CAP SCREW, 5/8”-18 x 2 1/4” (TORQUE 180 FT.LBS.)	A/R
9A	116-7-1	NUT, 5/8”	A/R
10	810140	BEARING, 2 1/4" PILLOW BLOCK	4
11	118-7	LOCK WASHER	A/R
12	811352	CAP SCREW	A/R
13	851104	TRACK PAD, POLY	A/R
14	811304	TRACK PAD, CASTED	A/R
15	811308	BOLT, FOR PAD	A/R
15A	811309	NUT, FOR PAD BOLT	A/R
16	811306	PINS, MASTER (COMPLETE)	A/R
17	811312	LINK, TRACK LINK REPAIR SEG.	A/R
18	811310	SPACERS	A/R
19	811307	PINS; PLAIN	A/R
20	851460	BUSHING 004017	A/R
21	811314	BUSHING,TRACK, B/O	A/R
22	851105L	SIDE FRAME ASSY. L.H.	1
	851105R	SIDE FRAME ASSY. R.H.	1
23	851566	TRACK ROLLER, B / 1	2
24	811326	TRACK ROLLER, B / O	6
25	811330A	CAP SCREW	A/R
26	811328	LOCKWASHER; ROLLER 12MM	A/R
27	811330	CAP SCREW	A/R
28	811406	FRONT IDLER, TRACK (CASTED)	2
29	811329A	YOKE, TRACK IDLER (SHORT)	A/R
30	851485	UNIVERSAL SEAL KIT, 3 1/2" HYD. CYL.	A/R
31	851644	BREATHER; CYLINDER	A/R
32	811331	HYD. CYL., TRACK TENSIONER	2
33	2404-10-8.	ADAPTER,HYD. HOSE	A/R

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FIGURE 1. SPROCKET DRIVE TRACK SYSTEM (AUTOMATIC HYDRAULIC ADJUSTABLE) CONT.

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
34		HOSE ASSY. TRACK R.H. TENSIONER	1
35	984283	PUSH BAR ASSY.	2
36	810110	BEARING, PUSH ROLLER (1 1/4")	4
37	852799	ROLLER, W/SHAFT & BEARINGS	2
38	930075	SHAFT, PUSH ROLLER	A/R
39	810070	BUSHING, TRACK IDLER / TRUCK HITCH	2
40	810081	PIN; PIVOT	1
41		ADAPTER,HYD. HOSE	A/R
42		ADAPTER,HYD. HOSE	A/R
43		ADAPTER,HYD. HOSE	A/R
44		BUSHING,3/4" M.P.T.x1/2" F.P.T.	1
45	851544	MANIFOLD, N/S TRACK TENSIONER	1
46		HOSE ASSY. L.H. TRACK TENSIONER	1
47		HOSE ASSY.R.H. TRACK TENSIONER	1
48	811365	SEAL, TORQUE HUB DRIVE SHAFT	A/R
49	851489A	SEAL, HYD. MOTOR	A/R
50		SNAP RING	A/R
51	930060	EXT. ROLLER W/BEARINGS	2
52	984379	R/H ROLLER MOUNT	2
53	984378	L/H ROLLER MOUNT	2

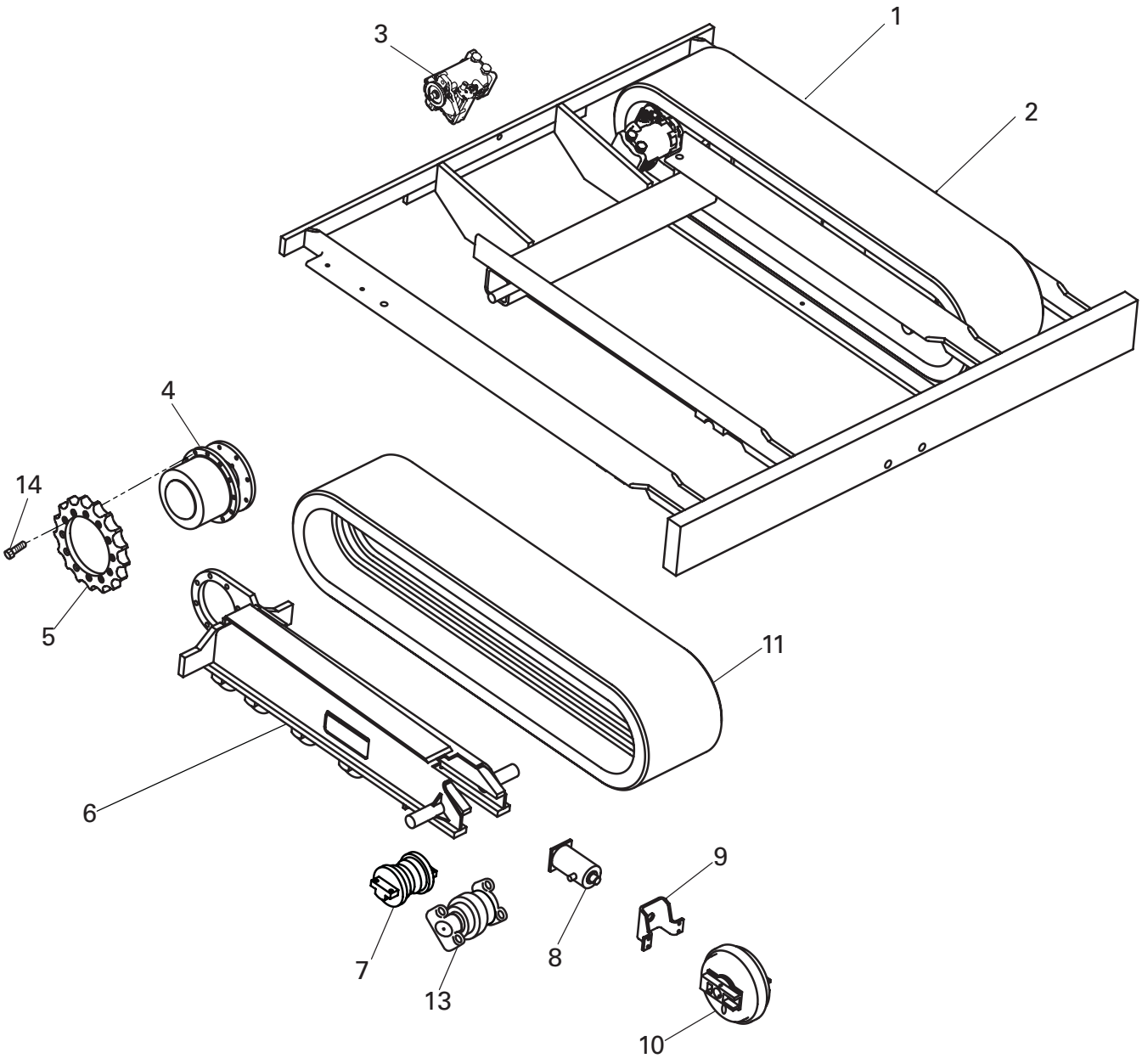

FIGURE 2. RUBBER TRACK UNDER CARRIAGE

FIGURE 2. RUBBER TRACK UNDER CARRIAGE

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	980607L	ASSEMBLY IN FRONT OF UNDER CARRIAGE, LH	1
2	980607R	ASSEMBLY IN FRONT OF UNDER CARRIAGE,,RH	1
3	811362	HYD MOTOR, PAVER/635B 2-SPEED	2
4	980850	TORQUE HUB, FINAL DRIVE	2
5	980670	SPROCKET,17TOOTX75.5MM PITCH	2
6	980606R	WELMONT UNDERCARRIAGE, RUBBER TRACK, RH	1
6A	980606L	WELMONT UNDERCARRIAGE, RUBBER TRACK, LH	1
7	851566	TRACK ROLLER, B/1 (N/S AS OF	A/R
8	811331	HYD CYL, 8000C/8500 TRACK	2
9	811329A	YOKE, 8500 TRACK FRONT IDLER	2
10	983530	IDLER, FRONT B1 8515	2
11	982585	TRACK, RUBBER, CONTINUOUS	2
12	983166	TRACK, 135MM, POLYPADS, HEAVY DUTY	2
13	983588	TRACK ROLLER B-1 INNER FLANGE	A/R
	986807	TORQUE HUB W/BRAKE (NEW IN 2006)	
14	80278	CSHH, 625-18 X 1.25	A/R

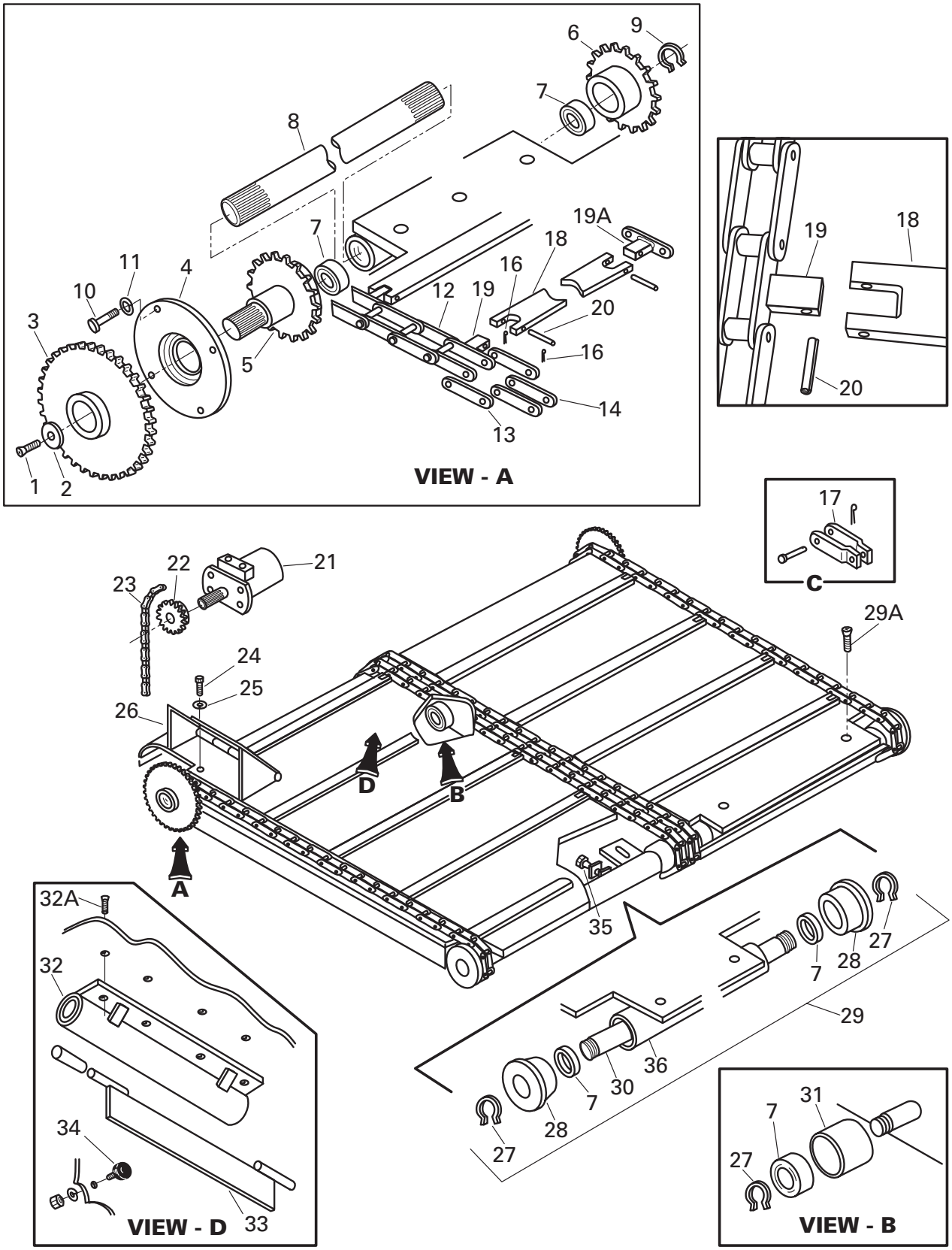

FIGURE 3. CONVEYOR DRIVE ASSEMBLY

FIGURE 3. CONVEYOR DRIVE ASSEMBLY

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
	851626	CONVEYOR, ASSY. COMPLETE	
	851627	BED ASSY. 8500 CONVEYOR	
1	851111	CAPSCREW, 1/2"x2"	2
2	851112	WASHER, COUNTER SUNK 1/2	2
3	851473	SPROCKET, OUTER DRIVE	2
4	851483	CONVEYOR MOUNTING PLATE WITH BEARING	2
5	851474	SPROCKET, OUTER DR. C-188	2
6	850030	SPROCKET, INNER DRIVE C-188	2
7	851130	BEARING, AUGER, AXLE, IDLER	20
8	851116	DRIVE SHAFT, CONVEYOR	2
9	850040	SNAP RING, CONVEYOR DRIVE SHAFT	2
10	102-405-1A	CAPSCREW, 1/2"x1"	A/R
11	118-5	WASHER, LOCK 1/2"	2
12	851117A	CONVEYOR CHAIN, ASSEMBLY	A/R
13	850070A	LINK, MASTER W/ PINS & COTTER PINS	4
14	850080A	BLOCK LINK WITHOUT TAB	A/R
16	850100	COTTER PIN, CONVEYOR CHAIN M/I	A/R
17	850215A	HALF LINK, CONVEYOR CHAIN	A/R
18	851118A	BAR, CONVEYOR FLIGHT BAR (QUICK CHANGE)	A/R
19	851118-2	TAB, WELDMENT (QUICK CHANGE)	A/R
19A	850080B	LINK, W/TAB W/CONVEYOR CHAIN	A/R
20	851118-1	PIN, ROLL PIN (3/8"x2")	2
21	260130	HYD. MOTOR, CONVEYOR MAIN	2
21A	860014	SEAL KIT, HYD. MOTOR	A/R
22	851120	SPROCKET, CONVEYOR DRIVE MOTOR	2
23	851121	CHAIN, CONVEYOR DRIVE	2
24	800282	CAPSCREW, 5/8"x1 1/4"	A/R
25	118-7	LOCKWASHER, 5/8"	A/R
26A	850038 L	DEFLECTOR, LEFT SIDE (High Deck)	A/R
26B	850038 R	DEFLECTOR, RIGHT SIDE (High Deck)	4
27	850040	SNAP RING, CONVEYOR DRIVE SHAFT	4
28	850120	IDLER, CONVEYOR CHAIN FRONT	4
29	851123	TUBE ASSY. CONVEYOR FRONT CHAIN GUIDE	2
29A	851653	CAPSCREW, 5/8”x2” FLAT SOCKET HEAD	
30	851124	SHAFT, CONVEYOR FRONT IDLER	2
31	850162	ROLLER, CONVEYOR CHAIN GUIDE	4
32	851651	TUBE ASSY, CONVEYOR REAR DRIVE	2
32A	851652	CAPSCREW, 5/8”x1” FLAT SOCKET HEAD	

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FIGURE 3. CONVEYOR DRIVE ASSEMBLY CONT,

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
33	410070	BUMPER, WATER TANK/CONVEYOR	2
34	851129	STOP RUBBER, (SCRAPER)	2
35	850170	SET SCREW	4
36	851116-1	PIPE W/BUSHING	
37	851127L	PAN, CONVEYOR BOTTOM, LH	A/R
38	851127R	PAN, CONVEYOR BOTTOM, RH	A/R

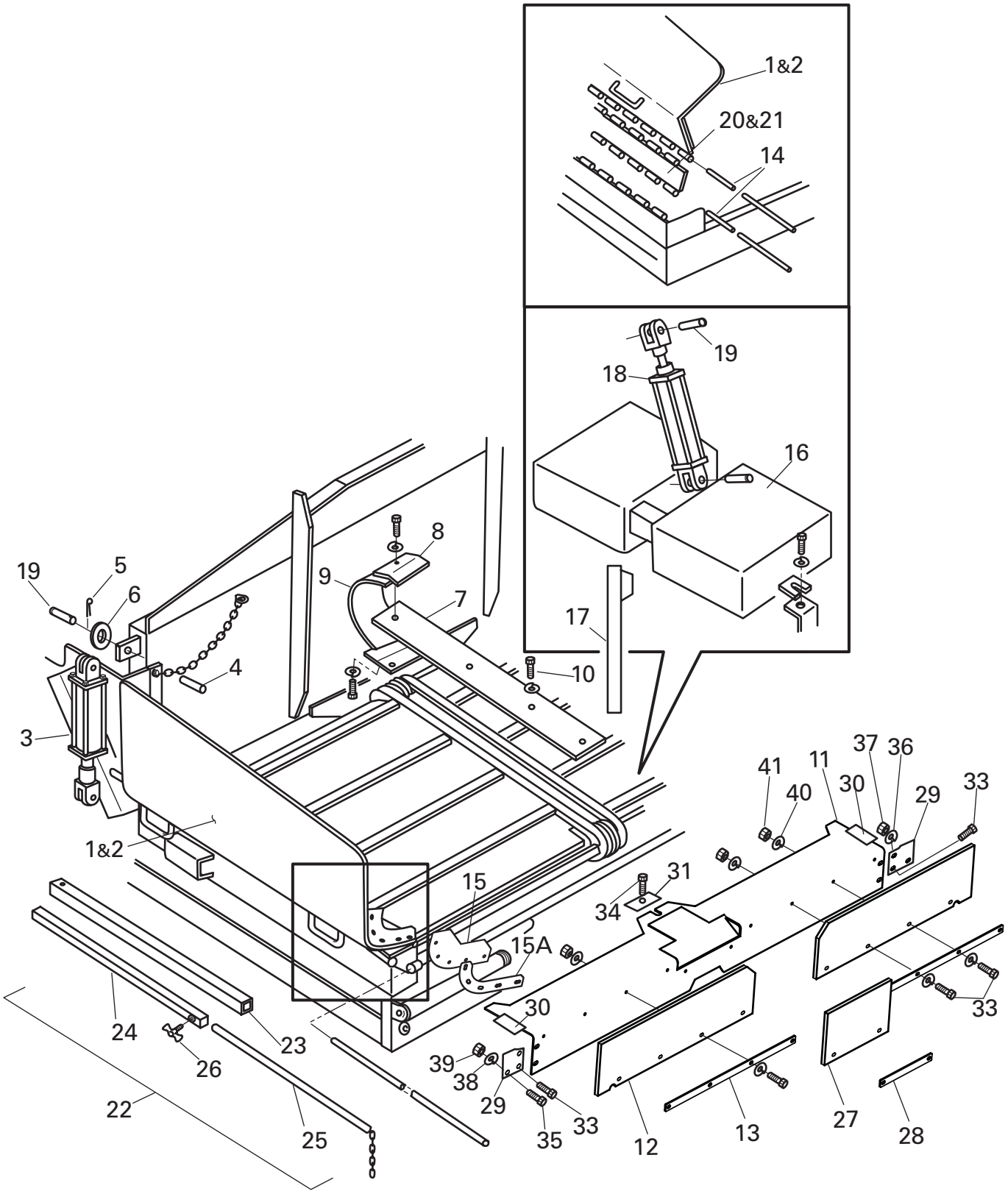

FIGURE 4. HOPPER COMPONENTS

FIGURE 4. HOPPER COMPONENTS

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	980703	ASSEMBLY, SIDE WING,R/H 8515	1
2	980702	ASSEMBLY, SIDE WING,L/H 8515	1
3	610110	CYL. HYD. 2”X8”	2
3A	851484	UNIVERSAL SEAL KIT, CYLINDER	A/R
4	851132	PIN	2
5	870307	CLIPS, (FOR PINS)	4
6	119-10	WASHER, 1"S.A.E. FLAT	2
7	851133	SHIELD,8500 CENTER CONV	1
8	840166	CLAMP, CONVEYOR CENTER RUBBER	1
9	840162	RUBBER CONVEYOR CENTER REAR	1
10	851134	CSFHS, .375-16 X .75.GR5	6
11	985669	ASSEMBLY, FRONT LIP GUARD	1
12	985057	RUBBER, FRONT LIP OUTER	1
13	985062	FLASHING, SIDE STRIP	1
14	854084	PIN, HOPPER WING HINGE HIGH DECK	4
15	980728	RUBBER SIDE WING, 8515	2
15A	980727	PLATE, SIDE WING RUBBER SHIELD	A/R
16	853370	BOTTOM TANK	A/R
17	840021	SAFETY PROP, HOPPER	1
18	840020	HOPPER LIFT CYLINDER	1
18A	870311	SEAL KIT HOPPER LIFT	A/R
19	240030	PIN	2
20	840157	HINGED PANEL, L/H	1
21	840156	HINGED PANEL, R/H	1
22	920032	GUIDE BAR ASSEMBLY	2
23	920041	BAR, GUIDE (OUTER)	2
24	920051	HOUSING, GUIDE BAR (INNER)	2
25	920061	ROD & CHAIN, GUIDE BAR	2
26	920070	WINGBOLT, GUIDE BAR LOCK	A/R
27	985058	RUBBER,FRONT LIP,CENTER	1
28	985063	FLASHING, CENTER FRONT LIP	1
29	853598	BAR, .375 X 6.25 X 7.00	2
30	853595	BAR, 125 X 1.50 X 9.50	2
31	985581	FRONT LIP CLAMP	1
32	102-209-1A	C5HH, .375-16 X 2.00GR5	10
33	102-407-1A	CH5HH, .500- 13 X 1.50, GR5	4
34	851111	CSSH, .500- 13 X 2.00, GR5	1
35	102-607-1A	CSHH, .625- 11 X 1.50, GR5	2

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FIGURE 4. HOPPER COMPONENTS CONT.

