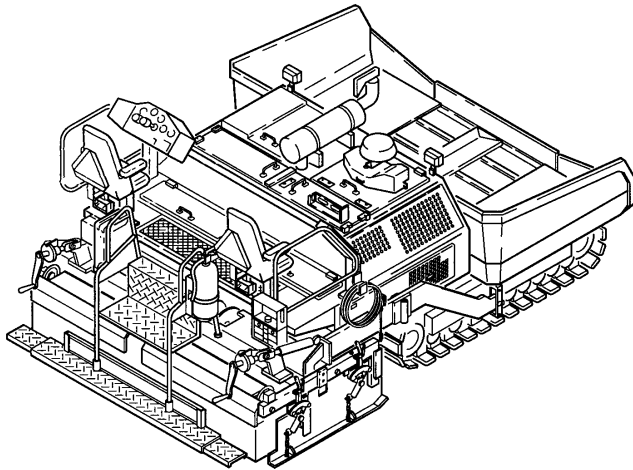


TECHNICAL MANUAL
OPERATOR'S MANUAL PAVING MACHINE



BITUMINOUS MATERIAL;
CRAWLER MOUNTED,
DIESEL ENGINE DRIVEN
NSN 3895-01-379-1102
END ITEM CODE (EIC): E47

INGERSOLLI-RAND COMPANY
MODEL 780T
CONTRACT NUMBER DAAEO7-93C-0501

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DISTRIBUTION RESTRICTION STATEMENT A. Approved for public release Distribution is Unlimited.

WARNING

Operating the paving machine during hot mix asphalt paving will expose the machine operator and screed crew to temperatures up to 300°F (65°C). To avoid heat stress and potential serious injury, all personnel operating the paving machine must be familiar with heat stress symptoms. Refer to TB MED 507 for guidelines to avoid heat stress, and follow the recommended work/rest cycles for specific conditions detailed in TB MED 507.

DEATH OR SERIOUS INJURY

could occur if fuel is not handled carefully. Fuel is very flammable and can explode easily. To avoid serious injury or death:

Keep fuel away from open flame or any spark (ignition source).

Always wear safety glasses/goggles at all times.

Keep at least a B-C fire extinguisher within easy reach when working with fuel or on a fuel system.

Post signs that read "NO SMOKING WITHIN 50 FEET" when working with open fuel lines or fuel tanks.

When refueling, stop vehicle and shut down engine. Ensure no open flame is near area. Never smoke. Never add fuel with engine running. Do not have operator seated when adding fuel. After fuel is added, securely close reservoir cap; a loose cap can cause a fuel leak or be a fire hazard. Before starting vehicle, check that no fuel is spilled on or around vehicle. If fuel is spilled, wipe up spilled fuel immediately with rags.

DEATH OR SERIOUS INJURY

may occur if fuel spray system is operated near an open flame or ignition source. Do not direct fuel spray stream toward engine compartment or exhaust pipes and muffler.

CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU

Exposure to exhaust gases produce symptoms of headache, dizziness, loss of muscular control, drowsiness, or coma. Brain damage or death can result from severe exposure.

Fumes from engines become concentrated with poor ventilation. Operate the paving machine in a well ventilated area only.

SERIOUS INJURY

may result if the engine is not turned off during service or maintenance.

When running engine, be alert for fumes. Keep area ventilated. If someone is overcome by fumes, expose to fresh air, keep warm and still, and give artificial respiration if needed. Seek medical attention. Administer oxygen if available.

DEATH OR SERIOUS INJURY

could occur if compressed air is directed against the skin. Do not use compressed air for cleaning or drying unless the pressure is/has been reduced to 30 psi. (207 kPa) or less. When working with compressed air always use chip guards, eye protection, and other personal protective equipment.

Refer to FM-21-11 for artificial respiration or other first aid procedures.

SEVERE BURNS

Muffler, exhaust pipes, screed burners, and screed plates get hot enough during paving machine operation to cause severe burns. Avoid contact with these components during checks described in this text.

SEVERE BURNS

Extreme care should be taken when removing radiator filler cap if temperature gauge reads above 180°F (82°C). Contact by steam or hot coolant may result in injury or death to personnel.

HEALTH AND SAFETY HAZARD

Cleaning solvent, P-D-680, is TOXIC and flammable. Wear protective goggles and gloves. Use only in a well ventilated area. Avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type III cleaning solvent is 200°F (93, 3°C). Failure to do so may result in injury or death to personnel.

NOISE LEVEL HAZARD

Personnel hearing can be PERMANENTLY DAMAGED if exposed to constant high noise levels of 85dB(A) or greater. Wear approved hearing protection devices when working on and around the paving machine during paving operations. Personnel exposed to high noise levels shall participate in a hearing conservation program in accordance with TB MED 501. Hearing loss occurs gradually but becomes permanent over time.

DEATH OR SERIOUS INJURY

can occur when standing in material hopper with auger/conveyor system in operation. Do not stand in material hopper during auger/conveyor system operation. Clothing, hands, feet, arms, and legs can be caught in conveyor chain and personnel can be pulled into rotating augers. Always ensure the engine is shut down and auger/conveyor control switches are off before performing any checks or services in hopper and auger/conveyor area described in the text.

OPERATION HAZARD

Do not drive paving machine with the screed partially raised. When moving from job site to job site or loading the paving machine on a transport vehicle, raise the screed to the travel position with the screed travel lock valve closed as described in the text.

OPERATION HAZARD

Do not lower the screed if anyone is near or under the screed. When lowering the screed place the screed lift switch in the float position as described in the text.

DEATH OR SERIOUS INJURY

can occur when hopper wings are raised or lowered when personnel are working around the front of the machine. Do not raise or lower hopper wings when personnel are working around the front of the machine. Always ensure all personnel are clear of hopper wings before operating hopper wings.

DEATH OR SERIOUS INJURY

can occur if personnel are caught between the hopper and asphalt haul truck when loading the hopper from an asphalt truck. Always make sure that all personnel are clear from the front of the machine when backing a haul truck up to the paving machine.

TECHNICAL MANUAL
OPERATOR'S MANUAL

PAVING MACHINE, BITUMINOUS MATERIAL;
CRAWLER MOUNTED, DIESEL ENGINE DRIVEN
NSN 3895-01-379-1102
END ITEM CODE (EIC): E47
INGERSOLL-RAND COMPANY, MODEL 780T
CONTRACT NUMBER DAAE07-93C-0501

REPORTING OF ERRORS

Reporting Errors and Recommending Improvements. You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publication and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Tank-automotive and Armaments Command, AMSTA-IM-MMAA, Warren, MI 48397-5000. A reply will be furnished to you.

DISTRIBUTION RESTRICTION STATEMENT A. Approved for Public Release; Distribution is Unlimited.

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HOW TO USE THIS MANUAL

This manual contains instructions to operate the 780T Asphalt Paving Machine. You must familiarize yourself with the entire operation of the paving machine before operating it. Pay special attention to all Notes, Cautions, and Warnings when performing any operation or maintenance procedure.

Use the front cover locators and "marked" pages to quickly find the parts of the manual shown on the cover. Simply spread the pages on the right edge of the manual until the printed blocks can be seen. Open the manual where the block on the edge of the page lines up with the selected topic printed on the front cover block. These portions of the manual were chosen because they are used often. Inside, the manual has been divided into chapters, sections, and paragraphs, which are all numbered sequentially.

When first receiving the 780T Asphalt Paving Machine, start at the front of the manual and read all the way through to the back. Become familiar with every part of the manual and the paving machine. As a paving machine operator, you are responsible for the operation and maintenance of the machine. Read through the following example on using the manual.

1. *Need to know how to operate the screed burner system. How do you start?*

Turn to the cover of your manual.

On the right side you will find a listing for "**SCREED CREW CONTROLS AND INDICATORS**". To find that section quickly, open the manual by using the black tab on the side of the manual that lines up with the "**SCREED CREW CONTROLS AND INDICATORS**".

2. *How do you operate the burners?*

Read through paragraph 2.16, Screed Burner Operation. Refer to paragraph 2.2 Screed Crew Controls and Indicators to familiarize yourself with the controls.

3. *Screed burners give off black smoke. What type of problems do you have?*

Open your manual to page 3-2.

In the "Malfunction Index", find the listing for the equipment malfunction "Screed burners give off black smoke". Look to the right of the malfunction index for the page number for the troubleshooting procedure for "Screed burners give off black smoke".

4. *How do you determine what is causing your problem?*

Turn to page 3-15.

You will find there the troubleshooting procedure you need. The procedure has columns with headings: "Malfunction", "Test or Inspection", and "Corrective Action". Starting at Step 1, each step tells you what to do. Let's assume you check to see if the screed blower air control plates are properly adjusted. The Corrective Action tells you to loosen the thumbscrew and adjust screed blower air control plate until you see an orange/white screed burner combustion flame and hear a loud combustion roar.

You are able to adjust the combustion flame properly, but you still have black smoke. Go to Step 2. Let's assume you check the screed plates for clogged exhaust vents on screed trailing edge. The Corrective Action tells you to clean the exhaust vents. To clean the exhaust vents, Step 2 tells you to perform the maintenance procedure per paragraph 3.3.7.

5. *How do you fix the problem?*

Refer to paragraph 3.3.7.

This is the maintenance procedure for fuel spray washdown. This procedure is designed to ensure all areas of the paving machine requiring a spray washdown are covered. Read through the procedure on how to perform a washdown and clean the area of the paving machine causing the problem.

CHAPTER 1

INTRODUCTION II

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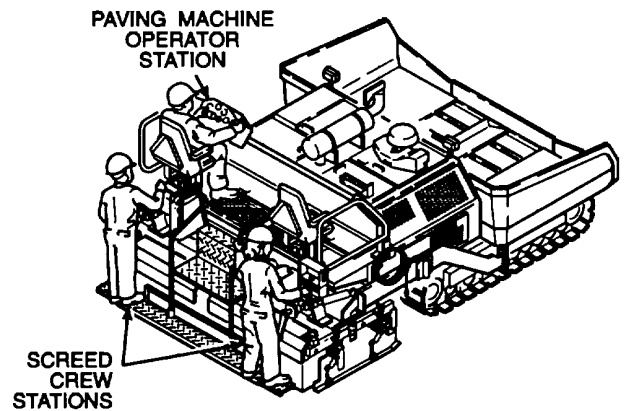
SECTION I. GENERAL INFORMATION

1.1 **SCOPE.**

a. Type of Manual. This operator's manual gives crew members the information needed to operate the paving machine under usual and unusual conditions. The manual also contains the data needed to check the paving machine for proper operation and to keep it serviceable. Special information for the moveable operator station, two fixed screed crew stations, and bolt-on screed accessories are included.

b. Model Number and Equipment Name. Ingersoll-Rand Company Model 780T Crawler Mounted, Diesel Engine Driven, Bituminous Material Paving Machine, NSN 3895-01-379-1102.

c. Purpose of Equipment. The Paving Machine is used to repair and maintain damaged or worn landing pads, airfields, taxiways, roads, and parking areas in combat-related facilities as well as in new road construction. The paving machine may be used to construct extensions to existing facilities such as roads, airfields, and taxiways.



1.2 MAINTENANCE FORMS AND PROCEDURES.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, the Army Maintenance Management System.

1.3 CORROSION PREVENTION AND CONTROL (CPC).

Corrosion Prevention and Control (CPC) of Army material is a continuing concern. It is important that any corrosion problem be reported, so the problem can be corrected and improvements can be made to prevent the problem in the future. While corrosion is typically associated with rusting of metals, it also includes the deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may indicate a corrosion problem.

If a corrosion problem is identified, report it using an SF 368, Quality Deficiency Report. Completed forms should be submitted to the address specified in DA PAM 738-750. Use of key words such as "corrosion", "rust", "deterioration", or "cracking" will ensure the information is identified as a CPC problem.

1.4 DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

Procedures for destruction of Army tank-automotive materiel to prevent enemy use are listed in TM 750-244-6.

1.5 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If the Paving Machine needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to us at Commander, U.S. Army Tank-automotive and Armaments Command, AMSTA-TR-E/MPA, Warren, MI 48397-5000.

1.6 WARRANTY INFORMATION.

The Paving Machine warranty is detailed in Warranty Technical Bulletin (WTB) number TB 5-3895-373-14.

1.7 REFERENCE INFORMATION.

This listing includes the nomenclature cross-reference list, list of abbreviations, and explanation of terms (glossary) used in this manual.

a. Nomenclature Cross-Reference List.

<u>Common Name</u>	<u>Official Nomenclature</u>
Ignition Switch	Sensitive Switch
Paving Machine	Bituminous Material
Paving	Machine
Hopper Wing	Aggregate Feeder
Screed	ES-80 (Diesel) Hydraulic Vibratory Extendable Screed
Tow Arm	Finisher Arm
Hopper	Aggregate Hopper
Flashing	Solid Rubber
Auger	Screw Conveyor
Latch	Pawl Fastener
Stud Weld Nut	
Fuel/Water Separator	Fuel Filter
Fuel Spray Wand	Nozzle and Hose
Assembly	Assembly
Pump Drive Gearbox	Angle Drive Unit
Speed Reduction	Speed Gear Assembly
Gearbox	
Auger Flight	Screw Conveyor

b. List of Abbreviations/Acronyms.

Auto	Automatic
F/R	Forward/reverse
MAN	Manual
MAX	Maximum
N	Neutral
rpm	Revolutions per minute
fpm	Feet per minute
mph	Miles per hour
vpm	Vibrations per minute

c. Glossary.

Bituminous Asphalt	Dense-graded asphalt concrete material consisting of a uniform or continuous aggregate grading with an asphalt cement binder.
Eccentric Shaft	A shaft which is geometrically unbalanced, designed to produce an oscillating motion.
Feeder	Combination of conveyor and augers, collectively.
Hydrostatic	Hydraulic fluid in a hydraulic system where fluid at rest or under pressure exerts or transmits a force.

1.8 USE OF METRIC UNITS.

The equipment described herein contains metric components and requires metric common and special tools. Therefore, metric units are used when a metric part is referenced. U.S.

standard units are used when a U.S. standard part is referenced. Equipment gauges are dual scale U.S. standard and metric common. All references to equipment data and operating parameters appear both in U.S. standard and metric units.

SECTION II. EQUIPMENT DESCRIPTION

1.9 EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

1.9.1 Characteristics.

a. Diesel engine powered hydrostatic propulsion system provides power to rubber padded steel crawler tracks.

b. Multiple disc brakes engage automatically in the event of pressure loss or electrical failure.

c. Moveable operator control console provides operator with fingertip command of paving machine functions.

d. Hopper is independently hydraulically-operated to maintain material supply.

e. Hydrostatically driven conveyor system is a high capacity, dual conveyor feeder system with variable speed control. Conveyors reverse direction to unjam conveyor chain.

f. Heavy-duty 4.82 in. (14, 8 cm) pitch crawler track. Undercarriage features low maintenance components. Hydraulic track adjusters, consisting of the track tensioning cylinders and accumulator, maintain track tension and impact relief. Each track can be counter rotated.

g. Hydraulically extendable vibratory screed provides a high degree of material compaction.

h. Box type screed frame structure provides maximum rigidity to screed plates.

i. Tractor tows screed with two vertically adjustable floating tow points.

j. Screed is furnished with left and right side screed crew control boxes.

1.9.2 Capabilities.

a. Maximum paving depth of 8 in. (20, 3 cm).

b. Paving width is 8 ft (2, 4 m); hydraulically extendable to 14 ft (4, 3 m); bolt-on screed and auger extensions increase paving width to 16 ft (4, 9 m).

c. Hopper capacity is 7.4 tons (6, 7 metric tons) of paving material.

d. Maximum paving grade is 15%.

e. Maximum side slope paving angle is 12°.

f. Maximum speed:
Paving: 135 fpm (41, 2 m/m)
Traveling: 3.2 mph (5, 1 kph)

1.9.3 Features.

a. Paving width decreases to 6 ft (1, 8 m) with the use of bolt-on cutoff shoes.

b. Operator control console is mounted on a guide shaft allowing the control console to be positioned from side to side on the paving machine.

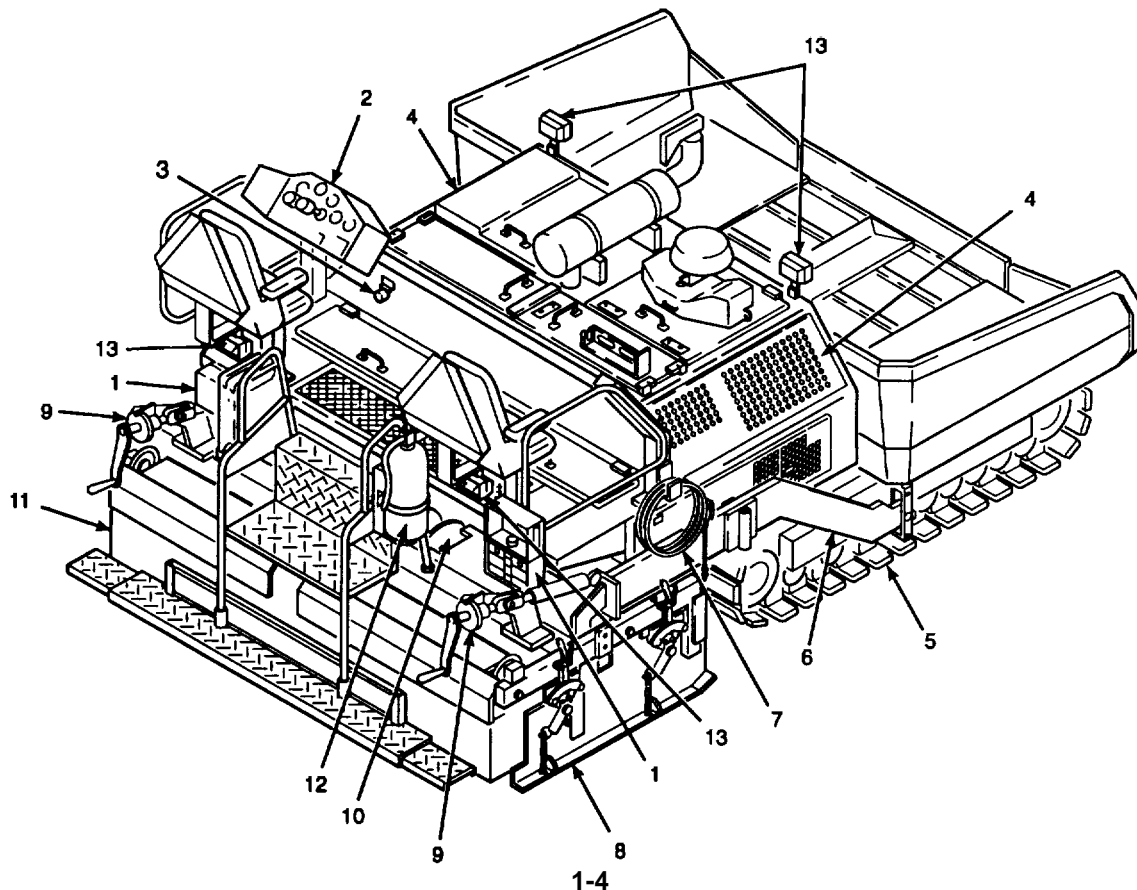
c. Operator control console and screed crew control boxes have protective covers.

d. A toolbox is provided on the paving machine.

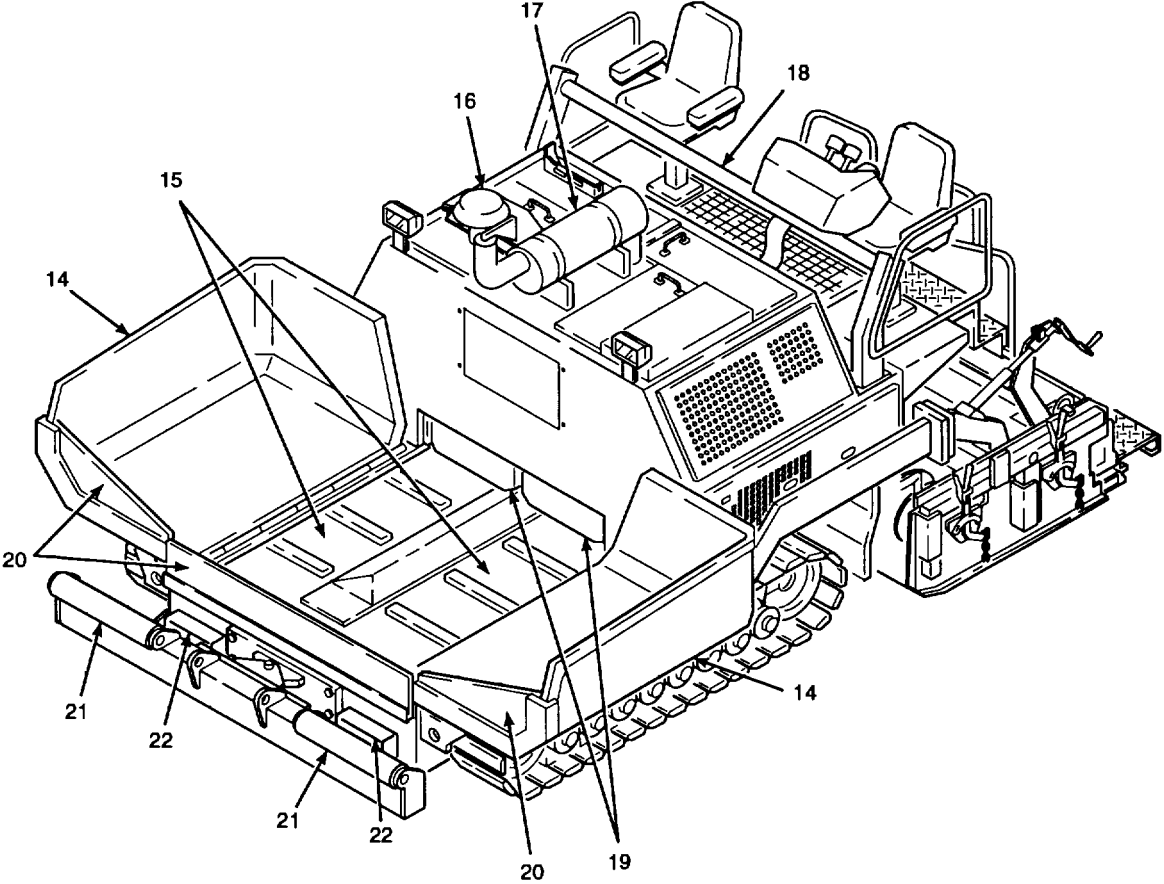
e. The paving machine has easy access panels. Guards, walkways, and cover plates are easily removed.

1.10 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

1. SCREED CREW CONTROL BOXES. Contain major screed and feeder system control functions.
2. PAVING MACHINE OPERATOR CONTROL CONSOLE. Provides controls for operating the paving machine, conveyors, flow gates, and augers.
3. NATO SLAVE RECEPTACLE. It is the connecting point for the slave cable used to slave start the vehicle from an external source.
4. ENGINE COMPARTMENT. Location of diesel engine, hydraulic pumps, hydraulic reservoir, and fuel tank.
5. TRACK DRIVES. Provide a large, stable surface area to support the weight of the paving machine. The track drives are hydraulically powered.
6. SCREED TOW ARMS. Connect the tractor to the screed and allow the tractor to pull the screed.
7. FUEL SPRAY WAND ASSEMBLY. Used to wash down areas of the paving machine constantly exposed to paving material. Hose has a quick disconnect coupling, and wand is trigger activated.
8. ENDGATE ASSEMBLIES. Prevent outward movement of paving material to control paving width. Provide the edge to the paving material.
9. THICKNESS CONTROLS. Control the amount of material passing under the screed.
10. AUGERS. Spread paving material evenly across the width of the screed.
11. SCREED. Controls the thickness and provides initial finish and compaction of paving mat.
12. FIRE EXTINGUISHER. Portable fire extinguisher for use on all classes of fires.
13. WORK LIGHTS. Illuminate areas of the paving machine during night operation. Two additional lights located below main operator's deck directly under operator's seat.



- 14. HOPPER WINGS. Raise to dump paving material to conveyors. Lower to increase volume of the hopper.
- 15. CONVEYORS. Move paving material from hopper to augers.
- 16. DIESEL ENGINE AIR INTAKE. Provides air supply to diesel engine.
- 17. EXHAUST MUFFLER. Dissipates heat and reduces noise level of diesel exhaust.
- 18. CONSOLE GUIDE SHAFT. Allows tractor operator to move operator control console from side to side.
- 19. FLOW GATES. Control the amount of paving material flowing to the augers.
- 20. RUBBER FLASHINGS. Prevent paving material from spilling out of the hopper.
- 21. PUSH ROLLERS. Maintain contact with the haul truck wheels allowing paving machine to push the haul truck.
- 22. COUNTERWEIGHT. Increases stability of paving machine during travel.



1.11 EQUIPMENT DATA.

GENERAL

Weight (operational)21, 200 lbs. (9624, 8 kg)
 Weight (shipping)19, 900 lbs. (9034, 6 kg)
 Length 16.0 ft (4, 9 m)
 Height.....8.42 ft (2, 6 m)
 Width (hopper up)8.67 ft (2, 6 m)
 Width (hopper down) 10.83 ft (3, 3 m)
 Hopper Capacity 135 cu ft (3, 8 cu m)
 Personnel Capacity3
 Fuel Tank Capacity 28 gals. (106.9)
 Engine Motor Oil Capacity 7.7 qts. (7, 3 Q)
 Engine Coolant Capacity..... 6.5 gals (24, 6 l)
 Hydraulic Reservoir Capacity..... 32 gals (121, 1 l)
 Fire Extinguisher One, Class A, Size II
 Class B and C, Size In

OPERATION

Paving Thickness..... 0 to 8 in. (0 to 20 cm)
 Crown (positive)2 in. (50 mm)
 Crown (negative)..... 1 in. (25 mm)
 Paving Speed..... 0 to 135 fpm (0 to 41, 2 m/m)
 Travel Speed.....0 to 3.2 mph (0 to 5, 2 km/h)
 Traveling Range.....25 mi. (40, 2 km)
 Gross Horsepower-to-weight Ratio..... 9.62 hp/ton

SCREED

Main Screed Plate.... 14 in. x 8 ft (356 mm x 2, 4 m)
 Extension Screed Plates (each)..... 14 in. x 36 in.
 (356 mm x 915 mm)

SCREED - Continued

Plate Thickness 3/8 in. (10 mm)
 Burners 4 diesel
 Vibrators4
 Vibrator (frequency) 0 to 2200 vpm (0 to 36, 6 Hz)

ENGINE

Make and Model Perkins T4.236
 Displacement236 cu in. (3, 9 01)
 Type 4 Cylinder
 FuelDiesel
 Gross Horsepower.....102 hp (76.1 kW) @ 2600 rpm

ELECTRICAL SYSTEM

Alternator Amps 105 amp
 Alternator Volts 24 volt
 System Volts 12 volt
 Crank Motor Volts 24 volt
 Storage Batteries (2)..... 12 volt

RUNNING GEAR

Track Type... Steel, with detachable rubber track pads
 Track Width 12 in. (30, 5 cm)
 Track Length (ground contact) 6.5 ft. (1, 98 m)
 Ground Pressure
 (operational unloaded) 12 psi. (82, 7 kPa)
 Ground Pressure
 (operational loaded) 20.6 psi. (142, 04 kPa)

SECTION III. PRINCIPLES OF OPERATION

1.12 PAVING MACHINE.

The paving machine consists of the tractor and screed. It is normally manned with one paving machine operator and two screed crew members. The tractor unit pushes a haul truck while the haul truck unloads paving material into the tractor hopper. The twin dual slat conveyor system on the tractor unit carries the paving material from the hopper to the augers. Two electrically-controlled flow gates, mounted behind the hopper, regulate the amount of material fed to the augers at the back of the tractor. The augers spread the paving material evenly along the length of the leading edge of the screed. As the tractor unit moves forward, it tows the screed over the paving material. Burners on the screed heat the screed plate and maintain its temperature equal to that of the paving material to prevent sticking. The screed is equipped with a vibrating screed plate, which provides a high degree of compaction to the paving material passing underneath it.

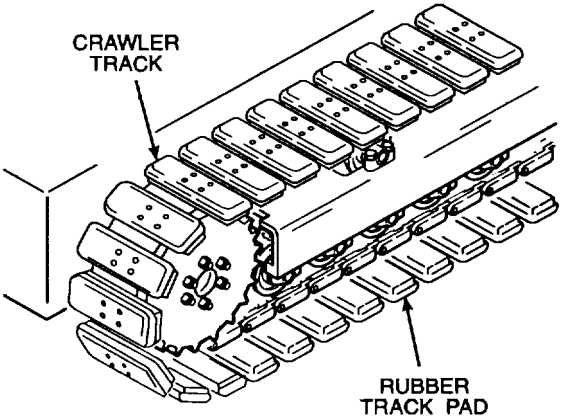
Both the tractor and screed units are equipped with controls that impact the paving operation. The paving machine operator can operate virtually all machine functions. The screed crew control boxes contain controls limited to paving functions.

1.13 TRACTOR.

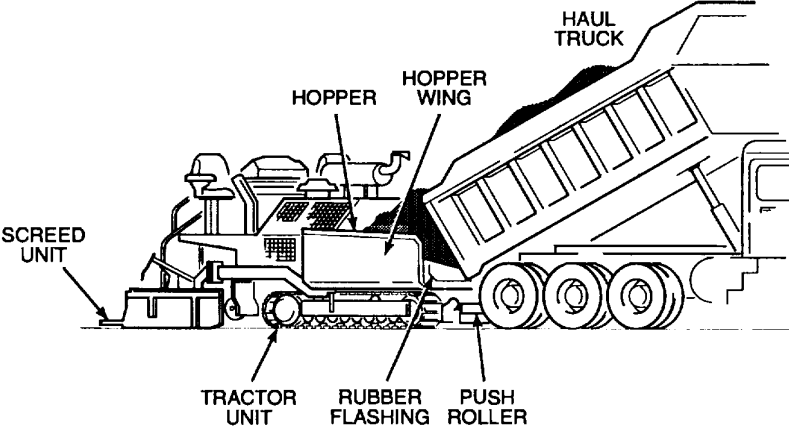
The tractor is powered by a Perkins T4.236 turbocharged diesel engine coupled to a pump drive gearbox that provides power to five hydraulic pumps. Two hydraulic propulsion pumps are attached to the gearbox and provide hydraulic oil pressure to drive the propulsion motors mounted on the track frame. Two hydraulic auxiliary pumps and a hydraulic auxiliary vibration pump are attached in tandem to the propulsion pumps. These pumps provide hydraulic oil power to auger/conveyor motors, vibration motors, and all hydraulic

cylinder functions on the paving machine. Additional components such as push rollers, hopper wings, and flow gates are discussed in the following paragraphs.

1.13.1 Track Drive. The paving machine is mounted on steel crawler tracks equipped with rubber track pads mounted on steel track pad plates. The hydraulically-powered track drive evenly distributes and supports the weight of the paving machine for greater stability. The tracks operate individually in the forward and reverse directions at variable speeds. The tracks can be counter-rotated for quick turning maneuvers.



1.13.2 Push Rollers. The push rollers are located on the front of the paving machine. The push rollers contact the tires of the haul truck and allow the tractor to push it while receiving paving material. To compensate for misalignment between tractor and haul truck, the push rollers are mounted on a pivoting bumper.



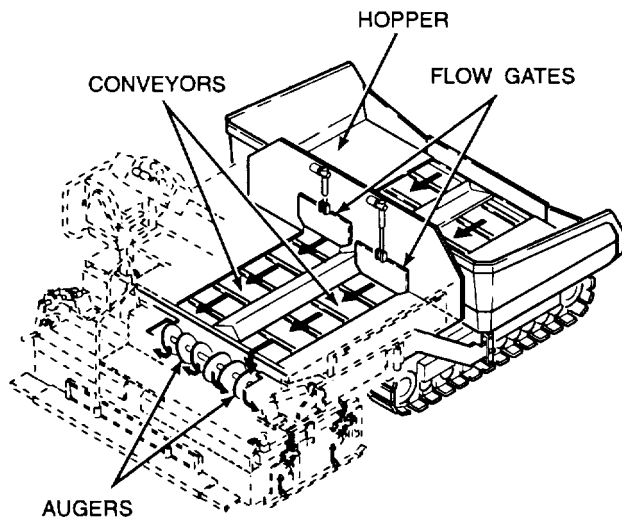
1.13.3 Hopper. The paving machine hopper receives and temporarily holds the paving material from the haul truck. The hopper wings move inward to facilitate dumping paving material onto the conveyors and outward to receive paving materials. Heavy rubber flashing mounted on the hopper reduces the amount of paving material that could spill from the hopper. The paving machine operator controls the hopper wing movement from the operator control console.

1.13.4 Auger/Conveyor System. The conveyors move paving material from the hopper to the augers located on the back of the tractor. The right and left auger/conveyor systems operate independently of each other. The paving machine operator selects manual or automatic control of each separate auger/conveyor system. The augers move the paving material outward from the conveyors, distributing it evenly to the screed. Reversing direction of the conveyors empties the hopper toward the front of the paving machine.

Operation of the left and right auger/conveyor systems can also be controlled from the screed crew control boxes. The left control box controls the left auger/conveyor system, and the right control box controls the right auger/conveyor system.

1.13.5 Flow Gates. Two flow gates are mounted at the back of the hopper, one on either side. Each can be independently raised or lowered from the operator control console. The position of the flow gates controls flow of the paving material to the augers.

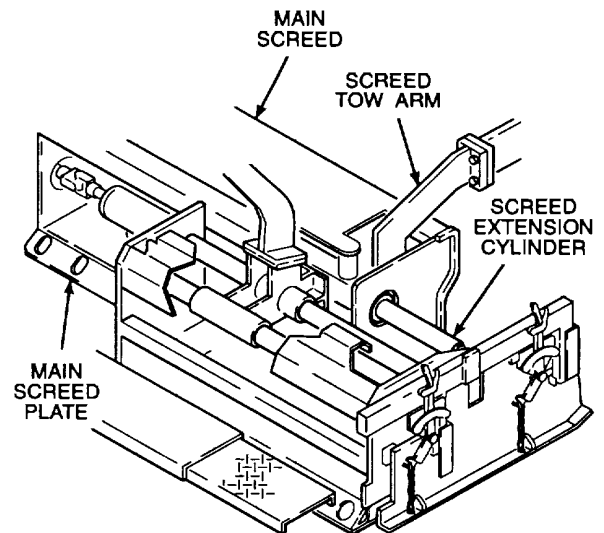
Operation of the left and right flow gates can also be controlled from the left and right screed crew control boxes. The left control box can control only the left flow gate, and the right control box can control only the right flow gate.

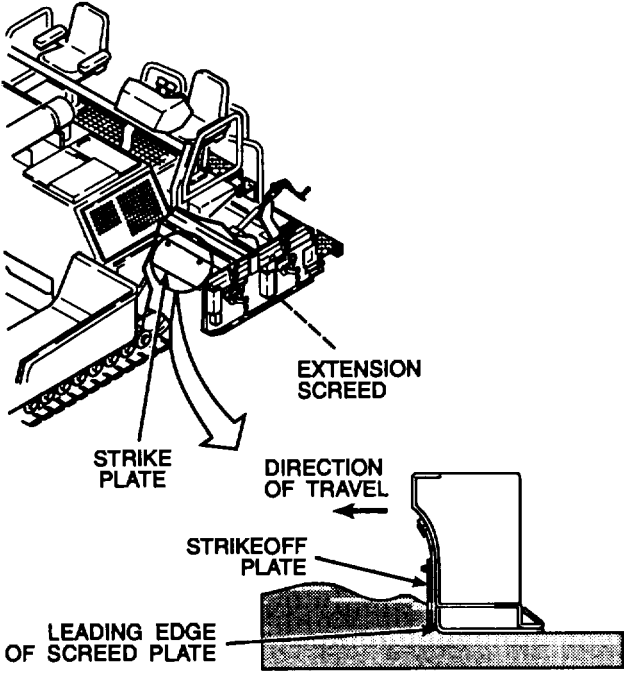


1.14 SCREED.

The screed is towed by and receives paving material from the tractor. As the tractor moves forward, the screed is towed over the paving material. The screed provides the initial compaction through vibration and lays paving material to the desired thickness and finish.

1.14.1 Main Screed. The main screed provides the structural rigidity for the screed and is attached to the tractor by two screed tow arms. The main screed plate, bolted to the bottom of the main screed, rides on top of the paving mat and creates a smooth finish. The weight and vibration of the main screed provides initial compaction of the mat. Screed extension cylinders mounted inside the main screed extend and retract the extension screeds. The paving machine operator controls the operation of the main screed from the operator control console.



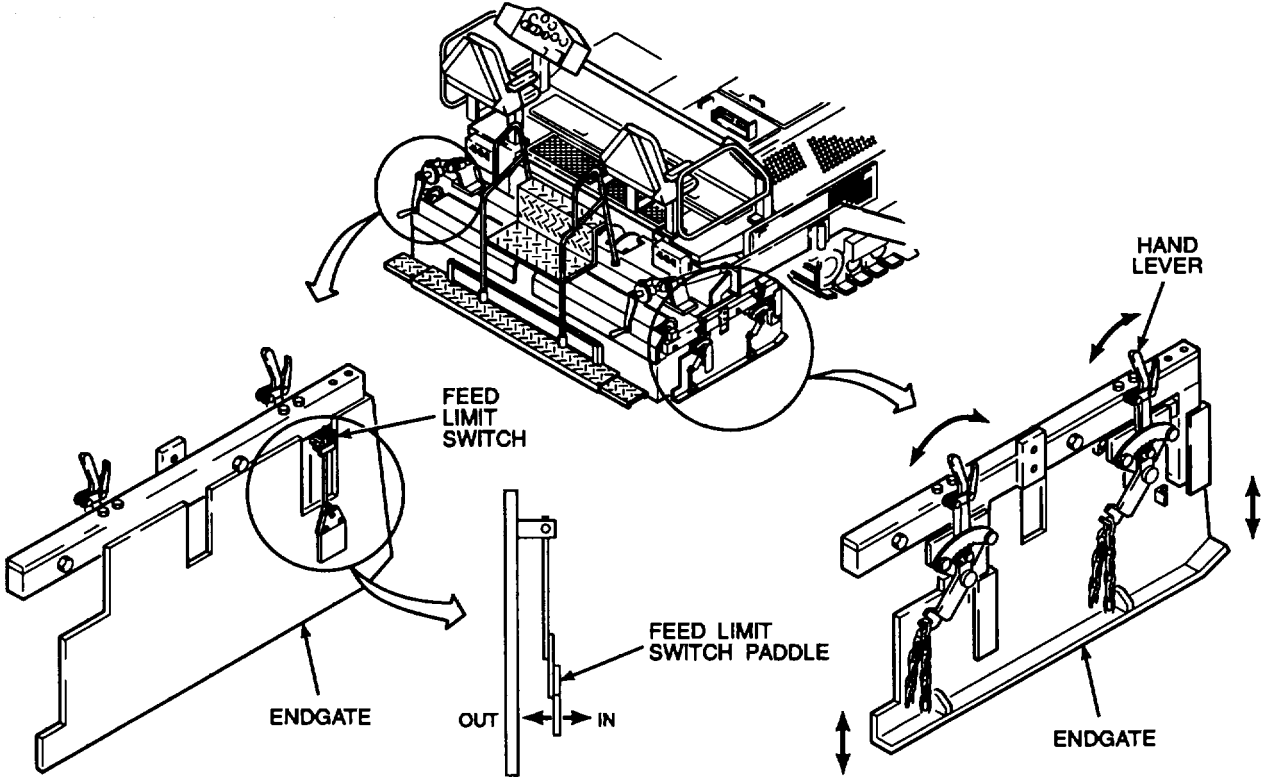


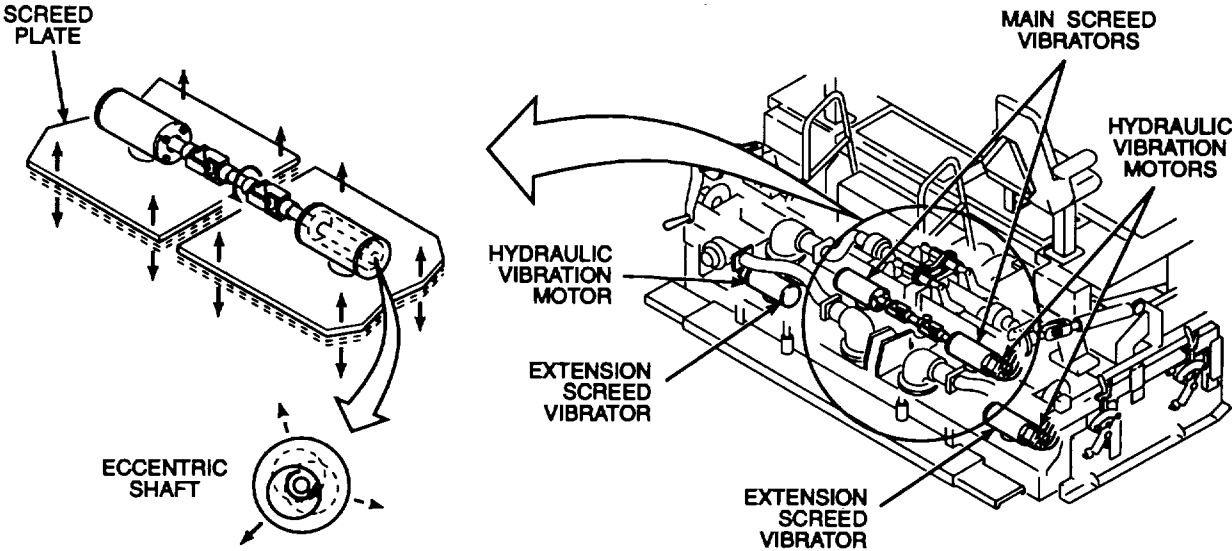
1.14.2 Strikeoff Plates. Strikeoff plates attach to the main screed and extension screeds. The strikeoff plates regulate the amount of paving material that reaches the leading edge of the TM 5-3895-373-1 0

main and extension screed plates. When the extension screed is hydraulically extended, the strikeoff plates extend the full width of the extension screed.

1.14.3 Endgates. An endgate is attached to each side of the screed to prevent the outward movement of paving material beyond the material mat being laid. The endgates provide the finished edge to the paving material. Each endgate is equipped with two hand levers that are used to adjust the position of the endgate. The hand levers are attached to the bottom of the endgates by a chain. When the hand levers are moved backward, the endgate is lowered. When the hand levers are moved forward, the endgate is raised. Each hand lever can be moved independently forward or backward for specific material applications.

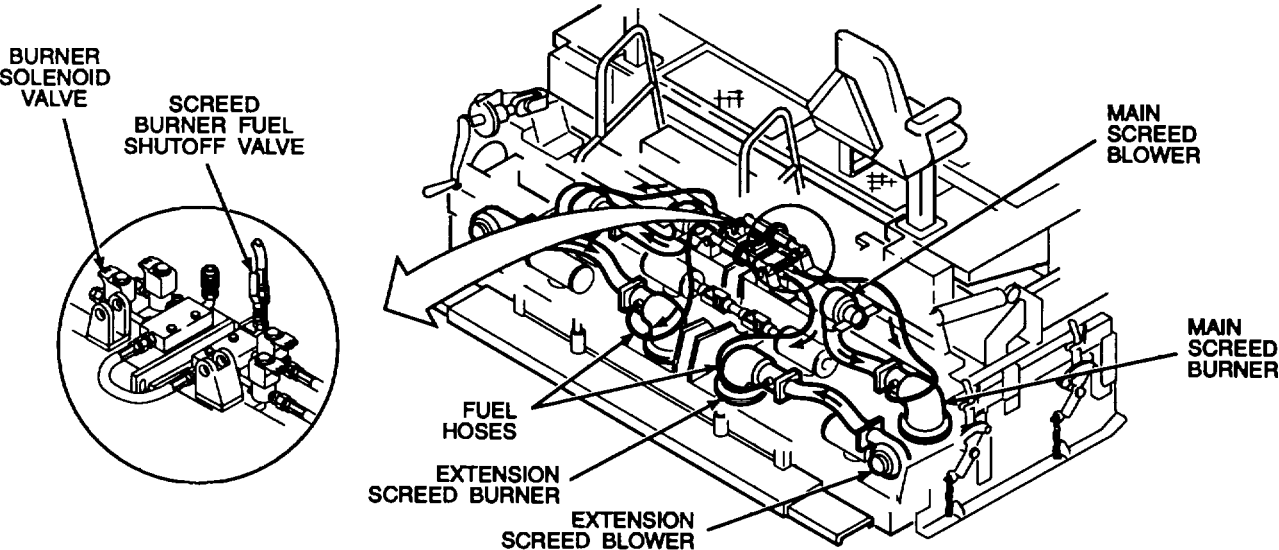
1.14.4 Feed Limit Switches. The feed limit switches are located on the inside of the endgates, forward of the screed leading edge. The feed limit switches maintain a constant level of paving material in front of the screed when the auger/conveyor system is in automatic mode. When the amount of material falls below the desired amount, the paddle portion of the limit switch will move inward. This movement causes the auger/conveyor system to start and pulls more material back to the screed. The paving material level rises until the paddle moves outward. This action stops the auger/conveyor system.





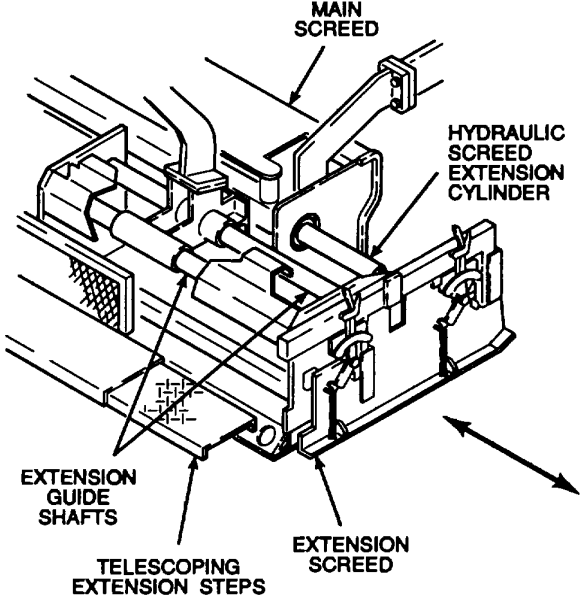
1.14.5 Screed Vibrators. The screed is equipped with four hydraulic vibrators: two main screed vibrators and two extension screed vibrators. The vibrators compact the paving material. A single hydraulic vibration motor drives both main screed vibrators. Each extension screed is equipped with a separate vibrator and hydraulic vibration motor. The vibrators vibrate at a frequency set by the paving machine operator. As the eccentric shaft in each vibrator spins, the eccentric weight in the shaft causes vibrations due to its off-center weight. The vibrators mount directly to the screed plate and cause the plate to vibrate with them. This vibrating motion provides the initial compaction to the paving material beneath the screed.

1.14.6 Screed Burners/Blowers. The main and extension screeds are equipped with burner/blower pairs. Each burner/blower pair operates together to increase the temperature of the screed plates to 300°F (150°C). Each half of the main screed, and each extension screed, is equipped with an individual burner/blower pair. Diesel fuel sprays into the burners and ignites from the heat of a glow plug. The blower evenly distributes the heat from the burner across the screed plate. Each screed crew control box contains control switches for the burners and blowers. The left control box has the only control for the screed burner fuel pump. Both the right and left control boxes include controls for the burner

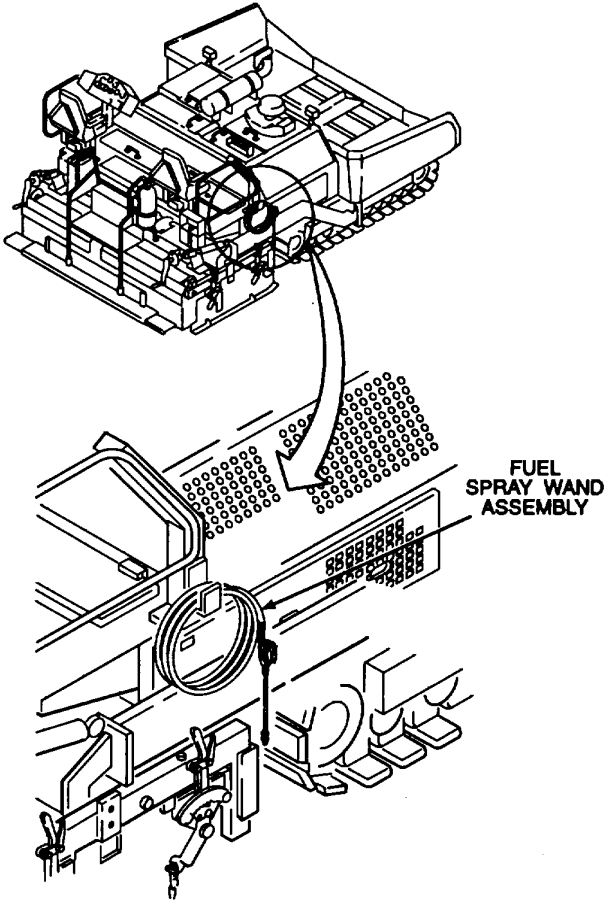


solenoid valves, which supply fuel to the right and left side burners, respectively. There is a screed burner fuel shutoff valve connected to the right burner solenoid valve. This valve allows the operator to shut off fuel to the burners in the event of a solenoid valve failure.

1.14.7 Extension Screeds. The two extension screeds increase the width of the paving operation. Hydraulic screed extension cylinders connect the main screed and the extension screeds. The extension screeds hydraulically move in and out on the extension guide shafts to any desired width up to 14 ft (4, 3 m). Each extension has a burner/blower pair and a vibrator. Telescoping extension steps mounted on the extension screeds extend and retract with the extension screeds. The extension screeds can be controlled at either the operator control console or by the screed crew control boxes. The control console controls both extension screeds, but the left control box can control only the left extension screed and the right control box can control only the right extension screed.



1.14.8 Fuel Washdown System. The fuel washdown system consists of a screed fuel pump switch and a fuel spray wand assembly. This system is used to spray diesel fuel on components that are directly exposed to paving material during operation to allow the removal of built up and hardened paving material. The spray wand assembly is coiled and stored on a hanger mounted to the right handrail of the operator platform. When in use, the spray wand assembly hose connects to the left burner solenoid valve using a quick disconnect coupling. The fuel washdown system is controlled by turning on the screed fuel pump switch located on the left screed control panel. The spray wand assembly has a 10 ft hose and a wand, which consists of the body, trigger, and spray tip. The wand is activated by squeezing the trigger when the screed fuel pump switch is turned on.



CHAPTER 2

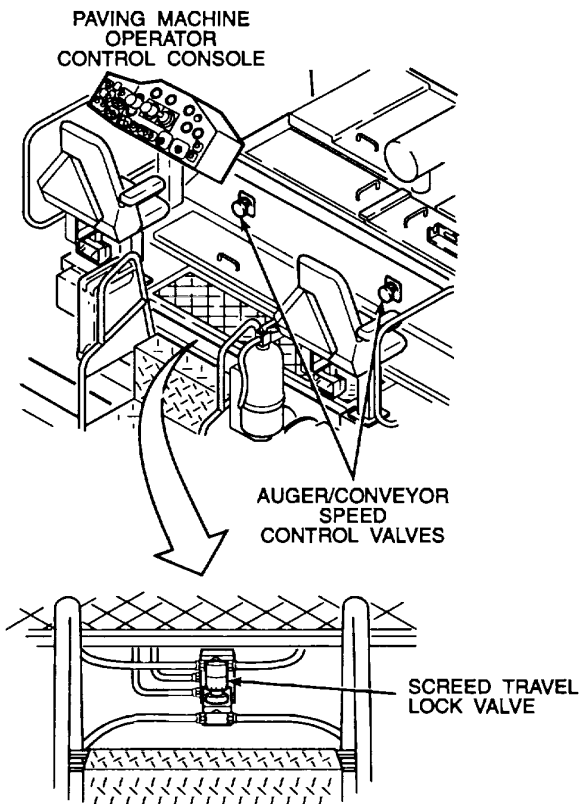
OPERATING INSTRUCTIONS

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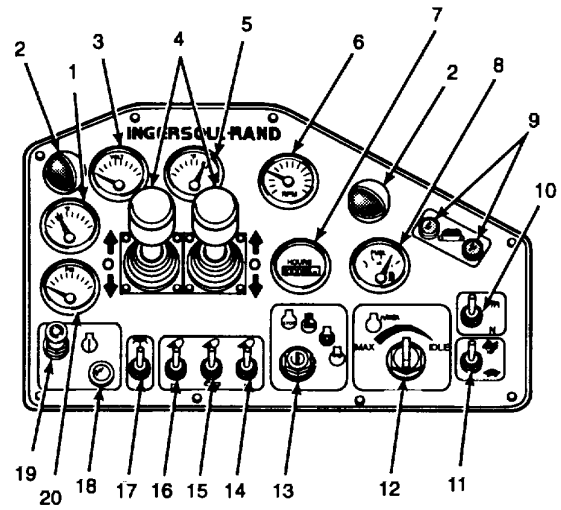
SECTION I. DESCRIPTION AND USE OF OPERATOR AND SCREED CREW CONTROLS AND INDICATORS

2.1 PAVING MACHINE OPERATOR CONTROLS AND INDICATORS.

The paving machine operator controls the operation of the paving machine from the operator platform. The operator control console is moveable and can be positioned on either the left or right side of the operator platform. The operator platform is positioned on the machine to allow the operator maximum visibility. The operator has access to the control console, the auger/conveyor speed control valves, and the screed travel lock valve. The gauge panel and the switch panel are located on the control console.



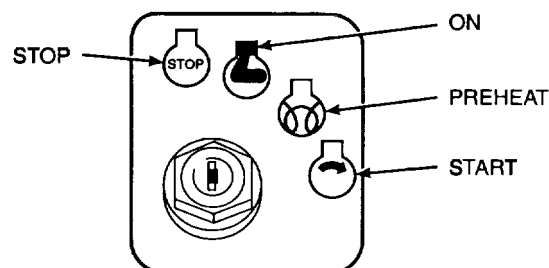
2.1.1 Gauge Panel. The paving machine operator monitors various machine functions, conditions, and performances from the gauge panel. Controls for controlling the speed and direction of the paving machine are located on the gauge panel. The following is a listing of the gauges and controls that are found on the operator gauge panel.



1. **COOLANT TEMPERATURE gauge**
Dual scale gauge that indicates the temperature of the engine coolant (labeled "WATER") from 100° to 250°F (38° to 121°C).
2. **PANEL lights**
Controlled by a switch, illuminate operator control console.
3. **VOLTMETER**
Indicates the voltage going through the electrical system. Voltmeter scale range is from 8 to 16 volts.
4. **CONTROL HANDLES**
The control handles control the motion of the paving machine. The left control handle controls the left track and the right control handle controls the right track. In the center position, the tracks are stationary and the hydraulic brakes are applied. To move the control handle, the control handle release must be pulled up while moving the control handle out of the center position. Moving the control handle in the forward direction will cause the corresponding track to move forward. Moving the control handle backward will cause movement in the reverse direction. The further the control handle is moved forward or in reverse, the faster the track will turn. Each control handle operates independently from the other. This allows the tracks to move independently and at different speeds. The tracks may also be counter-rotated, causing the paving machine to pivot in place.
5. **HYDRAULIC OIL TEMPERATURE gauge**
Dual scale gauge which indicates hydraulic oil temperature from 100° to 250°F (380 to 1210C).

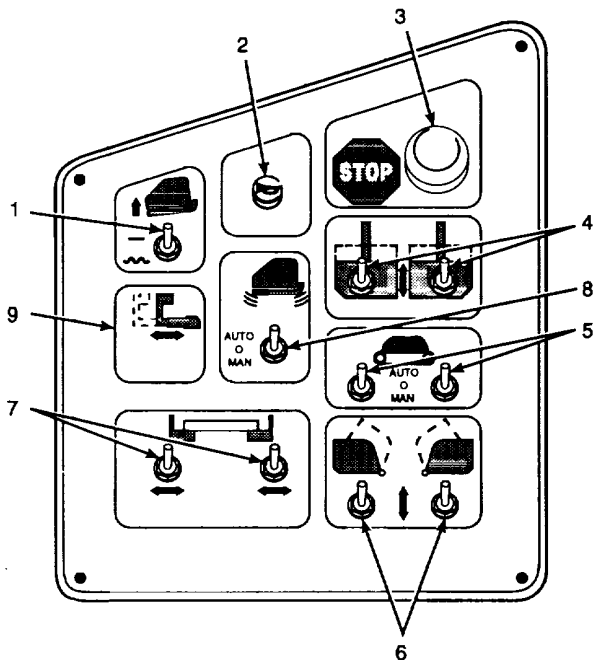
6. **TACHOMETER**
Indicates engine rotation speed (rpm) from 0 to 4000 rpm.
7. **HOURMETER**
Displays the amount of time the engine has been running in hours and tenths of hours.
8. **FUEL gauge**
Indicates the amount of fuel in the fuel tank.
9. **AUGER/CONVEYOR INDICATOR lights**
When on, indicate the auger/conveyor system is in automatic operation.
10. **TRAVEL switch**
In the down, neutral "N" position, the paving machine will not move. In the up, forward/reverse "F/R" position, the control handles will operate to control the movement of the paving machine. In the down, "N" position, the motion of the paving machine is stopped without losing the established control handle position. This allows the operator to resume an established paving speed when the travel switch is returned to the up, forward/reverse "F/R" position. When the travel switch is in the down, neutral "N" position, the brakes are engaged.
11. **SPEED RANGE switch**
This switch controls the paving machine range of speed. In the up, "hare", travel position, the paving machine can travel at its greatest range of speed. This position is for traveling only and should not be used for paving. In the down, "tortoise", paving position, the paving machine speed is limited to the slower paving speeds.
12. **THROTTLE CONTROL switch**
This switch controls the speed of the engine. In the extreme left position, "MAX" position, the engine will operate at its maximum rpm. In the extreme right position, "IDLE" position, the engine will operate at its idle rpm. Momentarily moving the switch from idle to maximum and returning to the center, detent position, will increase engine rpm gradually. For additional rpm, jog the switch between the "MAX" and center, detent positions until the desired rpm is reached. Reverse the operation described above to decrease rpm.
13. **IGNITION switch**
Controls the starting and stopping of the engine and turns power on and off to the paving machine. In the "STOP" position, all power to the paving machine is turned off except power to the horn and work lights.

In the ON position, electrical power is applied to all machine components. In the PREHEAT position, power is provided to the engine induction heater. In the START position, power is provided to the engine starter motor.



14. **REAR WORK LIGHT switch**
Turns the rear work lights ON and OFF. Work lights will operate with the ignition switch in the stop position.
15. **AUGER WORK LIGHT switch**
Turns the work lights in the auger chamber ON and OFF. Auger work lights will operate with ignition switch in the stop position.
16. **FORWARD WORK LIGHT switch**
Turns the work lights in the hopper area ON and OFF. Forward work lights will operate with ignition switch in the stop position.
17. **PANEL LIGHT switch**
Turns the control panel lights ON and OFF.
18. **HIGH TEMPERATURE WARNING indicator light**
The red light turns on at 214°F (101°C) engine coolant temperature. This light warns the paving machine operator of a high coolant temperature before automatic engine shutdown occurs at 220°F (104°C).
19. **HIGH TEMPERATURE MANUAL OVERRIDE button**
When pushed and held in, this button allows the paving machine operator to override the automatic engine high temperature shutdown. When pressure on the button is relieved, the button spring returns to the up position, disengaging the override. The button must be held in for as long as the shutdown is to be overridden.
20. **ENGINE OIL PRESSURE gauge**
Dual scale gauge which indicates engine oil pressure from 0 to 150 psi. and 0 to 10 kp/cm².

2.1.2 Switch Panel. The switch panel provides the following control features to the operator.



1. **SCREED LIFT switch**
In the up, LIFT position, the screed moves up. In the down, FLOAT position, the screed moves down. The center, HOLD position, is the screed hold position.
2. **HORN switch**
Operates the paving machine horn. Power to the paving machine is not required to operate the horn.
3. **EMERGENCY STOP switch**
When pushed in, this switch cuts off all power to the paving machine, except to the horn and work lights, and stops the engine. After the switch is pushed in, it must be pulled out before the engine can be restarted and paving machine functions operated.
4. **FLOW GATE switches**
Control up and down movement of the flow gates, which control the amount of material reaching the augers. In the up, OPEN position, the flow gates open, and in the down, CLOSE position, the flow gates close. In the center, OFF position, the flow gates remain in position.
5. **AUGER/CONVEYOR switches**
Select between center OFF position, down "MAN", and up "AUTO" for control of the auger/conveyor systems. In the up, "AUTO" position, the auger/conveyor systems are automatically controlled by the position of the feed limit switch. In the down, "MAN" position, auger/conveyor system operates

regardless of the position of the feed limit switch. In either position, the feeder control switch on the screed control panel must be in the ON position.

6. **HOPPER WING switches**
In the up, RAISE position, the hopper wings close. In the down, LOWER position, the hopper wings open.

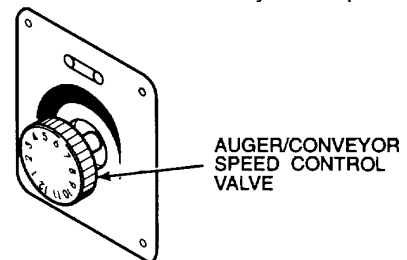
CAUTION

Use extreme caution when retracting extension screed when auger and fender extensions or bolt-on screed extensions are installed. Damage to extension screed can occur.

7. **EXTENSION SCREED CONTROL switches**
Two switches control the extension and retraction of the extension screeds. Moving the left switch to the left and right extends and retracts the left extension screed, respectively. Moving the right switch to the right and left extends and retracts the right extension screed, respectively.
8. **SCREED VIBRATOR switch**
Select between center OFF position, down "MAN" position, and up "AUTO" position, for control of the screed vibrators. When in "AUTO", the screed vibrators operate only when the control handles are stroked in forward or reverse directions and the travel switch is in the up, forward/reverse "F/R" position. In the down, "MAN" position, the screed vibrators operate continually.
9. This location is for the truck hitch control switch, which is not installed on the paving machine.

2.1.3 Auger/Conveyor Speed Control Valves.

The left speed control valve regulates the speed of the left auger/conveyor system and the right speed control valve regulates the speed of the right auger/conveyor system. Turning the speed control valve counterclockwise will increase speed of each auger/conveyor system. Turn the speed control valve clockwise to decrease system speed and counterclockwise to increase system speed.



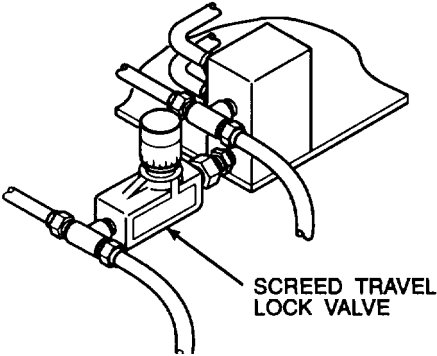
WARNING

Do not open screed travel lock valve all the way when using the valve to lower the screed. The screed will fall to the ground if the valve is opened quickly. Ensure all personnel are clear of the screed when the valve is opened. Equipment damage and severe injury to personnel may occur if screed is improperly handled.

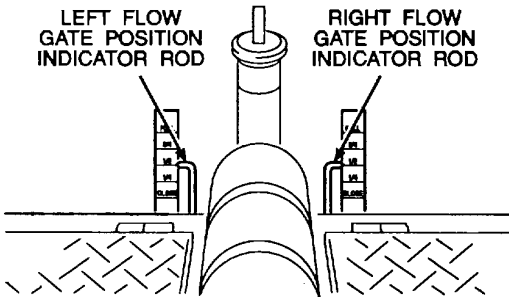
2.1.4 Screed Travel Lock Valve. This valve is used to lock the screed in the raised position. Turning the valve clockwise to the closed position will lock the screed in its current position. To lower the screed, set the screed lift switch to down, FLOAT position, and turn the valve in the counterclockwise direction. The valve can be used to regulate the speed at which the screed is lowered. The engine does not have to be running to lower the screed using the valve, but the ignition switch must be in the ON position.

NOTE

With the screed travel lock valve closed, the screed can be raised, but not lowered.