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
36	118-7	WASHER, LOCK, .625	2
37	117-5	NUT, HEX, HEAVY, .625-11	4
38	118-5	WASHER, LOCK, .500	4
39	117-5	NUT, HEX, HEAVY, .625-11	4
40	119-3	WASHER, FLAT, SAE, .375	20
41	143-3	NUT, LOCK, .375-16	10

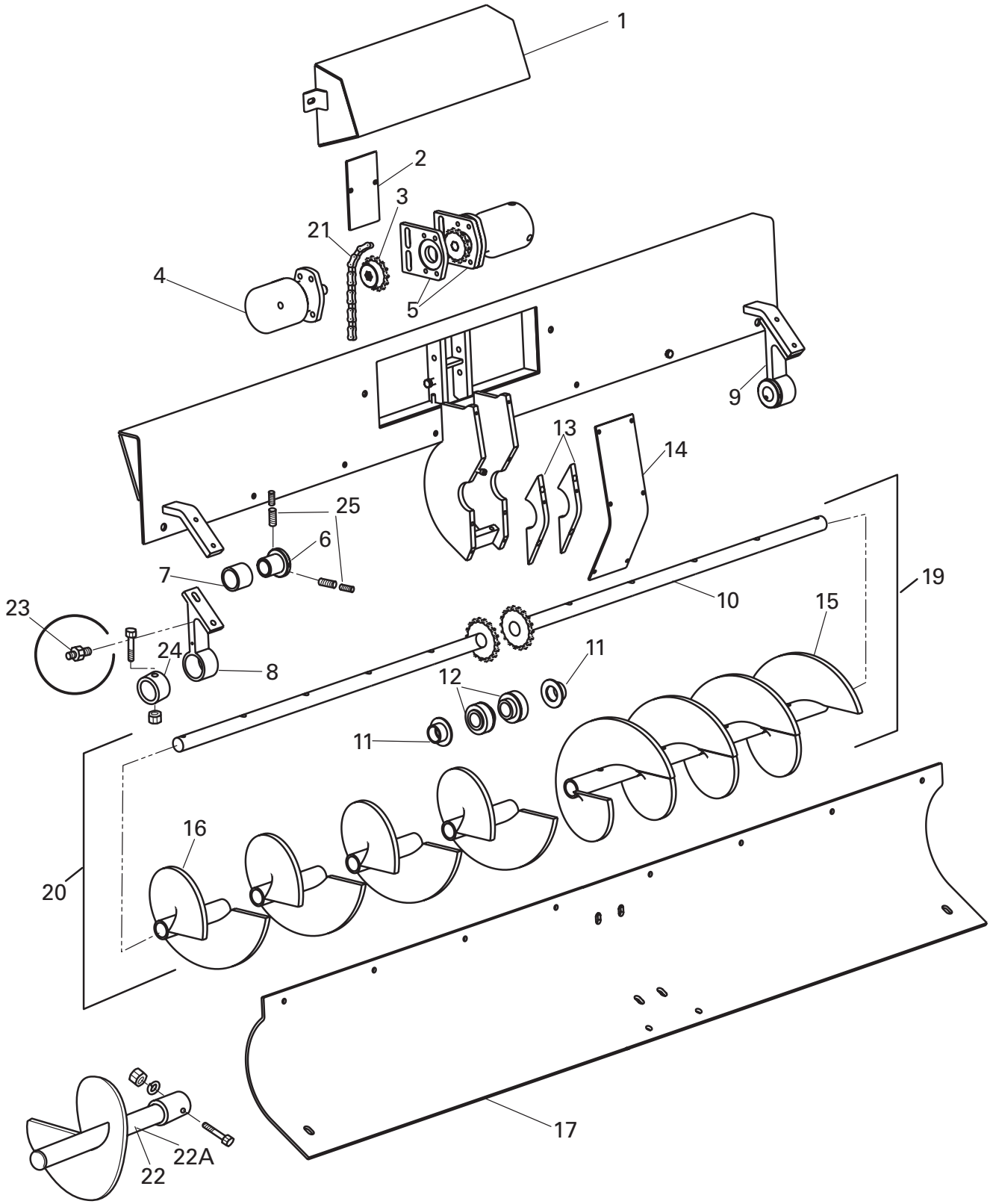

FIGURE 5. AUGER ASSEMBLY

FIGURE 5. AUGER ASSEMBLY

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	981685	ASSY, AUGER MOTOR COVER, 8515	1
2	981688	CHAIN COVER, 8515	1
3	860030	SPROCKET, 8000 / 8500 AUGER	2
4	260130	HYD MOTOR, CONVEYOR DRIVE	2
5	981696	MOUNT, MOTOR, 8515	2
6	851645	COLLAR, AUGER END MOUNT	2
7	810070	BUSHING, TRACK IDLER / TRUCK	2
8	860051HDR	AUGER END MOUNT, RH 8000/8500	1
9	860051HDL	AUGER END MOUNT, LH 8000/8500	1
10	981691	AUGER SHAFT WITH SPROCKET	A/R
11	982945	ASSEMBLY,SPACER AUGER SHAFT	A/R
12	850130	BEARING, AUGER/AXLE/IDLER	2
13	981683	CLAMP, AUGER 12"	2
14	981695	COVER, AUGER SUPPORT, 8515	1
15	981700L	AUGER FLIGHT, RH, 12", 8515	A/R
16	981700R	AUGER FLIGHT, LH, 12", 8515	A/R
17	981699R	PLATE, WEAR, 12" AUGER, 8515	A/R
19	981692L	AUGER ASSEMBLY COMPLETE, L/H, 8515	A/R
20	981692R	AUGER ASSEMBLY COMPLETE, R/H, 8515	A/R
21	860090	CHAIN, ROLLER, 60H X 52 PITCH	2
21A	860049	MASTER LINK, #60H (N/S)	A/R
22	985796	ASSEMBLY, 12” AUGER EXT. SHORT R/H	A/R
22A	985795	ASSEMBLY, 12” AUGER EXT. SHORT L/H	A/R
23	140610	FITTING, LUBE STR. 1/4-28	2
24	851647	ENDCAP, AUGER SHAFT	2
25	851645-1	SET SCREW, AUGER END MOUNT	2

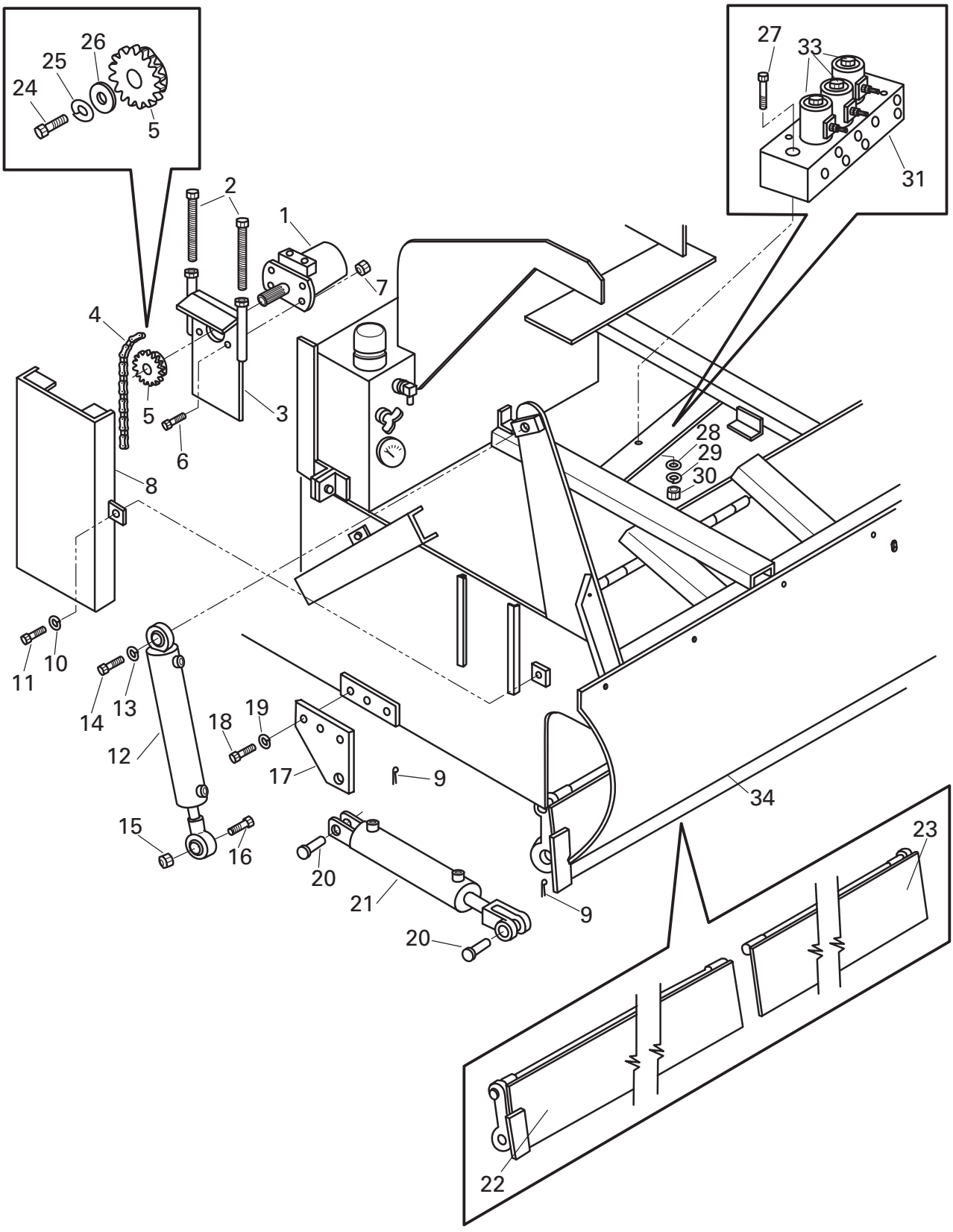

FIGURE 6. CONVEYOR DRIVE CUTOFF, SCREED LIFT CYLINDERS

FIGURE 6. CONVEYOR DRIVE CUTOFF, SCREED LIFT CYLINDERS

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	260130	HYDRAULIC MOTOR	2
2	851148	BOLT, CONVEYOR DRIVE CHAIN ADJUSTER	4
3	851149	MOUNT, CONVEYOR DRIVE MOTOR	2
4	851121	CHAIN, CONVEYOR DRIVE (#80)	2
5	851120	SPROCKET, CONVEYOR DRIVE MOTOR	2
6	851111	CAP SCREW, 1/2"-13 x2"HEX HEAD	8
7	116-5	NUT, 1/2"-13 HEX	8
8	854532	CHAIN, GUARD, GUARD ASSY, L.H.	1
8A	851151R	CHAIN, GUARD, GUARD ASSY, R.H.	1
9	930039	COTTER PIN, 3/16" X 2" LONG	4
10	118-3	WASHER, 3/8" LOCK	6
11	102-203-1A	CAP SCREW, 3/8"-16 x 3/4"HEX HEAD	6
12	851436	HYD. CYL., SCREED LIFT (1000C / 8000C / 8500)	2
12A	851484	SEAL KIT, HYD. CYL. UNIVERSAL	A/R
13	118-10	WASHER, 1" LOCK	2
14	100-913-1A	CAP SCREW, 1"-14x3 GR. 8 HEX HEAD	2
15	36779-02	LOCK NUT, 1"-14 HEX	2
16	100-915-1A	CAP SCREW, 1'-14x3 1/2", GR.8 HEX HEAD	2
17	851152	PLATE, CUTOFF CYLINDER MOUNT	2
18	102-607-1A	CAP SCREW, 5/8"-11x1 1/2" HEX HEAD	6
19	118-7	WASHER, 5/8" LOCK	6
20	240030	PIN, HYDRAULIC CYLINDER	2
21	910170	HYD. CYL., CUTOFF	2
21A	870312	SEAL KIT, HYD. CYL. UNIVERSAL 2.50	A/R
22	851153	CUT-OFF LEFT SIDE	1
23	851154	CUT-OFF RIGHT SIDE	1
24	102-5-1A	CAP SCREW, 1/4"-20x 1" HEX HEAD	2
25	118-1	WASHER, 1/4" LOCK	2
26	860036	WASHER, FENDER (1/4	2
27	102-114-1A	CAP SCREW, 5/16"-18 x 3 1/2"	4
28	119-2	WASHER, 5/16" FLAT	4
29	118-2	WASHER, 5/16" LOCK	4
30	116-2	NUT, 5/16"-18 HEX	4
31	850001	MANIFOLD ASSEMBLY, AUGERS AND 2- SPEED	1
33	851237A	COIL, WITH DIODE, 12 V SINGLE TERMINAL (AUGERS& 2 SPEED)	A/R
34	981699	PLATE, 8515 AUGER BACK	A/R

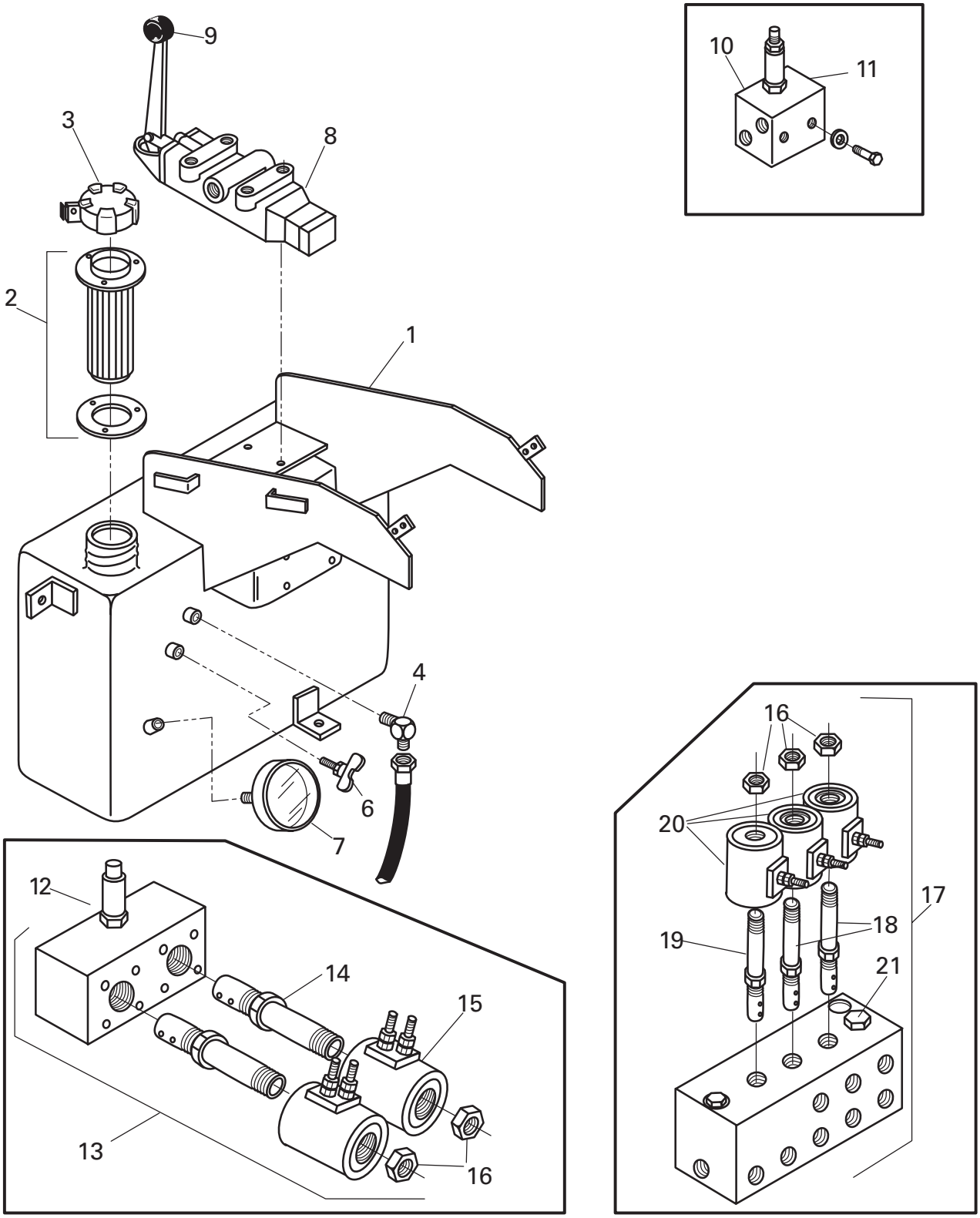

FIGURE 7. HYDRAULIC COMPONENTS L/H SIDE

FIGURE 7. HYDRAULIC COMPONENTS L/H SIDE

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	851232	TANK, HYDRAULIC (TOP HIGH DECK)	1
1A	851233	TANK, HYDRAULIC (TOP LOW DECK) N/S	1
2	140030GK	STRAINER & GASKET KIT	1
3	140030HL	CAP, HYD. TANK (LOCKABLE)	1
4	910129	ADAPTER, 1/4" MPT x 1/4" MJIC (90 DEGREE)	1
6	910150	PETCOCK, HYD. OIL LEVEL	1
7	330040	GAUGE, TACK TEMP/ HYD. OIL TEMP.	1
8	910120	VALVE, MONOBLOCK (CONVEYOR/ WINGS)	1
9	910130	HANDLE, MONOBLOCK VALVE (CONVEYOR WINGS)	1
10	910122	MANIFOLD, SIDE WING	1
11	910122-1	RELIEF VALVE, SIDE WING MANIFOLD	1
12	851628A-3	VALVE, RELIEF, CONVEYOR MANIFOLD (H.P.S)	
13	851628A	MANIFOLD, AUTO CONVEYOR (H.P.S.)	1
14	851628A-1	CARTRIDGE VALVE, AUTO CONVEYOR (H.P.S.)	1
15	851628A-2	COIL, 12V (H.P.S.)	2
16	851628-3	NUT, COIL RETAINER (H.P.S.)	2
17	850001	MANIFOLD, AUTO AUGER/ 2-SPEED (H.P.S.)	1
18	851235	CARTRIDGE VALVE, AUTO AUGER (H.P.S.)	2
19	851236	CARTRIDGE VALVE, 2-SPEED (H.P.S.)	1
19A	850003	CARTRIDGE VALVE, 2-SPEED	1
20	851237A	COIL, W/ DIODE,12V	3
21	851689	FLOW DIVIDER SCREED	