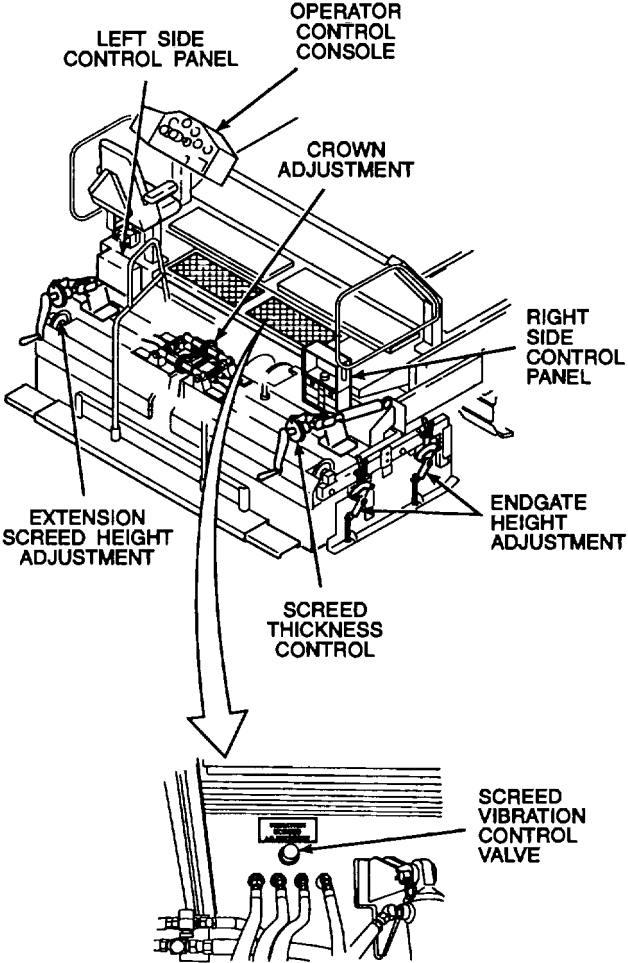


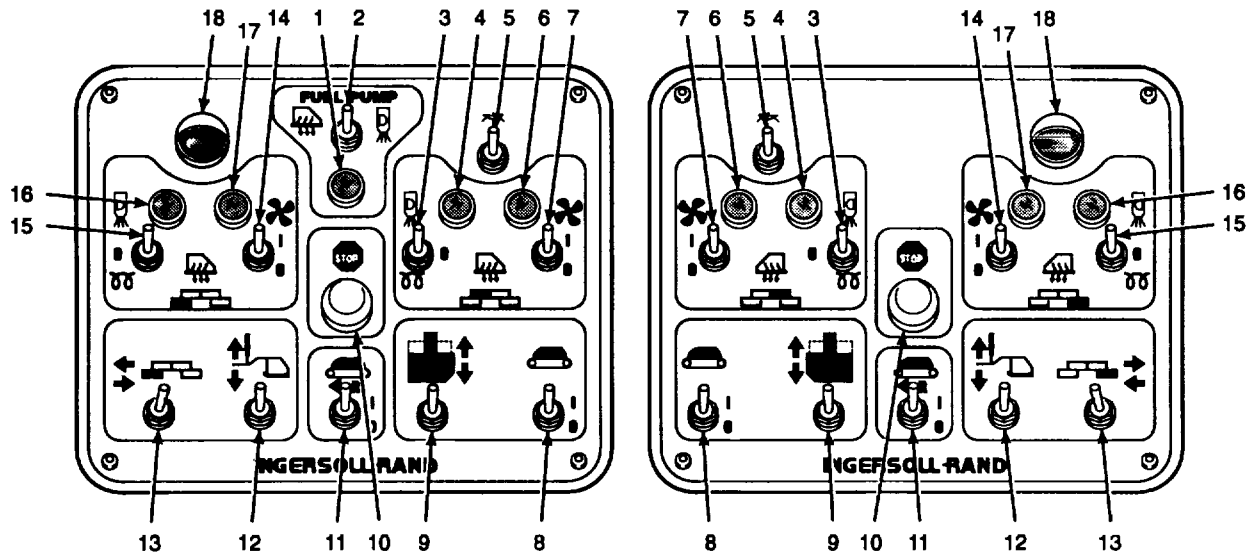
2.1.5 Flow Gate Position Indicator Rods. Indicate the position of the flow gates. Each flow gate has a separate position indicator rod.



2.2 SCREED CREW CONTROLS AND INDICATORS.

Several controls and indicators used to operate the screed are located on the screed control panel. The controls and indicators available to the screed crew consist of the left side control panel, right side control panel, screed vibration control valve, crown adjustment, screed thickness controls, extension screed height adjustments and endgate height adjustment (endgate hand levers and feed limit switch adjustments).

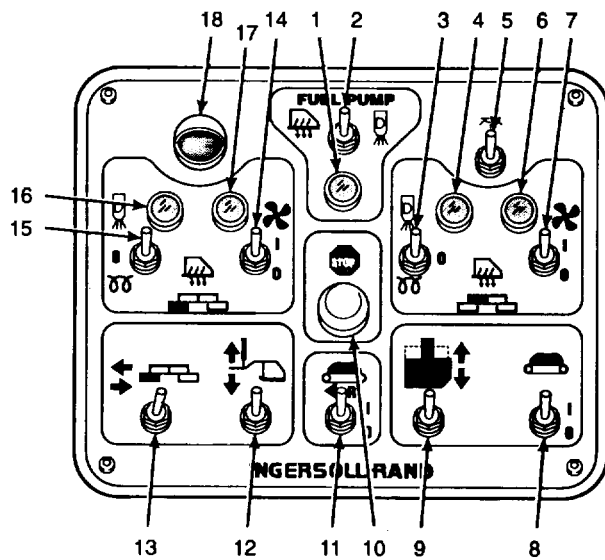




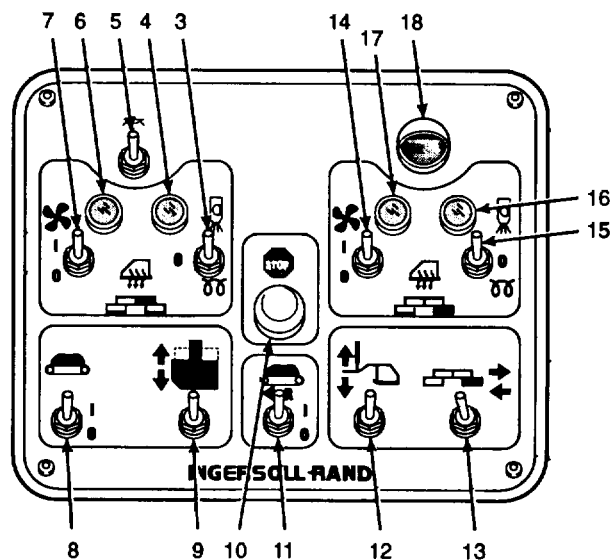
2.2.1 Screed Control Panels. The two screed control panels allow the screed crew to control the screed functions. With the exception of the fuel pump switch mounted on the left control panel, all controls and indicators located on the left and right screed control panels are identical. For clarity, only the controls located on the left control panel are described.

1. **SCREED FUEL PUMP indicator light**
Indicates that the screed fuel pump is turned on.
2. **SCREED FUEL PUMP switch**
In the up, ON position, the screed fuel pump is on and in the down, OFF position, the screed fuel pump is off. The screed fuel pump supplies fuel to the screed burners and the fuel spray washdown system.
3. **MAIN SCREED BURNER CONTROL switch**
Ignites the main screed burners. In the down, PREHEAT position, the glow plug is on. In the up, SPRAY position, the main screed burner solenoid valve is open. In the center, OFF position, the glow plug is off and the solenoid valve is closed.
4. **MAIN SCREED BURNER ON indicator light**
Indicates that the main screed burner solenoid valve is open.
5. **PANEL LIGHT switch**
In the up, ON position, the panel light is on and in the down, OFF position, the panel light is off.
6. **MAIN SCREED BLOWER indicator light**
Indicates that power is applied to the main screed blower motor.
7. **MAIN SCREED BLOWER switch**
In the up, ON position, the main screed blower is on and in the down, OFF position, the blower is off.

8. **FEEDER CONTROL switch**
In the up, ON position, the auger/conveyor systems are turned on and in the down, OFF position, the auger/conveyor system is turned off. The switch operates in conjunction with the auger/conveyor control switch on the paving machine operator control console.
9. **FLOW GATE switch**
Controls the up and down movement of the flow gate. In the up, OPEN position, the flow gates open, and in the down, CLOSE position, the flow gates close. In the center, OFF position, the flow gates remains in position.
10. **EMERGENCY STOP switch**
When pushed in, all power to the paving machine is cut off, except to the horn and work lights, and stops the engine. After the switch is pushed, it must be pulled out before the engine can be restarted and paving machine functions operated.
11. **AUGER/CONVEYOR REVERSE CONTROL switch**
When placed in the up, REVERSE position, the auger/conveyor systems will operate backward. In down, NORMAL position, the auger/conveyor systems will operate normally.
12. **TOW POINT MOVEMENT switch**
The tow point is used to alter the angle of attack of the screed causing the screed to ride higher or lower on the mat, which changes the mat thickness. In the up, RAISE position, the screed angle of attack is increased. This allows more paving material under the screed, which produces a thicker mat. In the down, LOWER position, the tow point is lowered, which produces a thinner mat.



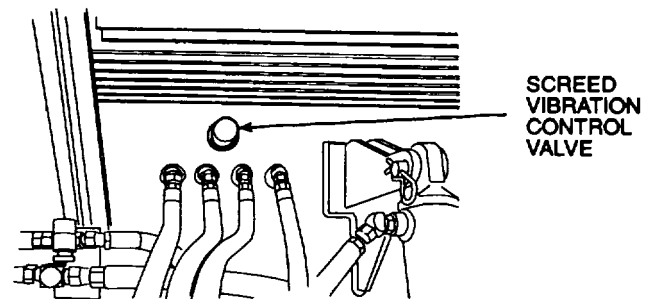
LEFT SCREED CONTROL PANEL



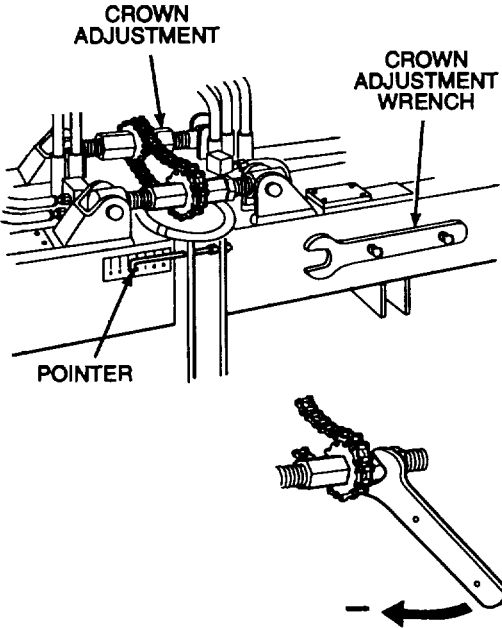
RIGHT SCREED CONTROL PANEL

- 13. EXTENSION SCREED CONTROL switch
Controls the extension and retraction of both left and right extension screeds. In the direction of the top arrow, the extension screed extends and in the direction of the bottom arrow, the extension screed retracts.
- 14. EXTENSION SCREED BLOWER switch
In the up, ON position, the extension screed blower is on, and in the down, OFF position, the blower is off.
- 15. EXTENSION SCREED BURNER CONTROL switch
Ignites the extension screed burners. In the down, PREHEAT position, the glow plug is on. In the up, SPRAY position, the extension screed burner solenoid valve is open allowing fuel to the extension screed burner. In the center, OFF position, the glow plug is off, and the solenoid valve is shut.
- 16. EXTENSION SCREED BURNER ON indicator light
Indicates that the extension screed burner solenoid valve is open.
- 17. EXTENSION SCREED BLOWER indicator light
Indicates power is applied to the extension screed blower motor.
- 18. PANEL light
Illuminates the screed control panel.

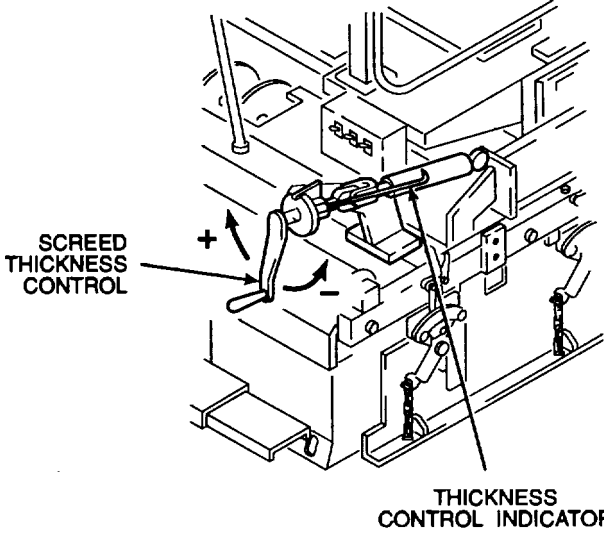
2.2.2 Screed Vibration Control Valve. The screed vibration control valve controls the vibration frequency of the screed vibrators. Turning the valve clockwise increases vibration frequency. Turning the valve counterclockwise decreases vibration frequency.



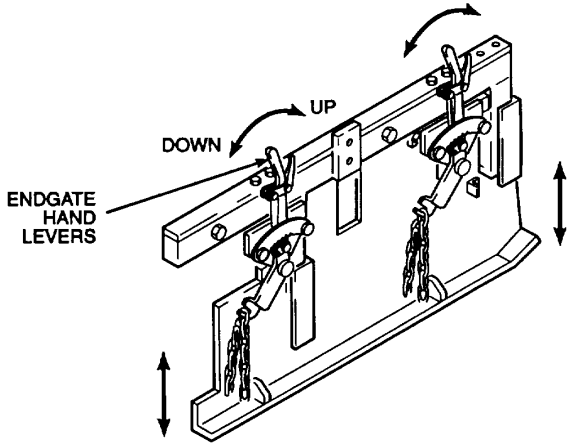
2.2.3 Crown Adjustment. The crown adjustment produces the desired contour of the finished paving material. Crown adjustment is accomplished by a sprocket wheel and chain mechanism located on the top center of the screed. A crown adjustment wrench is provided on the screed for this adjustment. Turning the wrench up produces a positive crown. Turning the wrench down produces a negative crown. A pointer mounts on the screed to show the amount of crown placed on the screed. This pointer is for comparison only and does not provide an actual crown value. When the screed is flat (no crown), it is referred to as being in a null condition.



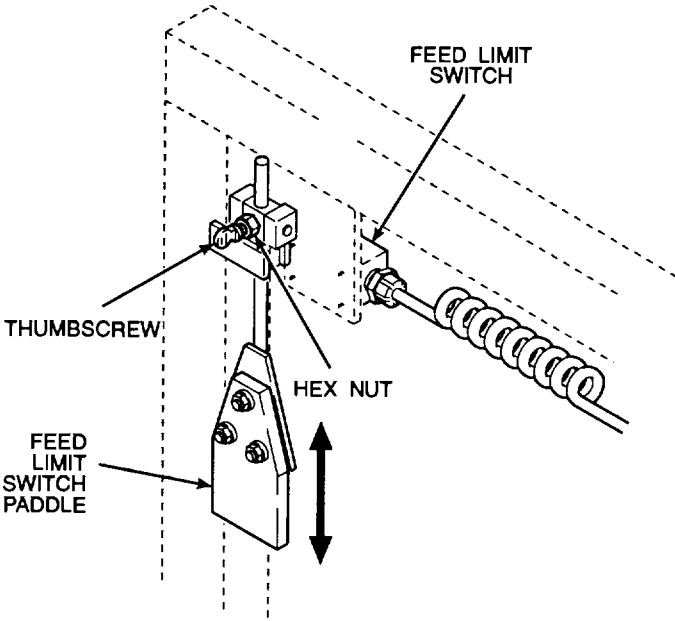
2.2.4 Screed Thickness Controls. The thickness controls control the thickness of the finished paving material by controlling the angle of attack on the screed. Turning the hand crank clockwise increases thickness. Turning the hand crank counterclockwise decreases thickness. An indicator for the thickness control is provided on the screed. The thickness control indicator is for comparison only and does not provide an actual mat thickness value.



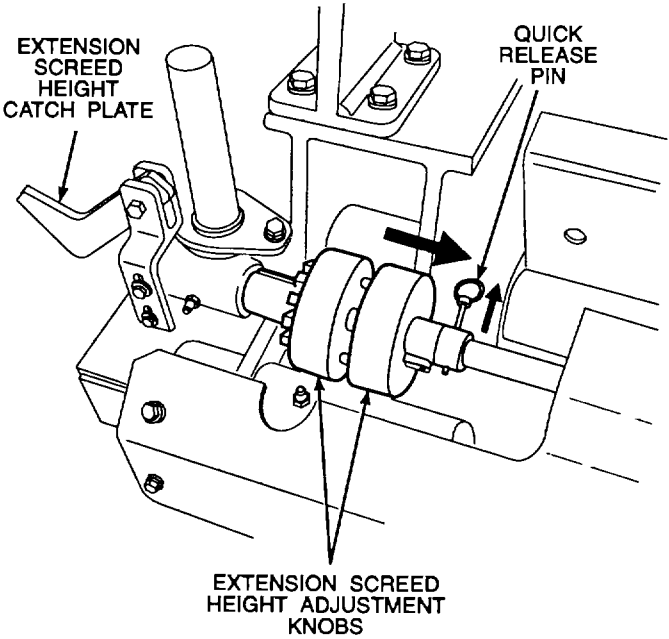
2.2.5 Endgate Hand Levers. The endgate hand levers raise and lower the endgates. The hand levers must unlock before they will operate. To unlock a hand lever, grasp it with one hand and squeeze. The endgates normally ride on the surface that is being paved, providing the finished edge.



2.2.6 Feed Limit Switches. The feed limit switches are two-position switches controlled by the position of the feed limit switch paddles. Each endgate has a switch and paddle which controls automatic operation of the auger/conveyor system on that side. When paving material fills the area between the augers and endgates and presses against the feed limit switch paddle, the auger/conveyor system stops. When the material is used up and releases the paddle, the auger/conveyor system starts again. Raising the position of the paddle by loosening the thumbscrew and hex nut will increase the amount of paving material at the leading edge of the screed. Lowering the position of the paddle will decrease the amount of material at the leading edge of the screed.



2.2.7 Extension Screed Height Adjustments. The height adjustments move the extension screeds up or down to keep the extension screed plates parallel with the main screed plates. Turn the extension screed height adjustment knob forward to raise extension screed plate height. Turn the knob back to lower extension screed plate height. The adjusted height of the extension screeds is locked in place using the extension screed height catch plates. To change height on one end of an extension screed, pull the quick release pin out of the shaft. Slide the two halves of the knob apart. Turn the left or right half of the separated knob to raise or lower an end of the extension screed.



SECTION II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2.3 GENERAL

Preventive Maintenance Checks and Services (PMCS) means systematic caring, inspecting, and servicing of equipment to keep it in good condition and prevent breakdowns. The operator's mission is to:

- a. Be sure to perform PMCS each time the paving machine is operated. Always do PMCS in the same order so that it becomes a habit. With some practice, anything wrong is quickly spotted.
- b. Do BEFORE PMCS just before operating the paving machine. Pay attention to WARNINGS, CAUTIONS, and NOTES.
- c. Do DURING PMCS while operating the paving machine. During operation means to check the paving machine and its related components while it is actually operating. Pay attention to WARNINGS, CAUTIONS, and NOTES.
- d. Do AFTER PMCS right after operating the paving machine. Pay attention to WARNINGS, CAUTIONS, and NOTES.
- e. Do WEEKLY PMCS once a week.
- f. Use DA Form 2404 (Equipment Inspection and Maintenance Worksheet) to record any faults discovered before, during, or after operation that cannot be immediately fixed. Do not record faults that are immediately fixed.
- g. Be prepared to assist organizational maintenance during lubrication of the paving machine. Perform other services when required by organizational maintenance.

2.4 CLEANING AGENTS

WARNING

Do not use diesel fuel, gasoline, or benzene (benzol) for general cleaning procedures. Diesel fuel washdown is only permitted for general cleaning of the machine using the fuel washdown system provided with the paving machine.

WARNING

Cleaning solvent, P-D-680, is TOXIC and flammable. Wear protective goggles and gloves. Use only in a well ventilated area. Avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type Mil cleaning solvent is 200°F (93, 3°C). Failure to do so may result in injury or death to personnel.

If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, flush eyes with water and get immediate medical attention.

CAUTION

When using steam to clean, do not point water or steam directly at any electrical connections. Do not use a high pressure steam supply system. Damage to electrical system and other components may occur.

The machine should be cleaned immediately after use. Any asphalt materials or residue should be removed from the surfaces of the machine as a general care practice. A fuel spray washdown procedure is provided in the maintenance section of this manual. Use this procedure immediately after completing each paving operation. General cleaning procedures are as follows:

- a. Steam Cleaning.
 - (1) The paving machine may be steam cleaned if extremely dirty. When cleaning the engine compartment, cover the alternator, air cleaner cap assembly, and any other electronic component with waterproof material.
 - (2) After cleaning allow engine to air dry. Do not use compressed air to dry engine. Do not run engine to decrease drying time.
 - (3) When dry remove all component covers before starting engine.

b. Cleaning Rust or Grease. When cleaning grease buildup or rusted areas, use cleaning solvent and a stiff bristle brush; do not use a wire brush. After cleaning wipe surfaces with a clean rag until all dirt or grease is removed. Apply a light coat of oil to any bare metal surfaces to prevent additional rusting.

2.5 LUBRICANTS.

All lubrication of the paving machine shall be in accordance with LO 5-3895-373-12 Lubrication Order.

2.6 FLUID LEAKAGE.

It is necessary to know how fluid leakage affects the status of the paving machine. Following are types/classes of leakage an operator must know to determine the status of the paving machine. Learn these leakage definitions; when in doubt notify the supervisor.

NOTE

Equipment operation is allowable with minor leakages (Class I or II). Consideration must be given to fluid capacity in the item/system checked/inspected. When in doubt, notify the supervisor.

When operating with Class I or II leaks, continue to check fluid levels as required by PMCS.

Immediately report Class m leaks, fuel leaks, and steady stream leaks of hydraulic fluid to the supervisor.

a. Class I. Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

b. Class II. Leakage of fluid great enough to form drops, but not enough to cause drops to drip from item checked/inspected.

c. Class III Leakage of fluid great enough to form drops that fall from item checked/inspected.

d. Paving machine operation must stop and maintenance performed if any steady stream leak of hydraulic oil is detected.

e. Paving machine operation must stop and maintenance performed if any fuel leak is detected.

2.7 PMCS PROCEDURES.

a. Preventive Maintenance Checks and Services, Table 2-1, lists inspections and care required to keep the paving machine in good operating condition. Table 2-1 is set up to make BEFORE OPERATION checks while walking around the paving machine.

b. The ITEM NUMBER column of Table 2-1 provides numbers for each check or service task. Use these numbers as a source of item numbers for the TM Number column on DA Form 2404 when recording results of PMCS. The PMCS routing diagram, located directly before Table 2-1, shows the location of all PMCS checks by item number.

c. The INTERVAL column tells when to perform a certain check or service.

d. The LOCATION column gives the location of the item checked.

e. The ITEM TO CHECK/SERVICE column lists the item checked or serviced. This column is combined with the LOCATION column.

f. The PROCEDURE column tells how to do required checks and services. Carefully follow these instructions. If tools are not available, or if directed by procedure, notify the supervisor.

NOTE

Terms "ready/available" and "mission capable" refer to the same status: equipment is on hand and ready to perform its combat missions. (See DA PAM 738-750.)

g. The NOT FULLY MISSION CAPABLE IF: column tells when the paving machine is not mission capable and why the paving machine cannot be used.

h. If the paving machine does not perform as required, refer to Chapter 3, Section II, Troubleshooting Procedures.

i. If anything looks wrong and cannot be fixed, record it on DA Form 2404 IMMEDIATELY, and report it to the supervisor.

j. When performing PMCS, a rag or two is always needed. Following are checks that are common to the entire paving machine:

(1) Keep it Clean. Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean while working and as needed. Use cleaning solvent on all metal surfaces. Use soap and water when cleaning rubber or plastic material.

(2) Rust and Corrosion. Check paving machine main frame for rust and corrosion. If any bare metal or corrosion exists, clean and apply a thin coat of oil. Report rust or corrosion to the supervisor.

(3) Bolts, Nuts, and Screws. Check them all for obvious looseness and missing, bent, or broken conditions. Not all checks are done with a tool, but look for chipped paint, bare metal, or rust around bolt heads. Upon finding a loose bolt, nut, or screw, tighten it, or report it to the supervisor.

(4) Welds. Look for loose or chipped paint, rust, or gaps where parts are welded together. Report bad welds to the supervisor.

(5) Electric Wires and Connectors. Look for cracked, frayed, or broken insulation or bare wires and loose or broken connectors. Special attention should be paid to the wiring harnesses running from the tractor to the screed. Report any damaged wires to the supervisor.

(6) Hoses and Fluid Lines. Look for wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots show leaks, but a stain around a fitting or connector can also mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to the supervisor.

k. When checking for "operating condition," look at the component to see if it is serviceable.

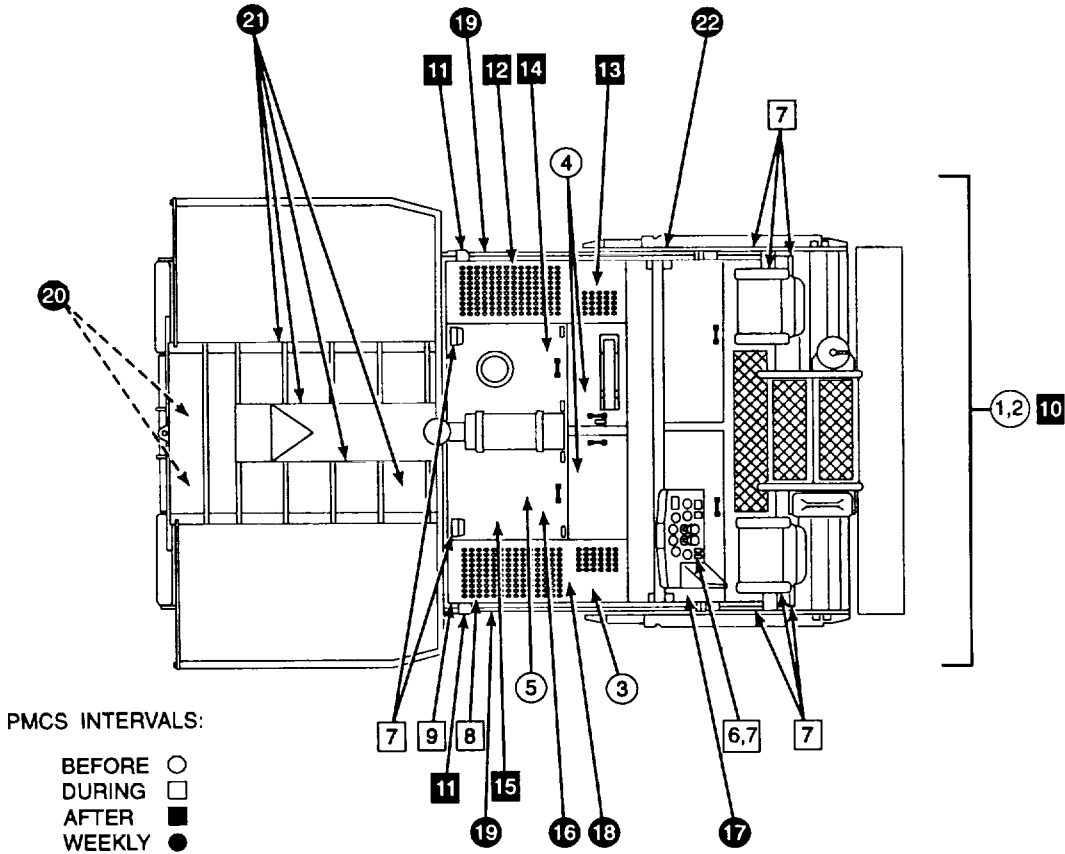


Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
		<u>GENERAL</u>	<p align="center">NOTE</p> <p>Ensure that all crew lubrication requirements are performed on the paving machine per LO 5-3895-373-12.</p> <p>Perform WEEKLY, as well as BEFORE, PMCS if:</p> <ul style="list-style-type: none"> a. You are the assigned operator but have not operated the equipment since the last WEEKLY. b. You are operating the equipment for the first time. <p>Levers, pins, linkages, etc., not equipped with lubrication fittings should operate freely and be clear of rust. When checking fuel/oil levels, ensure vehicle is on level surface for accurate reading.</p>	
		<u>EXTERIOR</u>	<p align="center">WARNING</p> <p>Read and understand all safety precautions and warnings before performing any checks and services or personal injury can result.</p>	
1	Before		Perform walk-around inspection of vehicle. Check for leaks or obvious damage that would require more detailed inspection.	A class III leak, fuel leak, or a steady stream leak of hydraulic oil is detected
2	Before	Safety decals and data plates	Check for damage and legibility. See paragraph 2.25.	

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

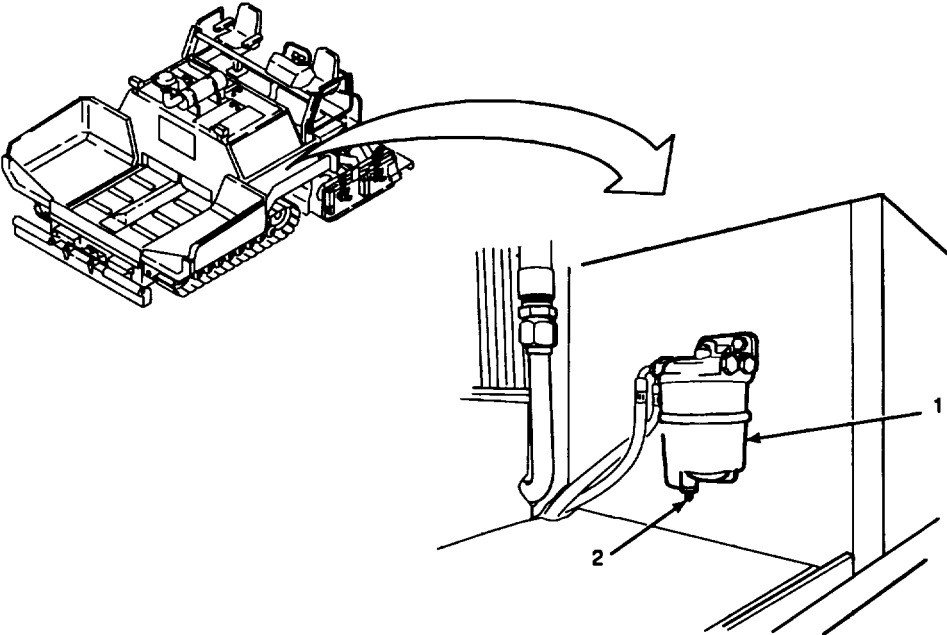
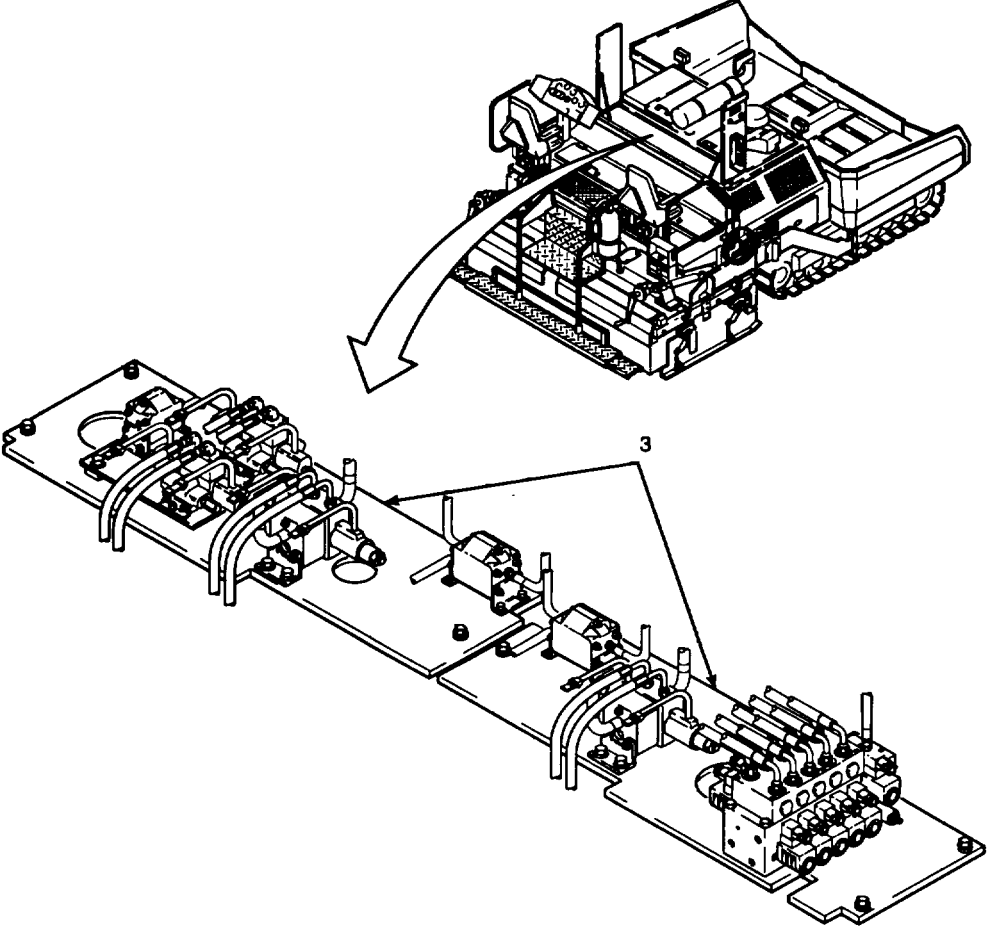
Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
3	Before	<p><u>ENGINE COMPARTMENT</u></p> <p>Fuel/water separator</p>	<p><u>WARNING</u></p> <p>Diesel fuel is flammable and can be an irritant to the skin, eyes, and respiratory system. Avoid prolonged exposure. Eye protection and rubber gloves should be worn when working with diesel fuel.</p> <p>Remove left access cover per paragraph 2.24.5. Drain water from the fuel/water separator (1) using drain screw (2) on the bottom of the separator into a suitable container. Close the drain screw when clear diesel fuel, no more water, flows from the separator. Dispose of waste water and fuel in accordance with local procedures.</p>	
				
<p>Install left access cover per paragraph 2.24.6.</p>				

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
4	Before	Valve panel	Open center top right and left access doors per paragraph 2.24.1. Inspect valve panel (3) for leaks, loose fittings, and loose or damaged wires.	Any class III leaks, steady stream hydraulic oil leaks, or damaged wiring



The diagram consists of two parts. The upper part is a perspective view of the paving machine's chassis with an arrow pointing to the location of the valve panel. The lower part is a detailed view of the valve panel, which is a rectangular metal plate with various hydraulic valves, hoses, and electrical connectors. A circled number '3' is placed near the panel to identify it.

Close center top right and left access doors per paragraph 2.24.2.

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

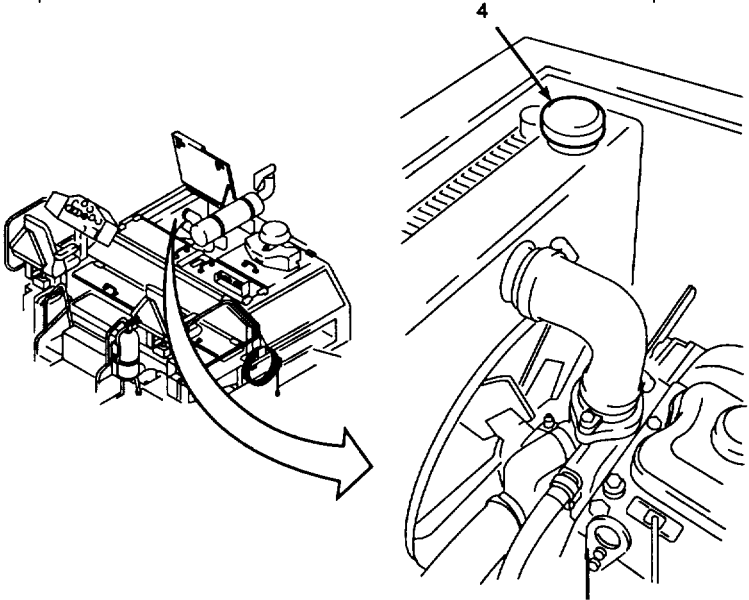
Item No.	Interval	Location Item To Check/Service	Procedure	Not Fully Mission Capable If:
5	Before	Engine coolant level	<p style="text-align: center;"><u>WARNING</u></p> <p>Extreme care should be taken when removing radiator cap if temperature gauge reads above 180°F (82°C). Contact by steam or hot coolant may result in injury or death to personnel.</p> <p>Use a clean, thick, waste cloth or like material to remove the radiator cap. Avoid using gloves. If hot water soaks through gloves, personnel could be burned.</p> <p>Open front top left access door per paragraph 2.24.1. Check engine coolant level by removing radiator cap (4). Proper coolant level is below filler neck and above the radiator fins. Add engine coolant as necessary.</p> <div style="text-align: center;">  </div> <p>Close front top left access door per paragraph 2.24.2.</p>	Engine coolant level is at or below radiator fins

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
6	During	<u>CONTROL CONSOLE</u> Gauge panel	Perform machine startup per paragraph 2.10. Inspect gauge panel for damage, unserviceable instruments, and broken glass. Monitor instrumentation regularly for proper function of all systems. <ul style="list-style-type: none"> a. Engine oil pressure: 10 psi (0,9 bar) minimum at low idle; 30 to 100 psi (2,6 to 8,6 bar) at high idle. b. Hydraulic oil temperature: 100° to 250°F (37° to 121°C). c. Engine coolant temperature: 100° to 250°F (37° to 121°C). 	A malfunction/deficiency is observed during operation, which would damage the equipment if operation were continued Engine oil pressure gauge is inoperative or oil pressure is below 10 psi (0,9 bar) at low idle and below 30 psi (2,6 bar) at high idle; or if oil pressure is above 100 psi (8,6 bar) at high idle Hydraulic oil temperature gauge is inoperative or hydraulic oil temperature is above 200°F to 220°F (76° to 104°C) for not more than one hour Water temperature gauge inoperative or engine coolant temperature is above 220°F (76°C)
7	During	Work lights, panel lights, indicator lights, etc.	Check for proper operation.	During night operations, both hopper work lights, rear screed work lights or either auger work lights fail to operate

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
8	During	ENGINE COMPARTMENT	<p>WARNING</p> <p>Stop paving machine motion and establish direct visual contact with the operator prior to checking hydraulic return filter differential pressure gauge. Failure to do so may result in serious personal injury or death from contact with moving crawler tracks or hydraulic function operation.</p> <p>Check hydraulic return filter differential pressure gauge (5) during normal operations at rated engine rpm.</p>	<p>Hydraulic return filter differential pressure gauge reads greater than 25 psi (172 kPa)</p>
		Hydraulic return filter		

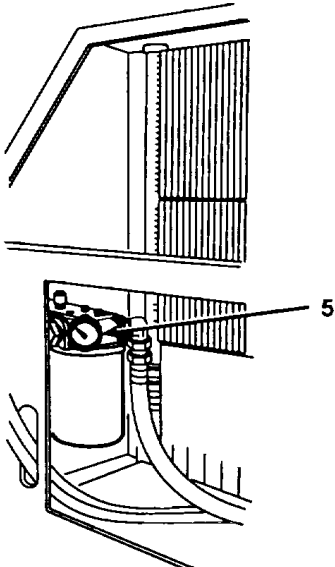
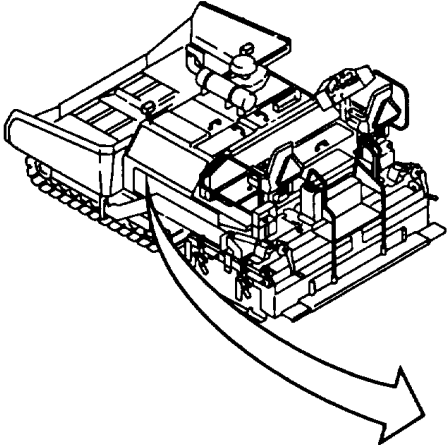


Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

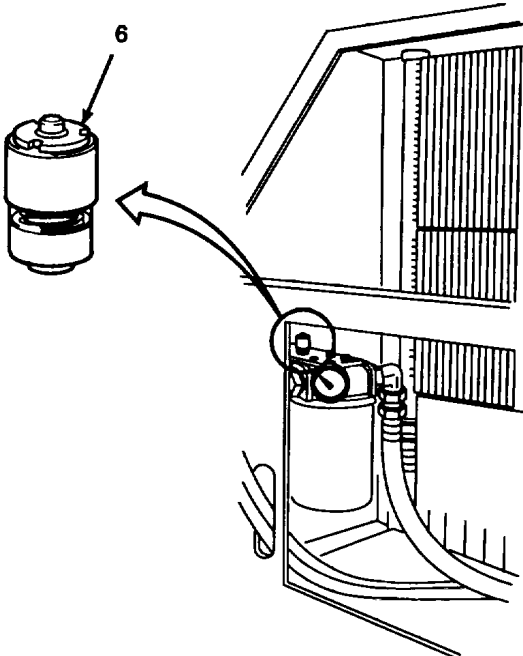
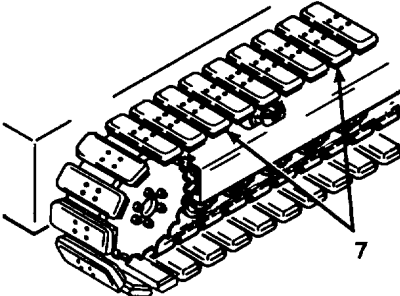
Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
9	During	Air cleaner service indicator knob	<p>Check air cleaner service indicator knob (6). Air cleaner filter element requires servicing if red flag is raised. Refer to paragraph 3.3.6.</p>  <p>Shutdown paving machine per paragraph 2.11.</p>	Red flag is raised
<u>EXTERIOR</u>				
10	After	Exterior	Perform walk-around inspection of vehicle. Check for leaks or obvious damage that would require more detailed inspection.	A Class III leak, fuel leak, or a steady stream leak of hydraulic oil is detected.
11	After	Tracks	Inspect tracks (7) for missing or cracked track pads.	More than two consecutive track pads are cracked or missing
				

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

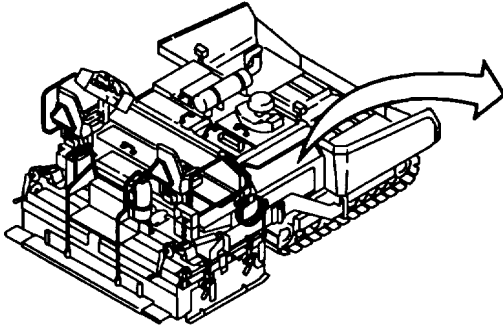
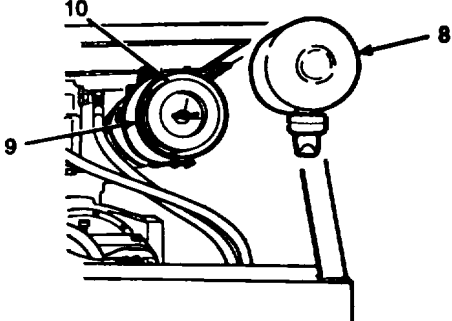
Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
12	After	ENGINE COMPARTMENT	<p align="center"><u>WARNING</u></p> <p>If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC Officer or NBC NCO for appropriate handling or disposal procedures.</p> <p>Open right access door per paragraph 2.24.1. Remove air cleaner intake (8) and inspect air cleaner deflector (9) and air cleaner filter element (10). Remove any dirt accumulated inside the air cleaner. Refer to paragraph 3.3.6.</p>  	Air cleaner filter element missing or clogged
		Air cleaner		

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

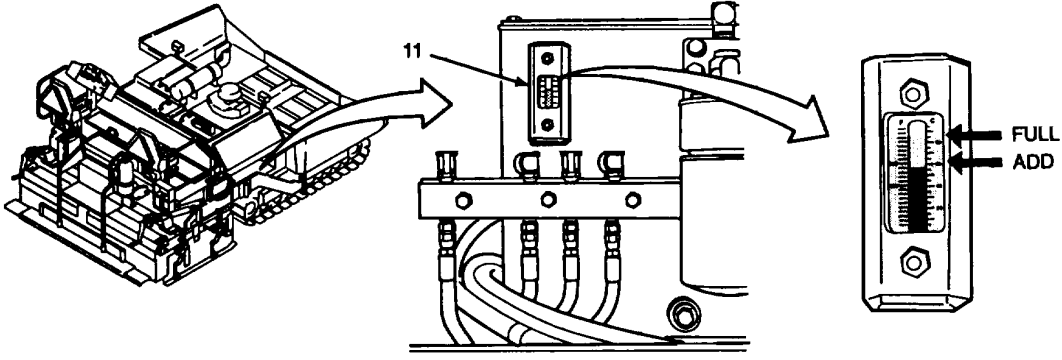
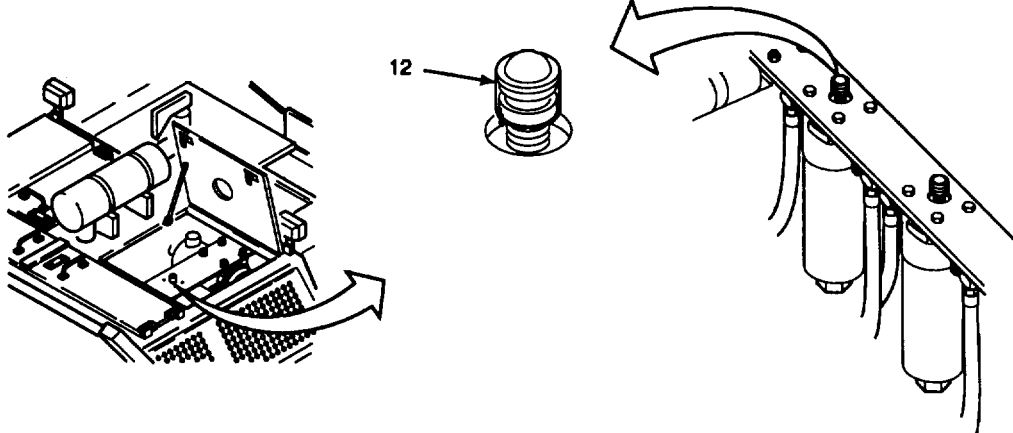
Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
13	After	Hydraulic reservoir level	Remove right access cover per paragraph 2.24.5. Check hydraulic reservoir level using combination sight liquid indicator (11). Add hydraulic oil as necessary. Refer to paragraph 3.3.4.	Hydraulic reservoir level is below bottom of sight liquid indicator
				
14	After	Hydraulic charge filters	<p>Install right access cover per paragraph 2.24.6.</p> <p>Open front to right access door per paragraph 2.24.1. Check hydraulic charge filter clogging indicators (12). If red flag has popped up, filter requires changing. Refer to Unit Maintenance.</p>	Red flag is raised
				
			<p>Close front top right access door per paragraph 2.24.2.</p>	

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

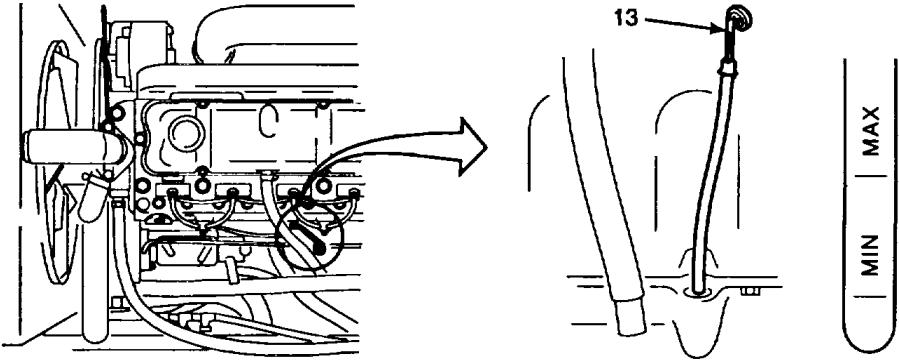
Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
15	After	Engine oil level	<p>WARNING</p> <p>Allow engine to cool before performing maintenance on the muffler, exhaust pipe, or exhaust manifold. Do not touch hot exhaust system with bare hands; injury to personnel will result. If maintenance of a heated surface is necessary, use insulated pads and gloves.</p> <p>Open front top left access door per paragraph 2.24.1. Check engine oil level with dipstick (13) and add engine oil as necessary. Refer to paragraph 3.3.2.</p>  <p>Close front top left access door per 2.24.2.</p>	Engine oil level is below minimum mark on dipstick

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

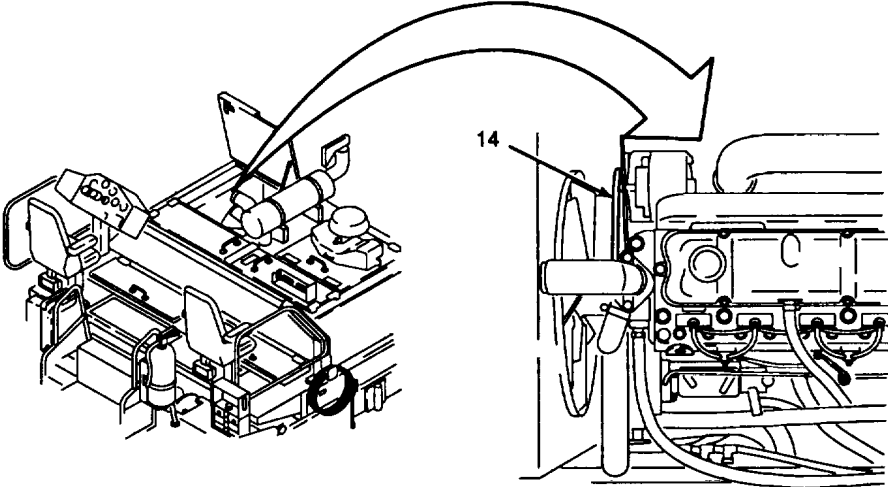
Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
16	Weekly	Fan belt	<p>Open front top left access door per paragraph 2.24.1. Check fan belt (14) for fraying and cracks.</p>  <p>Close front top left access door per paragraph 2.24.2.</p>	Fan belt is missing, cracked, or frayed.

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

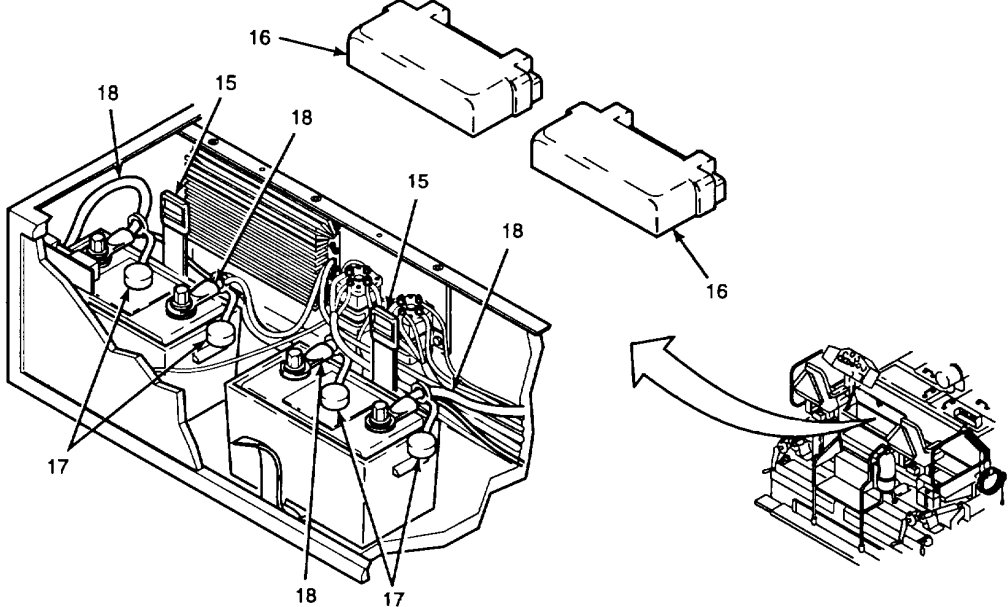
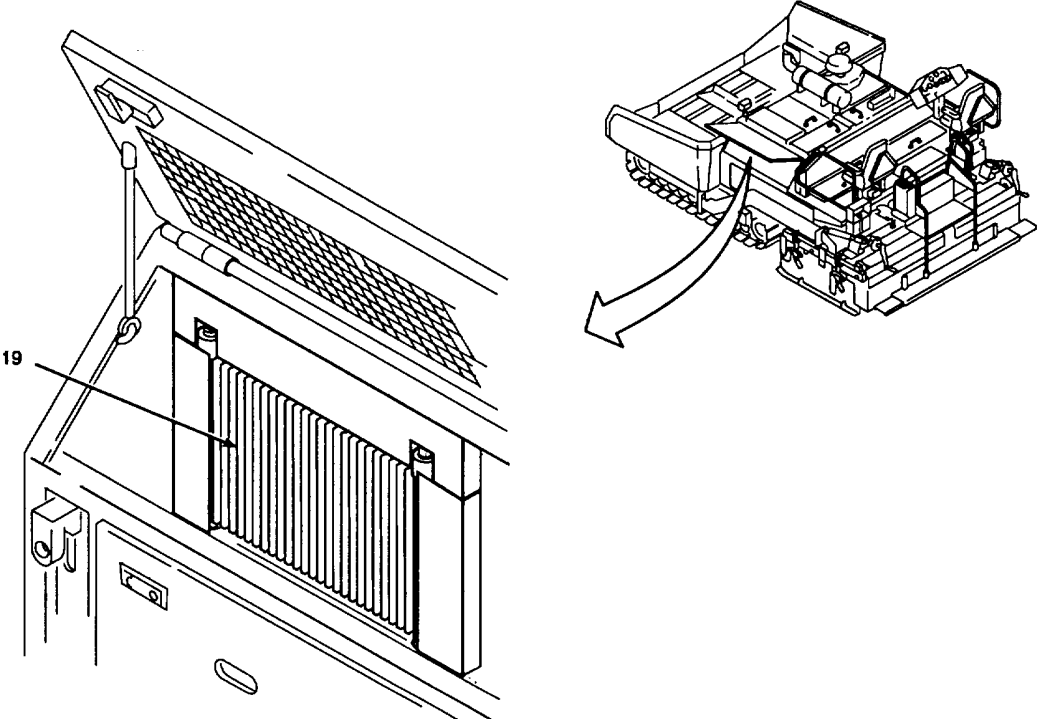
Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
17	Weekly	Batteries	<p>Open rear top left access door per paragraph 2.24.1.</p> <p>Unbuckle battery box holddown straps (15) and remove battery box covers (16) from both batteries.</p>  <p>Lift rubber battery terminal caps (17) from battery terminals.</p> <p>Inspect battery terminals and cables (18) for corrosion.</p> <p>Inspect battery cables (18) for security.</p> <p>Install battery terminal caps (17) on battery terminals.</p> <p>Place battery box covers (16) on both battery boxes and secure with battery box holddown straps (15).</p> <p>Close rear top left access door per paragraph 2.24.2.</p>	Battery corroded or battery terminals loose. Notify Unit Maintenance.

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
18	Weekly	Radiator	Open left access door per paragraph 2.24.1. Check oil cooler (19) for obstructions. Remove any obstructions.	



Close left access door per paragraph 2.24.2.

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

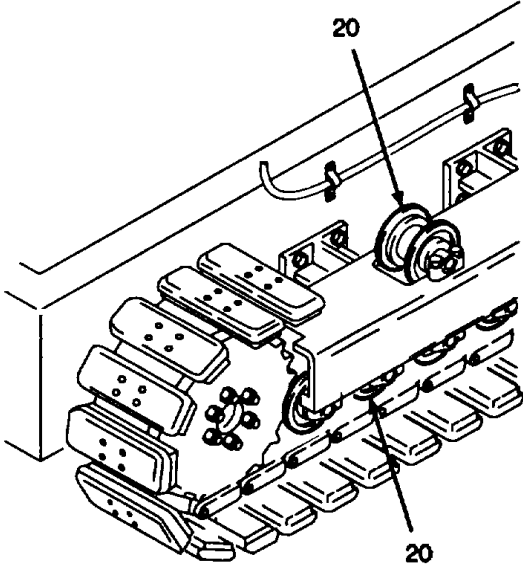
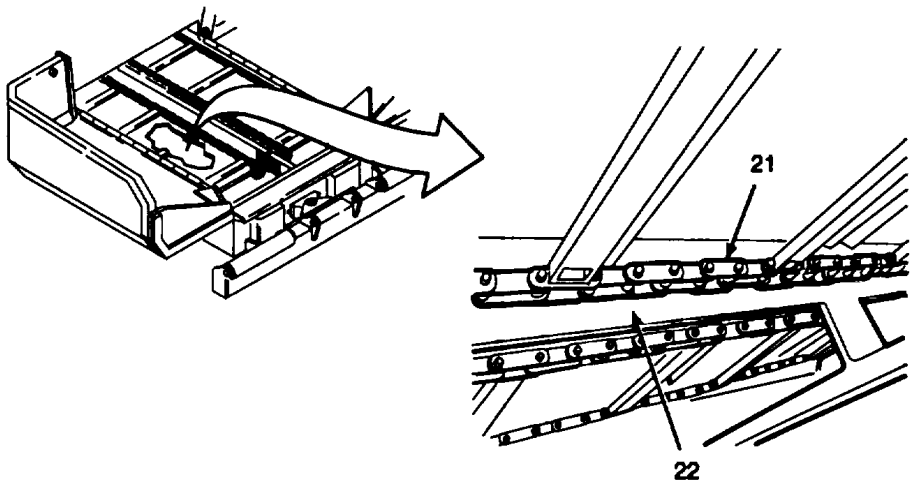
Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
19	Weekly	<p><u>EXTERIOR</u></p> <p>Track Rollers</p>	<p>Check track rollers (20) for oil leaks.</p> 	<p>Any track Class II roller oil leak</p>
20	Weekly	<p>Conveyor chain</p>	<p>Using flashlight located in toolbox, look underneath front of paving machine to check conveyor chain (21) tension. Chain should not hang down lower than center support beam (22).</p> 	<p>Conveyor chain hangs below center support beam</p>

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

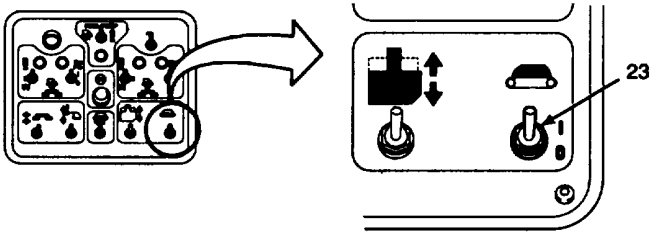
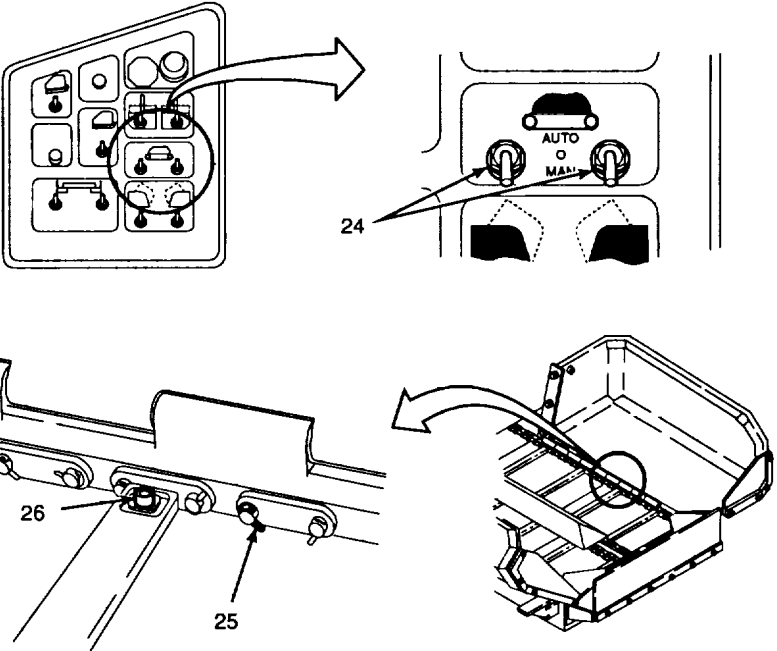
Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item To Check/Service		
21	Weekly	<p><u>HOPPER</u></p> <p>Conveyor chain</p>	<p><u>WARNING</u></p> <p>Do not stand in the hopper when engine or conveyor is running. Fingers, hands, legs, and feet can be caught in moving conveyor chain, slats, and augers, resulting in severe injury or death to personnel.</p> <p>Start paving machine per paragraph 2.10.</p> <p>Place both LH and RH feed control switches (23) in the up, ON position.</p>  <p>NOTE: LEFT SCREED CONTROL PANEL SHOWN. RIGHT SCREED CONTROL PANEL SIMILAR, BUT DOES NOT INCLUDE SCREED FUEL PUMP SWITCH.</p>	Any missing cotter pin(s) or spring pin(s)

Table 2-1. Preventive Maintenance Checks and Services for Bituminous Material Paving Machine - Continued

Item No.	Interval	Location Item To Check/Service	Procedure	Not Fully Mission Capable If:
		Conveyor chain - continued	<p>Place the left auger/conveyor switch (24) in the down, "MAN" position. Using flashlight, check the complete length of the conveyor chain and master links for missing cotter pins (25) and spring pins (26).</p> <p>Place the left auger/conveyor switch (24) to the center, OFF position.</p> <p>Place the right auger/conveyor switch (24) in the down, "MAN" position. Check the complete length of the conveyor chain and master links for missing cotter pins (25) and spring pins (26).</p> <p>Place the right auger/conveyor switch (24) to the center, OFF position.</p> <p>Place the ignition switch to the STOP position and remove ignition key.</p> 	
			2-28	

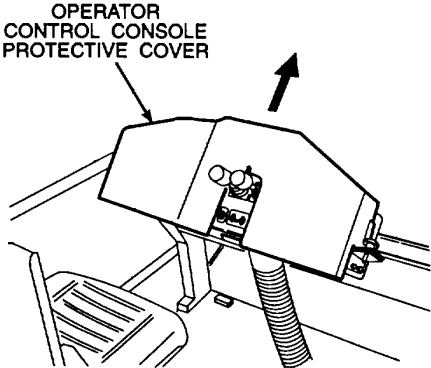
SECTION III. OPERATION UNDER USUAL CONDITIONS

2.8 GENERAL.

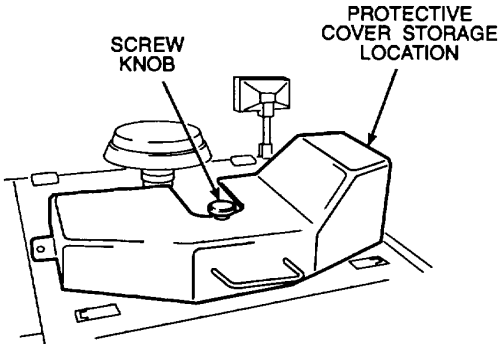
The paving machine has one operational mode: paving mode. The machine can be taken out of the paving mode by raising the screed and making minor control adjustments to travel at faster speeds. The operation of the machine is similar to conventional diesel-driven tracked vehicles. The machine is equipped with independently-controlled crawler track steering and spring-applied, hydraulically-released brakes on track drives. The machine operation gauges and controls are arranged on the operator control console, so that the machine instruments and controls are in front of the operator.

2.9 OPERATOR INITIAL ADJUSTMENTS.

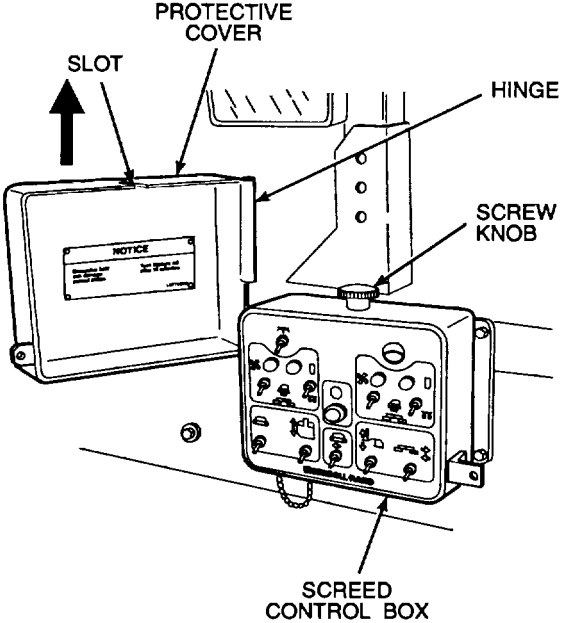
- a. Unlock and remove the operator control console protective cover by sliding the cover up and off the top of the console.



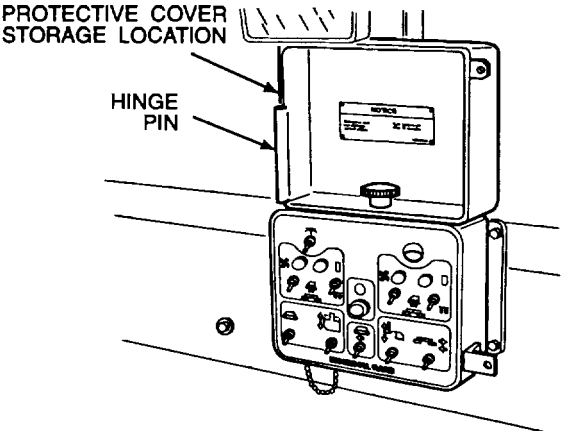
- b. Loosen cover support screw knob and stow the protective cover on cover support located on the front top right access door.



- c. Unlock and remove left and right screed control box protective covers by positioning the covers all the way open and lifting straight up off the hinge.