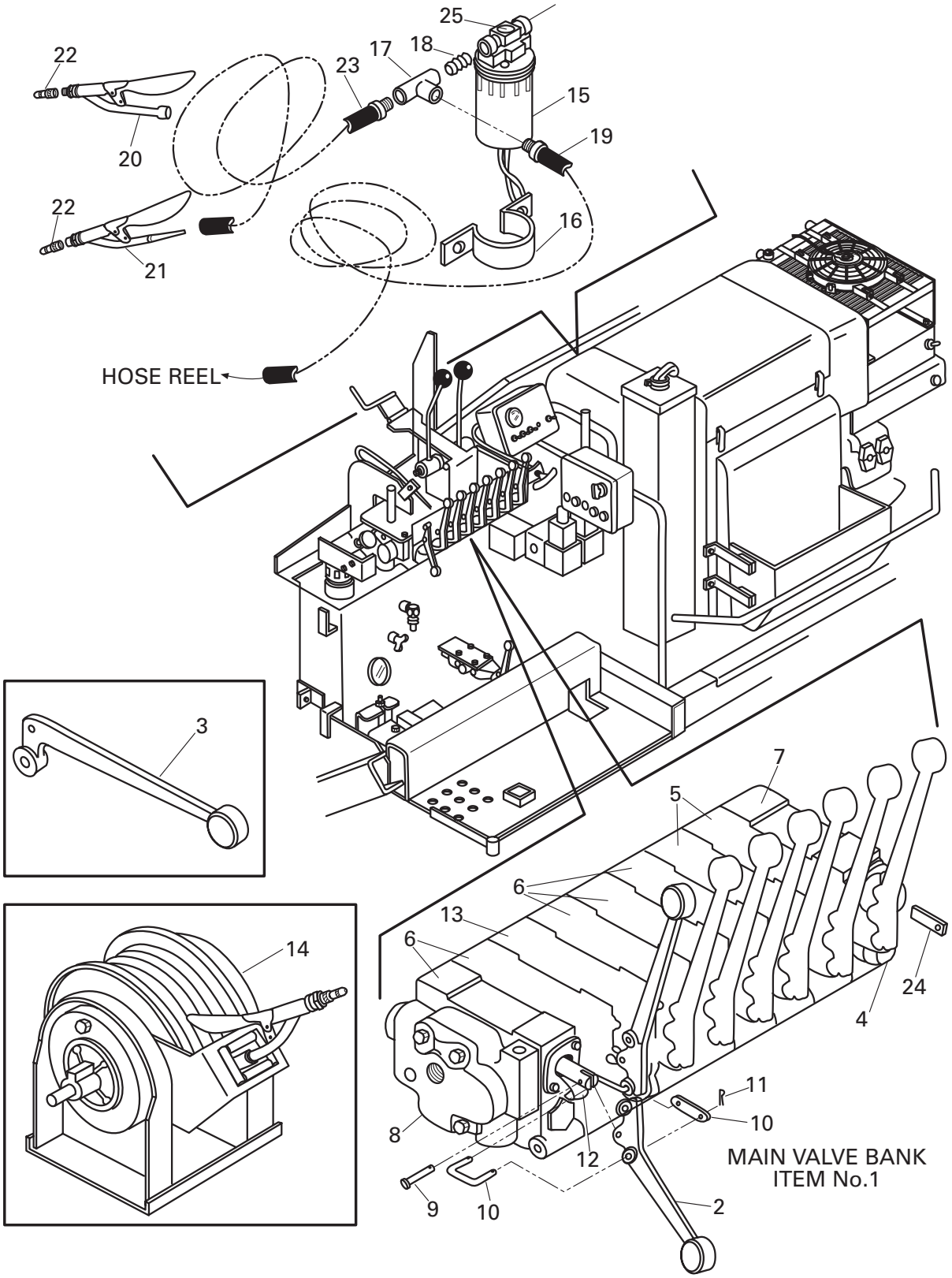

FIGURE 8. MAIN VALVE SPRAY DOWN

FIGURE 8. MAIN VALVE SPRAY DOWN

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	851161	VALVE, MAIN	1
2	910060	HANDLE, VERTICAL	8
3	910070	HANDLE, HORIZONTAL	1
4	901009	VALVE, RELIEF	1
5	910052	SECTION,VALVE (AUGERS) (DETENTED)	2
6	910054	SECTION, VALVE (CYLINDERS) (SPRING RETURN)	6
7	910055	INLET COVER, V-20 (W/RELIEF)	1
8	910056	OUTLET COVER, V-20 (W/PB SLEEVE)	1
9	350080	PIN, CLEVIS (1/4”)	8
10	901010	LINK ASSY., VALVE LEVER	8
11		COTTER PIN (PART OF LINK ASSY. ITEM 10)	8
12	910058	BRACKET, VALVE LEVER	8
13	910054FLS	FLOAT, ASSEMBLY SCREED	1
14	920200	HOSE REEL, MACHINE WASHDOWN	1
15	900010	PUMP, SPRAYDOWN (FLOWJET)	1
16	480260	BRACKET, WATER / FUEL PUMP MOUNT	1
17	920222	TEE, 3/8”	1
18	920223	NIPPLE, 3/8”	1
19		HOSE, PUMP TO HOSE REEL	1
20	920220A	HANDLE & NOZZLE, FUEL WASH-DOWN	2
21	920220	HANDLE & NOZZLE, FUEL WASH-DOWN	2
22	901210A	NOZZLE, FUEL WASH-DOWN HANDLE	A/R
23	920224	HOSE, TO SPRAYDOWN HANDLE	2
24	850101	TAB, AUGER LOCKOUT	
25	851448	PRESSURE SWITCH (FLOWJET PUMP)	A/R
		SEAL KITS FOR VALVES	
	910059	SEAL KIT, VALVE SPOOL	
	910062	SEAL KIT, VALVE SECTION	
	910065	KIT, SEAL (RELIEF VALVE)	

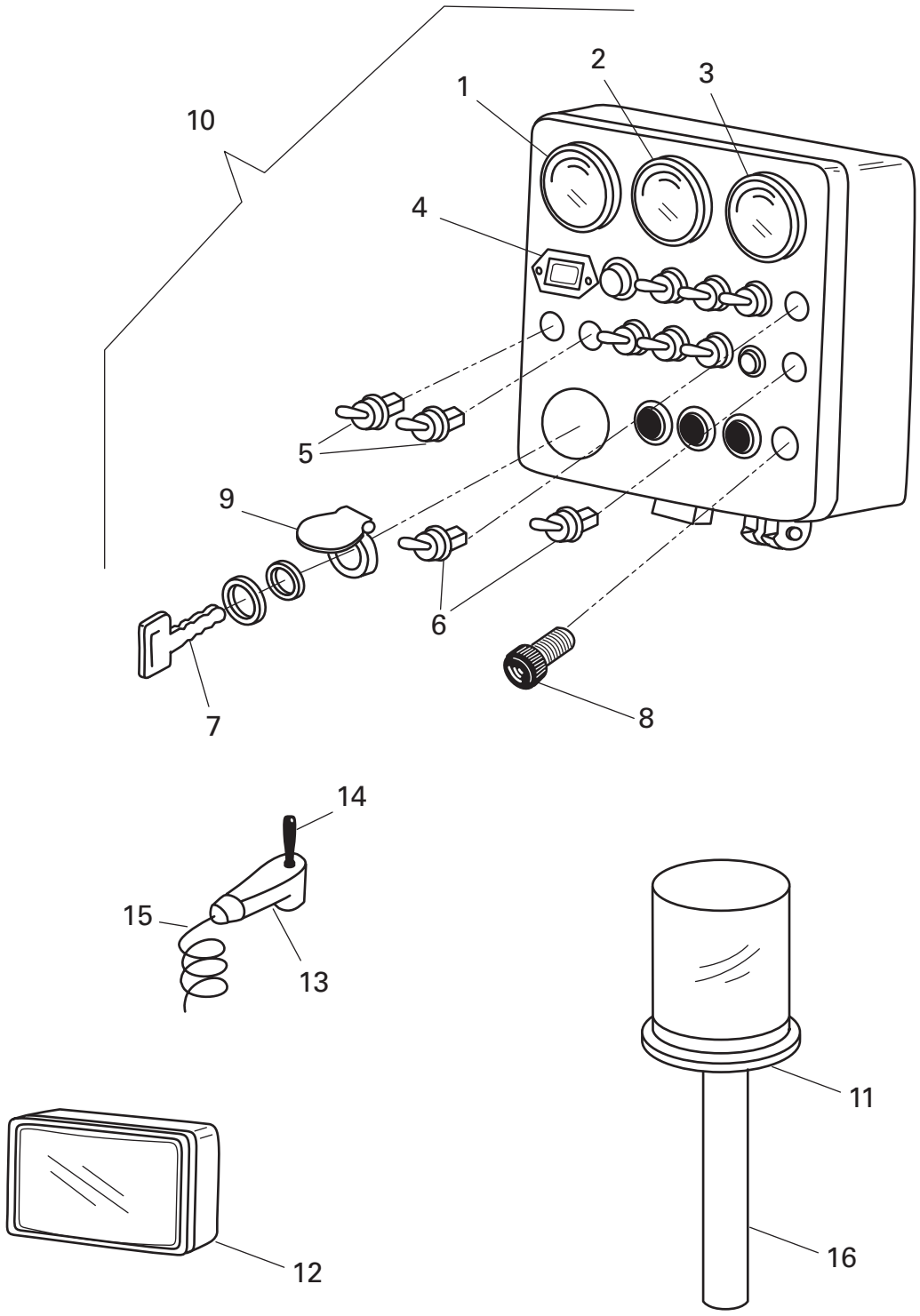

FIGURE 9. SPECIAL COMPONENTS L/H SIDE DASH

FIGURE 9. SPECIAL COMPONENTS L/H SIDE DASH

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	943309	GAUGE, VOLT METER	1
2	943306	GAUGE, FUEL LEVEL	1
2A	140040	SENDING UNIT FUEL LEVEL	1
3	943270	GAUGE, OIL PRESSURE	1
3A	127353	SENDING UNIT	1
4	5120-1200	HOUR-METER	1
5	900030	TOGGLE SWITCH, AUTO CONVEYOR	2
6	500040	TOGGLE SWITCH, ON-OFF	A/R
7	320380	KEY, HATZ ENGINE	
8	320386	INDICATOR LIGHT, BATTERY, (WITHOUT BULB)	
9	320370	COVER, IGNITION SWITCH (HATZ)	1
10	920165	DASH, COMPLETE 8500/8000D	1
11	211748-02	STROBE LIGHT	1
12	160040A	WORK LIGHT	4
13	920238	HANDLE & CHORD REMOTE	1
14	900080	SWITCH, REMOTE (ONLY)	1
15	900082	CORD, REMOTE	1
16	853962	ASSY. BEACON LIGHT POST	
	910-0260LD	WIRING HARNESS MAIN L/D	
	910-0260HD	WIRING HARNESS MAIN H/D	

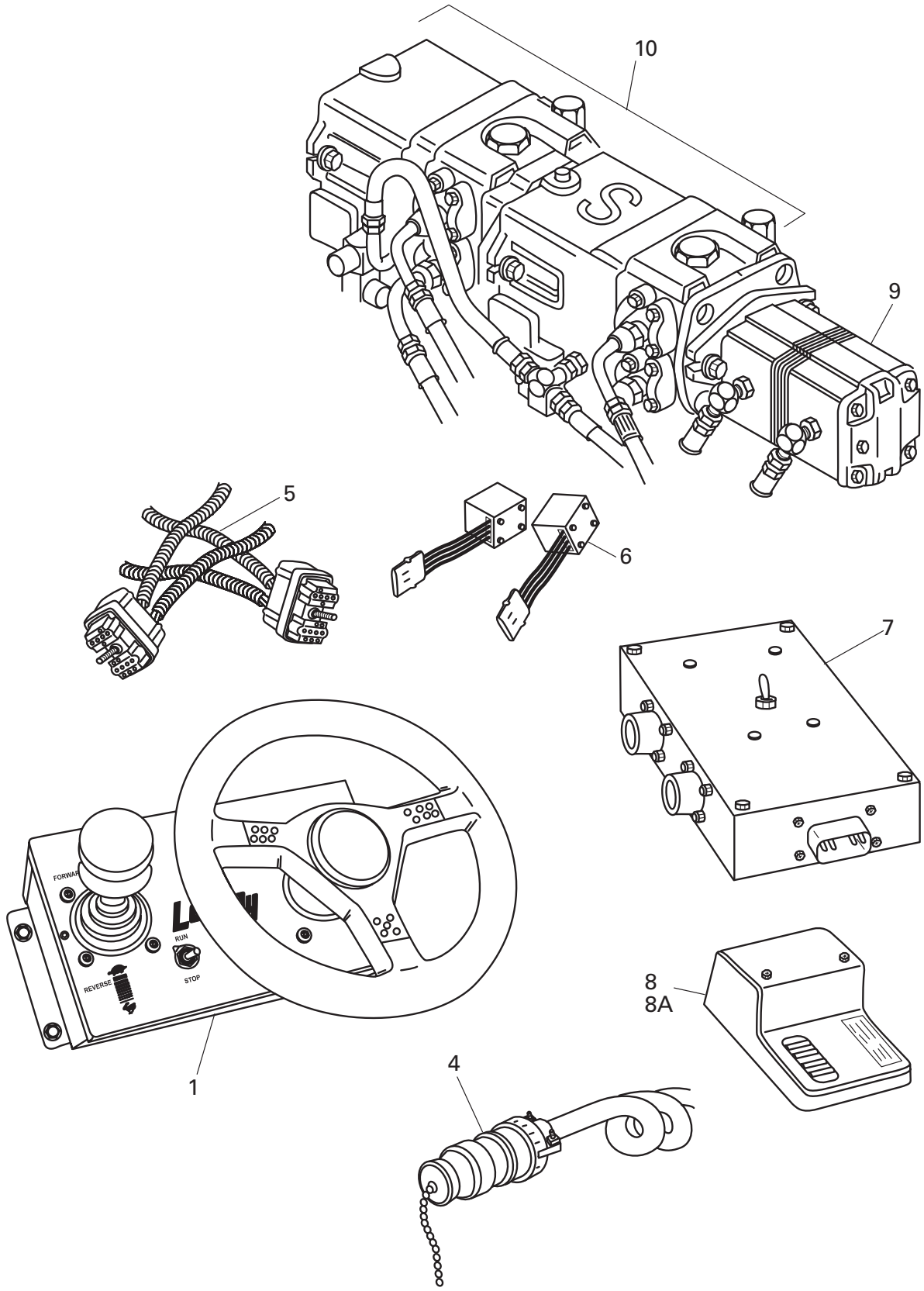

FIGURE 10. PUMP COMPONENTS SUNDSTRAND ELECTRONIC STEERING

FIGURE 10. PUMP COMPONENTS SUNDSTRAND ELECTRONIC STEERING

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	981913	STEERING BOX, W/STEERING WHEEL	1
2	851540	POTENTIOMETER, STEERING	1
3	851546	STEERING BOX, SUNDSTRAND (N/S)	1
4	851548	CURLY CORD, STEERING BOX TO JUNCTION BOX	1
5	851553	WIRE HARNESS, JUNCTION BOX TO CONTROLLER	1
6	851545-1	CONTROLLER, E.D.C.	1
7	851549	JUNCTION BOX, SUNDSTRAND	1
8	851547	MC. MICRO CONTROLLER	1
8A	852410	MC. MICRO CONTROLLER (USE WITH REX ROTH PUMPS)	1
9	984483	TANDEM AUXILIARY PUMP, AUGERS & CONVEYORS	1
10	851545	HYD.PUMP, TANDEM PROPULSION (W/E.D.C.) (SUNSTRAND)	1
10A	851525	Hydraulic PUMP TANDEM (REX ROTH) DEN CONNECTOR	1
10B	985663	Hydraulic PUMP TANDEM (REX ROTH)	1
11	320235	O-RING (PIGGYBACK TO MAIN PUMP) (N/S)	1
	986378	STEERING BOX W/DUAL JOYSTICKS (FIRST EDITION) (N/S)	
	986510	WIRE HARNESS (FIRST EDITION) (N/S)	

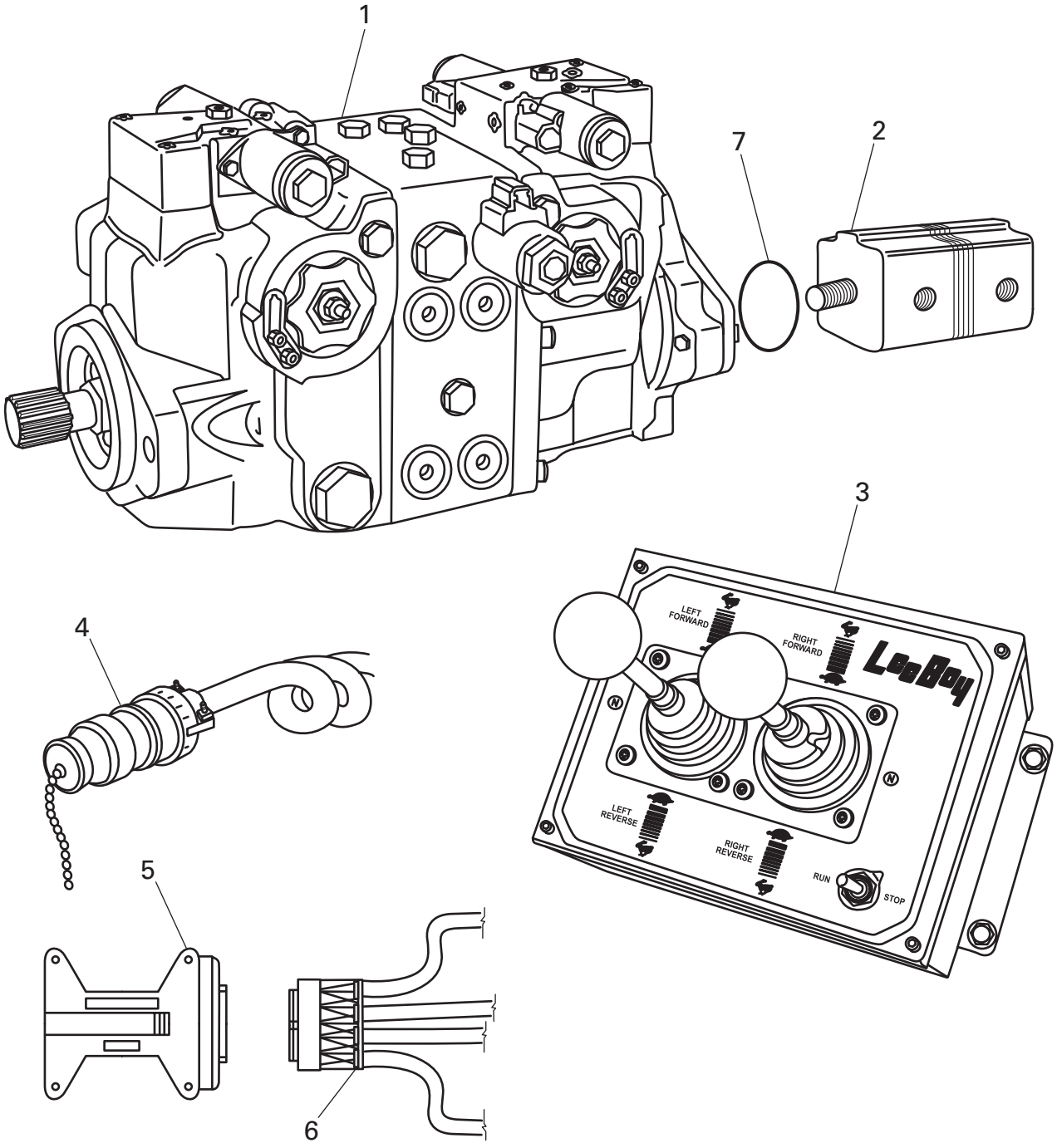

FIGURE 11. H1 PUMP & CONTROLS

FIGURE 11. H1 PUMP & CONTROLS

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	986519	PUMP, HYD. SINGLE W/EDC (NEW: H-1 PUMP)	1
2	987473	PUMP, AUX. H-1, 11T SPLINE	1
3	987134	DUAL JOYSTICKS, ONTO BOX (+) ONE	2
4	851548	CURLY CORD, STEERING BOX TO JUNCTION BOX	2
5	987135	CONTROLLER, 50 DIN,. (+) ONE	1
6	987133	HARNESS (+) ONE TO PUMPS	1
7	36808	'O' RING, PIGGYBACK TO MAIN	
8	987132	KIT, DUAL JOY STICK CONTROL (+) ONE	