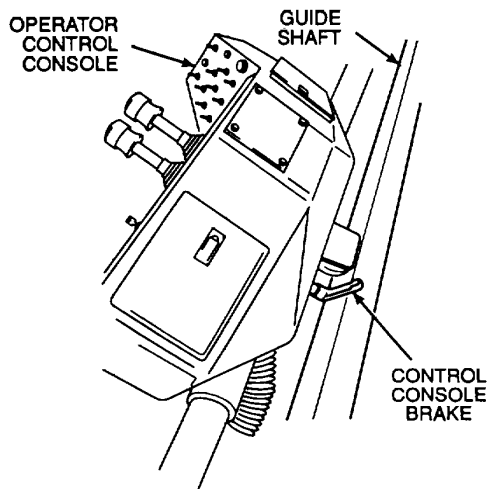


- d. Stow the protective covers on top of the screed control box by turning the protective cover upside down, setting on hinge pin, and securing with screw knob through the slot.



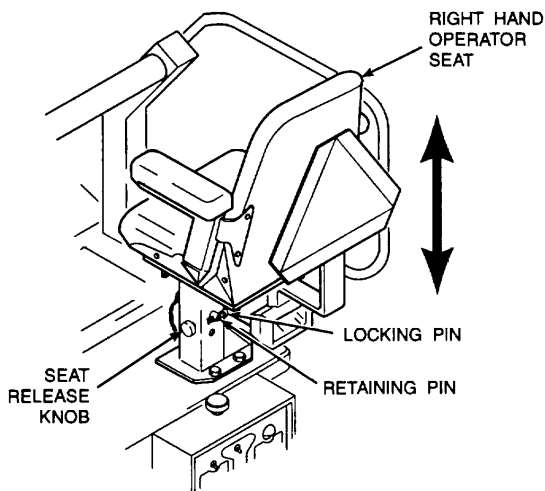
- e. Position the operator control console to the desired operating position.

- (1) Turn the control console brake counterclockwise to unlock the operator control console.
- (2) Slide operator control console along guide shaft to the desired position.
- (3) Lock the console in place by turning control console brake handle clockwise.



f. Adjust the operator seat height.

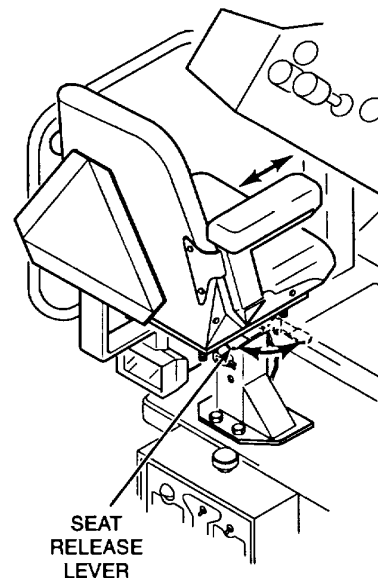
- (1) Loosen the operator seat release knob by turning counterclockwise to unlock seat.
- (2) Loosen screw knob securing protection cover to top of screed control box. Remove cover.
- (3) Remove the retaining pin and locking pin.



WARNING

Extreme care must be taken when working on platform of paving machine. Falling from platform can cause severe injury or death.

- (4) Raise or lower the operator seat to a comfortable '3 height allowing adequate visibility around the paving machine.
 - (5) Replace the locking pin and cotter pin.
 - (6) Tighten seat release knob clockwise to lock the seat in position.
 - (7) Stow the protective cover on top of the screed control box by turning the protective cover upside down, setting on hinge pin, and securing with screw knob through the slot.
- g. Adjust the operator seat position forward or backward.
- (1) Pull the seat release lever out away from the operator seat.
 - (2) Slide the operator seat forward or backward to a comfortable position.
 - (3) Push the seat release lever in to lock the operator seat position.



2.10 PAVING MACHINE STARTUP.

NOTE

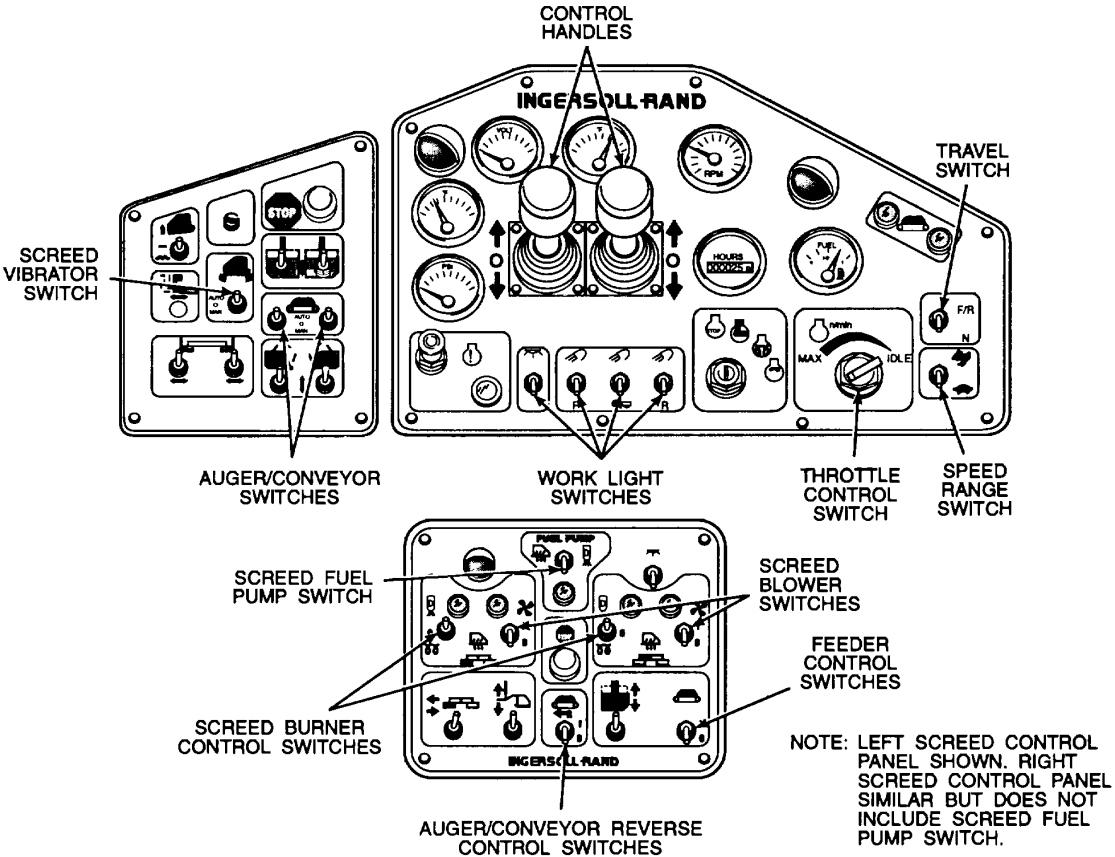
All crew members must become thoroughly familiar with the location and use of controls, instruments, accessories, and characteristics of the paving machine before use.

- a. Prior to operating the paving machine at the beginning of each personnel change, perform the daily checks and services as outlined in paragraph 2.7.
- b. Set the paving machine controls to the following positions:

Gauge Panel..... Position
 Control handles Neutral
 Work light switches Off
 Throttle control switch Idle
 Speed range switch..... "Tortoise" Pave
 Travel switch..... Neutral "N"

Switch Panel
 Screed vibrator switch..... Off
 Auger/conveyor switches Off

Screed Control Panel
 Screed fuel pump switch..... Off
 Screed burner control switches..... Off
 Screed blower switches Off
 Feeder control switches Off
 Auger/conveyor reverse control switches Off



WARNING

Engine operation causes hazardous noise levels that may cause hearing loss. Wear ear protection while operating or working near paving machine.

Conveyor movement may cause injury or death. Ensure no personnel are in hopper when starting engine.

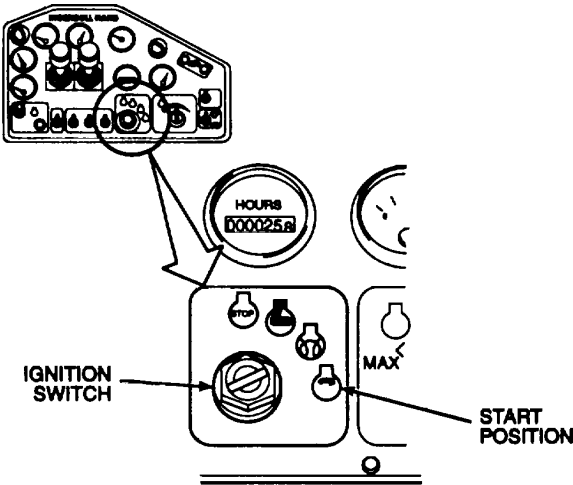
CAUTION

Starter motor may overheat if operated longer than 30 seconds. If engine does not start, allow starter to cool for two to three minutes before trying again. If engine fails to start after three attempts, notify Unit Maintenance.

NOTE

Prior to operating in unusual environment/weather conditions, refer to operation in unusual environment and weather, paragraph 2.27.

- c. Turn the ignition switch to the START position and immediately release when the engine starts. The switch will spring return to the ON position.



CAUTION

Incorrect oil pressure can cause engine damage. If gauges do not display proper readings, shut down engine and correct malfunction before operation.

- d. Check engine oil pressure. If no engine oil pressure develops, immediately shut down the engine. Engine oil pressure gauge should read 10 to 15 psi (0,9 to 1,3 bar) minimum at low idle and 30 to 100 psi (2,6 to 8,6 bar) maximum at high idle.

CAUTION

Incorrect oil pressure or temperature can cause engine damage. If gauges do not display proper readings, shut down engine and correct the malfunction before operation.

Do not idle unnecessarily for long periods of time. Idling the engine unnecessarily for long periods of time wastes fuel and fouls injector nozzles. Unburned fuel causes carbon buildup, oil dilution, and formation of lacquer or gummy deposits on the valves, pistons, and rings.

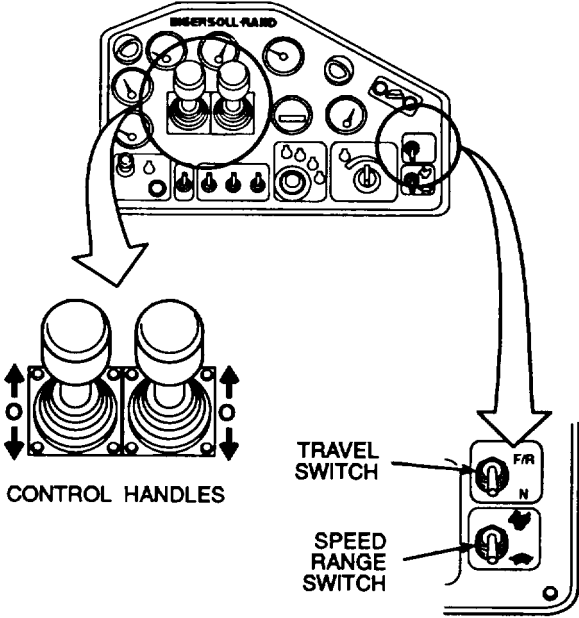
- e. After startup, observe engine gauges and warning lights for proper readings.

<u>Gauge</u>	<u>Reading (Low Idle)</u>
RPM	560 to 850
Oil Pressure	10 to 15 psi (0,9 to 1,3 bar)
Coolant Temperature	170° to 200°F (77° to 93°C)
Hydraulic Oil Temperature	100° to 200°F (38° to 93°C)
Voltage	12 to 14 VDC

- f. Run the engine at IDLE for five minutes before paving operation begins. Do not race the engine during the warmup period.

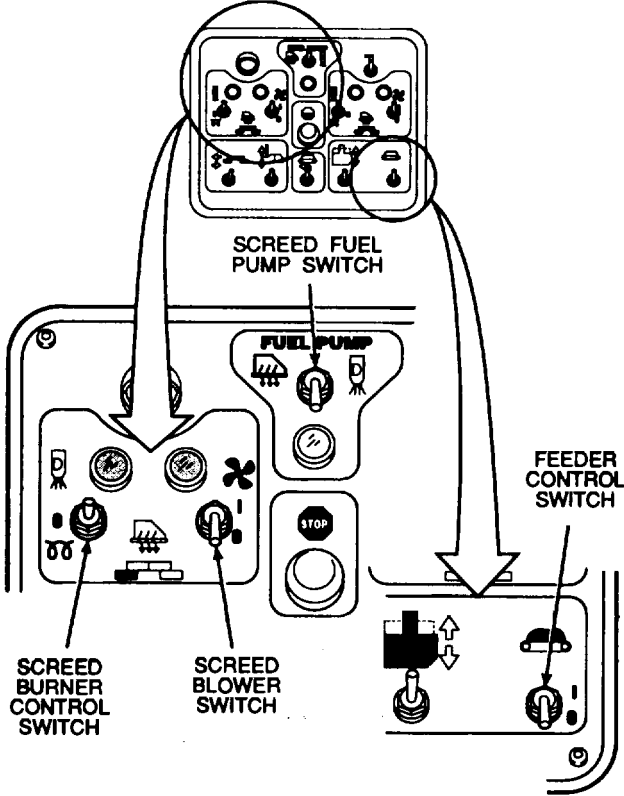
2.11 PAVING MACHINE SHUTDOWN.

- a. Position the control handles in neutral.
- b. Place speed range switch in the down, "tortoise" pave position.
- c. Place the travel switch in down, neutral "N" position.



- d. If in use, place the screed fuel pump switch on left screed control panel in the down, OFF position.

- e. Place screed burner control switches in center, OFF position. After a cool down period of five minutes, place screed blower switches in down, OFF position.
- f. Place feeder control switch in the down, OFF position.

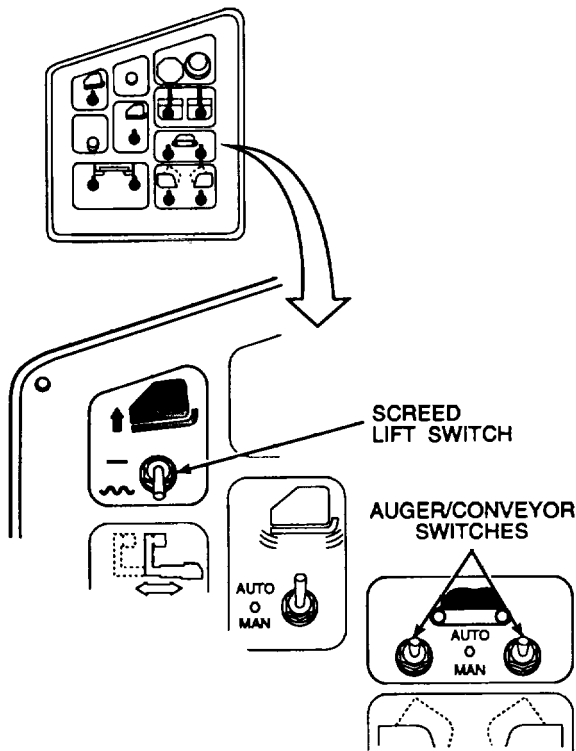


- g. Place auger/conveyor switches in center, OFF position.

WARNING

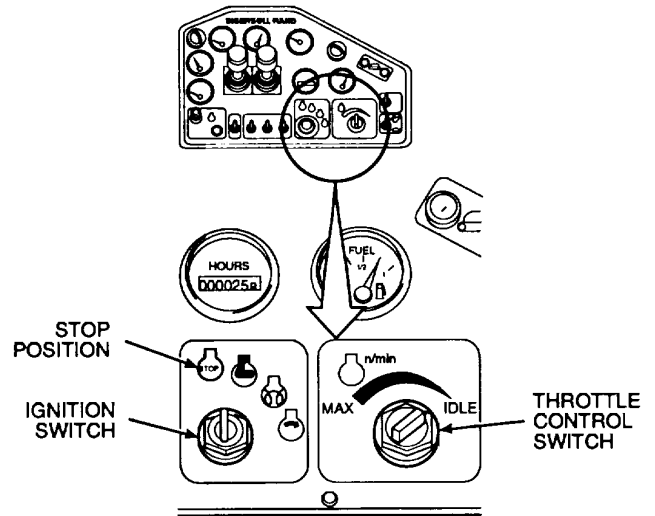
Do not open the screed travel lock valve if anyone is near or under the screed. The screed can fall rapidly when the screed travel lock valve is opened. Falling screed can cause severe injury or death.

- h. If screed is in travel position, use caution and open the screed travel lock valve, refer to paragraph 2.1.4.
- i. Place screed lift switch to down, FLOAT position, to lower the screed until the screed rests on the ground.



- j. Place the throttle control switch in "IDLE" position. Idle the engine for one minute to allow the engine to cool.

- k. Place the ignition switch to the STOP position.



- l. If shutdown follows paving operations, refer to fuel spray washdown system operation per paragraph 3.3.7.

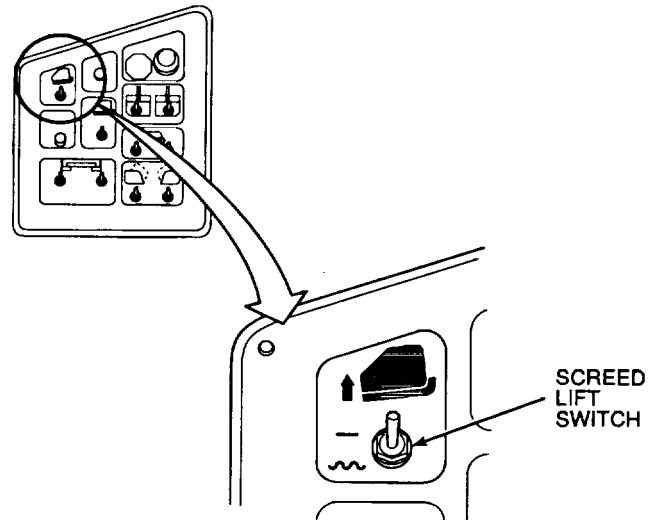
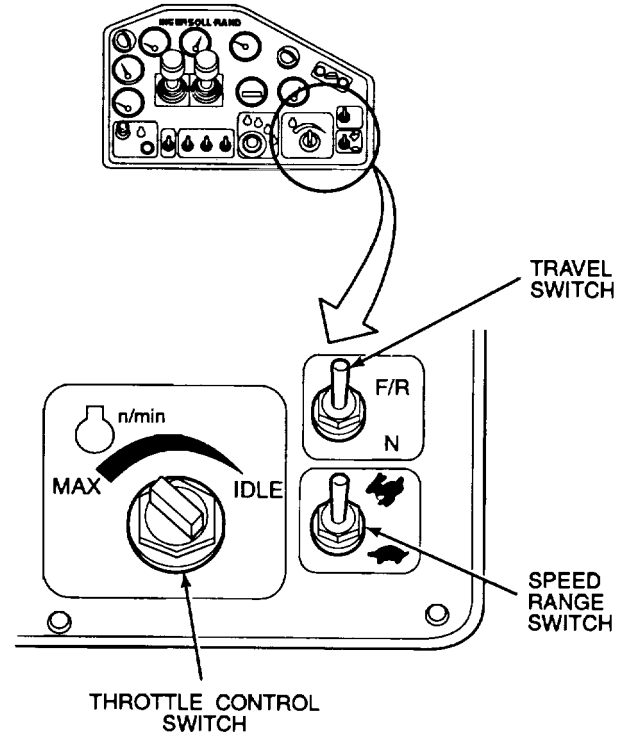
NOTE

Protective covers are provided with brackets for the installation of padlocks.

- m. Remove the operator control console protective cover from the stowage location on the front top right access door.
- n. Install the protective cover on the operator control console. Slide the cover over the console so the control handles fit in the open slot on the cover.
- o. Remove the screed crew control box protective covers from the stowage location on top of the control boxes.
- p. Install the protective covers on the screed crew control boxes by sliding the hinge on the cover over the hinge pin on the box. Close the protective covers.

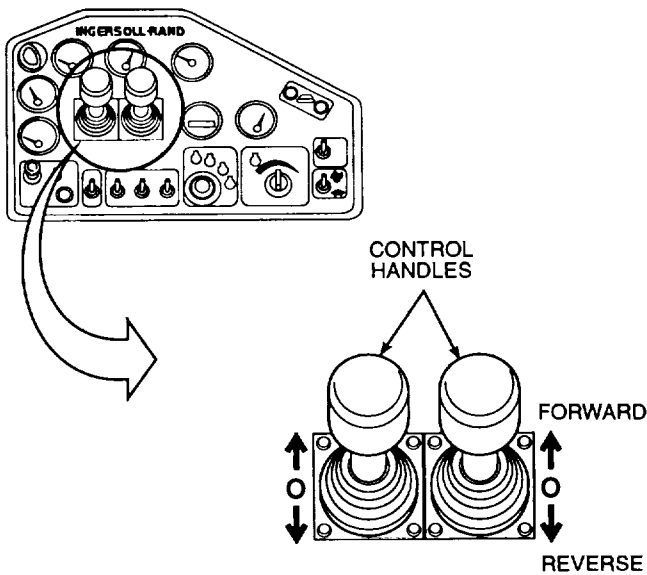
2.12 TRAVELING PROCEDURE.

- a. Start the paving machine per paragraph 2.10.
- b. On gauge panel do the following:
 - (1) Place the throttle control switch in the MAX position.
 - (2) Lift screed to the travel position using screed lift switch and close screed travel lock valve per paragraph 2.1.4.
 - (3) Place the throttle control switch in a position to achieve desired speed. Select desired speed by rapidly moving throttle control switch to IDLE then to center detent.
 - (4) Move the speed range switch on the operator control console to the up, "hare", travel position.
 - (5) Place the travel switch in the UP, forward/reverse "F/R" position.



c. Pull up on the control handle release and slowly move the control handles in the direction of travel and set travel speed.

- (1) To travel forward, move both control handles forward an equal amount.
- (2) To travel backward, move both control handles backward an even amount.
- (3) To turn, move one control handle farther than the other control handle.
- (4) To pivot the paving machine in place, move one control handle forward and the other control handle backward equal distances at the same time.

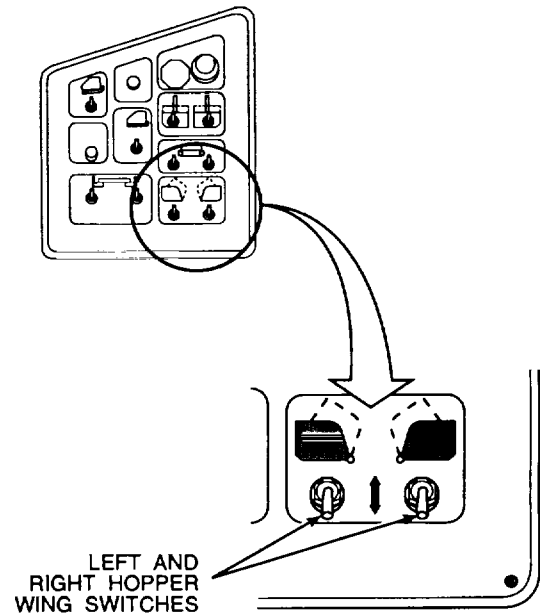


2.13 LOADING THE HOPPER.

WARNING

Do not raise or lower hopper wings when personnel are working around the front of the machine. Unexpected hopper wing raising or lowering can cause serious injury. Ensure all personnel are clear of hopper wings before operating hopper wings.

- a. Fully lower the hopper wings by holding the hopper wing switches in the down, LOWER position.



WARNING

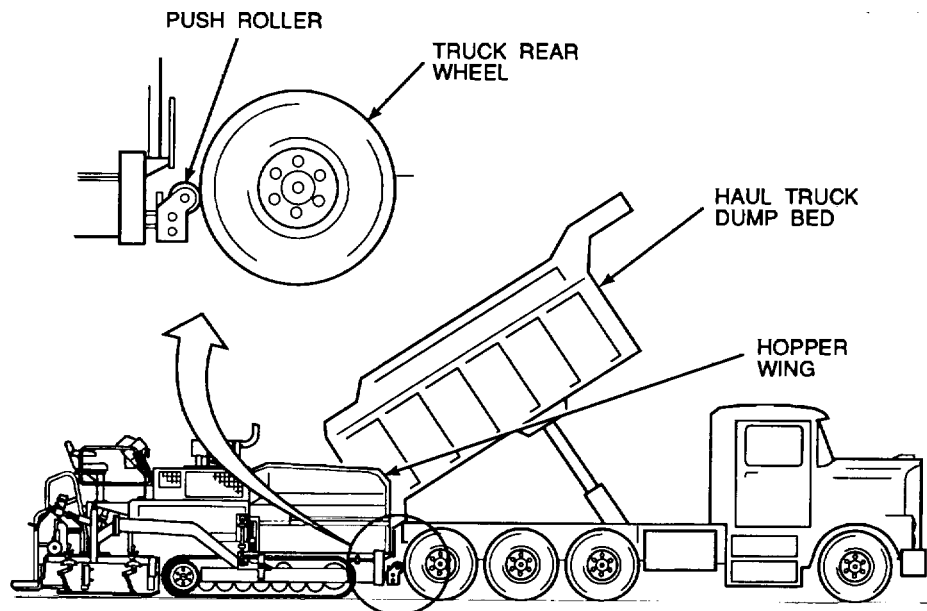
Personnel could be crushed if caught between haul truck and paving machine. Do not allow personnel in front of the hopper when loading the hopper from an asphalt haul truck. Ensure all personnel are clear from front of the machine when backing a haul truck up to the paving machine. Failure to do so may result in serious injury or death.

- b. Back up the haul truck to the paving machine until the truck rear tires make contact with the push rollers.

CAUTION

Establish good communication between paving machine operator and haul truck driver. Use caution when haul trucks are backing up to the hopper. Do not let the haul truck bed hit the hopper wings. Damage to hopper wings may result from collision with haul truck bed.

- c. When in position, instruct haul truck operator to raise dump bed slowly, so the paving material flows down into the paving machine hopper.



2.14 AUGER/CONVEYOR OPERATIONS.

The auger/conveyor system is a dual system. There are left and right controls to operate each system together, independently, and in different modes, if required. The following operating instructions discuss operating the system as a dual system. To operate the left or right side independently use the left or right side controls separately.

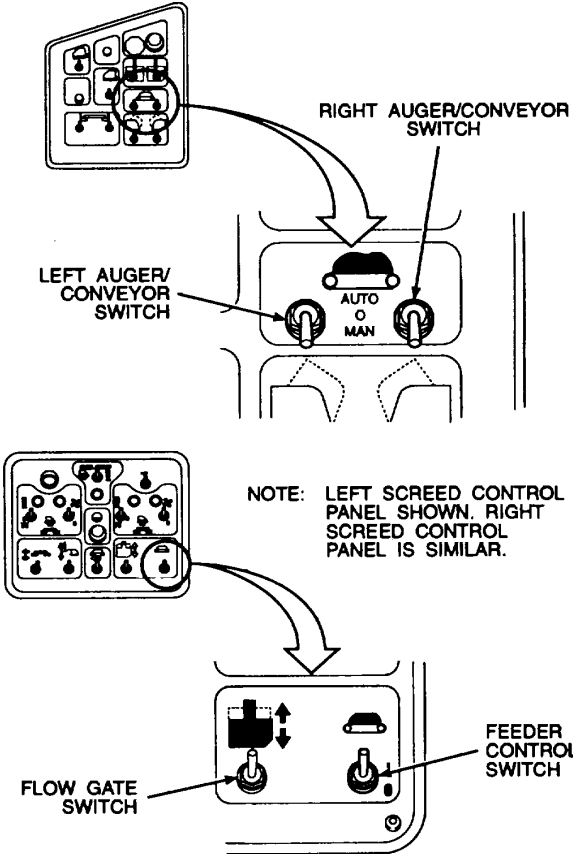
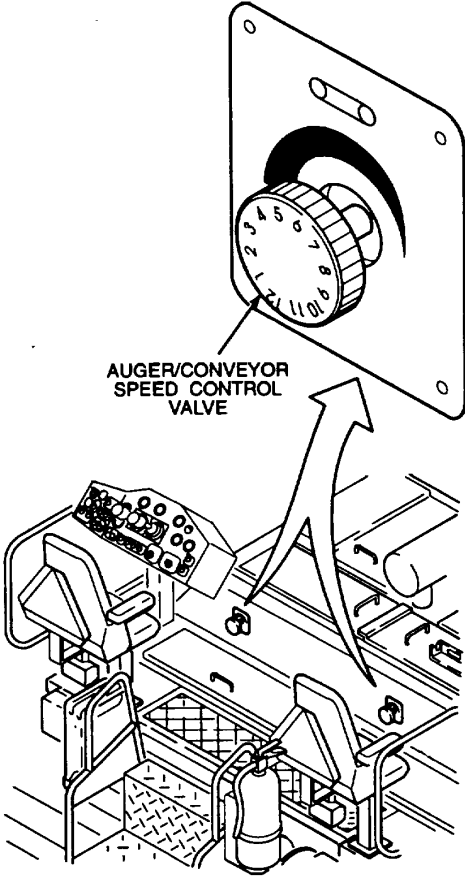
2.14.1 Manual Operation.

- a. Turn left and right auger/conveyor speed control valves fully clockwise and then back-off each valve three clicks. This is done to balance out auger/conveyor speed at the start of paving. To further adjust the speed of left or right auger/conveyor systems, turn the speed control valve counterclockwise to increase speed and clockwise to decrease speed.
- b. Place left and right auger/conveyor switches to MAN.

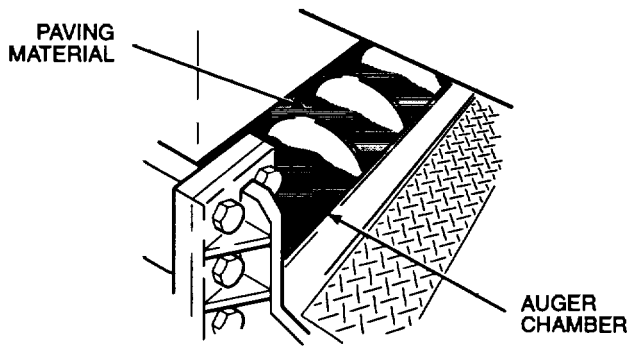
NOTE

Either left or right feeder control switches and left or right flow gate switches can be used to regulate flow of paving material from the hopper to the augers. The two controls can be used independently or together to maintain the desired level of paving material in auger chamber. These switches are located on both left and right screed control panels and operator control console switch panel.

- c. Move the flow gate switch up to increase the material flow or down to decrease or stop the material flow. The flow gate switch is used to maintain proper paving material level in the auger chamber. Depth of paving material should be maintained at one half to three quarters the height of the auger diameter.



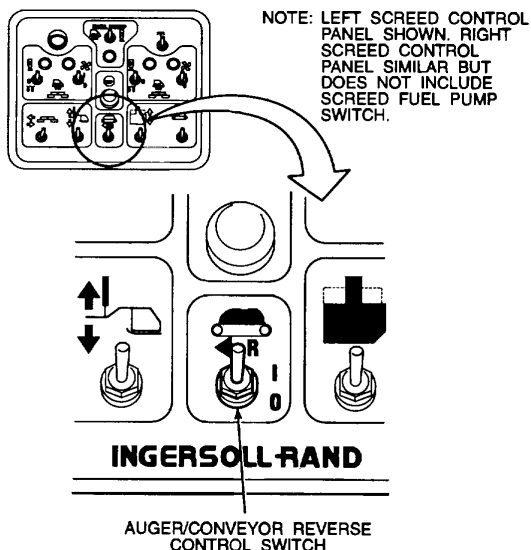
- d. Jog left or right feeder control switch up, ON, and down, OFF, to maintain proper paving material level in the auger chamber. Depth of paving material should be maintained at one half to three quarters the height of the auger diameter.



NOTE

If reverse operation of the auger/conveyor system is desired in the manual mode, with the auger/conveyor switch on the operator control console in manual, turn the feeder control switch on the screed control panel off and place the auger/conveyor reverse control switch in the up, ON, position.

- e. Place the auger/conveyor switch in down, "MAN", position then the auger/conveyor reverse control switch in the up, REVERSE, position if auger/conveyor manual operation in reverse is desired. Auger/conveyor reverse control switches are located on both left and right screed control panels only.



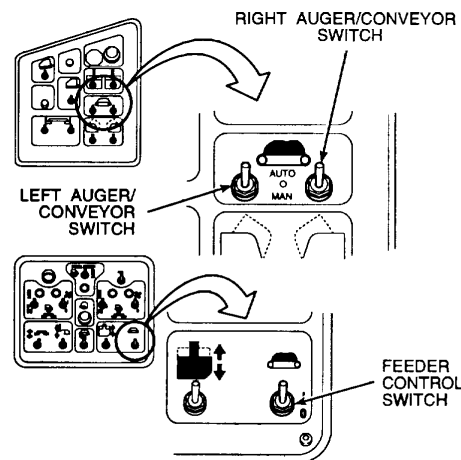
2.14.2 Automatic Operation.