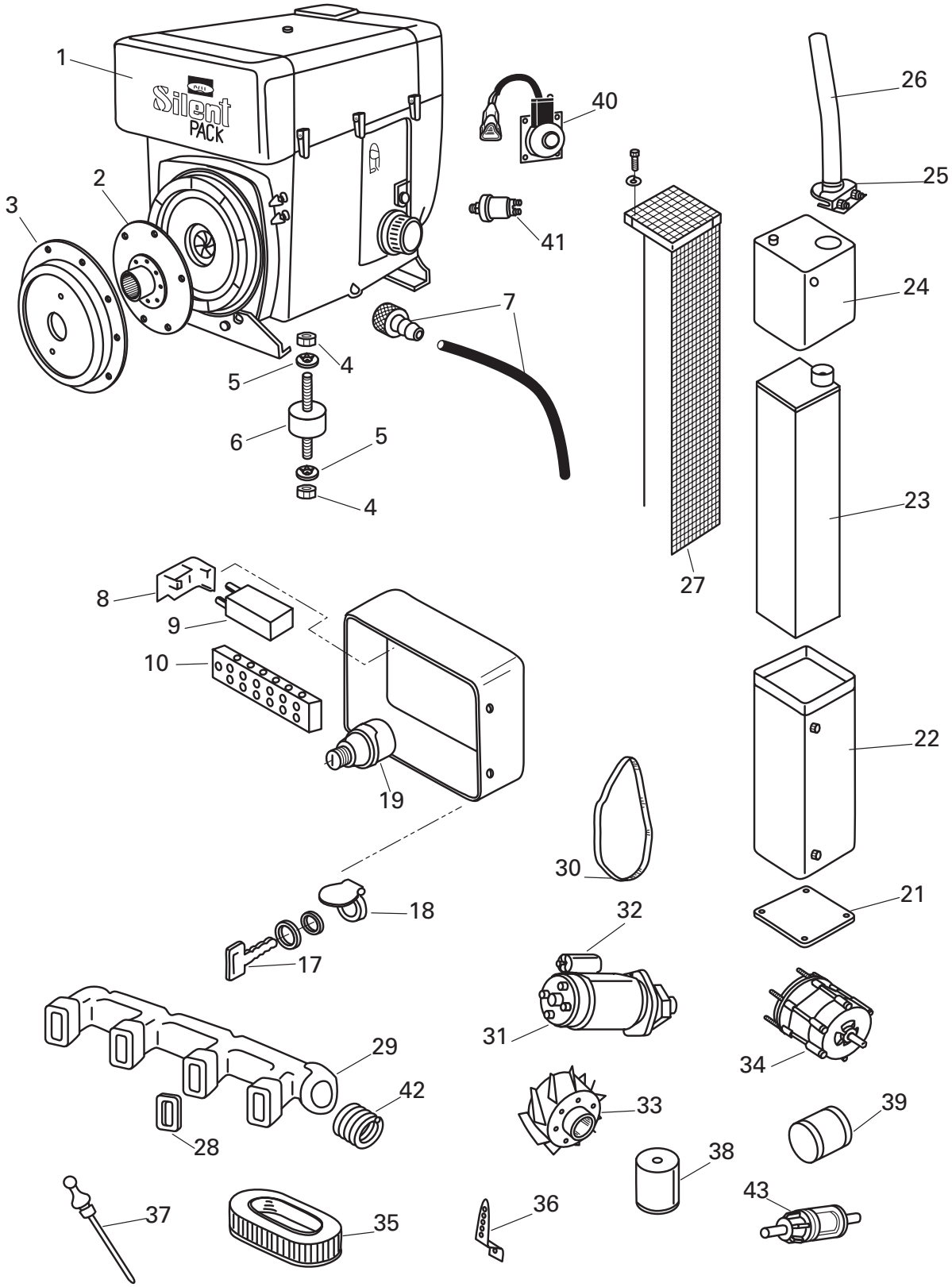

FIGURE 12. ENGINE AND PUMP COMPONENTS

FIGURE 12. ENGINE AND PUMP COMPONENTS

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	320001	4 CYL. DIESEL ENG., HATZ 4L41C (SILENT-PAK)	1
2	851479	PUMP DRIVE PLATE, FLYWHEEL	2
3	320200	COVER, PUMP PLATE	1
4	320144	NUT,10mm.	1
5	320142	WASHER, 10mm.	4
6	320140	MOUNTPAD, ENGINE HATZ	4
7	851497	HOSE & DRAIN FITTING, ENGINE OIL DRAIN	1
8	320330	MOUNT, STARTER RELAY	1
9	320320	RELAY, STARTER	1
10	320340	BLOCK, TERMINAL	1
11	320383	INDICATOR LAMP, ENGINE TEMP	NS
12	320385	INDICATOR LAMP, AIR FILTER	NS
13	320384	INDICATOR LIGHT, ENG.OIL PRESS.	NS
14	320386	INDICATOR LIGHT, BATTERY CHARGE	NS
15	320360	LIGHT BULB, INDICATOR LAMP	NS
16	320382	PLUGS	NS
17	320380	IGNITION KEY, HATZ DIESEL	1
18	320370	COVER, IGNITION SWITCH	1
19	320390	IGNITION SWITCH, HATZ DIESEL	1
21	HAT03878000	PLATE, MUFFLER BOTTOM	1
22	HAT00871801	COVER, MUFFLER BOTTOM	1
23	320422	MUFFLER, HATZ SILENT PACK	1
24	HAT01083000	COVER, MUFFLER TOP	1
25	71172	CLAMP, 2" EXH. PIPE	1
26	851164	PIPE EXT. MUFFLER	1
27	320510	HEAT SHIELD, MUFFLER	1
28	320260	GASKET, EXH. MANIFOLD TO CYL. HEAD	3
29	320250-4	EXH. MANIFOLD, HATZ 4 CYL.	1
30	320090	BELT, ALTERNATOR / BLOWER	1
31	320270	STARTER MOTOR	1
32	320280	SOLENOID, STARTER	1
33	320290	BLOWER FAN	1
34	320300	ALTERNATOR, 12 VOLT	1
35	310060	ELEMENT, AIR FILTER	2
36	320120	LEVER, ENGINE THROTTLE	1
37	320110	DIPSTICK, ENGINE OIL LEVEL	1
38	310080	ELEMENT, FUEL FILTER	1
39	310070	ELEMENT, OIL FILTER	1

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FIGURE 12. ENGINE AND PUMP COMPONENTS CONT.

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
40	851567	SOLENOID, FUEL SHUT-OFF	1
41	853490	SENDING UNIT, OIL PRESSURE	1
42	HAT001603700	GASKET, MUFFLER TO MANIFOLD	1
43	310090	IN-LINE FUEL FILTER	1

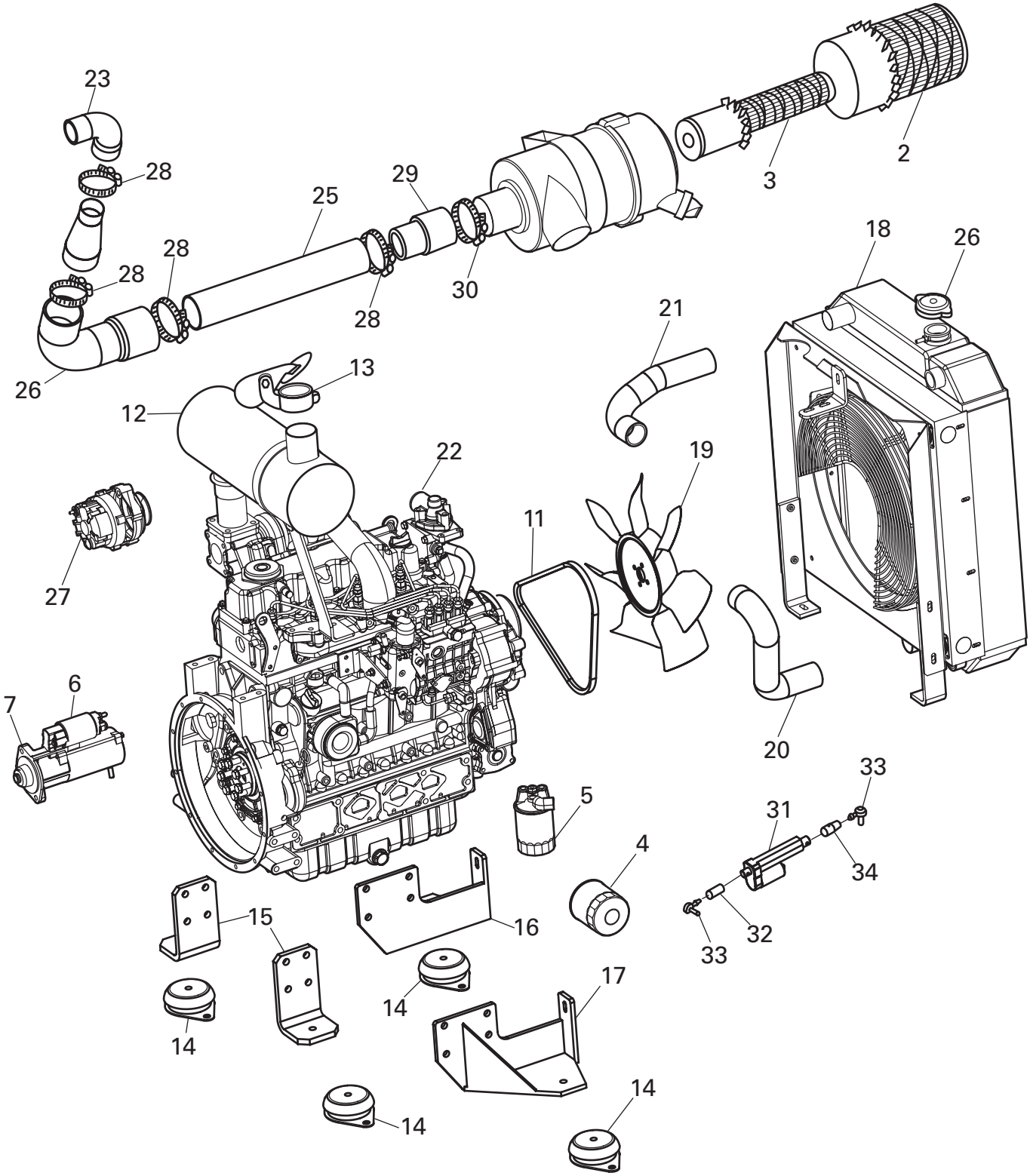

FIGURE 13. KUBOTA ENGINE

FIGURE 13. KUBOTA ENGINE

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
	986537	ENGINE ASSY, 8500 W/KUBOTA 87.5HP	1
2	986537-01	ELEMENT, AIR FILTER PRIMARY	1
3	986537-02	ELEMENT, AIR FILTER SECONDARY	1
4	986537-03	ELEMENT, FILTER OIL	1
5	986537-04	ELEMENT, FILTER FUEL	1
6	986537-05	STARTER, SOLENOID	
7	986537-06	STARTER	
8	986537-07	PUMP FUEL	
9	986537-08	THERMOSTAT	
10	986537-09	GASKET THERMOSTAT	
11	986537-10	BELT FAN	
12	986537-12	EXHAUST CE33017A	
13	987537-13	EXH RAIN CAP P270534	
14	987537-14	ISOLATOR RA350EMB	
15	987537-15	REAR MOTOR MOUNT EPS3105	
16	987537-16	LF MOTOR MOUNT EPS3104	
17	987537-17	RF MOTOR MOUNT EPS3103	
18	986537 -18	RADIATOR AE33012A	
19	987537-19	FAN 1C010-74110	
20	987537-20	LOWER RADIATOR HOSE	
21	987537-21	UPPER RADIATOR HOSE	
22	987537-22	ENGINE 8515	
23	987537-23	UPPER AIR FILTER ELBOW EPS2206	
24	987537-24	UPPER AIR FILTER REDUCER EPS2207	
25	855197	PIPE, 3.00 OD X 19.00 ALUM	
26	986537-11	CAP, RADIATOR	
27	986537-12	ALTERNATOR	
28	171090	CLAMP, T BOLT 3”	
29	37163	HUMP HOSE, REDUCER 3.50-3.00 ID	
30	171109	CLAMP, T-BOLT 3.50 NOMINAL	
31	23252	ACTUATOR, EMULSION/THROTTLE	
32	980318	CONNECTOR, REAR, ELECTRIC SCREW	
33	982157	LINKAGE, THROTTLE	
34	980317	CONNECTOR, FRONT, ELECTRIC SCREW	

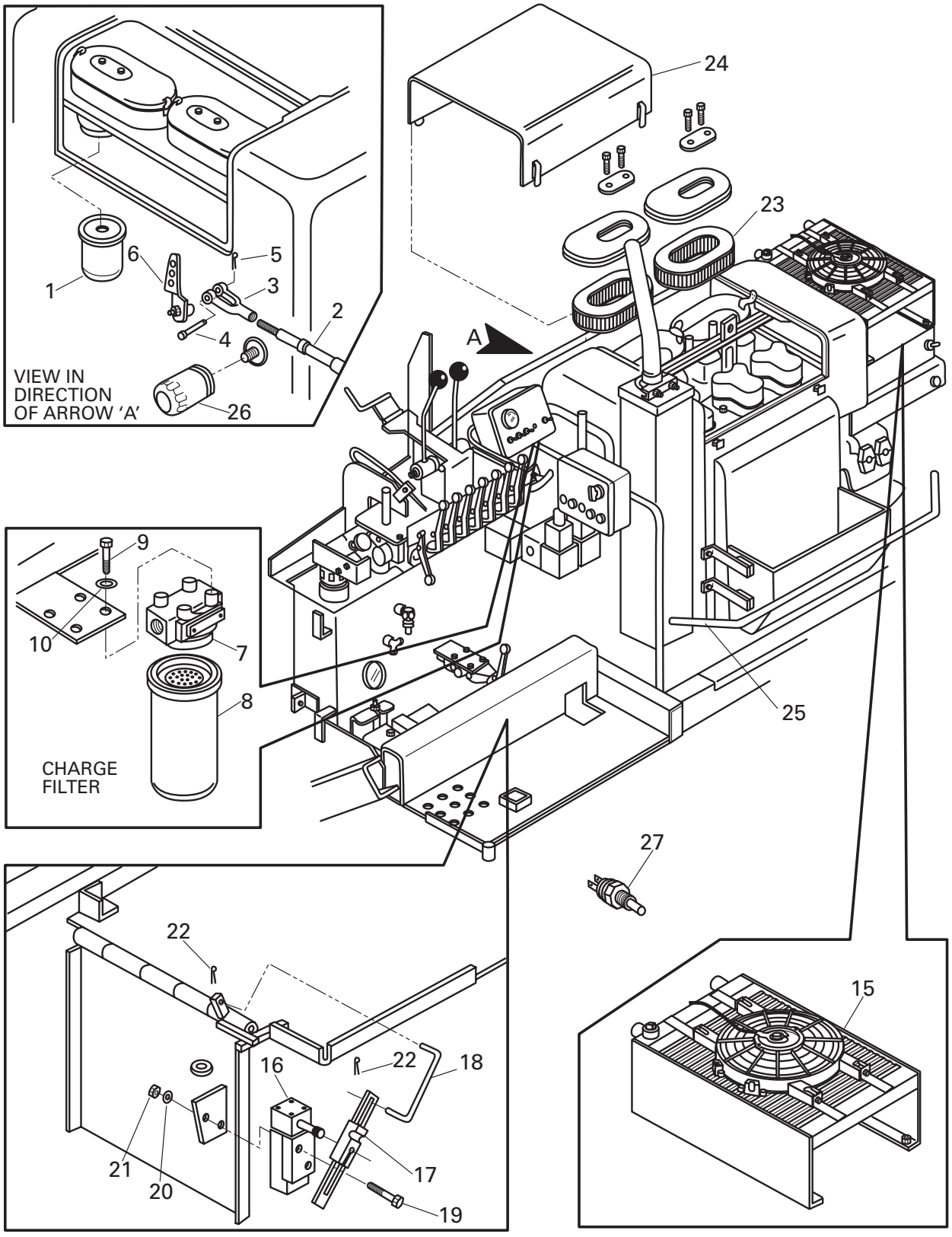

FIGURE 14. FILTER LOCATION & ACCESSORIES (HATZ)

FIGURE 14. FILTER LOCATION & ACCESSORIES (HATZ)

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	310080	ELEMENT, FUEL FILTER (HATZ DIESEL)	1
2	920161	CABLE, THROTTLE	1
3	350050	CLEVIS, 1/4"	1
4	350080	PIN, CLEVIS (1/4)	1
5	960019	PIN, COTTER (1/4)	1
6	320120	LEVER, THROTTLE	1
7	290010	HEAD, CHARGE / RETURN FILTER	1
8	290030	ELEMENT, CHARGE / RETURN FILTER	1
9	102-205-1A	CAPSCREW, 3/8X1"	4
10	118-3	WASHER, 3/8"	4
15	851400	HYD. OIL COOLER, W / FAN, MOTOR & SENSOR	1
16	900050	MIRCO SWITCH, AUTO. CONVEYORS	2
17	900060	ARM, AUTO. CONVEYOR SWITCH	2
18	900075	LINKAGE	2
19	900076	SCREWS	2
20	900077	LOCK WASHER	2
21	900078	NUT	2
22	900079	PIN, COTTER (1/4)	2
23	310060	ELEMENT, AIR FILTER (HATZ DIESEL)	2
24	320500	COVER,ENGINE ACCESS(HATZ 4L41C	1
25	851163	SHIELD, HEAT 4 CYLINDER (HATZ)	1
26	310070	OIL FILTER, HATZ	1
27	900144	SENSOR, HUD. OIL TEMP.	

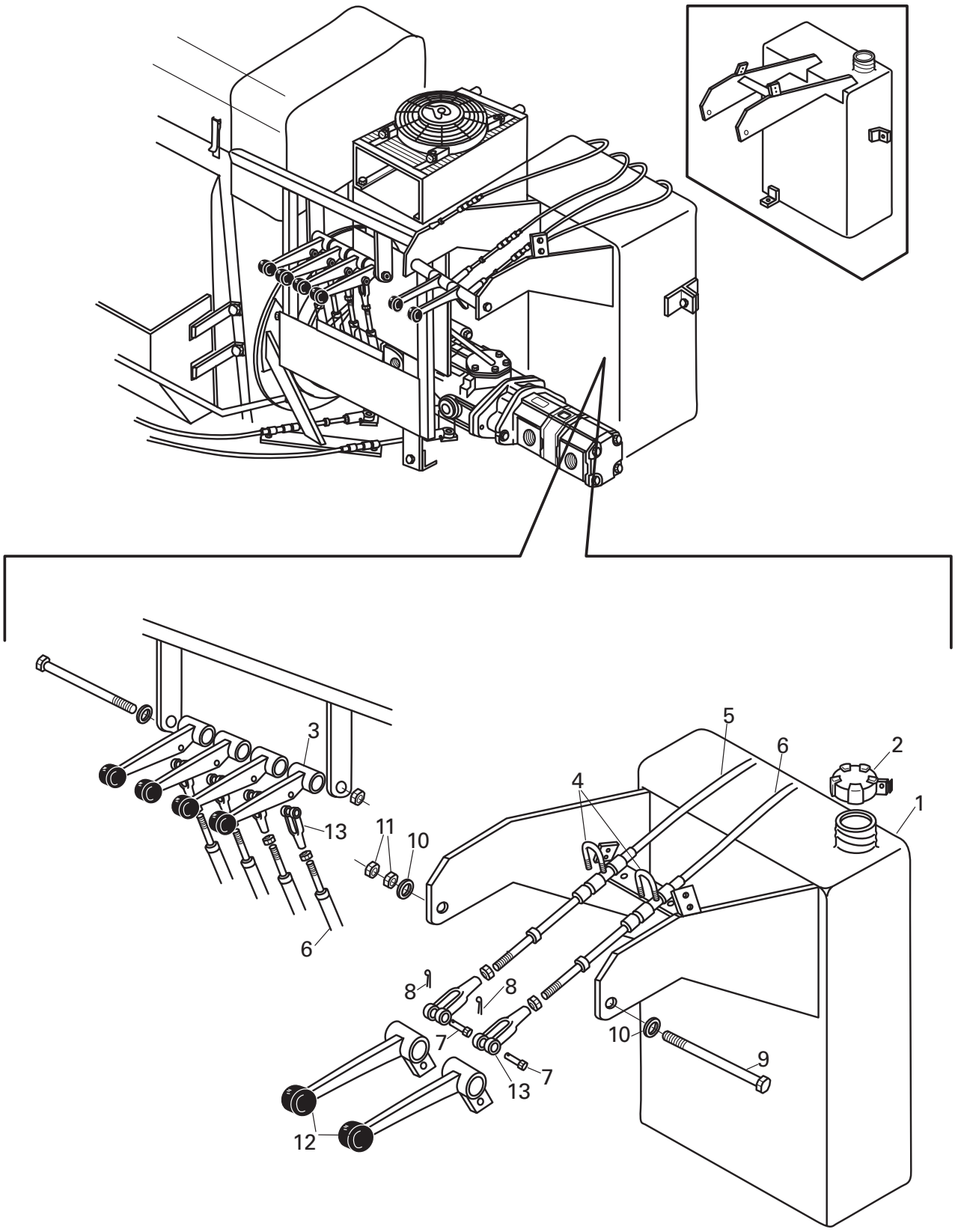

FIGURE 15. R/H DRIVE & FUEL TANK

FIGURE 15. R/H DRIVE & FUEL TANK

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	851157	TANK, HIGH DECK FUEL	1
1A	851642	TANK, FUEL LOW DECK 20G	1
2	140030FL	FUEL TANK CAP, LOCKABLE	1
3	920210A	LEVER	
4	350060	U-BOLT, 3/8"	4
5	920136	CABLE, 135” X 3” (R/H AUGER)	1
6	920136	CABLE, 135” X 3” (R/H EXT)	1
7	350080	PIN, CLEVIS 1/4"	2
8	960019	PIN, COTTER	2
9	920145	ROD FOR RIGHT HAND 5/8	1
10	119-7	LOCKWASHER, 5/8"	1
11	116-7-1	NUTS, JAM (5/8	2
12	920210	CASTED HANDLE, R.H. CONTROL	2
13	350050	CLEVIS, 1/4"	2

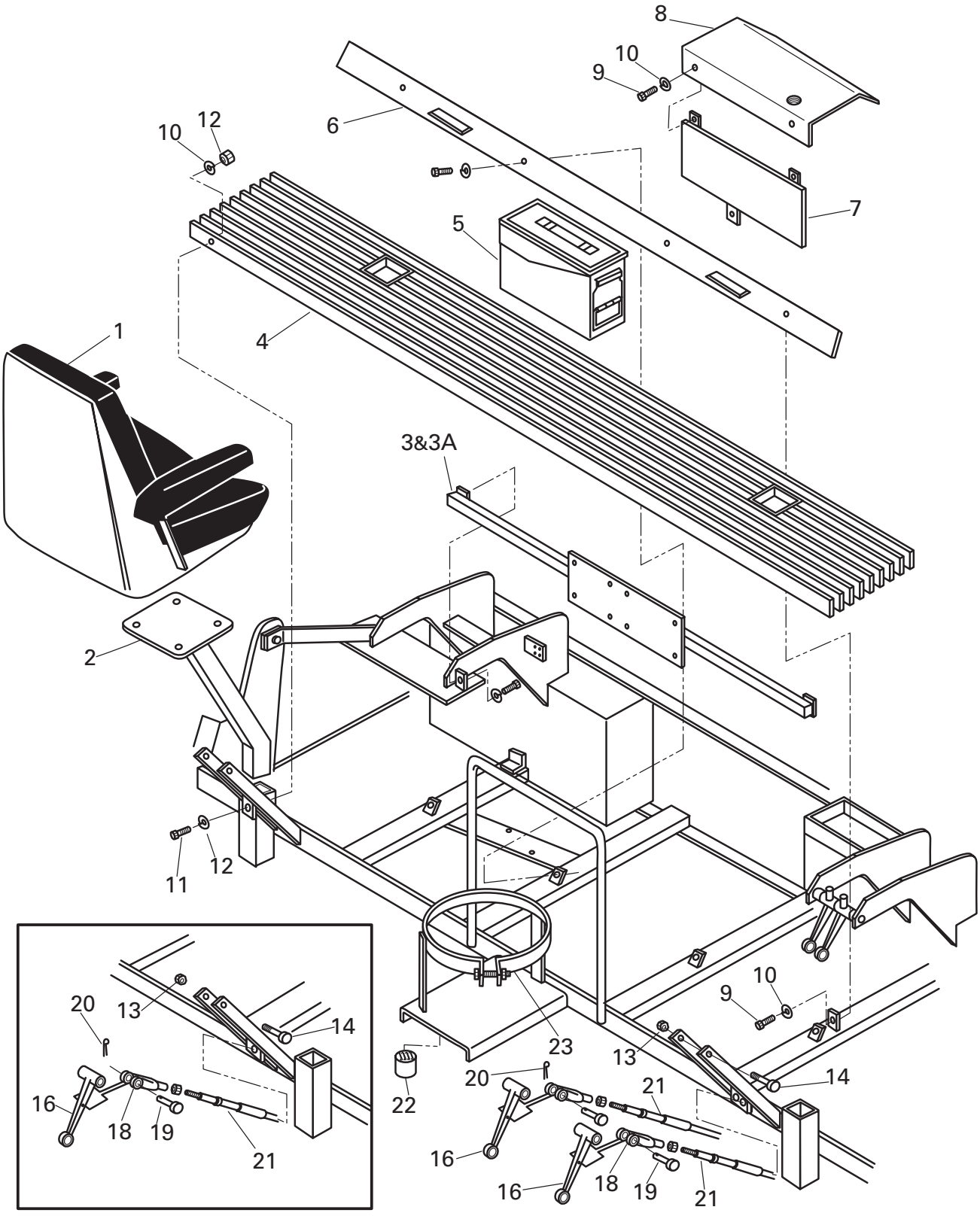

FIGURE 16. SEAT, WALKWAY & OTHER COMPONENTS

FIGURE 16. SEAT, WALKWAY & OTHER COMPONENTS

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	360010	SEAT ASSY W / ARMREST, WHITE	1
2	920024	SUPPORT, SEAT H/D	1
3		BAR, INSTRUMENT SLIDE (HIGH DECK)	1
3A	851167	BAR, INSTRUMENT SLIDE (LOW DECK)	1
4	851168	WALKWAY, UPPER	1
5	851169	TOOL BOX	1
6	851170	SHIELD, WALKWAY	1
7		SHIELD, PUMP LOWER	1
8		SHIELD, PUMP UPPER	1
9	102-205-1A	CAPSCREW, 3/8"x 1"	5
10	118-3	WASHER, LOCK 3/8"	9
11	102-205-1A	CAPSCREW 3/8” - 16 x 1” HEX	2
12	116-3	NUT, HEX 3/8"	2
13	116-7-1	NUT, HEX 5/8"	2
14	102-615-1A	CAPSCREW, 11 x 3 1/2"	2
16	920210A	LEVER, SCREED EXT. REMOTE	4
18	350050	CLEVIS, 1/4"	2
19	350080	PIN, CLEVIS	2
20	910057	PIN, COTTER	2
21	920120	CABLE, 104” X 3”	4
22	160320	HORN, BACKUP ALARM	
23	230062	BRACKET, W/CLAMP, LPG TANK MOUNT	

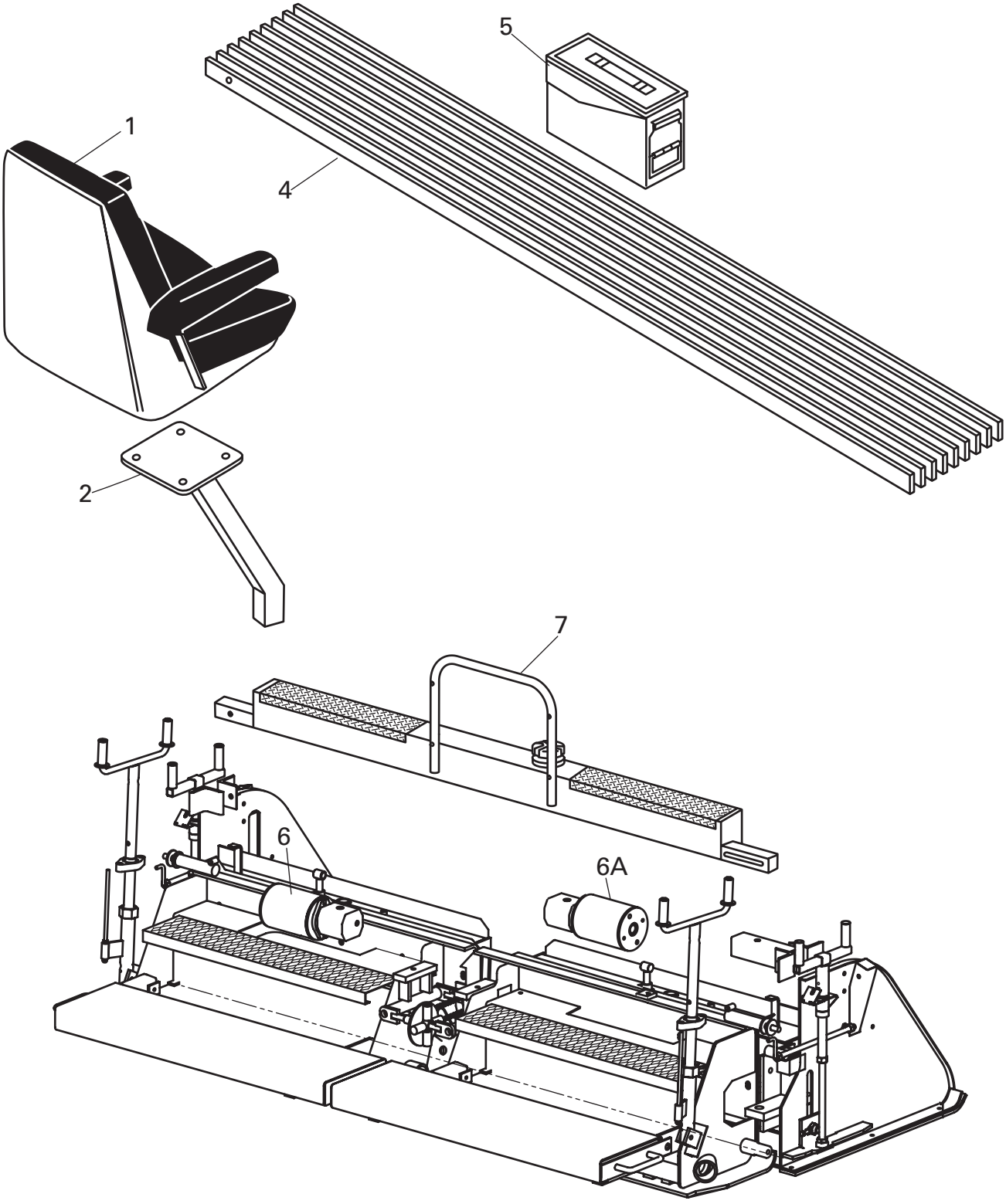

FIGURE 17. SEAT WALKWAY & OTHER COMPONENTS

FIGURE 17. SEAT WALKWAY & OTHER COMPONENTS

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	360010	SEAT ASSY W / ARMREST, WHITE	1
2	920024	SUPPORT, SEAT H/D	1
4	851168A	WALKWAY, UPPER	1
5	851169	TOOL BOX	1
6	982965L	ASSEMBLY, VIBRATOR L/H	
6A	982965R	ASSEMBLY, VIBRATOR R/H	
7	985777	CITRUS TANK ASSY.	

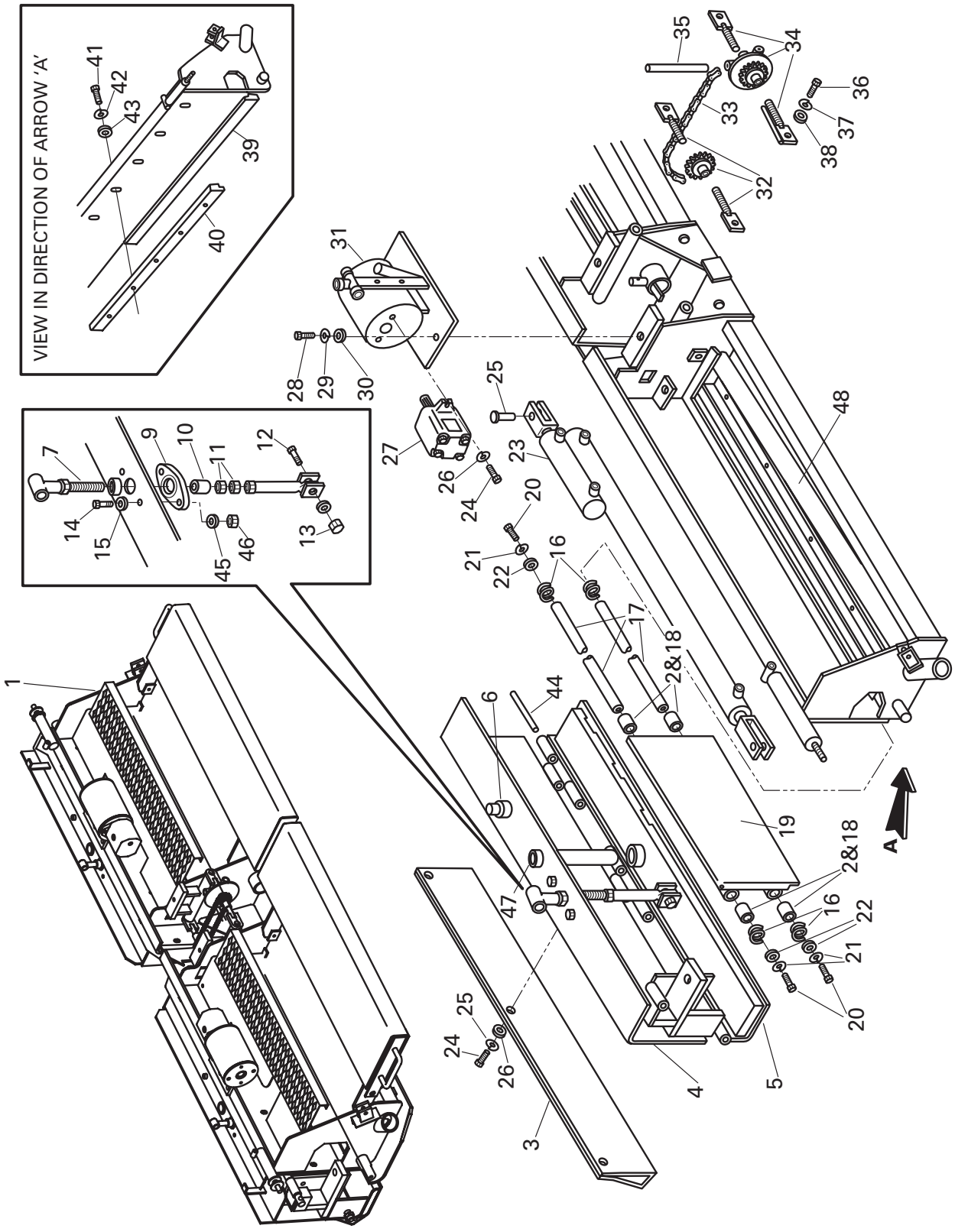

FIGURE 18. EXPANDABLE SCREED ASSEMBLY (PART I)

FIGURE 18. EXPANDABLE SCREED ASSEMBLY (PART I)

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
	982971	SCREED, COMPLETE	
1	982797	SCREED BASE, NEW STYLE	1
2	851179	BUSHING, SCREED EXTENSION (3" LONG)	1
3	851180L	GUARD, HOUSING SPECIFY L/H	1
3A	851180R	GUARD, HOUSING SPECIFY R/H	1
4	851181L	EXTENSION, UPPER, LEFT SIDE	1
4A	851181R	EXTENSION, UPPER, RIGHT SIDE (N/S)	1
5	851182L	WEAR PLATE, L.H. SCREED EXT. (C & D SCREED)	1
5A	851182R	WEAR PLATE, R.H. SCREED EXT. (C & D SCREED)	1
6	851183	COUPLING, MALE	1
7	851184	ADJUSTING SCREW, SCREED EXTENSION	2
9	870030	BEARING, SCREED FLIGHT SCREW	2
10	851186	SPACER	1
11	116-8	NUT, HEX 3/4"	1
12	870279	CAPSCREW, SOCKET HEAD SHOULDER	1
13	143-3	LOCKNUT, 3/8"-16	1
14	102-309-1A	CAPSCREW, 7/16"x2" HEX HEAD	1
15	119-4	WASHER, FLAT, 7/16"	1
16	851256	SNAPRING	2
17	855777	SHAFT, EXTENSION	2
18	851179	BUSHING, SCREED EXTENSION (3" LONG)	2
19A	851190L	SLIDE PLATE, LH SCREED EXT	1
19B	851190R	SLIDE PLATE, RH SCREED EXT	1
20	100-408-1	CAPSCREW, 1/2"x20x1 1/2" HEX HEAD	4
21	118-5	WASHER, 1/2" LOCK	4
22	119-5	WASHER, 1/2" FLAT	4
23	851191	HYD. CYL., SCREED EXT. (L.H.)	1
23A	851484	UNIVERSAL SEAL KIT	
23B	851192	HYD. CYL., SCREED EXTENSION (R.H.)	1
24	860048	CAPSCREW, 7/16"x2" HEX HEAD	2
25	210060	PIN, CYLINDER	2
26	118-4	WASHER, 5/8" FLAT	2
27	983405	MOTOR, HYDRAULIC SCREED VIBRATOR (8515)	1
32	870172	TURN BUCKLE, CROWN & VALLEY (FRONT)	1
33	870190	CHAIN, CROWN & VALLEY #40	1
34	870182	TURN BUCKLE, CROWN & VALLEY (REAR)	1
35	851195	HANDLE, CRANK	1
36	102-607-1A	CAPSCREW, 5/8"x 1 1/2"	2

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FIGURE 18. EXPANDABLE SCREED ASSEMBLY (PART I) CONT.

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
37	118-7	WASHER, 5/8" LOCK	2
38	119-7	WASHER, 5/8" FLAT	2
39	855783	GUIDE, EXTENSION LOWER, (WELDMENT)	2
40	855784	GUIDE, EXTENSION TOP	1
41	102-406-1A	CAPSCREW, 1/2"x 1 1/4"	5
42	118-5	WASHER, LOCK 1/2"	5
43	119-7	WASHER, FLAT, 1/2"	5
44	851196	PIN, SCREED EXTENSION HINGE	1
45	119-4	WASHER, FLAT, 7/16"	2
46	116-5	NUT, 7/16"	2
47	851600-1	BURNER PIPE EXTENSION	
48	851197-1	BURNER PIPE, MAIN	

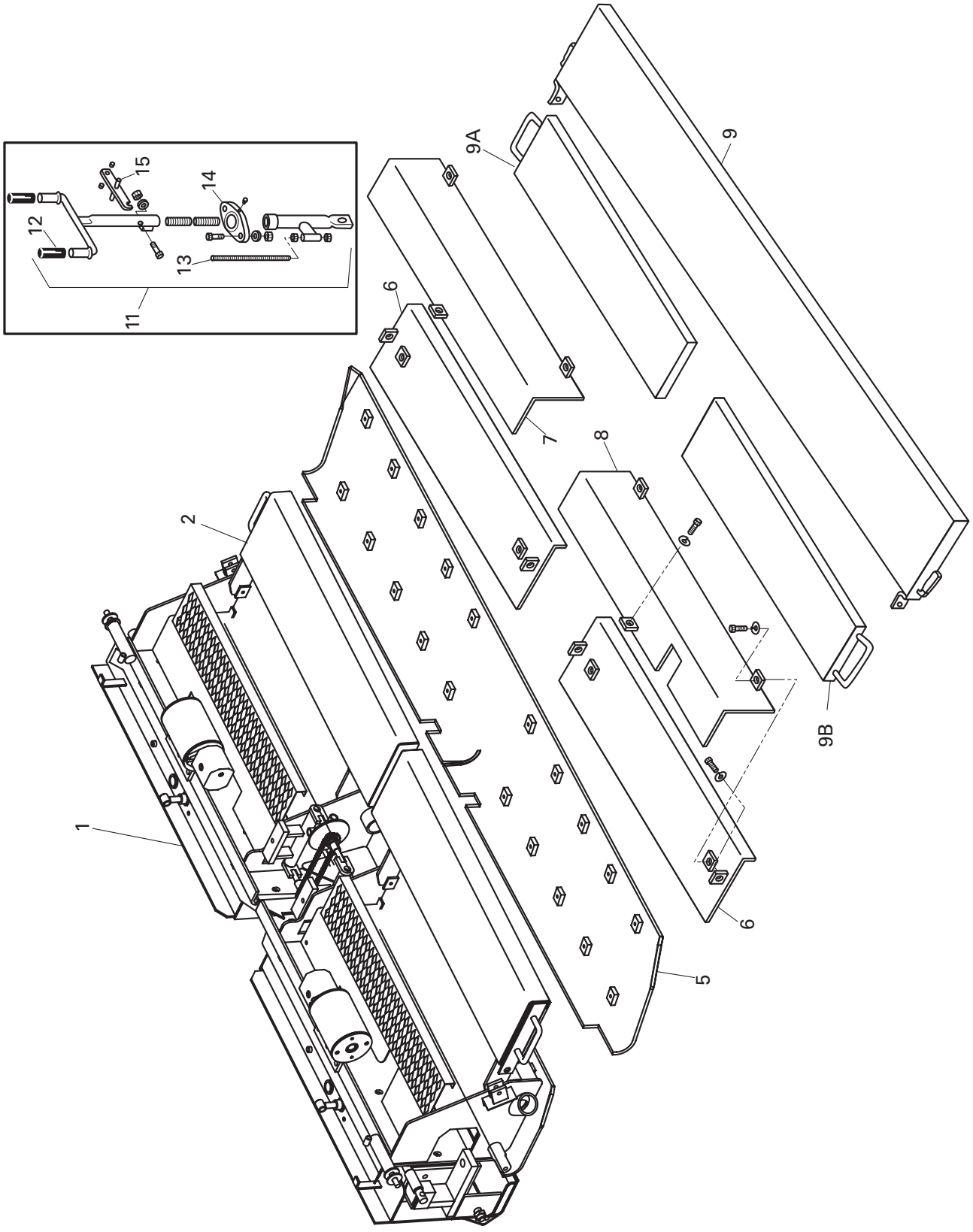


FIGURE 19. EXPANDABLE SCREED ASSEMBLY (PART II)