- a. Turn left and right auger/conveyor speed control valves fully clockwise and then back-off the valve three clicks. This is done to balance out auger/conveyor speed at the start of paving. To further adjust the speed of left or right auger/conveyor systems turn the speed control valve counterclockwise to increase speed and clockwise to decrease speed.

NOTE

If reverse operation of the auger/conveyor system is desired in the manual mode, with the auger/conveyor switch on the operator control console in manual, turn the auger/conveyor switch on the screed control panel off and place the auger/conveyor reverse control switch in the up, ON, position.

- b. Place left and right auger/conveyor switches on operator control console switch panel to up, AUTO position.
- c. Place left and right feeder control switches in the up, ON, position on both screed control panels. Ensure the auger/conveyor indicator lights on the gauge panel are on.
- d. If the automatic control is not maintaining proper level in the auger chamber, raise or lower flow gates, increase or decrease the speed of the auger/conveyor systems by adjusting the auger/conveyor speed control valve, or, adjust the feed limit switch paddle.



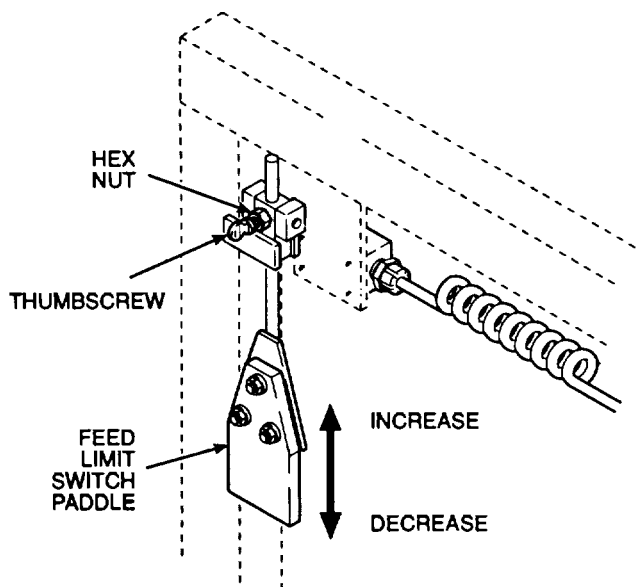
2.14.3 Feed Limit Switch Paddle Adjustment.

NOTE

Feed limit switch paddle adjustment is the same for left and right paddles.

- a. To increase the amount of material allowed to accumulate in auger chamber during automatic auger/ conveyor system operation, use the following procedure.
 - (1) Loosen hex nut.
 - (2) Loosen thumbscrew.
 - (3) Slide feed limit switch paddle upward to the depth desired.
 - (4) Tighten thumbscrew and hex nut.

- b. To decrease the amount of material allowed to accumulate in auger chamber during automatic auger/ conveyor system operation, use the following procedure.
 - (1) Loosen hex nut.
 - (2) Loosen thumbscrew.
 - (3) Slide feed limit switch paddle downward to the depth desired.
 - (4) Tighten thumbscrew and hex nut.



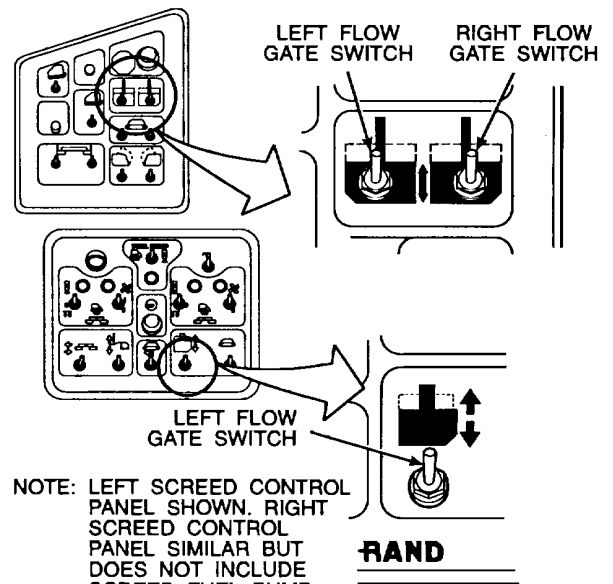
2.15 FLOW GATE OPERATION.

NOTE

Flow gate switches are located on both the switch panel and screed control panel. The flow gate switches on the left and right screed control panels control flow gates on each side respectively.

- a. To change flow gate position, hold the flow gate switch in the up position to increase flow or in the down position to decrease flow.

- b. When the flow gate reaches the desired position, release the flow gate switch. The switch will spring return to the center neutral position.



NOTE: LEFT SCREED CONTROL PANEL SHOWN. RIGHT SCREED CONTROL PANEL SIMILAR BUT DOES NOT INCLUDE SCREED FUEL PUMP SWITCH.

2.16 SCREED BURNER OPERATION.

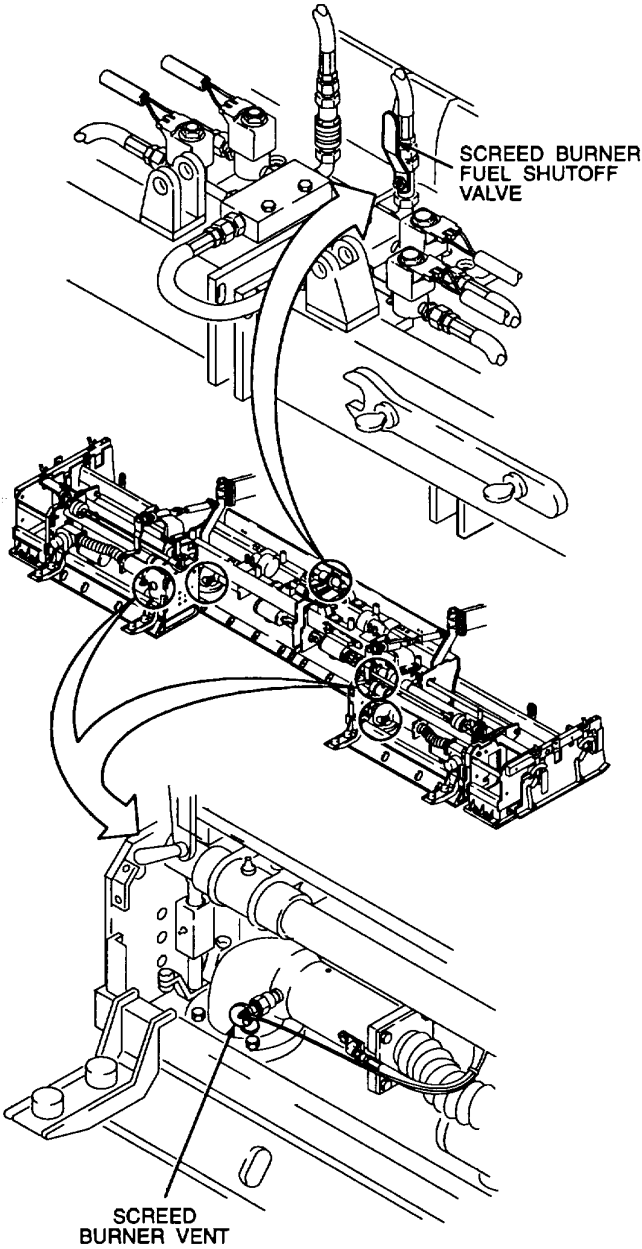
- a. Start paving machine per paragraph 2.10.
- b. Set the throttle control switch to left, MAX.
- c. Raise screed per paragraph 2.1.2.
- d. Extend left and right screed extensions fully open using extension screed control switches on left and right screed control panels or on switch panel per 2.19.
- e. Lower screed per paragraph 2.1.2.

- f. Ensure all four, left and right, and main and extension, screed burner vents are fully open.

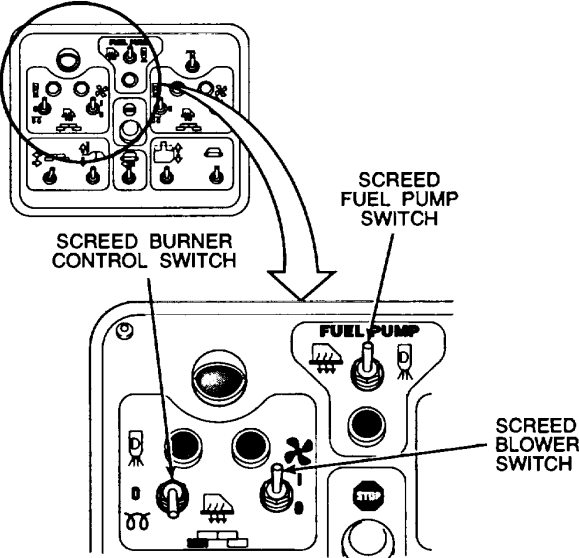
NOTE

Manual fuel shutoff valve must be open during screed burner operations. Valve is open when valve handle is straight up.

- g. Ensure screed burner fuel shutoff valve is open by turning the valve handle to the 12 o'clock position.



- h. Place the screed fuel pump switch on the left screed control panel to the up, ON, position.



WARNING

Do not leave screed unattended while burners are in operation. If burners are extinguished and fuel pump is running, the hot screed plate will accumulate flammable diesel fuel. If flame does go out, immediately shut off the fuel supply. Raise screed to drain off excess fuel. Ventilate the area before relighting.

CAUTION

Excessive heat can cause damage to screed plates. Do not operate burners longer than 15 minutes.

Trailing edge of main and extension screed plates must be free of material buildup. Material buildup on the screed plate can block proper burner ventilation, cause excessive smoke generation, and improper heating of screed plates.

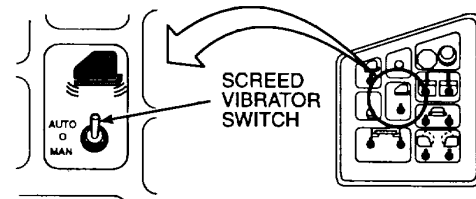
- i. Ignite left extension and left main screed burners separately from right extension and right main screed burners. Hold the left extension screed and main screed burner control switches in the down, preheat position.

2.17 SCREED VIBRATOR OPERATION.

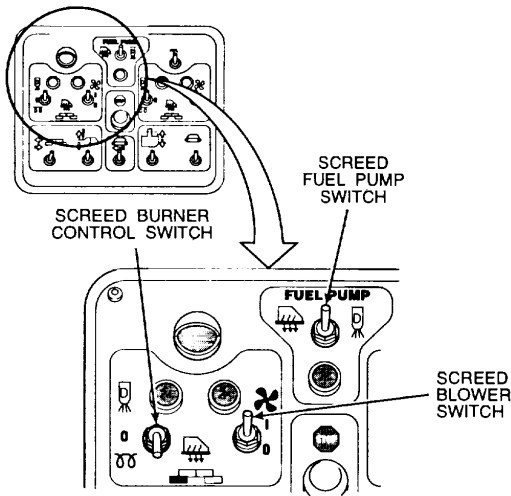
NOTE

When screed vibrator switch is placed in the AUTO position, the control handles must be moved out of the center, neutral, position for the vibrators to operate.

- a. Place the screed vibrator switch in the down, "MAN", position for manual vibration, or up, "AUTO", position for automatic vibration.



- b. Adjust screed vibration speed with the screed vibration control valve located on the rear bulkhead to achieve desired screed vibration speed. Turn control valve clockwise to increase the vibration and counterclockwise to decrease the vibration. Screed vibration speed should only be adjusted when the screed vibrator switch is in the "MAN" position. If using "AUTO" position, switch back to "MAN", set vibration speed, and then switch back to "AUTO" position.

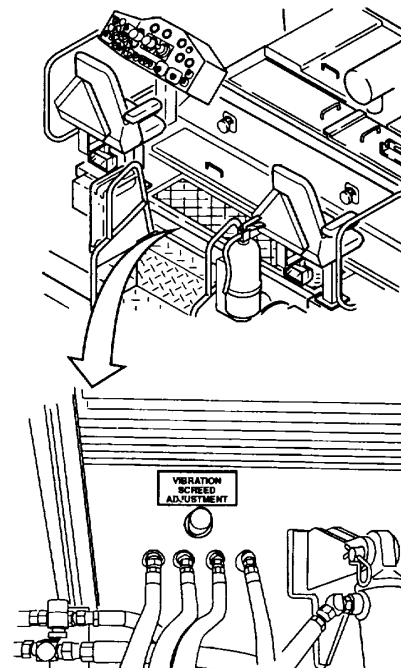


- j. After fifteen seconds, place the screed burner control switch in the up, SPRAY, position.

NOTE

When burner ignites there should be an audible sound indicating combustion. Smoke and flame should be visible when the burner ignites.

- k. When burner ignites, and ignition is confirmed by observing smoke and flame or by an audible sound, turn extension screed and main screed blower switches to the up, ON, position.
- l. If burner does not ignite, repeat steps g through k a maximum of four times. If burners fail to ignite after the fourth attempt, refer to operator troubleshooting procedures paragraph 3.2.
- m. Repeat steps g through k for the right extension screed and right main screed burners.
- n. Adjust screed blower vents to achieve desired burner flame. Open the vents to increase the flame and close the vents to decrease the flame.
- o. To extinguish the screed burners, turn screed burner control switch center, OFF position.
- p. Place the screed fuel pump switch in the down, OFF, position.
- q. Set screed burner fuel shutoff valve to off by turning valve handle to the 3 o'clock position.
- r. After five minutes, turn screed blower switch down, OFF position.

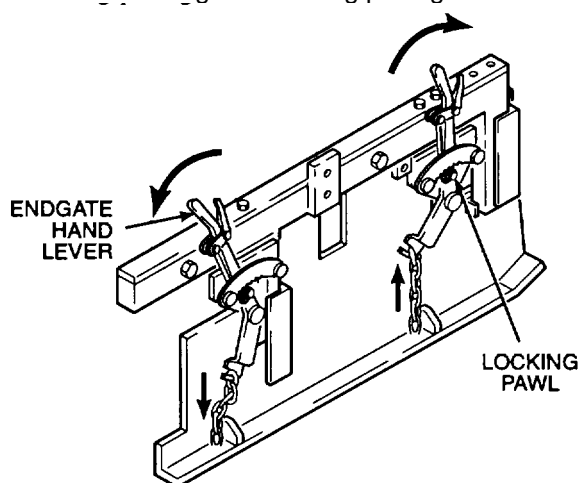


2.18 ENDGATE HEIGHT ADJUSTMENT.

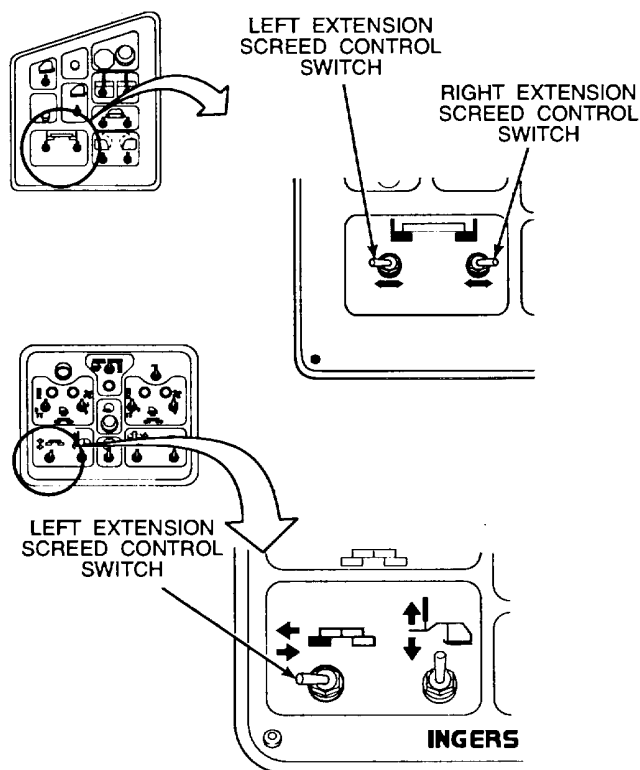
NOTE

The procedure for left and right endgate height adjustment is the same.

- a. Squeeze the endgate hand lever to release handle locking device.
- b. Move the endgate hand lever forward to raise endgates, or backward to lower endgates.
- c. When the endgate reaches the desired height, release endgate hand lever to engage locking pawl. The endgates are normally allowed to float on the ground during paving.



- b. When the extension screed reaches the desired width, release switch. Switch will spring return to center (neutral) position.



NOTE: LEFT SCREED CONTROL PANEL SHOWN. RIGHT SCREED CONTROL PANEL SIMILAR BUT DOES NOT INCLUDE SCREED FUEL PUMP SWITCH.

2.19 EXTENSION SCREED CONTROL.

CAUTION

Use extreme caution when retracting extension screed when auger and fender extensions or bolt on extensions are installed. Damage to extension can occur.

NOTE

Both the paving machine operator and screed crew can extend and retract the extension screed. One set of switches is located on the switch panel and single side controls are located on each screed control panel.

- a. Move the extension screed control switch on either the switch panel or left and right screed control panels in the direction of the arrows to extend and retract the extension screeds.

2.20 SCREED ANGLE OF ATTACK ADJUSTMENT.

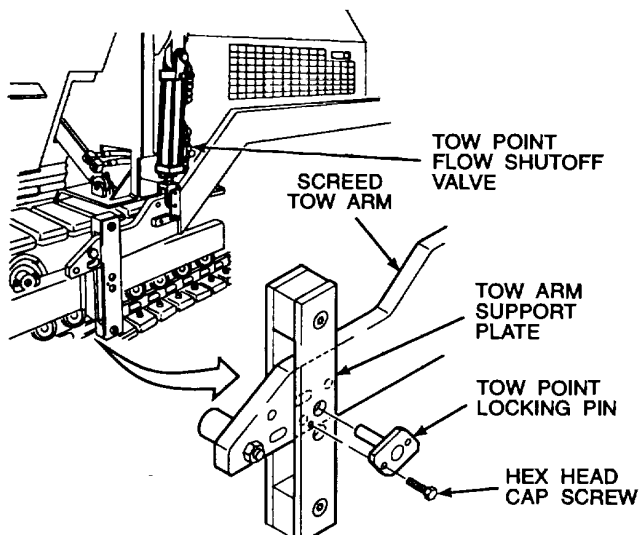
The screed angle of attack is adjusted using either of two methods, the tow point movement switch or the screed thickness control. Both methods will adjust angle of attack and thereby change mat thickness. Using the thickness control occurs only in preparation for paving, paragraph 2.23.1 and when tow point movement switch fails.

2.20.1 Tow Point Control.

CAUTION

Ensure tow point locking pins are not installed when adjusting screed angle of attack using tow point movement switches. Tow point locking pins are installed in an emergency when tow point cylinders fail to operate. Adjusting angle of attack using tow point movement switches may result in damage to tow point locking pins and tow point cylinders.

- a. Ensure tow point locking pins are not installed. If installed, remove per the following for both left and right sides.



NOTE

Ensure weight of screed tow arm is taken off the tow point locking pin prior to removal. Manually adjust the position of the tow arm to take the weight off the tow point locking pin using the screed thickness control per paragraph 2.20.2.

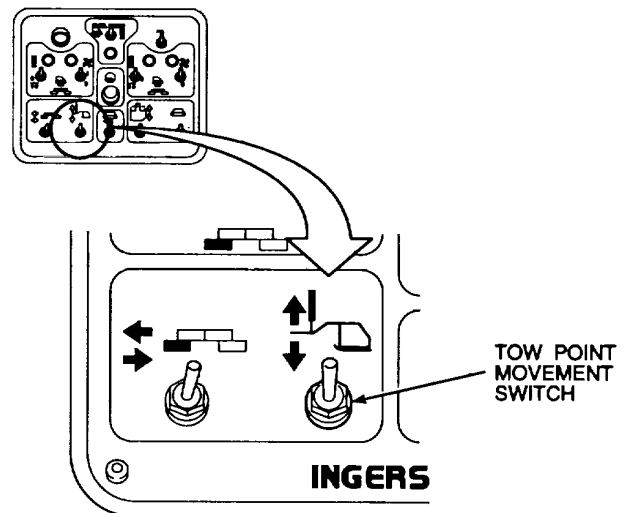
- (1) Access toolbox per paragraph 3.3.1 and retrieve wrench set.

- (2) Using a wrench, remove hex head cap screw from tow arm support plate.
- (3) Remove tow point locking pin.
- (4) Reinstall hex head cap screw into threaded hole on tow arm support plate.
- (5) Put tow point locking pins and wrench set back into toolbox and secure toolbox per paragraph 3.3.1.

NOTE

Ensure tow point flow shutoff valve is fully open (counterclockwise).

- b. Hold the tow point movement switch in the up, RAISE position, to increase angle of attack, or in the down, LOWER position, to decrease angle of attack.
- c. When the tow point reaches the desired position, release the tow point movement switch.
- d. Using tow point control angle of attack adjustment will result in a 6 in. (152 mm) mat thickness only. This is due to the maximum stroke length of the tow point cylinders. To increase mat thickness to the maximum of 8 in. (203 mm) refer to paragraph 2.26.9.



2.20.2 Screed Thickness Control.

NOTE

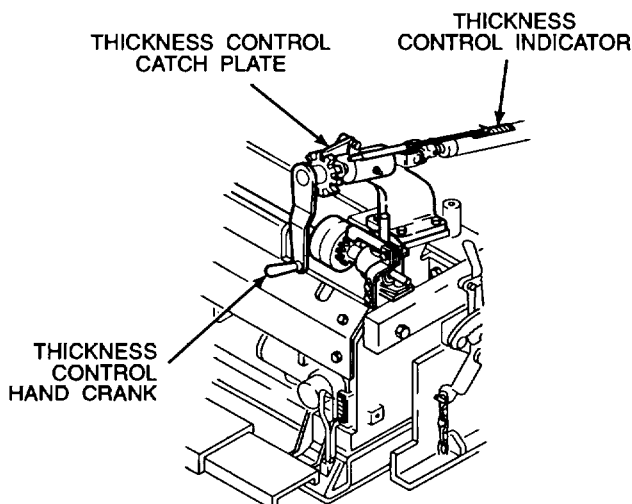
Procedure for left and right thickness control is the same.

- a. Lift screed thickness control catch plate.
- b. Turn screed thickness control hand crank clockwise to increase angle of attack or counterclockwise to decrease angle of attack.

NOTE

Indicator for screed thickness control is provided for reference only and does not indicate an actual thickness value.

- c. When screed thickness control reaches the desired position, lock screed thickness control catch plate in position. Note position of thickness control indicator on indicator scale for future use.



2.21 EXTENSION SCREED HEIGHT ADJUSTMENT.

2.21.1 Changing Extension Screed Height.

NOTE

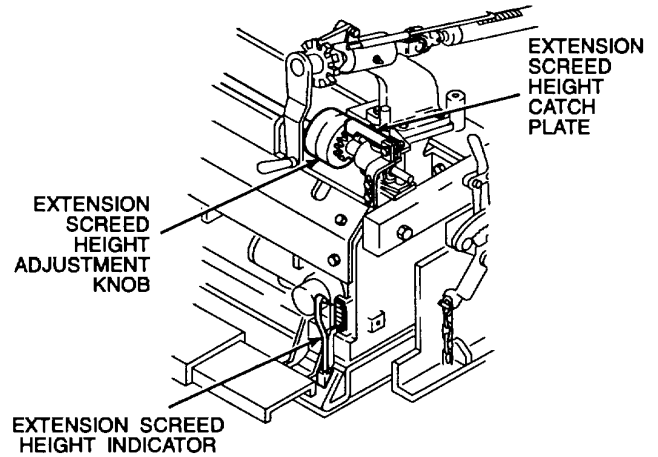
Procedure for changing left and right extension screed height is the same.

- a. Lift the extension screed height catch plate.
- b. Turn the extension screed height adjustment knob backward to raise extension screed height, or forward to lower extension screed height.

NOTE

Indicator for extension screed height is provided for reference only and does not indicate an actual height value.

- c. When the extension screed reaches the desired height, lock the extension screed height catch plate in position. Note position of height indicator on indicator scale for future use.

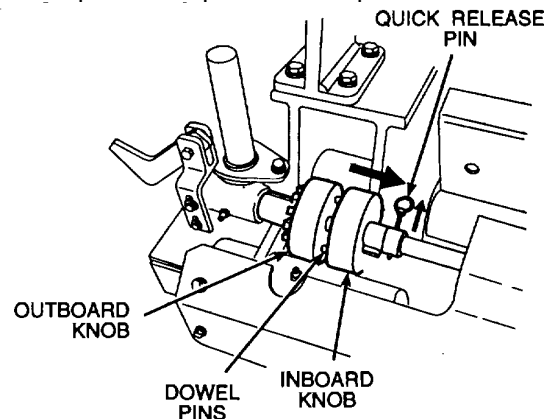


2.21.2 Angling the Extension Screeds.

NOTE

Left and right extension screed angles are set independently from each other.

- a. Remove the quick release pin from the shaft on either left or right extension screed height adjustment knob.
- b. Slide the inboard knob apart from the outboard knob.
- c. Independently turn each knob to achieve the desired extension screed angle.
- d. Line up knob dowel pins on inboard knob with holes on outboard knob and slide together. Replace the quick release pin.



2.22 SCREED CROWN CONTROL.

- a. Remove the two thumbscrews holding the crown adjustment wrench to the screed and remove the wrench.
- b. Grab the screed steps at the front edge of the top step. Lift and pull the steps up and away from the tractor.

CAUTION

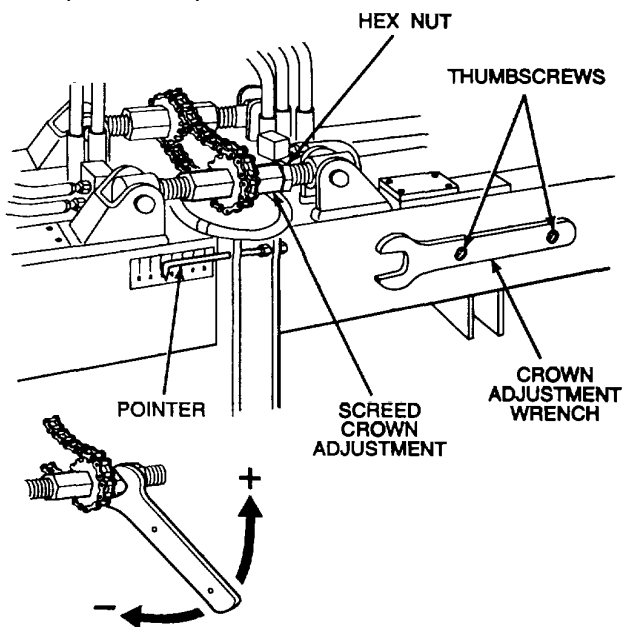
Do not pinch or crush fuel hose when adjusting screed crown adjustment. A pinched or crushed fuel hose can result in a fuel leak.

- c. Using crown adjustment wrench, loosen hex nut to free screed crown adjustment.

NOTE

Pointer for screed crown adjustment is provided for reference only and does not indicate an actual crown value.

- d. Turn the screed crown adjustment down for a negative crown or up for a positive crown. Note position of pointer on scale for future use.



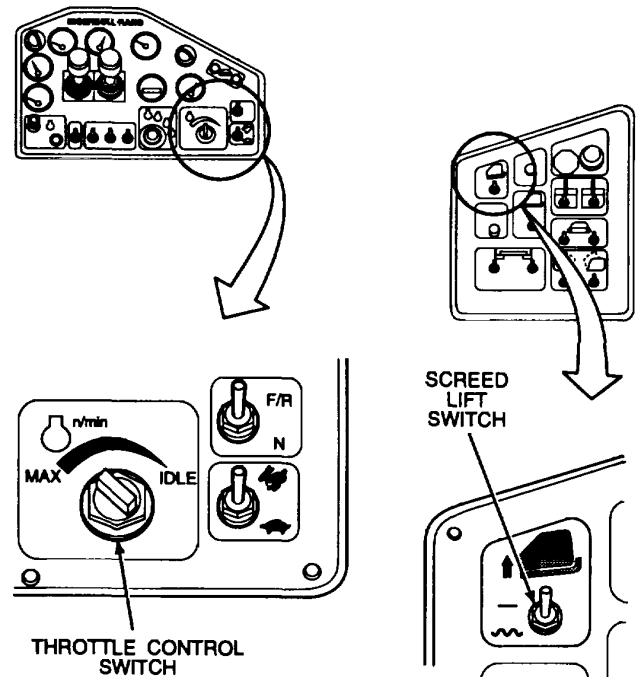
- e. When desired crown is achieved, tighten the hex nut to lock screed crown adjustment in place.

- f. Replace the crown adjustment wrench on the screed and replace thumbscrews.
- g. Lift and push the screed steps forward until fully seated.

2.23 PAVING PROCEDURE.

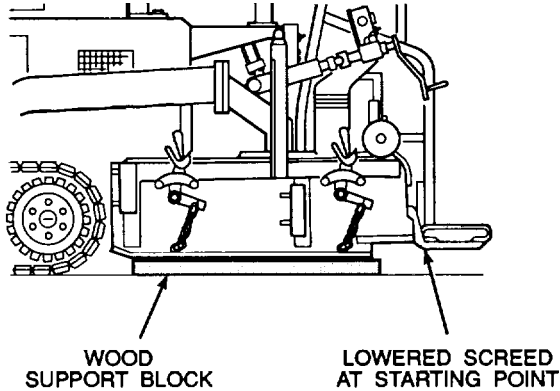
2.23.1 Preparation for Paving.

- a. Start paving machine per paragraph 2.10.
- b. Use spray washdown procedures per paragraph 3.3.7 and wet all surfaces that come in contact with paving material before starting to pave.
- c. Set the throttle control to the desired speed. Select desired speed by rapidly moving the throttle control switch to IDLE, then to the center detent to reduce speed. Rapidly move the switch to MAX, then to the center detent to increase speed.
- d. Place screed lift switch to the up, RAISE position and fully raise the screed. Close screed travel lock valve per paragraph 2.1.4.



- e. Move the paving machine into position where the screed can be lowered to the exact point which the mat is to begin.

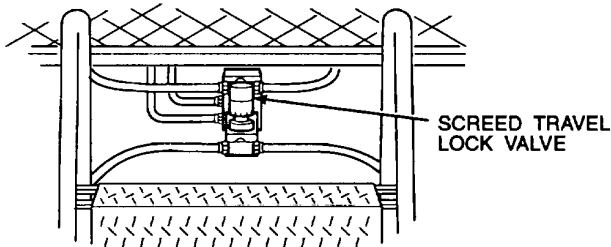
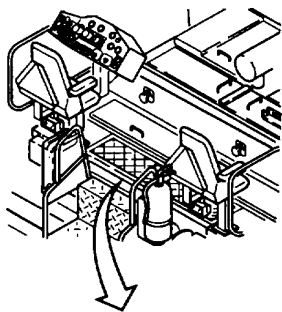
- f. Set wood support blocks under the ends and center of the screed. The wooden blocks should be one quarter inch taller than the desired mat thickness.



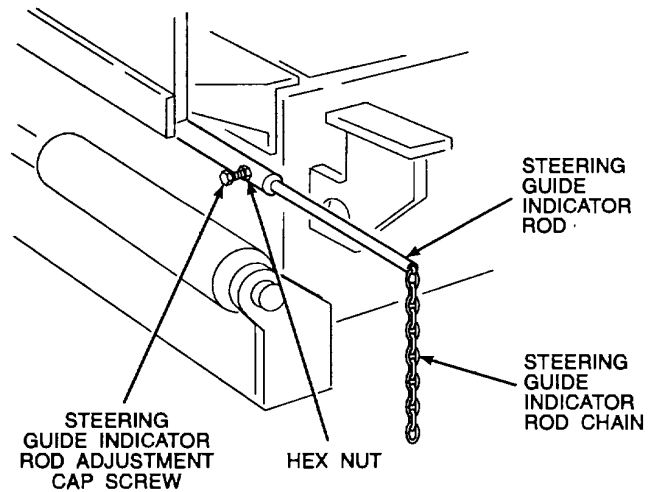
WARNING

Do not open the screed travel lock valve if anyone is near or under the screed. The screed can fall rapidly when the screed travel lock valve is opened. The falling screed can cause severe injury or death.

- g. Turn screed travel lock valve counterclockwise to open valve enough to lower screed onto the blocks using screed lift switch.
- h. Place screed lift switch to the down, FLOAT position and lower the screed onto wood support blocks.