FIGURE 19. EXPANDABLE SCREED ASSEMBLY (PART II)

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	982797	SCREED, BASE (NEW STYLE)	1
2	851198	STEP, UPPER	2
3	851134	CAPSCREW, HEX, 3/8"x3/4"	20
4	118-3	WASHER,LOCK 3/8"	20
5	981724	PLATE, SCREED (NEW STYLE WEAR PLATE WITH 90 ANGLE AT FRONT)	
6	851201	LID, SCREED	2
7	851203	COVER, CYLINDER (R/H)	1
8	851204	COVER, CYLINDER (L/H)	1
9	985554	MAIN WALKBOARD	1
9A	856743R	R/H INSERT	1
9B	856743L	L/H INSERT	1
10	121-3	WASHER, WEDGE	20
11	851370	FLIGHT SCREW ASSEMBLY	2
*12	870276	GRIP, HANDLE	2
*13	851372	ROD GAUGE	1
14	870030	BEARING, SCREED FLIGHT SCREW	1
*15	851373	LOCK, ARM	1
		* ITEMS NOT INCLUDED WITH PART. NO. 851370	
		FLIGHT SCREW ASSEMBLY	

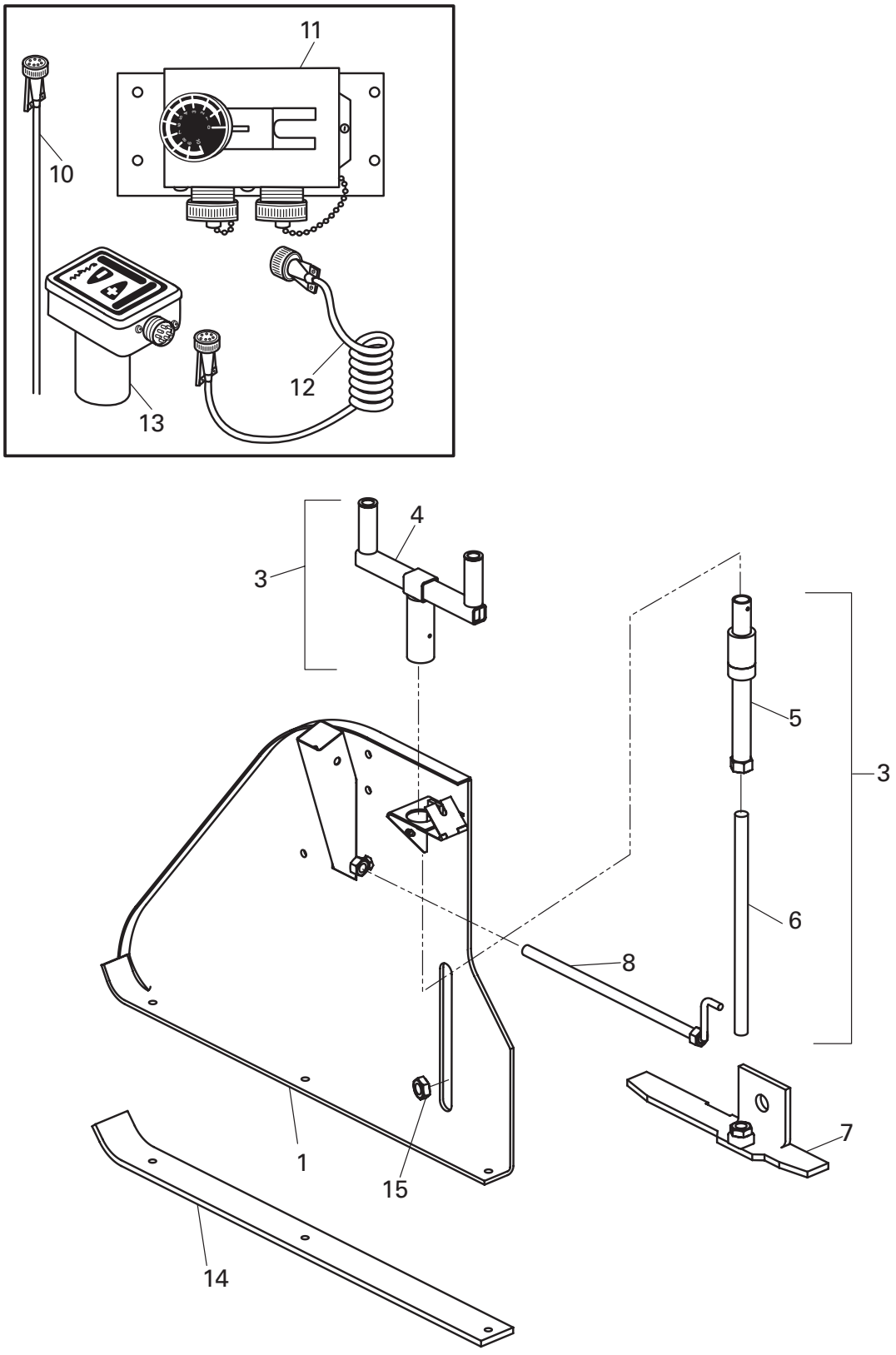


FIGURE 20. JOINTER ASSEMBLY

FIGURE 20. JOINTER ASSEMBLY

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	983308	JOINTER, ASSEMBLY, L/H 8515	1
2	983309	JOINTER, ASSEMBLY, R/H 8515	1
3	890092	DEPTH SCREW ASSY., SCREED	2
4		COMES AS # 3	
5		COMES AS # 3	
6		COMES AS # 3	
7	890132 R & L	BRACKET, DEPTH SCREW CONTROL	2
8	890081	TILT SCREW, JOINTER ASSY.	2
10	982796	CABLE, POWER ULTRASONIC	
11	982795	REMOTE POD, ULTRA SONIC	
12	983050	COILED CORD	
13	982794	SENSOR, ULTRA SONIC	
14	982963	BAR, END GATE SKID 8515	
15	987396	NUT, NYLON LOC 7/8-9 UNC-2B	

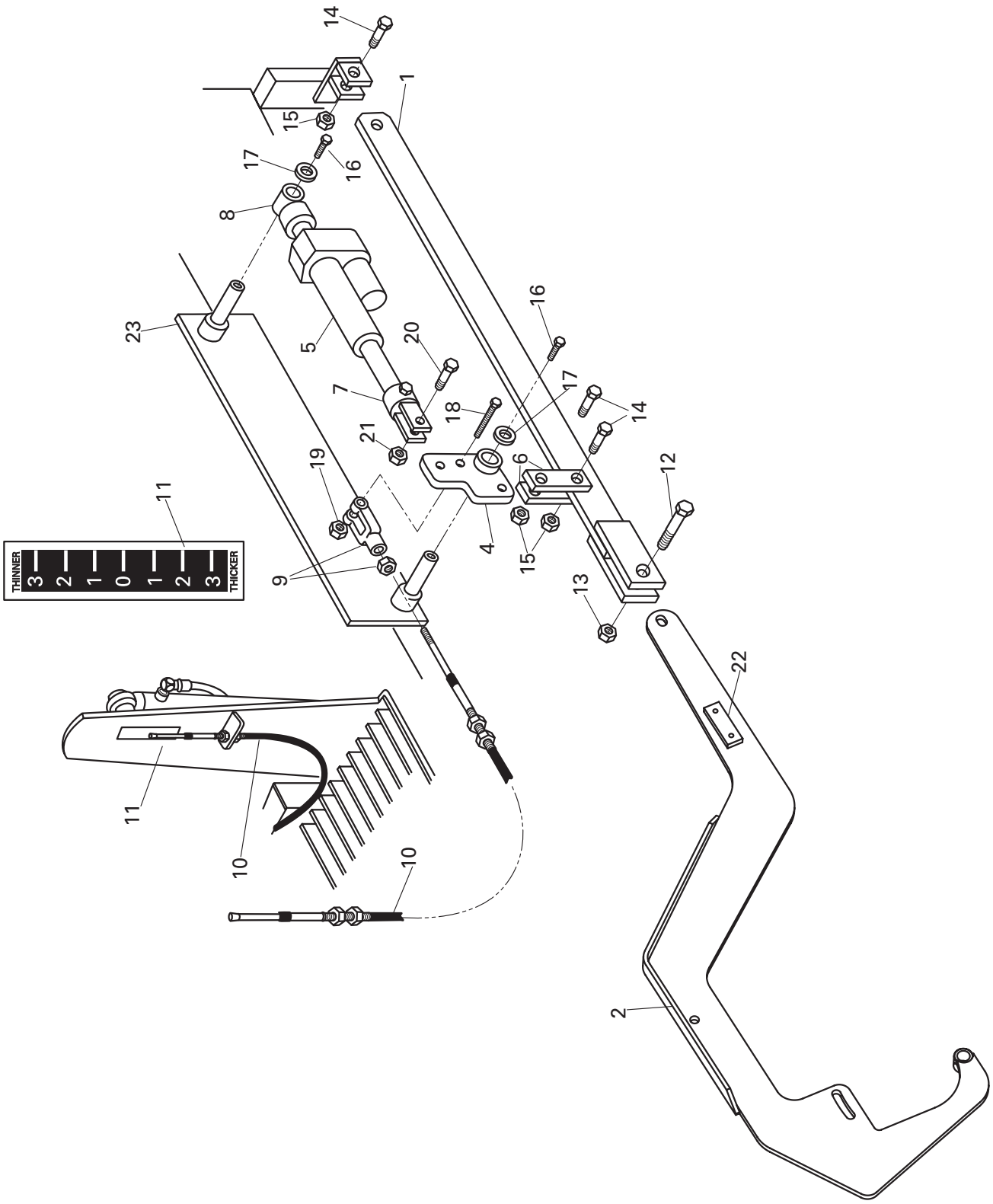


FIGURE 21. SCREED ARM ASSEMBLY WITH CENTER TOE POINT

FIGURE 21. SCREED ARM ASSEMBLY WITH CENTER TOE POINT

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	851206	EXTENSION, SCREED ARM	1
2	982743R	REAR, SCREED ARM, (RIGHT)	1
3	982743L	REAR, SCREED ARM (NOT SHOWN)	
4	851209	MOUNT, PIVOT	1
5	851518	SCREW, ELECTRIC (6"INCH)	2
6	851210	EARS, PIVOT	2
7	851211	END, ROD END OF SCREW	1
8	851212	END, MOTOR END OF SCREED	1
9	851213	CLEVIS, 3/16" X 1/4"	1
10	851520	CABLE, HEIGHT LOCATOR 3/16x90 WITH 5”STROKE	1
11	851215	DECAL, HEIGHT	1
12	102-411-1A	CAPSCREW, 1"x 2 1/2"	1
13	116-10	NUT, LOCK 1 " -8 HEX	1
14	102-611-1A	CAPSCREW, 5/8" - 11 x 2 1/2”	3
15	116-7	NUT, LOCK 5/8 "	3
16	851134	CAPSCREW, 3/8" -16 x 3/4"	2
17	119-3	WASHER, FENDER 3/8"	2
18	102-9-1A	CAPSCREW, 1/4"x 2"	1
19	116-1	NUT, LOCK 1/4"	1
20	102-408-1A	CAPSCREW, 1/2" -13 x 1 3/4"	2
21	115-5-A	NUT, LOCK 1/2"	2
22	851221	BRACKET, GRADE CONTROL	1
23	851001A	MOUNTING PLATE 6” ELECTRIC SCREW	

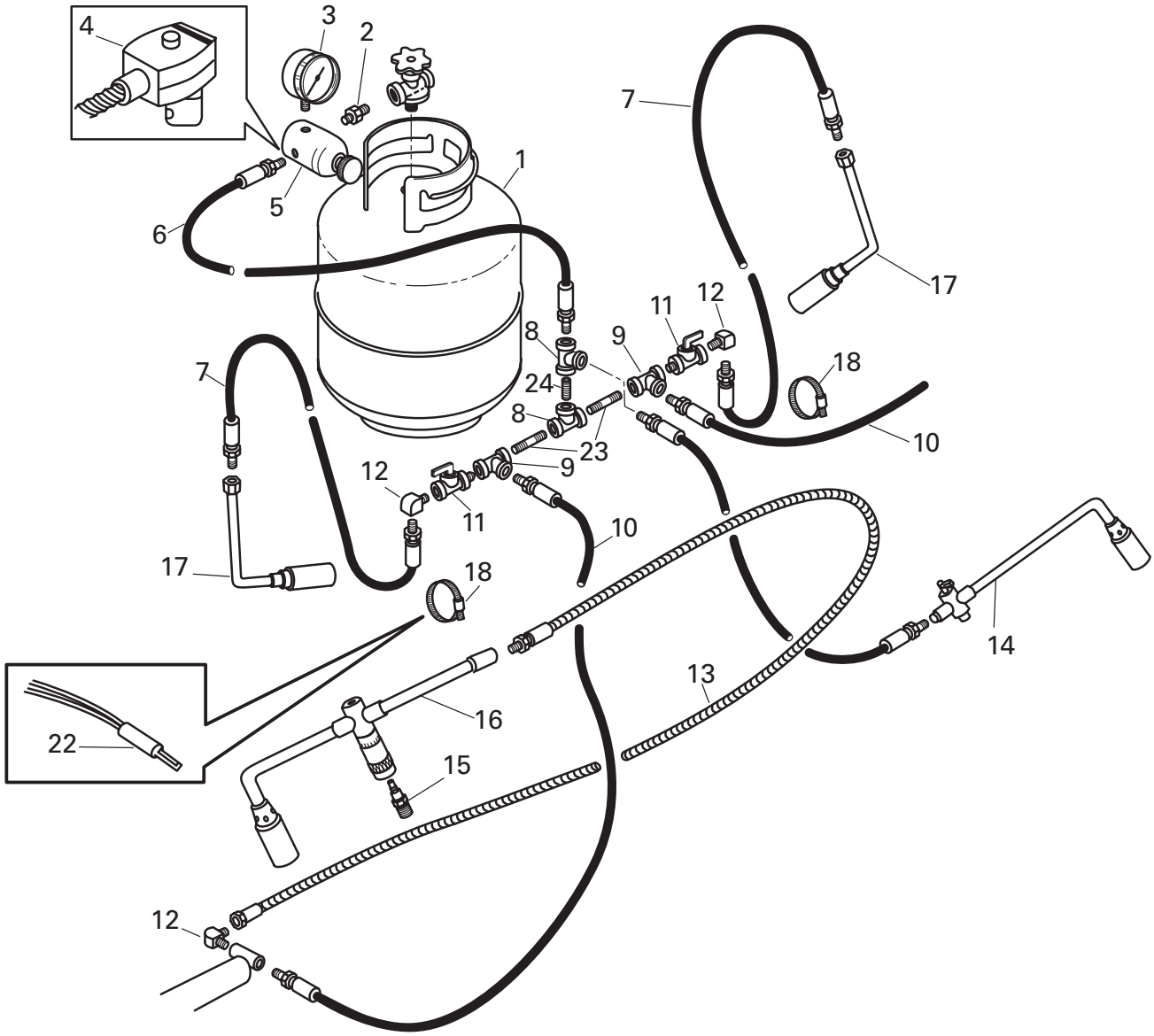


FIGURE 22. PROPANE HEATER & AUTOMATIC IGNITORS

FIGURE 22. PROPANE HEATER & AUTOMATIC IGNITORS

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	230010	L.P.G. TANK, 20 LBS.	1
2	230030	ADAPTER,P.O.L.	1
3	230110	GAUGE, L.P.G. PRESS.	1
4	230300	SOLENOID VALVE, 12 VOLT L.P.G.	OPT.
5	982515	REGULATOR,0-60PSI. MRLP	1
6	230032	HOES, L.P.G. REGULATOR TO TEE	1
7	230034	HOSE, SCREED BURNER/IGNITER TO	2
8	230080	TEE, 1/4" PIPE	2
9	230081	TEE, 1/4" STREET	2
10	230038	HOSE, L.P.G. TEE TO SCREED EXTENSION	2
11	230070	VALVE, 1/4” PETCOCK	2
12	230069	ADAPTER, PIPE TO HOSE (90)1/4	4
13	851225	HOSE, SCREED EXTENSION BURNER	2
14	982502	BURNER, WAND ASSY. ST5 IGNITER	2
15	851183	QUICK DISCONNECT, 1/4" MALE	2
16	982503	BURNER, EXTENSION ASSY.	2
17	982504	BURNER, WAND ASSY. ST5 IGNITER	2
18	230240	HOSE CLAMP	2
22	230024	IGNITER	
23	230950	PIPE NIPPLE, 1/4” X 2”	
24	230140	PIPE NIPPLE, 1/4” X CLOSE	

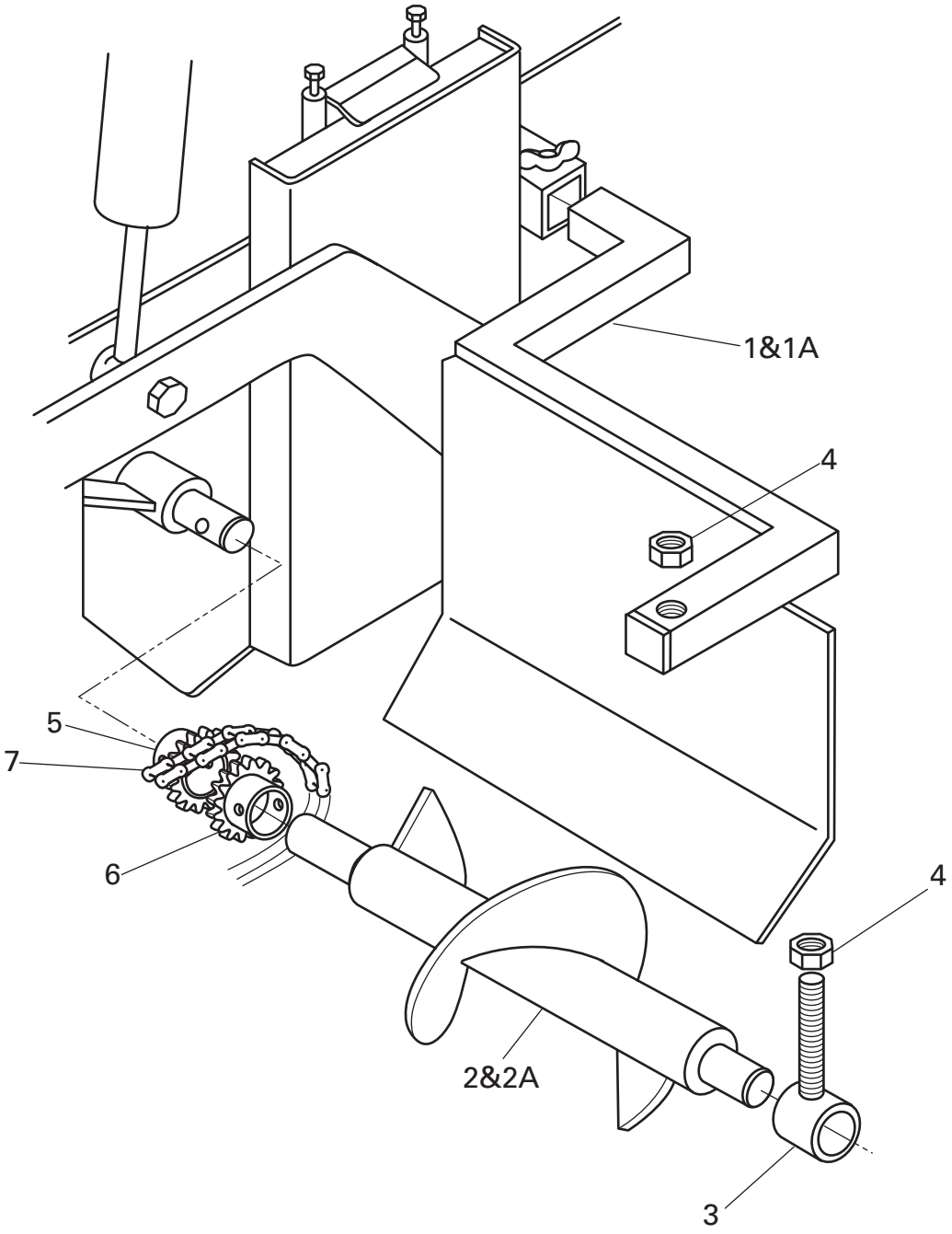


FIGURE 23. AUGER EXTENSION 24”

FIGURE 23. AUGER EXTENSION 24”

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	851227	SHIELD, AUGER EXTENSION (RIGHT)	1
1A	851228	SHIELD, AUGER EXTENSION (LEFT)	1
2	851229	AUGER EXTENSION, (RIGHT)	1
2A	851230	AUGER EXTENSION, (LEFT)	1
3	851231	SUPPORT, AUGER ADJUSTABLE	1
4	116-10	NUT, HEX 1"	2
5	854003	COUPLING HALF	1
6	854004	COUPLING HALF, (WELDMENT)	1
7	900404	DOUBLE ROW CHAIN ASSY. (50-2)	1

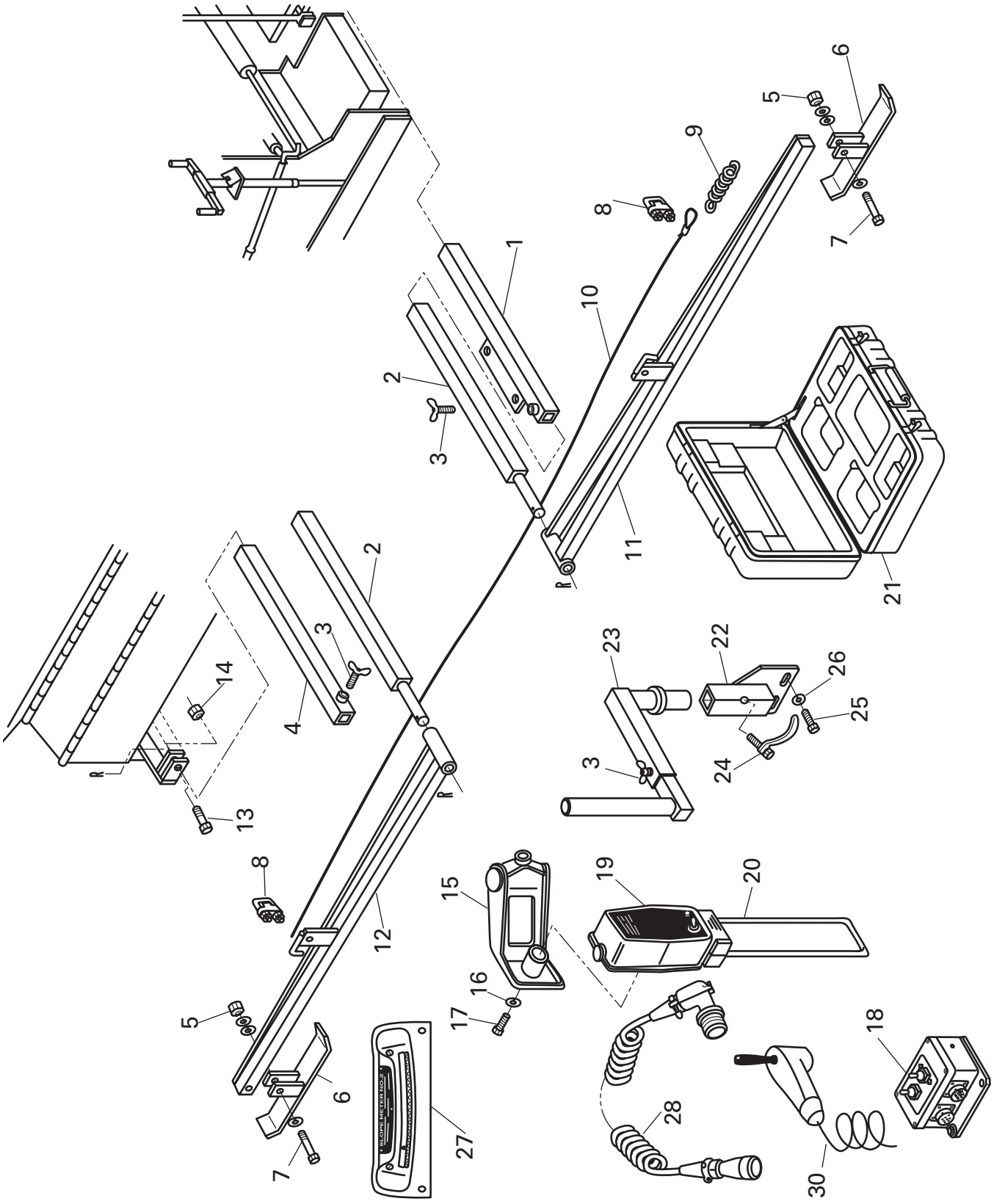


FIGURE 24. PAVER LEVELING CONTROL (TOPCON)

FIGURE 24. PAVER LEVELING CONTROL (TOPCON)

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	851241	HOUSING, REAR SLIDE BAR	2
2	851242	BAR, ADJUSTABLE SLIDE	2
3	920070	WING BOLT, 3/8"-16 x 1"	2
4	851243	HOUSING, FRONT SLIDE BAR	2
5	143-5	LOCKNUT, 1/2"-13 HEX	2
6	851249	SKID	2
7	102-411-1A	CAPSCREW, 1/2"X2 1/2"	2
8	851244	CLAMP, U' BOLT	2
9	851245	SPRING, TENSION	1
10	851246	CABLE 1 1/16	1
11	851247	ARM, SKID SUPPORT (REAR)	1
12	851248	ARM, SKID SUPPORT (FRONT)	1
13	102-611-1A	CAPSCREW, 5/8"x 2 1/2"	1
14	116-7	NUT, 5/8"	1
15	851578	BRACKET, SONIC TRACKER	1
16	119-7	WASHER, FLAT 5/8"	1
17	102-617-1A	CAPSCREW,5/8"x4"	1
18	985866	A/M MODULE & CABLE ASSEMBLY, W/BASE PLATE	1
18A	987053	ASSEMBLY TOPCON MODULE WITH REMOTE	
19	851579	SONIC TRACKER	1
20	851581	WIRE BAIL, TEMPERATURE	1
21	851265	CASE FOR SONIC TRACKER	1
22	851575	PIVOT MOUNT, TOPCON / SPECTRA PHYSICS	2
23	9090-1125	BRACKET, Z ARM	1
24	300060	HANDLE, BOLT	1
25	102-606-1A	CAPSCREW, 5/8"-11x1 1/4"	1
26	119-7	WASHER, FLAT 5/8"	1
27	851421	SLOPE METER	A/R
28	851574	COILED CORD, TOPCON TRACKER / SLOPE	A/R
29	851584	SKI. 20'	
30	986609	COILED CORD REMOTE, TOPCON	

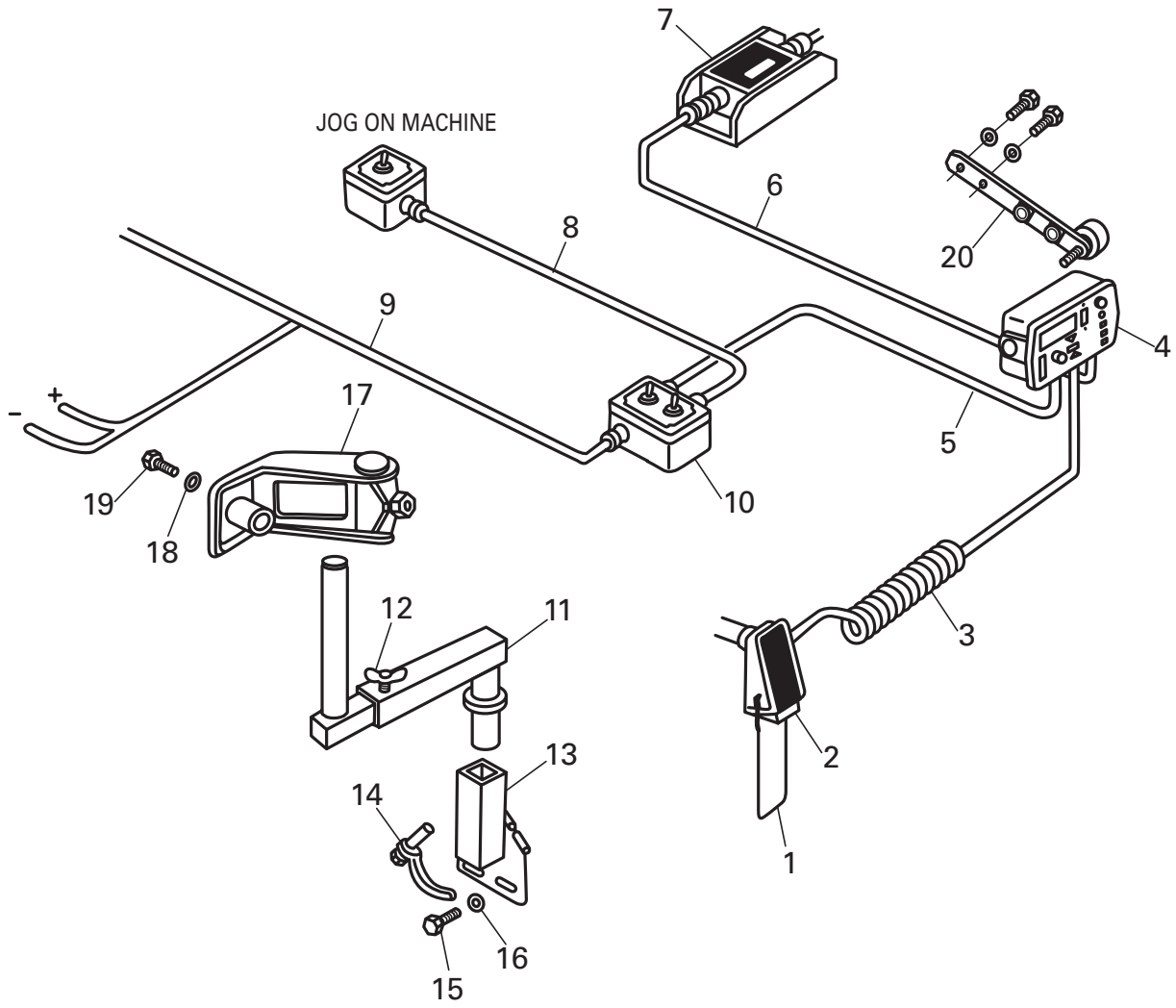


FIGURE 25. SYSTEM 5 (TOPCON)

FIGURE 25. SYSTEM 5 (TOPCON)

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	983414-10	ASSY. TEMP. BAIL W/SLEEVES	2
2	983414-01	TSD SONIC TRACKER II	2
3	983414-08	COIL CORD, 15FT. CA TO TRACKER	2
4	983414-02	TSD 3 CONN SS PAVER BOX	2
5	983416-01	CABLE J-BOX TO CNTRL BOX	2
6	983414-14	SLOPE CABLE 5 FOOT	2
7	983414-13	SLOPE SENSOR	2
8	986609	COILED CORD REMOTE (TOPCON)	2
9	985866-02	CABLE AM MODULE	2
10	985866-01	AM MODULE ONLY	2
11	9090-1125	BRACKET Z ARM TOPCON	2
12	920070	SCREW WING, .375-6” X 1.00	2
13	851575	PIVOT MOUNT, TOPCON/ SPECTRA	2
14	300060	HANDLE NUT, .625-11”	2
15	102-606-1A	CSHH, .625-11X1.25 GR5	4
16	119-7	WASHER, FLAT, SAE, 625	4
17	851576	PIVOT MOUNT, (TOPCON/ SPECTRA)	2
18	119-7	WASHER, FLAT, SAE, .625	2
19	102-617-1A	CSHH. .826-11 X 4.02 GR6	2
20	983414-09	ASSY. CB BRACKET	2

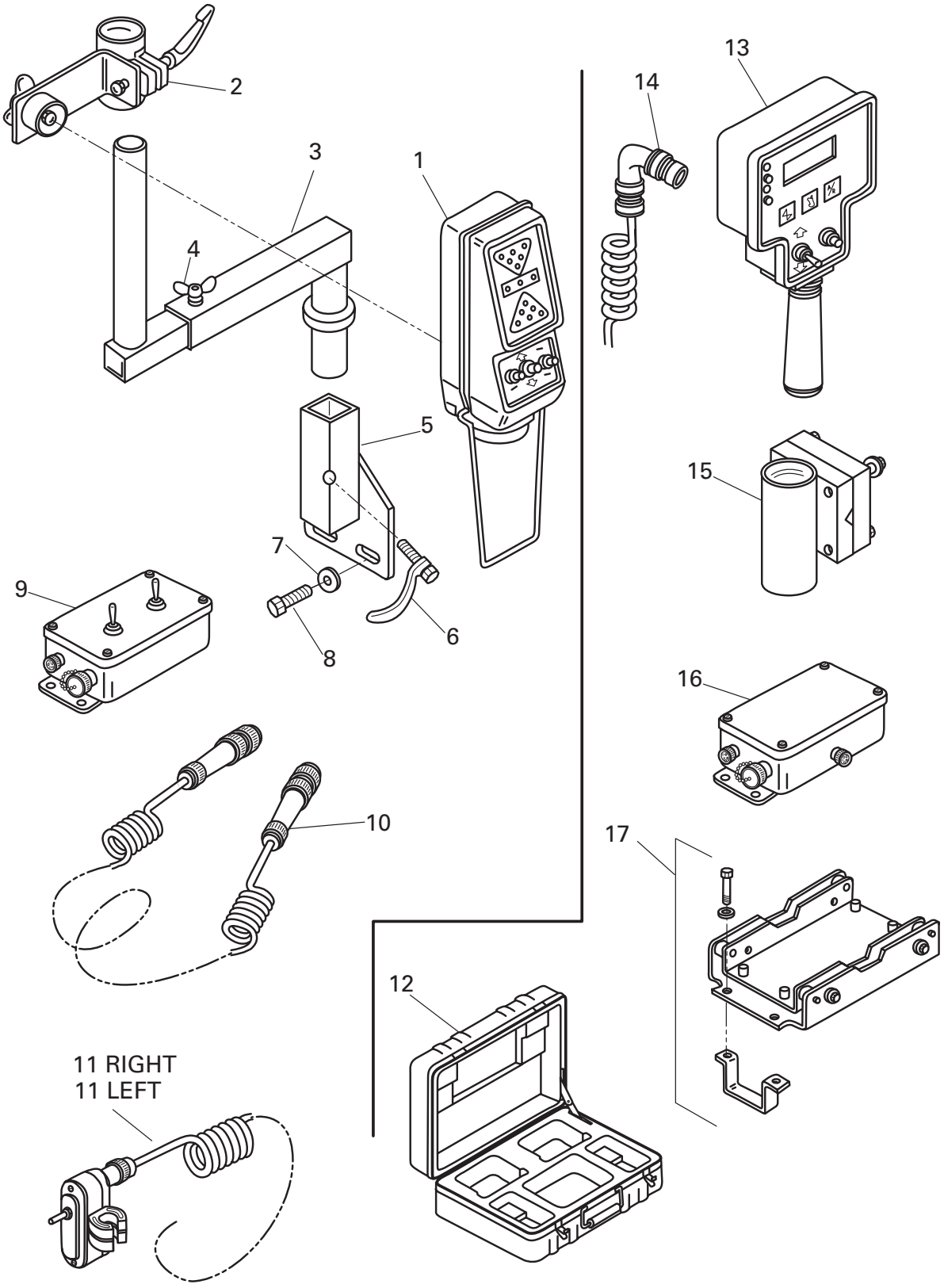


FIGURE 26. PAVER GRADE CONTROLS SPECTRA PHYSICS

FIGURE 26. PAVER GRADE CONTROLS SPECTRA PHYSICS

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	851422	SONIC TRACER	1
2	851631	BRACKET, TRACER MOUNTING	1
3	851423	Z BRACKET ARM, 1 3/4"	1
4	920070	WINGBOLT, .375-16 X 1.00	1
5	851575	MOUNT, PIVOT, TOPCON/SPECTRA	1
6	300060	HANDLE, BOLT, .625-11	1
7	119-7	WASHER, FLAT, SAE. .625	2
8	102-606-1A	CSHH, .625-11 X 1.25, GR5	2
9	851424	INTERFACE CONTROL BOX	1
10	851629	COILED CORD, TRACER / SLOPE (SPECTRA PHYSICS	1
11R	851633	SHORT COILED CORD, R.H. REMOTE (FITS LBI-25)	1
11L	851632	LONG COILED CORD, L.H. REMOTE (FITS LBI-25)	1
12	851265	CASE FOR SONIC TRACKER	1
13	851426	UNIVERSAL REMOTE	1
14	851630	COILED CORD, R-25 REMOTE	1
15	851687	BRACKET, REMOTE [SPECTRA]	1
16	851430	SLOPE MODULE, SCREED	1
17	851425	SHOCK MOUNT, SLOPE	1