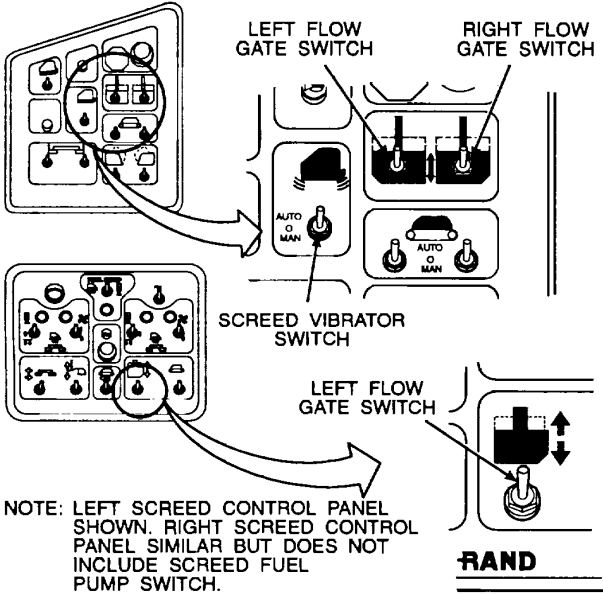


- i. Adjust left and right endgate height so each endgate floats on the ground and moves freely up and down per paragraph 2.18.
- j. Turn left and right screed thickness controls clockwise or counterclockwise until no load (a point of no or least resistance to movement of the screed thickness control) is felt on the screw. This is the "null" position.
- k. Turn thickness control clockwise until a load is felt.
- l. At point of load, turn the screed thickness control two more turns clockwise to establish the initial angle of attack for the screed.
- m. Open the screed travel lock valve counterclockwise to fully open position.
- n. Loosen steering guide indicator rod hex nut and adjustment cap screw.
- o. Extend the steering guide indicator rod so steering guide indicator rod chain falls where the edge of the mat is to be.
- p. Tighten steering guide indicator rod adjustment cap screw and hex nut.

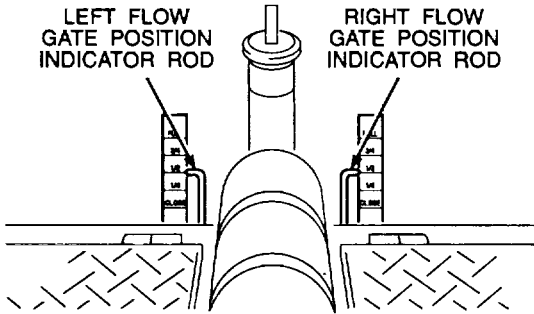


2.23.2 Paving Control Settings.

- a. Place the screed vibrator switch in up, "AUTO" position.
- b. Raise the flow gates to one half open position by moving the left and right flow gate switches to the up, OPEN, position.

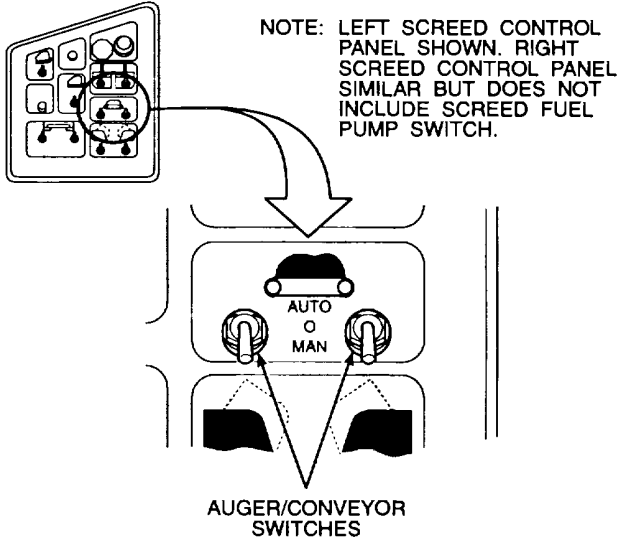
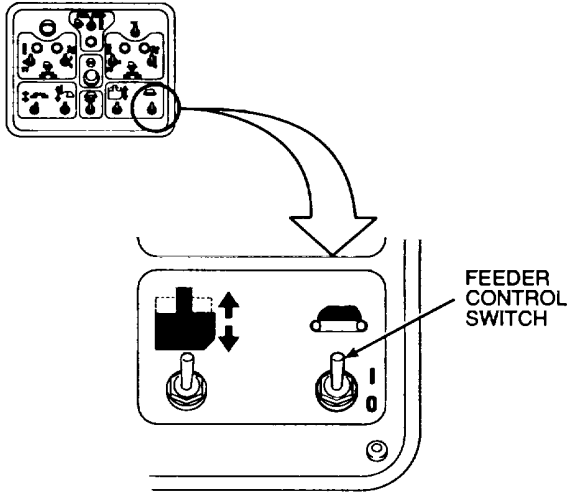


- c. Verify flow gate position by checking left and right flow gate position indicator rods.

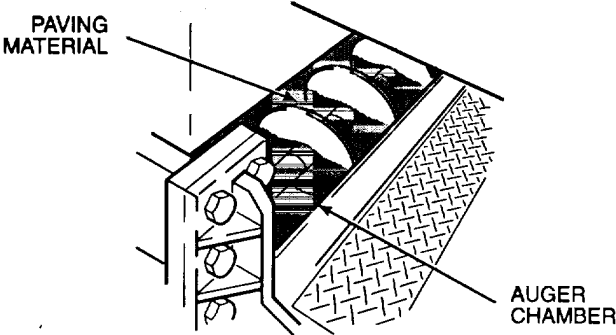
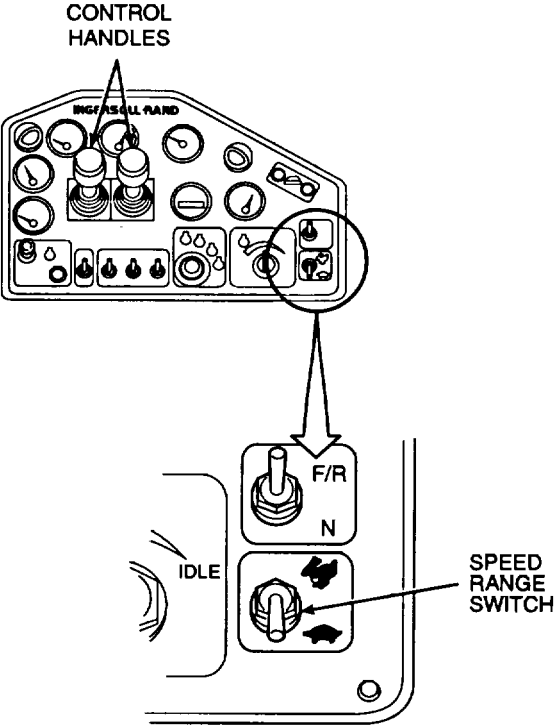


- d. Ignite the screed burners per paragraph 2.16 to heat the screed plates. Extinguish the main screed and extension screed burners after approximately ten minutes.

- e. Fill the hopper with paving material per paragraph 2.13.
- f. Place the feeder control switches on screed control panels in the up, ON, position.
- g. Place the auger/conveyor switches on switch panel in the down, "MAN", position.
- h. When the paving material reaches a level of one half to three quarters of the auger diameter, place the auger/conveyor switches on switch panel in the center, OFF position.

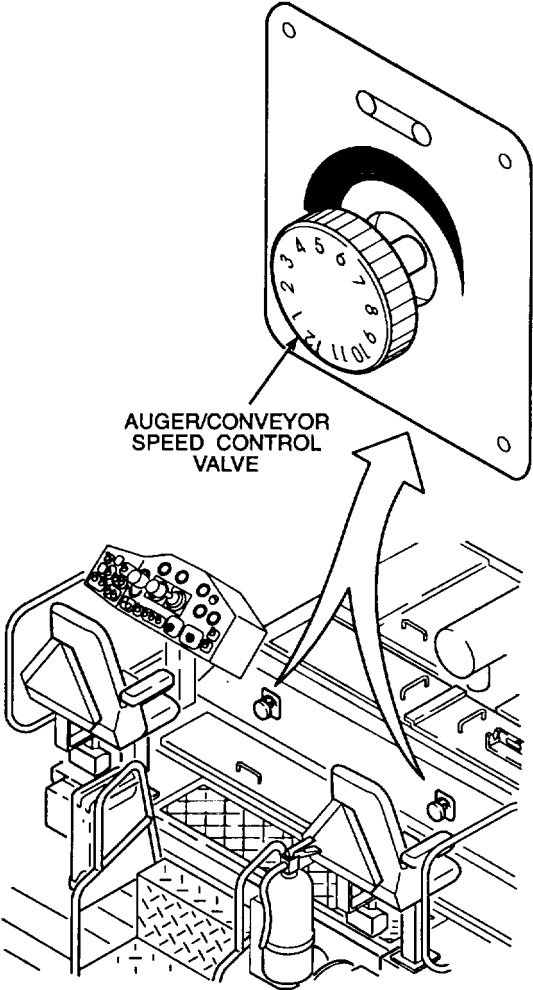


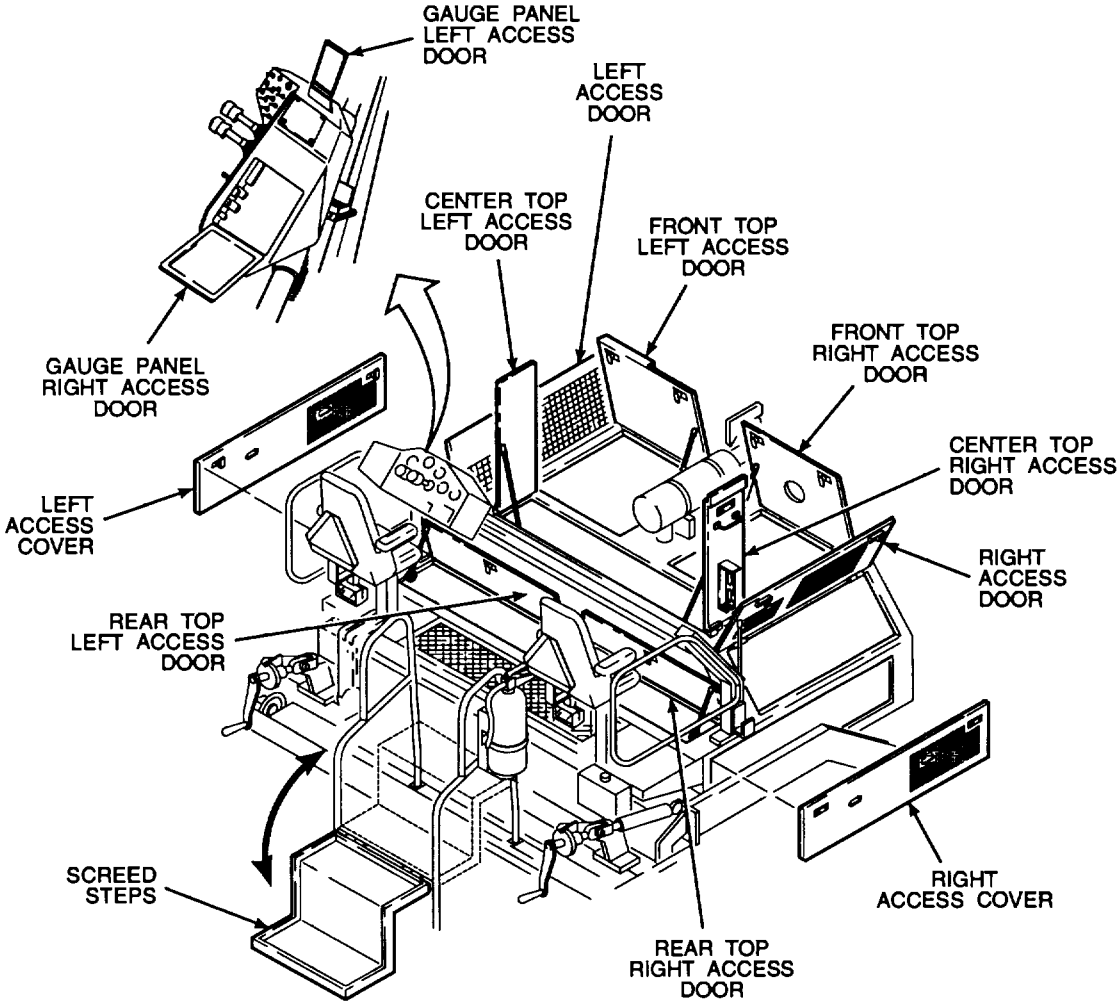
- i. Place the speed range switch in the down, "tortoise", pave position.



- n. Steer the paving machine to keep the steering guide indicator rod aligned with the edge of the paving reference marker.

- j. Place the auger/conveyor switches in up "AUTO" and start moving the paving machine forward by pulling up on control handle releases and moving both control handles forward an equal amount.
- k. After traveling approximately 20 ft (6 m), check mat thickness and adjust the angle of attack if necessary.
- l. If the mat shows streaks at the inside ends of the extension screeds, adjust extension screed height to remove the streaks.
- m. Adjust auger/conveyor speed with the auger/conveyor speed control valve or adjust flow gate to ensure sufficient asphalt at the ends of the screed. The paving material should rise to one half to three quarters of the auger diameter.



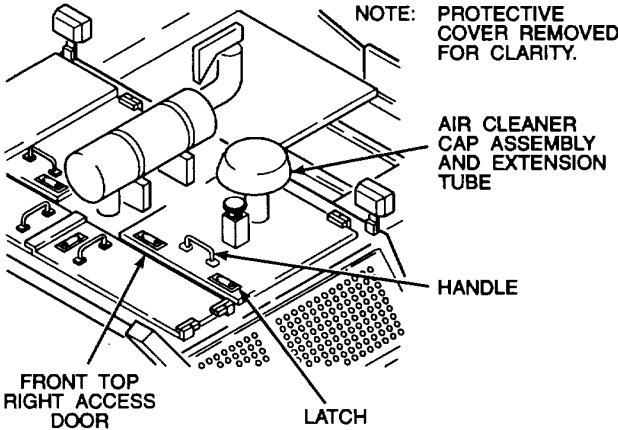


2.24 ACCESS COVERS AND DOORS.

The paving machine is equipped with covers and doors which provide access to internal equipment. The covers and doors are equipped with latches to hold them shut when access is not needed. The doors are equipped with support rods to hold them open. The screed steps are removable and tilt back to provide access to the area underneath.

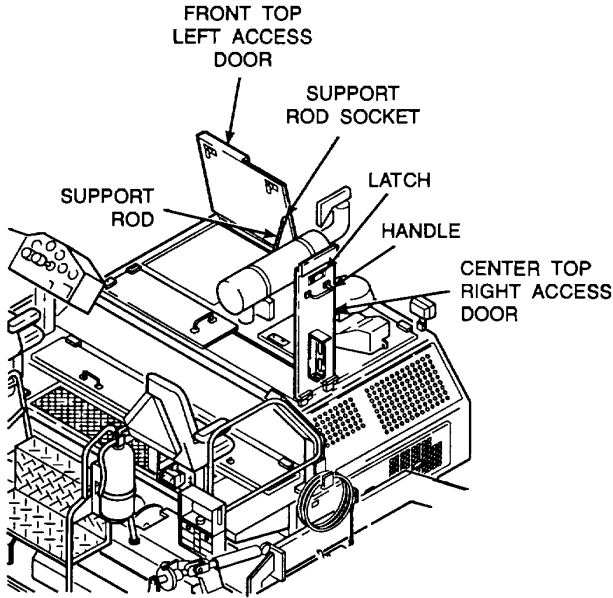
2.24.1 Opening Access Doors.

- a. Open the front top right access door using the following steps.
 - (1) Remove air cleaner cap assembly and extension tube by twisting and pulling straight up.
 - (2) Push in on one end of the latch and lift the other end, then turn 90°.



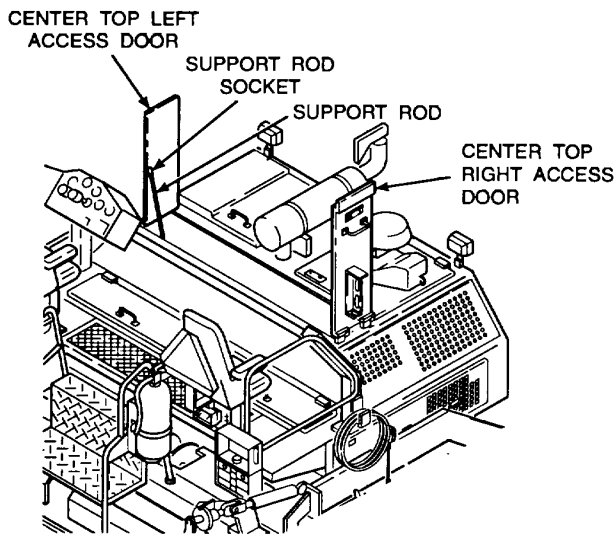
- (3) Using the handle, lift the access door.
- (4) Support the access door open by placing the support rod in the support rod socket.

b. Open front top left or center top right access door using the following steps.



- (1) Push in on one end of the latch and lift the other end, then turn 90°.
- (2) Using the handle, lift the access door.
- (3) Support the access door open by placing the support rod in the support rod socket.

c. Open the center top left access door using the following steps.

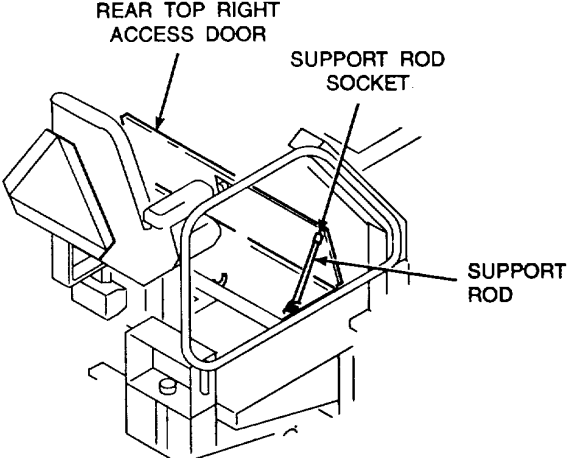


- (1) Open center top right access door per step b.
- (2) Using the handle, lift the center top left access door.
- (3) Support the access door open by placing the support rod in the support rod socket.

d. Open the rear top right access door using the following steps.

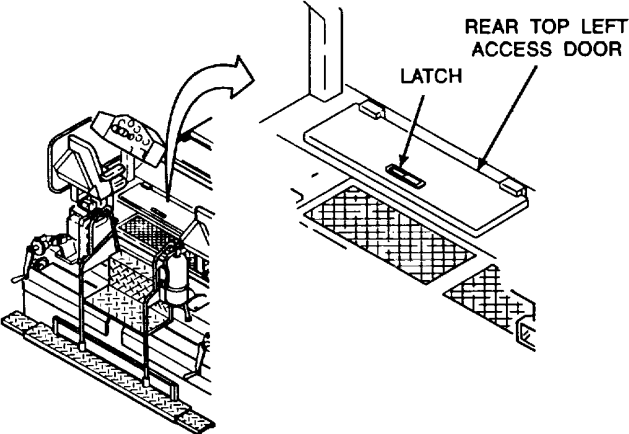
- (1) Remove padlock securing the access door closed. Padlock key is located on ignition key ring.
- (2) Push in on one end of the latch and lift the other end, then turn 90°.
- (3) Using the handle, raise the access door.
- (4) Turn the latch 90° and lower to lock.

- (5) Raise the access door and support the access door open by placing the support rod in the support rod socket.



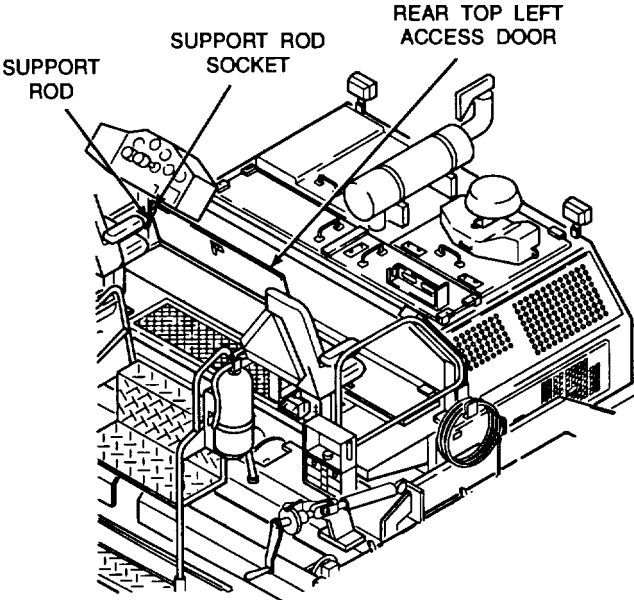
e. Open the rear top left access door using the following steps.

- (1) Push in on one end of the latch and lift the other end, then turn 90°.

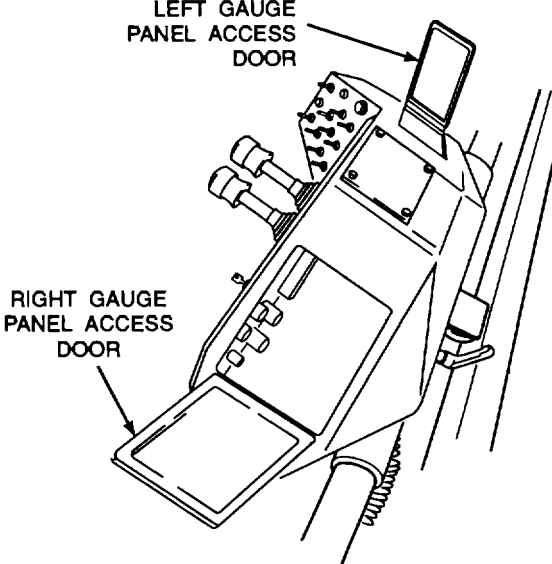


- (2) Using the edge of the door, raise the access door.
- (3) Turn the latch 90° and lower to lock.

- (4) Raise the access door and support the access door open by placing the support rod in the support rod socket.



f. Open the gauge panel left and right access door.

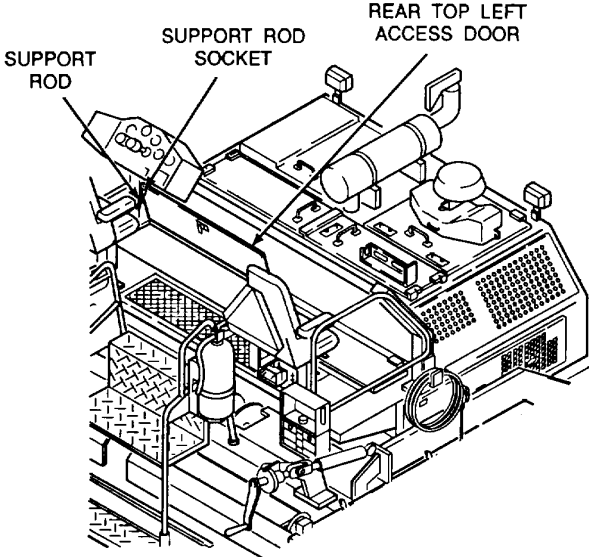


- (1) Push in on one end of latch and lift other end. Turn 90°.
- (2) Lift access door.

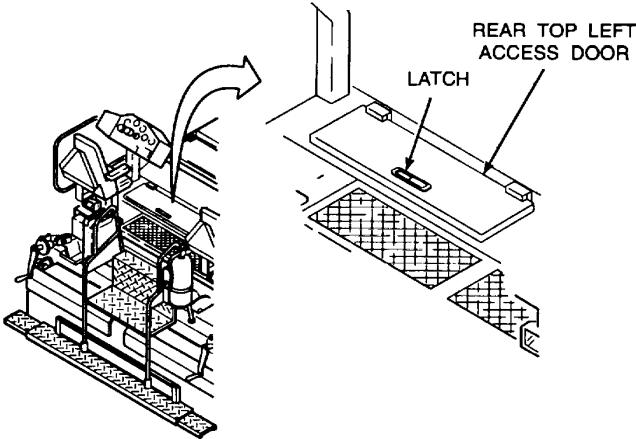
2.24.2 Closing Access Doors.

a. Close the rear top left access door using the following steps.

- (1) Lift the access door to release the support rod from the support rod socket.



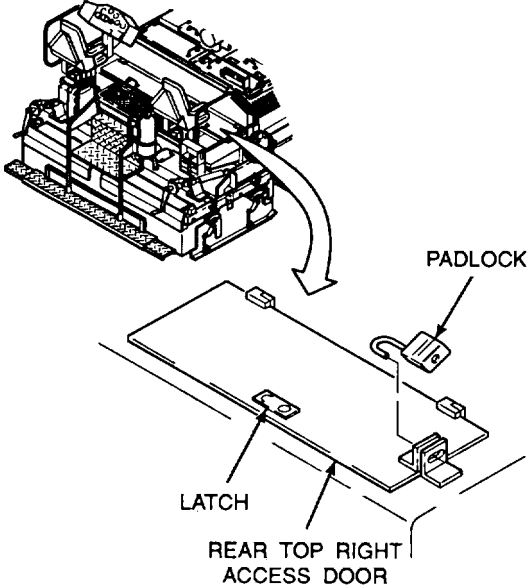
- (2) Place the support rod on the stowage hook.
- (3) Using the edge of the access door, lower the access door.
- (4) Push in on one end of the latch and lift the other end, then turn 90°.



- (5) Lower access door.
- (6) Turn the latch 90° and lower to lock.

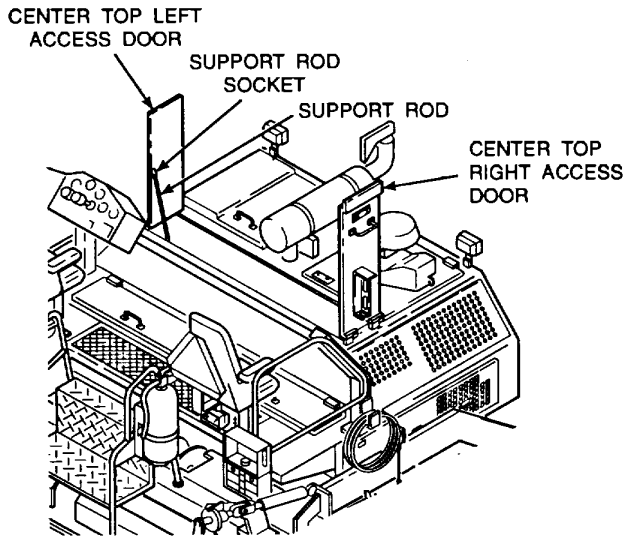
b. Close the rear top right access door using the following steps.

- (1) Lift the access door to release the support rod from the support rod socket.
- (2) Place the support rod on the stowage hook.
- (3) Using the edge of the access door, lower the access door.
- (4) Push in on one end of the latch and lift the other end, then turn 90°.



- (5) Lower access door.
- (6) Turn the latch 90° and lower to lock.
- (7) Secure access door closed with padlock.

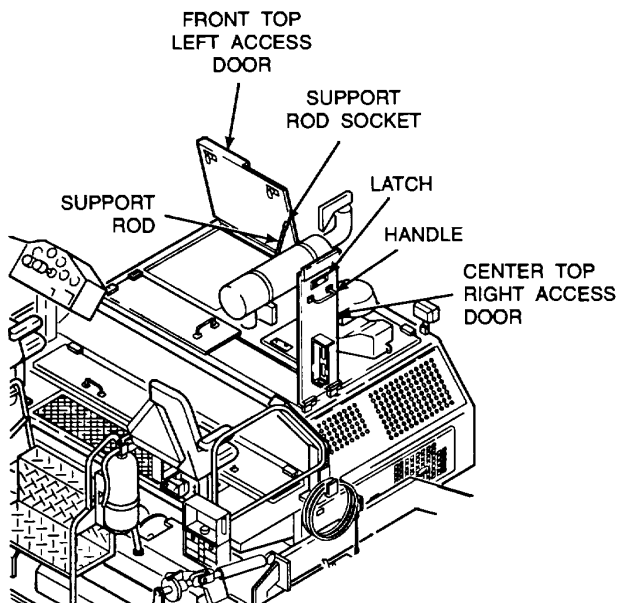
- c. Close the center top left door using the following steps.



- (1) Lift the access door to release the support rod from the support rod socket.
- (2) Place the support rod on the stowage hook.
- (3) Using the handle, close the center top left access door.

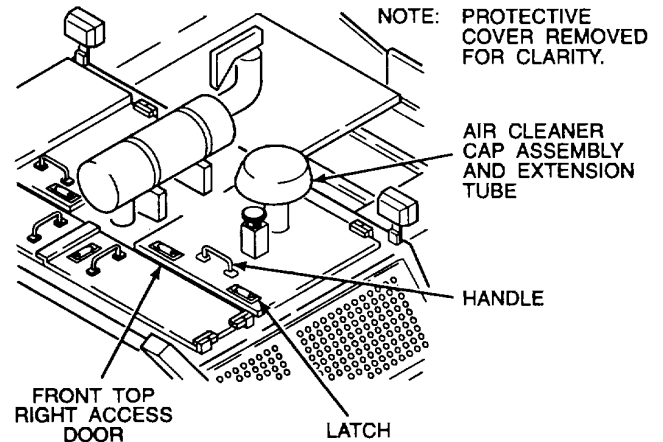
- d. Close the front top left and center top right access door using the following steps.

- (1) Lift the access door to release the support rod from the support rod socket.



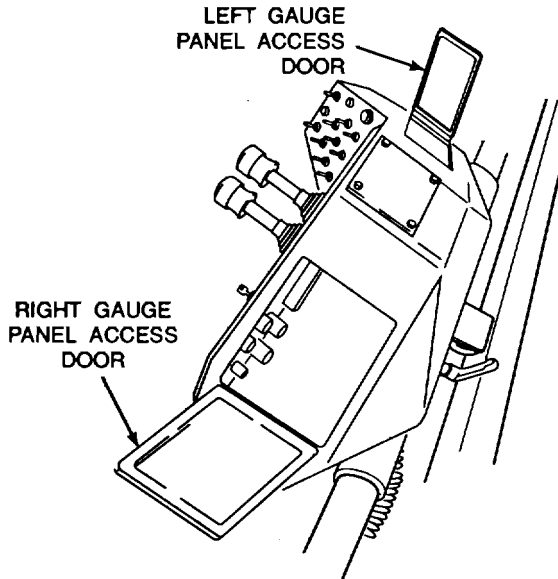
- (2) Place the support rod on the stowage hook.
- (3) Using the handle, lower the access door.
- (4) Turn the latch 90° and lower to lock.

- e. Close the front top right access door using the following steps.



- (1) Lift the access door to release the support rod from the support rod socket.
- (2) Place the support rod on the stowage hook.
- (3) Using the handle, lower the access door.
- (4) Turn the latch 90° and lower to lock.
- (5) Place the air cleaner cap assembly and extension tube over intake pipe. Press and twist until secure.

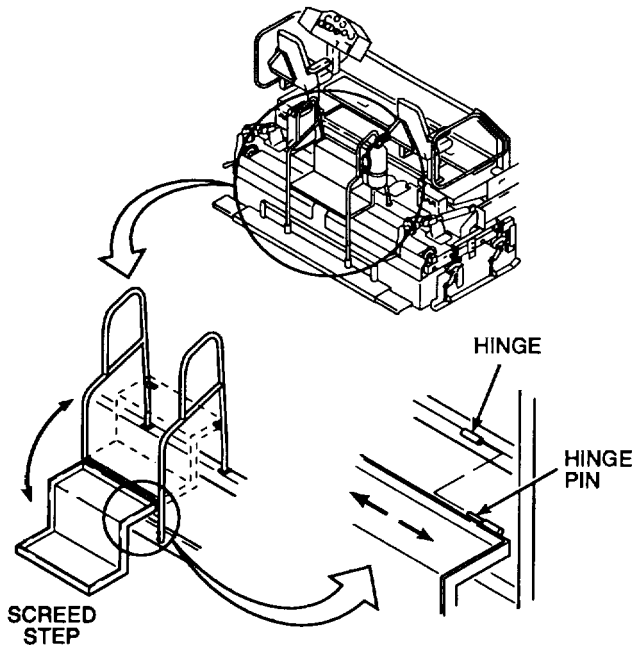
- f. Close the gauge panel left and right access doors.



- (1) Close access door.
- (2) Turn the latch 90° and lower to lock.

2.24.3 Removing Screed Steps.

- a. Grab the screed steps at the back edge of the top step. Lift and pull steps up and away from the tractor.
- b. With the screed steps full back, slide the steps to the right to separate the hinge pin from the hinge.