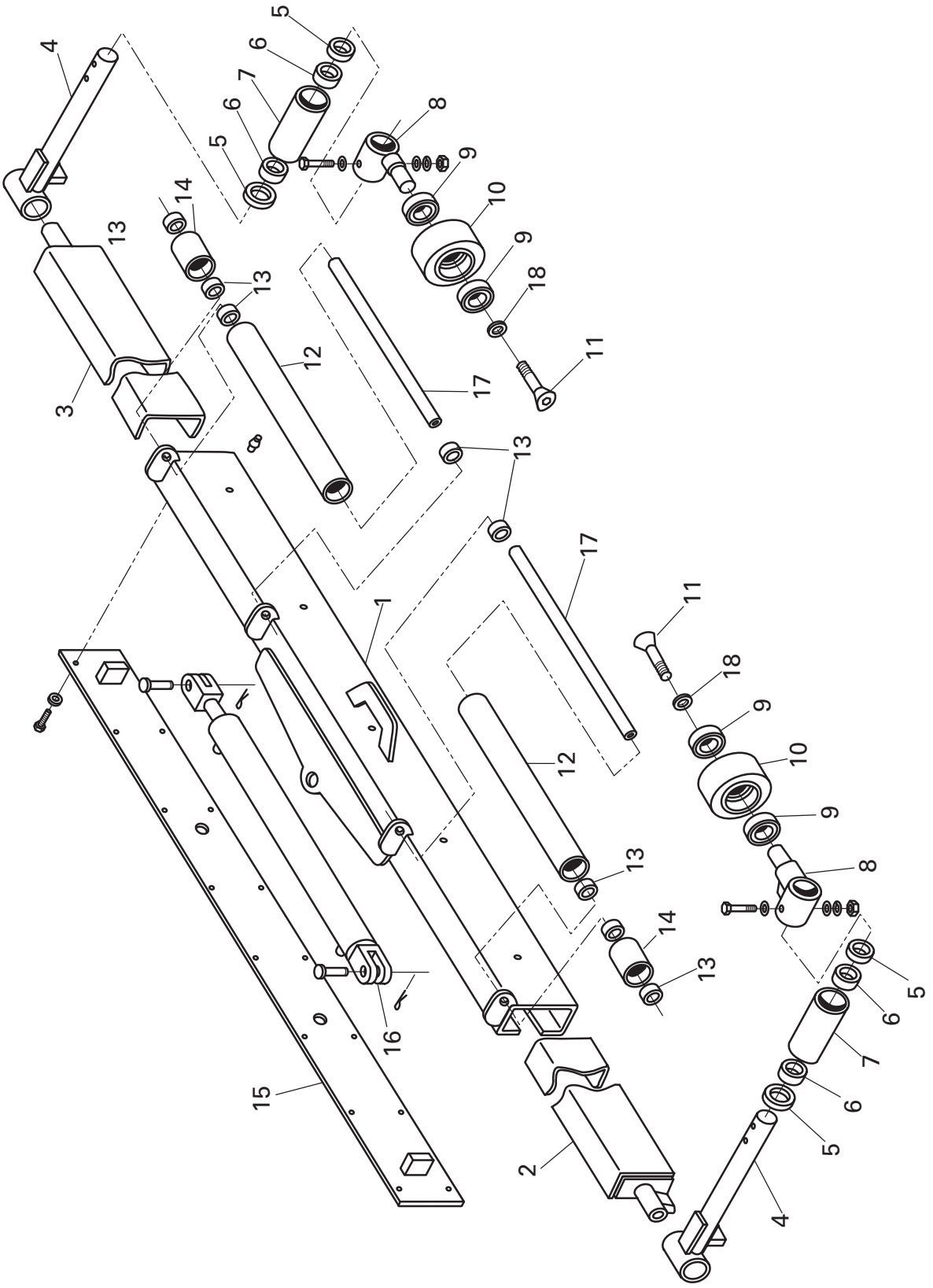
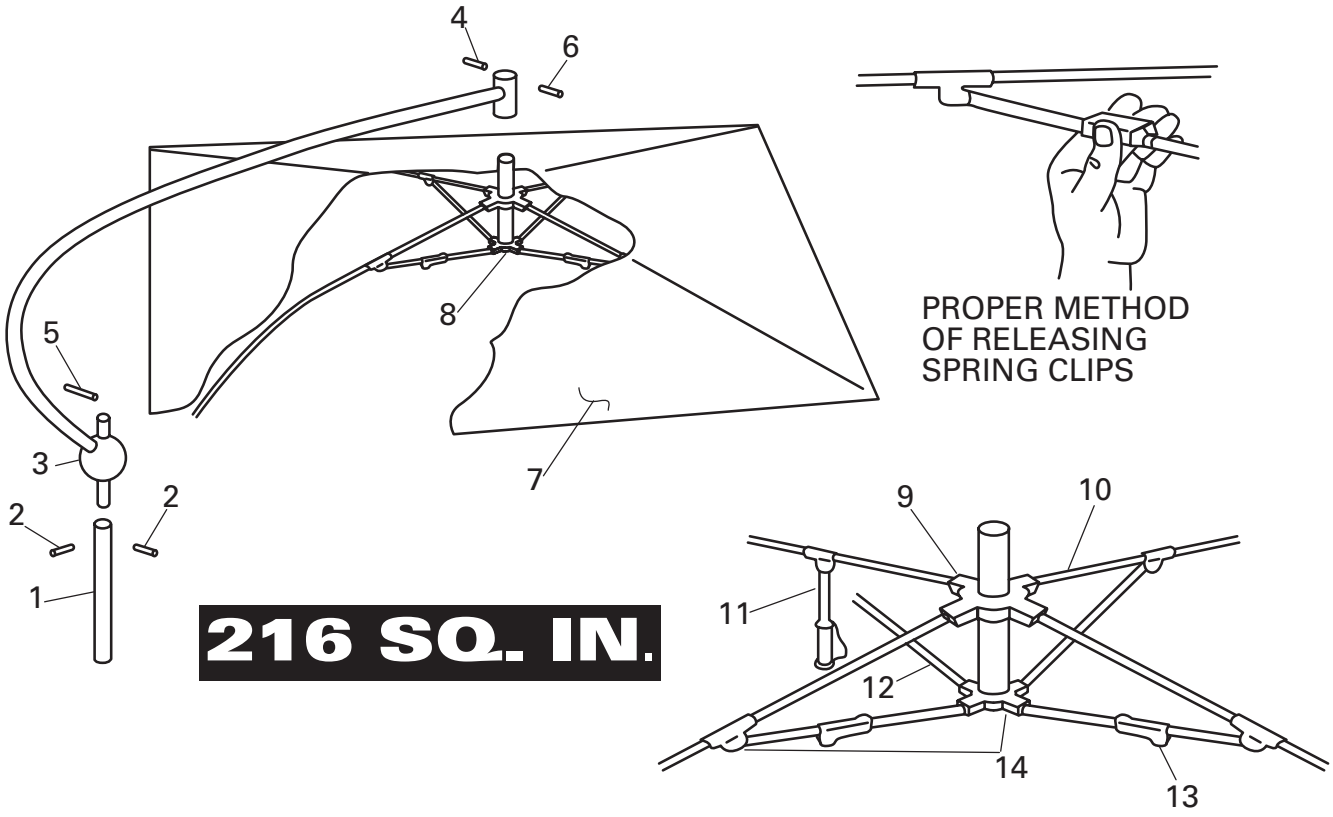


FIGURE 27. TRUCK HITCH ASSEMBLY

FIGURE 27. TRUCK HITCH ASSEMBLY

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
	930010	TRUCK HITCH ASSEMBLY	
1	930015	SUPPORT,PIVOTBAR	1
2	930020	ARM EXTENSION, R/H	1
3	930025	ARM EXTENSION, L/H	1
4	930030	GUIDE, WHEEL PIVOT ARM	2
5	620400	COLLAR, LOCK, 2”. ID (1 PC)	4
6	810070	BUSHING, TRACK IDLER / TRUCK HITCH, 2.00 ID X 250 OP	4
7	930040	ROLLER, TUBE 2.00 ID. X 3.50 OD X 7.875	2
8	930045	AXLE, GUIDE WHEEL	2
9	930050	BEARING, TRUCK HITCH ROLLER, 1.50	4
10	930055	GUIDE WHEEL, TRUCK HITCH	2
11	851111	CAPSCREW, 1/2" 13 x 2 FLAT HEAD SOCKET	2
12	810102	PUSH ROLLER, TRUCK WHEEL	2
13	810110	BEARING, PUSH ROLLER (1 1/4")	8
14	930060	ROLLER EXTENSION, BUMPER	2
15	930065	PLATE, TRUCK HITCH COVER	1
16	930070	CYLINDER, 1.50 X 30.00 X 1.00 ROD	1
17	930075	SHAFT, ROLLER ASSEMBLY, TRUCK HITCH	2
18	851112	WASHER, COUNTER SUNK	2



ASSEMBLY INSTRUCTIONS

1. Install Umbrella Mounting bracket (See bracket mounting instructions furnished with each bracket).
2. Insert ball stud on (#3) curved shaft into (#1) umbrella support shaft, align holes, and drive (#2) 3/16” X 1” spiral spring pins into position. Install (#5) locking handle.
3. Place (#7) canvas cover over (#8) umbrella frame assembly and hook corners to bows – tie each bow securely with tie straps.
4. Insert (#8) umbrella frame assembly with canvas in place into tube on (#3) curved shaft and insert (#6) bolt. Tighten snugly with nut (#4).
5. Install complete umbrella into clamp on umbrella mounting bracket.

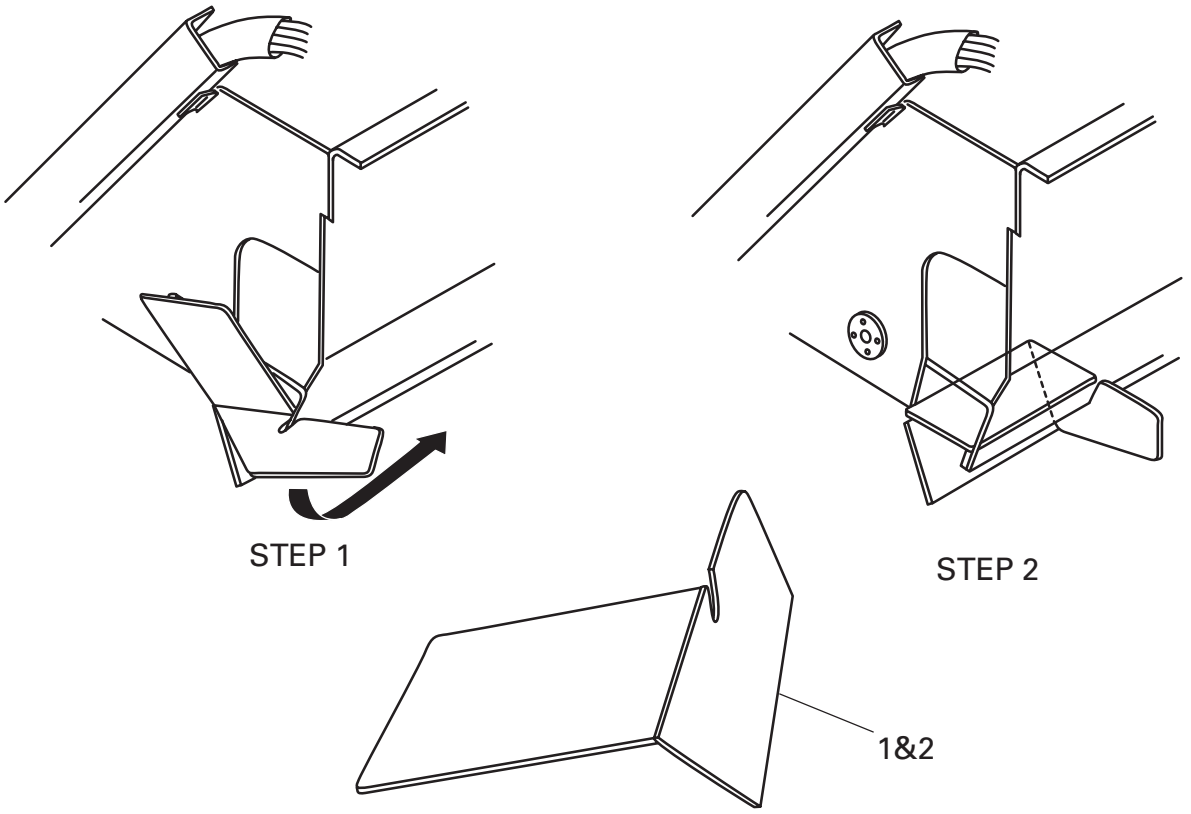
Each bow may be raised individually until locked into open position. Each bow has two positions in which it can be locked open. This is to allow for arc stretch in canvas.

•Part No. varies with color.

FIGURE 28. UMBRELLA

FIGURE 28. UMBRELLA

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	920235	UMBRELLA	A/R



INSTALLATION OF CUTOFF

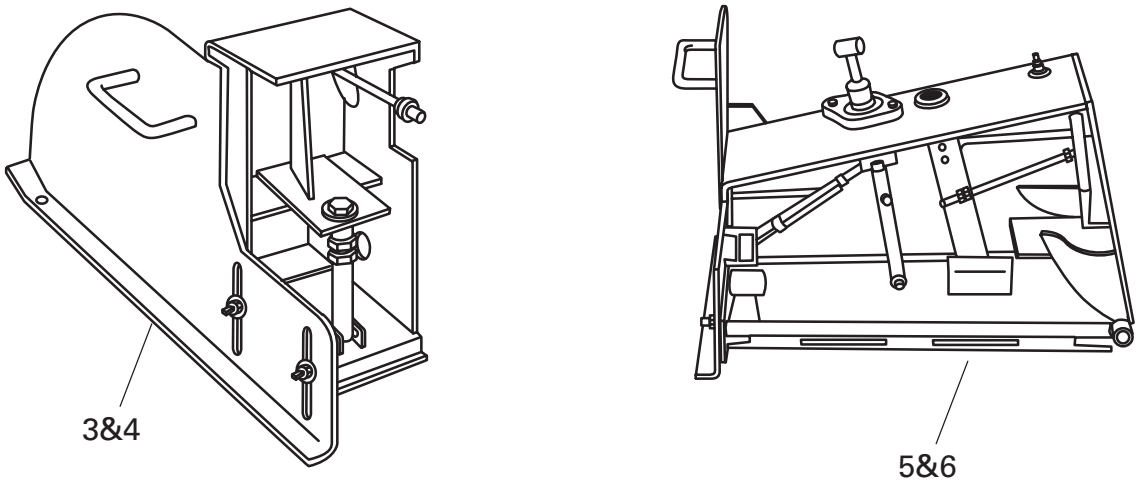


FIGURE 29. STRIKE OFFS & EXTENSIONS

FIGURE 29. STRIKE OFFS & EXTENSIONS

FIG ITEM	PART NUMBER.	NOMENCLATURE 123456	UNITS PER ASSY
1	860091L	STRIKE OFF, 12" LEFT SIDE	A/R
2	860091R	STRIKE OFF, 12" RIGHT SIDE	A/R
1	860093L	STRIKE OFF, 18" LEFT SIDE	A/R
2	860093R	STRIKE OFF, 18" RIGHT SIDE	A/R
1	860095L	STRIKE OFF, 24" LEFT SIDE	A/R
2	860095R	STRIKE OFF, 24" RIGHT SIDE	A/R
3	851634L	EXTENSION, 6' LEFT SIDE	A/R
4	851634R	EXTENSION, 6' RIGHT SIDE	A/R
5	851635L	ROLL UP CURB ATTACHMENT, 12"LEFT SIDE	A/R
6	851635R	ROLL UP CURB ATTACHMENT, 12"RIGHT SIDE	A/R
5	851636L	ROLL UP CURB ATTACHMENT, 24" LEFT SIDE (STANDARD	A/R
6	851636R	ROLL UP CURB ATTACHMENT, 24" RIGHT SIDE (STANDARD)	A/R

NOTES

INDEX OF PARTS BY NAME

FIG ITEM	PART NUMBER	NOMENCLATURE 123456	PAGE
		A	
18	985866	A/M MODULE & CABLE ASSEMBLY, W/BASE PLATE	IPL.59
31	23252	ACTUATOR, EMULSION/THROTTLE	IPL.35
4	910129	ADAPTER, 1/4" MPT X 1/4" MJIC (90 DEGREE)	IPL.21
12	230069	ADAPTER, PIPE TO HOSE (90)1/4	IPL.55
33	2404-10-8.	ADAPTER,HYD. HOSE	IPL.3
41	6801-10-8.	ADAPTER,HYD. HOSE	IPL.5
42	6400-10-8.	ADAPTER,HYD. HOSE	IPL.5
43	6401-8-8.	ADAPTER,HYD. HOSE	IPL.5
2	230030	ADAPTER,P.O.L.	IPL.55
7	851184	ADJUSTING SCREW, SCREED EXTENSION	IPL.45
27	986537-12	ALTERNATOR	IPL.35
34	320300	ALTERNATOR, 12 VOLT	IPL.31
10	985865-01	AM MODULE ONLY	IPL.61
3	930025	ARM EXTENSION, L/H	IPL.65
2	930020	ARM EXTENSION, R/H	IPL.65
17	900060	ARM, AUTO. CONVEYOR SWITCH	IPL.37
12	851248	ARM, SKID SUPPORT (FRONT)	IPL.59
11	851247	ARM, SKID SUPPORT (REAR)	IPL.59
1	980607L	ASSEMBLY IN FRONT OF UNDER CARRIAGE, LH	IPL.7
2	980607R	ASSEMBLY IN FRONT OF UNDER CARRIAGE,,RH	IPL.7
22A	985795	ASSEMBLY, 12” AUGER EXT. SHORT L/H	IPL.17
22	985796	ASSEMBLY, 12” AUGER EXT. SHORT R/H	IPL.17
11	985669	ASSEMBLY, FRONT LIP GUARD	IPL.13
2	980702	ASSEMBLY, SIDE WING,L/H 8515	IPL.13
1	980703	ASSEMBLY, SIDE WING,R/H 8515	IPL.13
6	982965L	ASSEMBLY, VIBRATOR L/H	IPL.43
6A	982965R	ASSEMBLY, VIBRATOR R/H	IPL.43
11	982945	ASSEMBLY,SPACER AUGER SHAFT	IPL.17
1	981685	ASSY, AUGER MOTOR COVER, 8515	IPL.17
16	853962	ASSY. BEACON LIGHT POST	IPL.25
20	983414-09	ASSY. CB BRACKET	IPL.61
1	982414-10	ASSY. TEMP. BAIL W/SLEEVES	IPL.61
18A	987053	ASSEMBLY TOPCON MODULE WITH REMOTE	IPL.59
19	981692L	AUGER ASSEMBLY COMPLETE, L/H, 8515	IPL.17
20	981692R	AUGER ASSEMBLY COMPLETE, R/H, 8515	IPL.17
9	860051HDL	AUGER END MOUNT, LH 8000/8500	IPL.17
8	860051HDR	AUGER END MOUNT, RH 8000/8500	IPL.17
2A	851230	AUGER EXTENSION, (LEFT)	IPL.57
2	851229	AUGER EXTENSION, (RIGHT)	IPL.57
16	981700R	AUGER FLIGHT, LH, 12", 8515	IPL.17
15	981700L	AUGER FLIGHT, RH, 12", 8515	IPL.17
10	981691	AUGER SHAFT WITH SPROCKET	IPL.17
8	930045	AXLE, GUIDE WHEEL	IPL.65
7	851103	AXLE; MAIN	IPL.3
		B	
29	853598	BAR, .375 X 6.25 X 7.00	IPL.13
30	853595	BAR, 125 X 1.50 X 9.50	IPL.13
2	851242	BAR, ADJUSTABLE SLIDE	IPL.59
18	851118A	BAR, CONVEYOR FLIGHT BAR (QUICK CHANGE)	IPL.9
14	982963	BAR, END GATE SKID 8515	IPL.51
23	920041	BAR, GUIDE (OUTER)	IPL.13

INDEX OF PARTS BY NAME CONT.

FIG ITEM	PART NUMBER	NOMENCLATURE 123456	PAGE
3	851166	BAR, INSTRUMENT SLIDE (HIGH DECK)	IPL.41
3A	851167	BAR, INSTRUMENT SLIDE (LOW DECK)	IPL.41
10	810140	BEARING, 2 1/4" PILLOW BLOCK	IPL.3
7	851130	BEARING, AUGER, AXLE, IDLER	IPL.9
12	850130	BEARING, AUGER/AXLE/IDLER	IPL.17
36	810110	BEARING, PUSH ROLLER (1 1/4")	IPL.5
13	810110	BEARING, PUSH ROLLER (1 1/4")	IPL.65
9	870030	BEARING, SCREED FLIGHT SCREW	IPL.45
14	870030	BEARING, SCREED FLIGHT SCREW	IPL.49
9	930050	BEARING, TRUCK HITCH ROLLER, 1.50	IPL.65
	851627	BED ASSY. 8500 CONVEYOR	IPL.9
11	986537-10	BELT FAN	IPL.35
30	320090	BELT, ALTERNATOR / BLOWER	IPL.31
14	850080A	BLOCK LINK WITHOUT TAB	IPL.9
10	320340	BLOCK, TERMINAL	IPL.31
33	320290	BLOWER FAN	IPL.31
2	851148	BOLT, CONVEYOR DRIVE CHAIN ADJUSTER	IPL.19
15	811308	BOLT, FOR PAD	IPL.3
16	853370	BOTTOM TANK	IPL.13
11	9090-1125	BRACKET Z ARM TOPCON	IPL.61
7	890132 R & L	BRACKET, DEPTH SCREW CONTROL	IPL.51
22	851221	BRACKET, GRADE CONTROL	IPL.53
15	851687	BRACKET, REMOTE [SPECTRA]	IPL.63
15	851578	BRACKET, SONIC TRACKER	IPL.59
2	851631	BRACKET, TRACER MOUNTING	IPL.63
12	910058	BRACKET, VALVE LEVER	IPL.23
23	230062	BRACKET, W/CLAMP, LPG TANK MOUNT	IPL.41
16	480260	BRACKET, WATER / FUEL PUMP MOUNT	IPL.23
23	9090-1125	BRACKET, Z ARM	IPL.59
31	851644	BREATHER; CYLINDER	IPL.3
47	851600-1	BURNER PIPE EXTENSION	IPL.47
48	851197-1	BURNER PIPE, MAIN	IPL.47
16	982503	BURNER, EXTENSION ASSY.	IPL.55
14	982502	BURNER, WAND ASSY. ST5 IGNITER	IPL.55
17	982504	BURNER, WAND ASSY. ST5 IGNITER	IPL.55
20	851460	BUSHING 004017	IPL.3
18	851179	BUSHING, SCREED EXTENSION (3" LONG)	IPL.45
2	851179	BUSHING, SCREED EXTENSION (3" LONG)	IPL.45
7	810070	BUSHING, TRACK IDLER / TRUCK	IPL.17
39	810070	BUSHING, TRACK IDLER / TRUCK HITCH	IPL.5
6	810070	BUSHING, TRACK IDLER / TRUCK HITCH, 2.00 ID X 250 OP	IPL.65
44	5406-12-8.	BUSHING,3/4" M.P.T.X1/2" F.P.T.	IPL.5
21	811314	BUSHING; BO TRACK	IPL.3
		C	
32	102-209-1A	C5HH, .375-16 X 2.00GR5	IPL.13
10	851246	CABLE 1 1/16	IPL.59
9	985865-02	CABLE AM MODULE	IPL.61
5	983416-01	CABLE J-BOX TO CNTRL BOX	IPL.61
21	920120	CABLE, 104” X 3”	IPL.41
5	920136	CABLE, 135” X 3” (R/H AUGER)	IPL.39
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4	851132	PIN	IPL.13
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20	910057	PIN, COTTER	IPL.41
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