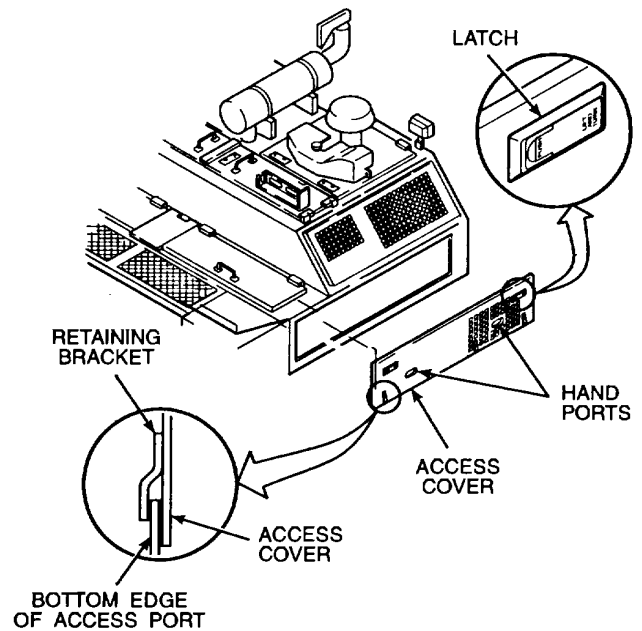


2.24.4 Installing Screed Steps.

- a. Position the screed steps to align the hinge pin with the hinge.
- b. With the screed steps full back, slide the steps to the left, so the hinge pin fits into the hinge.
- c. Lift and push the screed steps forward until fully seated.

2.24.5 Remove Access Covers.

- a. Push in on one end of the latch and lift the other end and turn 90°.



- b. Lift the access cover by the hand ports until the cover retaining brackets on the bottom of the access cover clear the bottom edge of the access port.

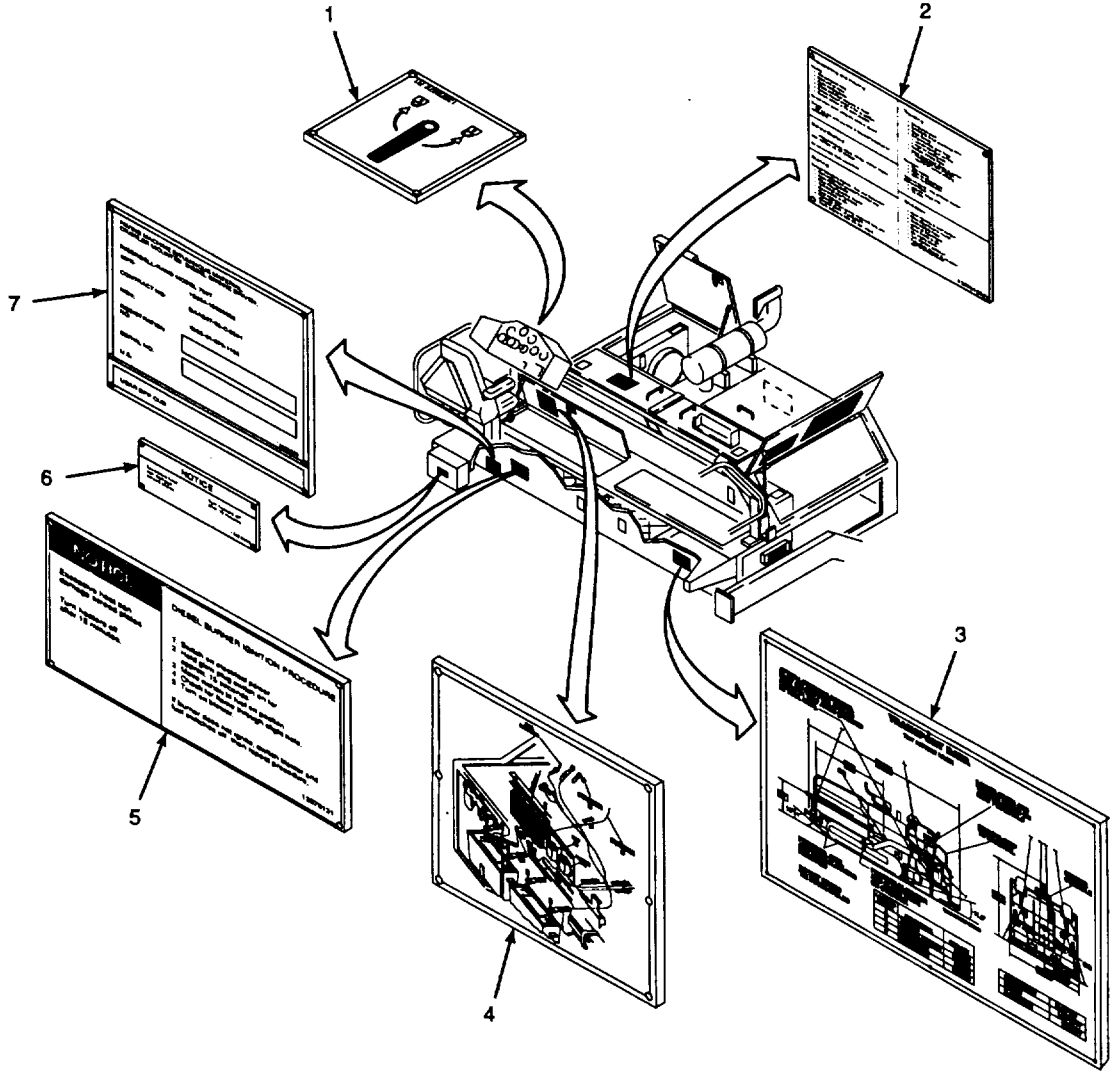
2.24.6 Install Access Covers.

- a. Center the access cover into the access port.
- b. Press down on the hand ports of the access cover until the cover retaining brackets on the bottom edge of the access cover are fully seated onto the bottom edge of the access port.
- c. Press the access cover against the port wall near the latch.
- d. Turn the latch 90° and lower to lock.

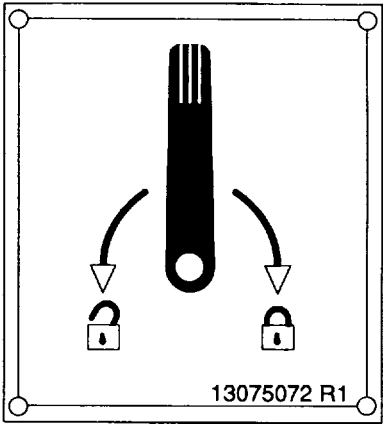
2.25 DECALS AND INSTRUCTION PLATES.

The 780T asphalt paving machine has several decals and instruction plates located on the machine that are essential for safe, efficient operation. Related warning and caution decals are present next to the danger it is the intention to prevent. Decals pertinent to operation of the paving machine and functions are placed on or around the operators platform. Prior to operating the paving machine the operator and crew shall read all safety and instruction decals and plates posted on the machine.

a. Operation, Instruction, and Safety Plates. The following illustrations detail the location and content of each operation, instruction, and safety plates essential to the safe operation of the paving machine. Locate and read all plates prior to operation of the paving machine.



1. Control Console Brake Plate. Identifies direction to move handle to open and close.



2. Operating Instructions Plate. Provides instructions for transporting and hauling, traveling, starting, and shutdown of the paving machine.

NOTE

The parking brake is applied by placing the control handles in the center, neutral position and the travel switch in the neutral, "N" position.

3. Transport Data Plate. Provides clearance information, tiedown and lifting locations and blocking instructions.

<p>Transporting and Hauling:</p> <p>Hauling:</p> <ul style="list-style-type: none"> Use adequate ramp. Back roll up ramp. Apply parking brake. Check and chock axles to trailer. Secure hooper straps in the up position. Secure screed in the down position. <p>Do not chock down using low areas or axles.</p> <p>Towing:</p> <p>Do not tow until you refer to Operator's Manual for instructions.</p> <p>Before Starting:</p> <ul style="list-style-type: none"> Inspect axles, hoses, fittings, muffler, engine, tires, ratings, etc. for damage. <p>Do not operate faulty equipment.</p> <p>Starting:</p> <p>Consult Operator's Manual. Use your Supervisor.</p> <ul style="list-style-type: none"> Start engine from operator's position only. Apply Parking Brake. Move Travel Levers to Neutral. Turn Off all other functions. Move throttle to idle. Clear work area. Place key switch to Pre-Heat and hold until indicator glows (if provided). Crank engine to start (20 sec. max.) 	<p>Traveling:</p> <ul style="list-style-type: none"> Check work area. Set throttle to full (operating) RPM. Take S-curve. Set appropriate gear range. Low for starting or working. High for roading only. Release parking brake. Move travel lever slowly to control. Travel speed and direction. Neutral for normal braking. <p>Operation:</p> <ul style="list-style-type: none"> Stay seated. Allow no passengers. Allow no bystanders. <p>Side Hill Travel: Use extreme caution. Downhill travel.</p> <ul style="list-style-type: none"> Use low range only. Go slow. <p>Shutdown:</p> <ul style="list-style-type: none"> Move machine to level surface. Move travel lever to neutral. Apply parking brake. Lower all attachments. Move throttle to idle. Idle engine slowly. Turn ignition switch off. Pull engine shut off (if provided). Lock all compartments.
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13070123

TRANSPORT DATA
780T ASPHALT PAVER

LOWER SEATS AND TIGHTEN KNOBS ON SEAT PEDESTALS

SECURE STEP TO HANDRAIL

CENTER CONSOLE

CG

POSITION IN CENTER AND CLOSE VALVE ON CYLINDER

WITH SCREED RAISED

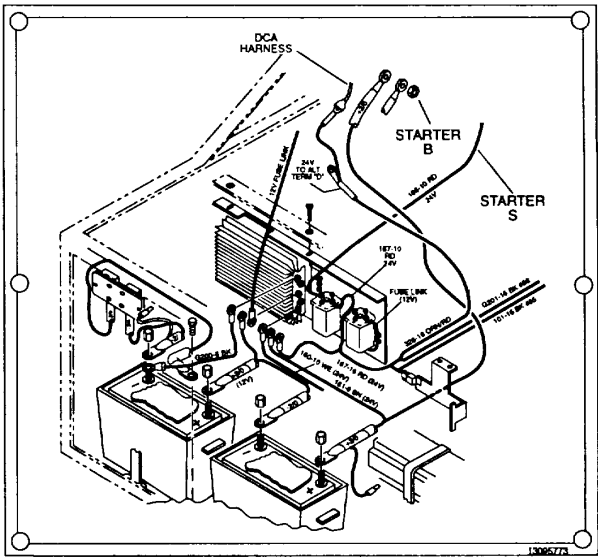
FORWARD, SIDE, AND REAR BLOCKING REQUIRED

DO NOT CROSS TIE DOWN CABLES

LOCATOR SYMBOL	DESCRIPTION	CAPACITY
A	TIEDOWN	5,500 LB
B	OPTIONAL TIEDOWN	15,900 LB
C	LIFT/TIEDOWN	9,400 LB
D	LIFT/TIEDOWN	16,200 LB

GROSS WEIGHT	21,400 LBS
VOLUME	1,000 CU FT
FLOOR SPACE	130 SQ FT

4. Storage Battery and Starting Circuit Connections Plate. Provides pictorial schematic for storage battery and starting circuit wires and cable hookups.



5. Diesel Burner Ignition Procedure Plate. Provides diesel burner ignition procedures.

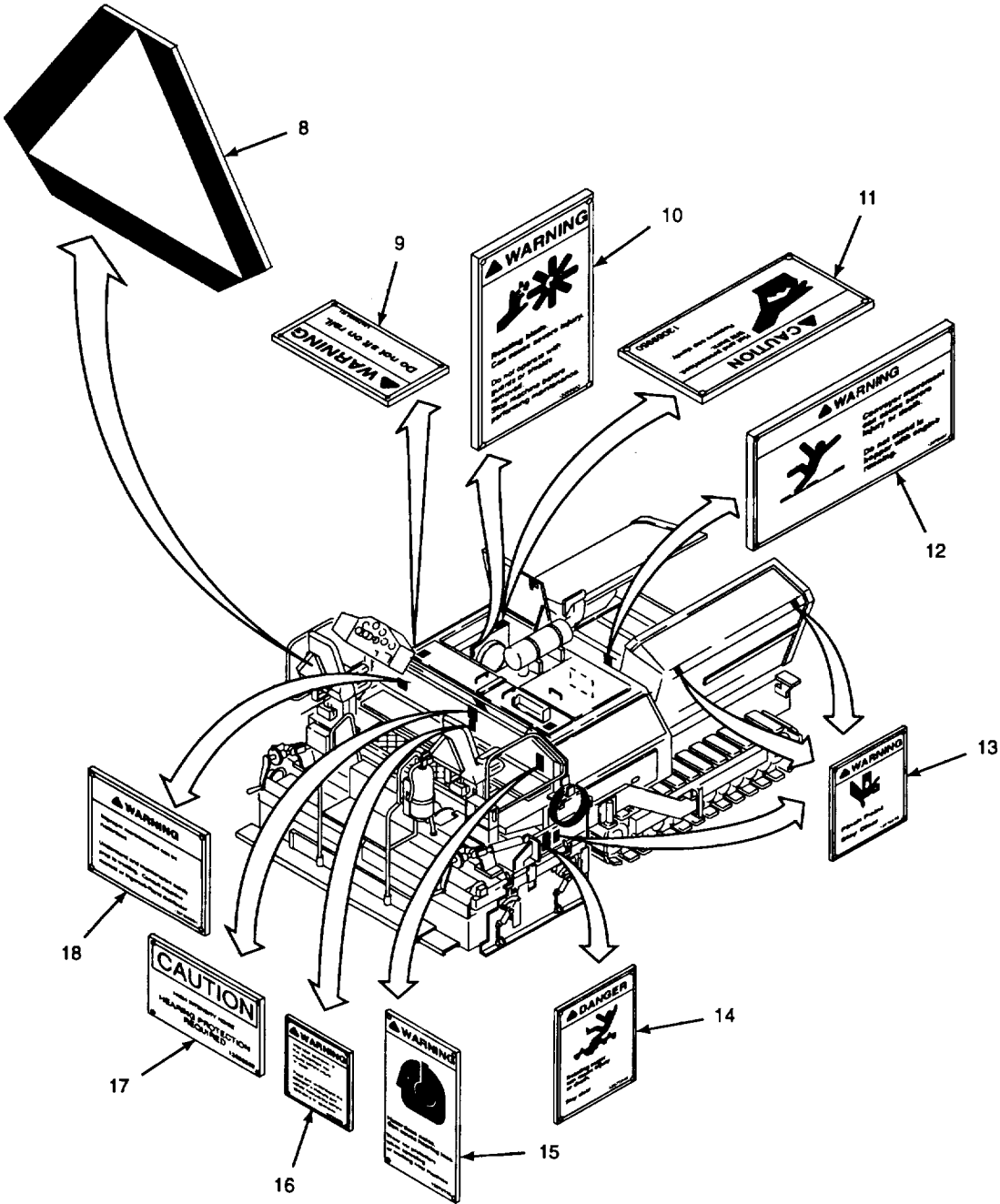
NOTICE	DIESEL BURNER IGNITION PROCEDURE
<p>Excessive heat can damage screed plates.</p> <p>Turn heaters off after 15 minutes.</p>	<ol style="list-style-type: none"> 1. Switch on electrical power 2. Hold glow plug switch on for approx. 15 seconds. 3. Move switch to fuel on position. 4. Check for flame through sight hole. 5. Turn on blower. <p>If burner does not ignite, switch blower and fuel switches off, then repeat procedure.</p>
	13070131

6. Excessive Heat Notice Plate. Identifies maximum allowable time for safe operation of screed burners.

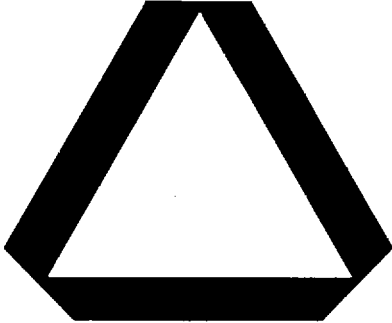
NOTICE	
<p>Excessive heat can damage screed plates.</p>	<p>Turn heaters off after 15 minutes.</p>
13070099	

7. Paving Machine Identification Plate. Provides NSN number, part number, name of manufacturer, contract number, date, serial number, and registration number.

PAVING MACHINE BITUMINOUS MATERIAL: CRAWLER MOUNTED, DIESEL ENGINE DRIVEN,	
INGERSOLL-RAND MODEL 780T	
MFR:	1S654-13063052
CONTRACT NO:	DAAE07-83-C-0501
NSN:	3895-01-379-1102
REGISTRATION NO:	<input type="text"/>
SERIAL NO:	<input type="text"/>
U.S.	
13089669	
USAR DPP CUB	



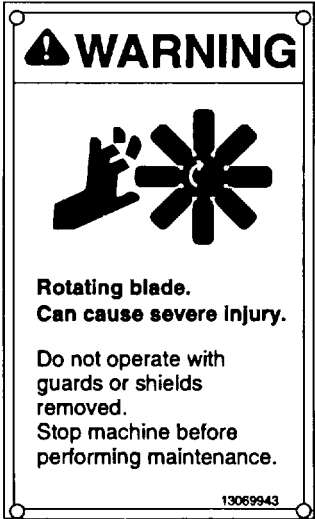
8. Slow Moving Vehicle Signs. Warns other vehicles of paving machine slow speed.



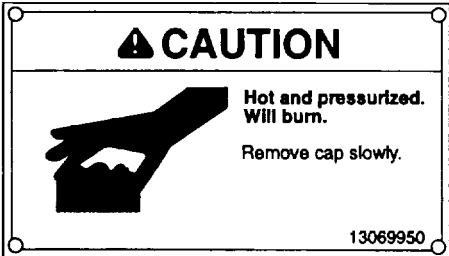
9. Do Not Sit On Rail Warning Plates. Instructs crew not to sit on handrails.



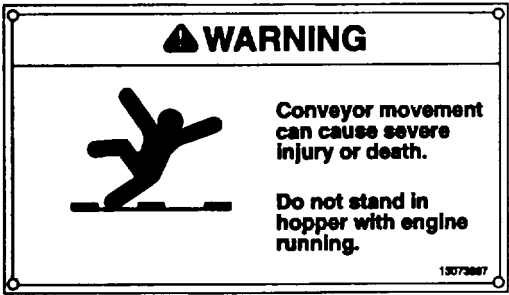
10. Rotating Fan and Belts Warning Plate. Warns crew against rotating fan blades and not operate the paving machine without radiator shroud in place.



11. Hot and Pressurized Cap Caution Plate (Radiator). Cautions crew that radiator cap is hot and pressurized.



12. Conveyor Movement Warning Plate. Instructs crew not to stand in hopper with the engine running and conveyors in operation.



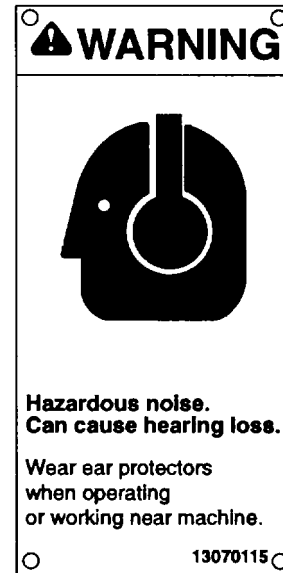
13. Pinch Point Warning Plates. Warn crew of pinch points between paving machine engine cowling and hopper wing and between paving machine main frame and moving screed tow arm.



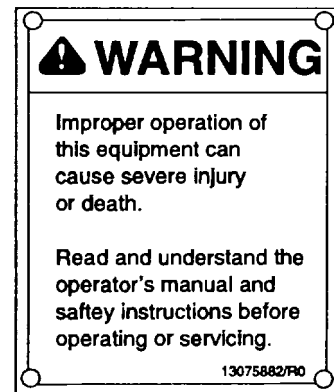
14. Rotating Auger Danger Plates. Instruct crew to avoid auger area during operation.



15. Noise Level Warning Plate. Instructs crew to wear hearing protection when operating or working near the paving machine.



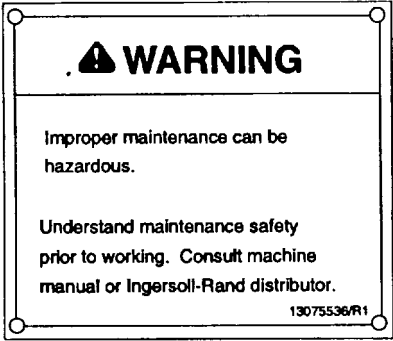
16. Misoperation Warning Plate. Instructs crew to perform paving machine maintenance in accordance with maintenance safety instructions.



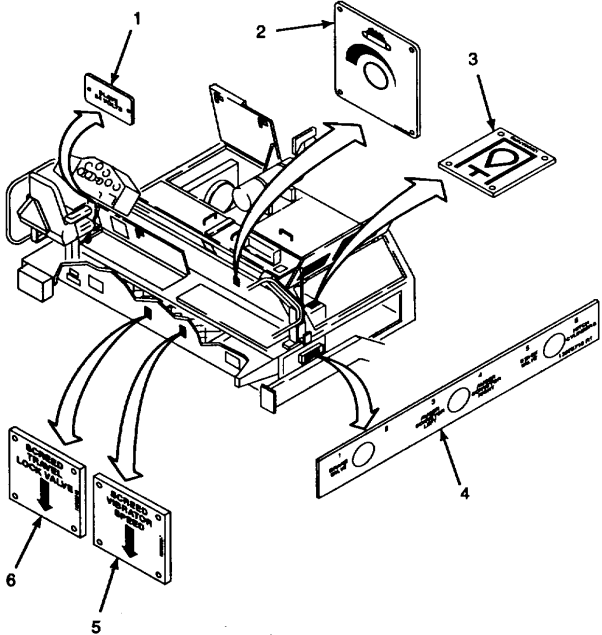
17. High Intensity Noise Caution Plate. Instructs crew that hearing protection is required while operating the paving machine.



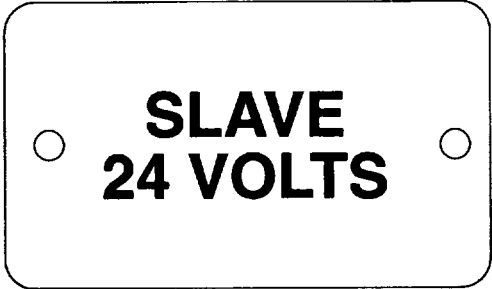
18. Maintenance Warning Plate. Instructs crew to perform machine maintenance in accordance with maintenance safety instructions.



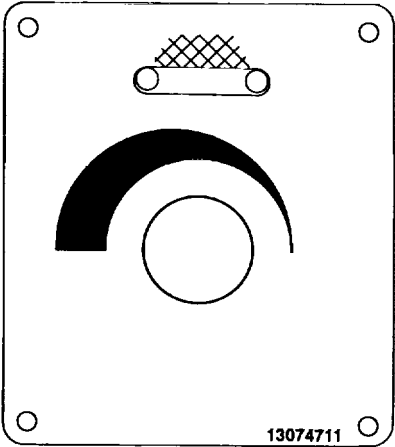
b. Information Plates and Decals. The following illustrations show the location and content of each information plate and decal essential to the safe operation of the paving machine. Locate and read all decals and plates prior to operation of the paving machine.



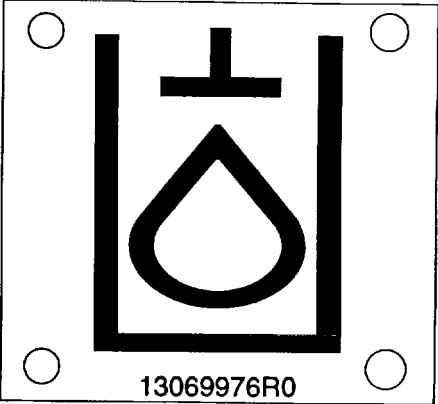
1. Slave 24 Volts Plate. Identifies location of NATO 24 volt slave receptacle.



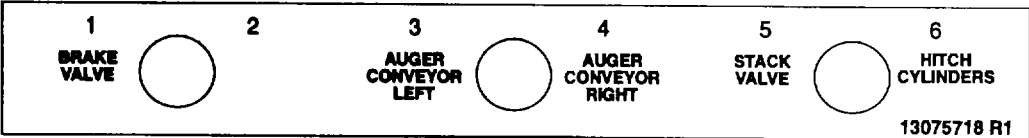
2. Auger/Conveyor Speed Control Plate. Illustrate to the operator the directions to turn the auger/conveyor speed control valves to increase and decrease function operations.



3. Hydraulic Oil Symbol Plate. Indicating hydraulic oil reservoir.

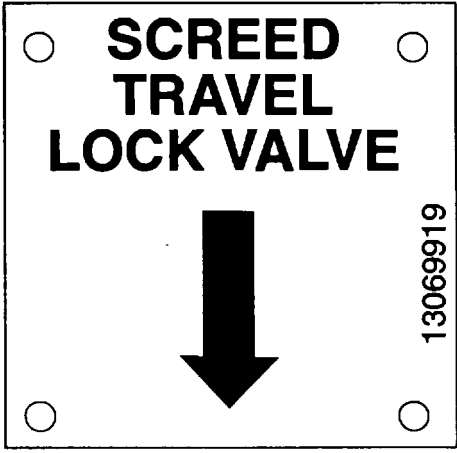
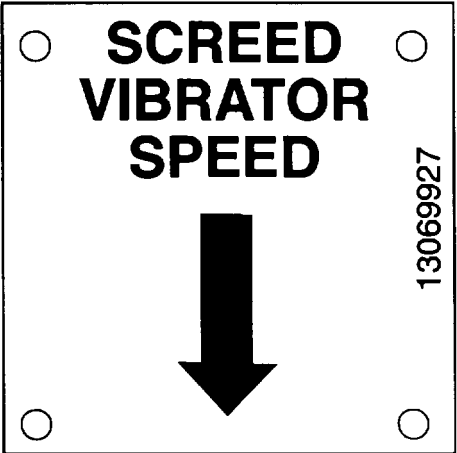


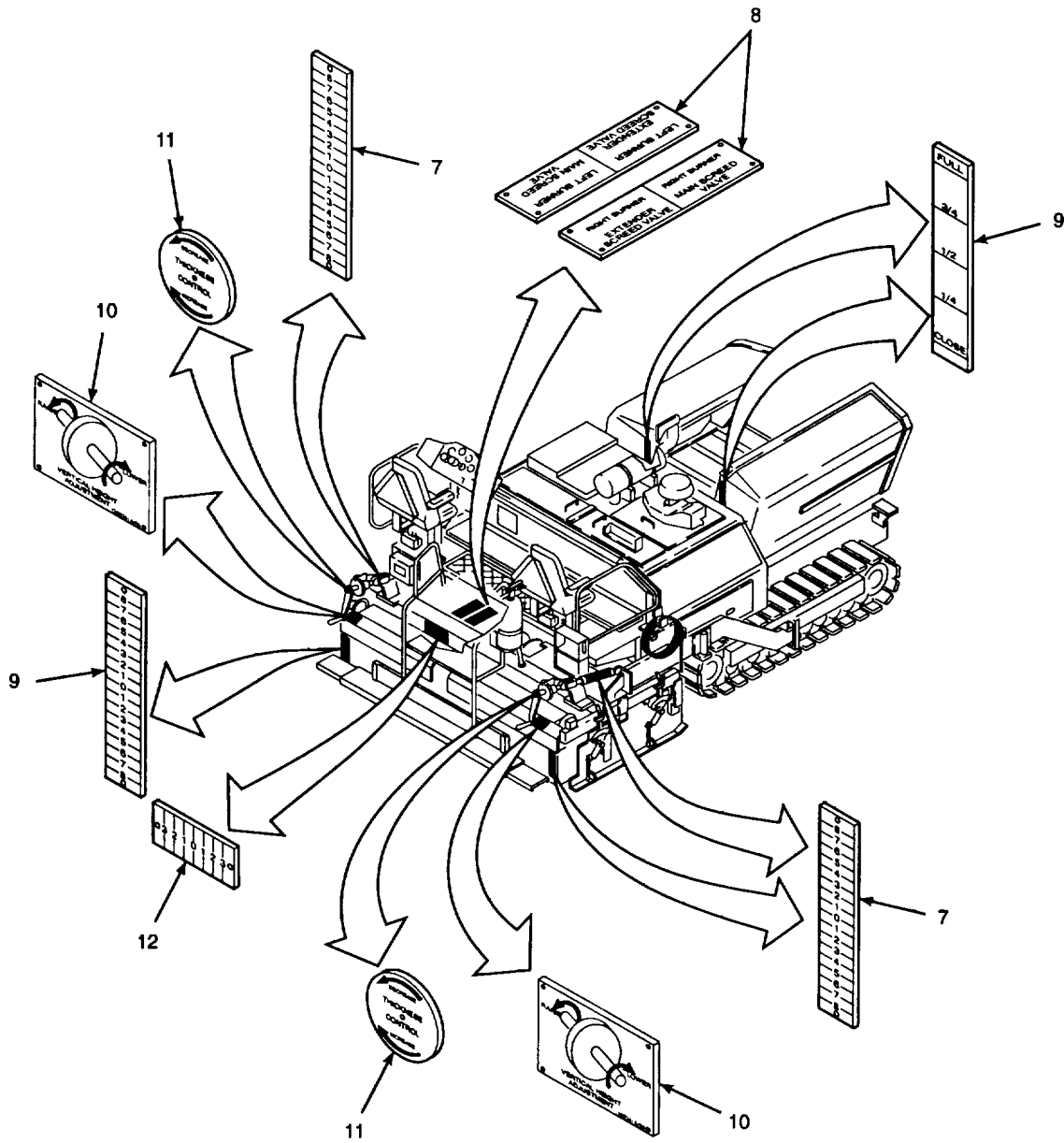
4. Pressure Test Manifold Plate. Indicates test ports for brake valve, auger/conveyor left, auger/conveyor right, stack valve, and hitch cylinders (not used).



5. Screed Vibrator Speed Plate. Identifies location of screed vibration control valve.

6. Screed Travel Lock Valve Plate. Identifies location of screed travel lock valve.

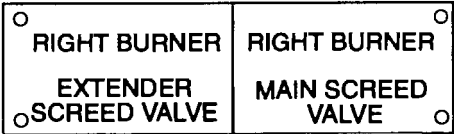
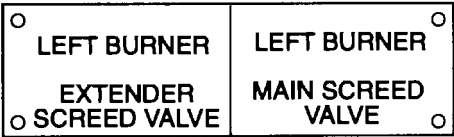




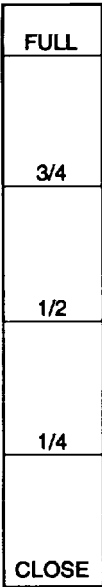
7. Thickness Indicator Scale Decal and Screed Height Adjustment Scale Decal. Thickness indicator scale identifies the degree of thickness of the paving mat. Screed height adjustment scale gives a visual reference to the height of the screed above or below zero. Decal graduations do not equate to any specific measurement.

0
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
0

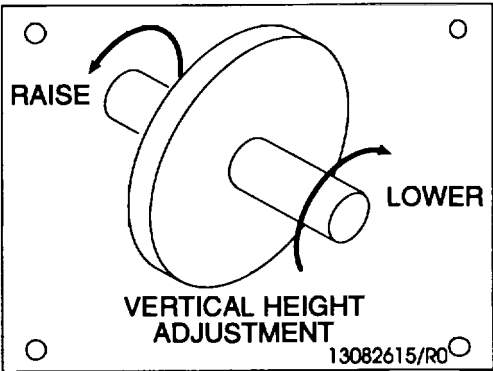
8. Screed Burner Identification Decals. Identify each screed burner solenoid valve servicing the screed burners.



9. Flow Gate Adjustment Scale Decals. Identify the degrees to which the flow gates are opened.



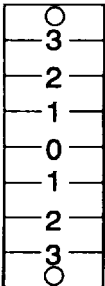
10. Vertical Height Adjustment Decals. Identify the directions to turn the vertical height adjustments to raise or lower the extension screeds.



11. Thickness Control Decals. Indicate directions to turn thickness controls to increase or decrease paving material mat thickness.



12. Screed Crown Adjustment Scale Decal. Indicator marks to instruct screed crew the position of the screed crown.



2.26 EQUIPMENT INSTALLATION INSTRUCTIONS.

The paving machine includes several separate attachments that may be used to accommodate different paving widths.

The attachments include cutoff shoes to reduce the paving width from 8 to 6 ft (2,4 to 1,8 m), auger and fender extensions to expand the paving width to 12 ft (3,7 m) and the auger and fender extensions with screed extensions to further expand the paving width to 16 ft (4,9 m).

When installing cutoff shoes or extensions, both cutoff shoes or an equal amount of extension must be added to each side of the paving machine.

NOTE

Plate spacers are installed between the screed plate and screed frame to ensure a smooth and level asphalt mat is laid. Maintaining plate spacer(s) in position any time the screed plate extension is removed or installed is critical to a smooth asphalt mat and prevention of screed plate alignment.

When installing the screed extensions, extreme care must be taken to ensure that the plate spacer(s) on the screed plate are not allowed to fall off of the screed plate during removal. If the plate spacers are not maintained on the studs, a full screed alignment must be performed by Unit Maintenance. Also, ensure that the plate spacers on the screed plate extension are kept on the same studs during installation since these plate spacers were installed during screed plate alignment.

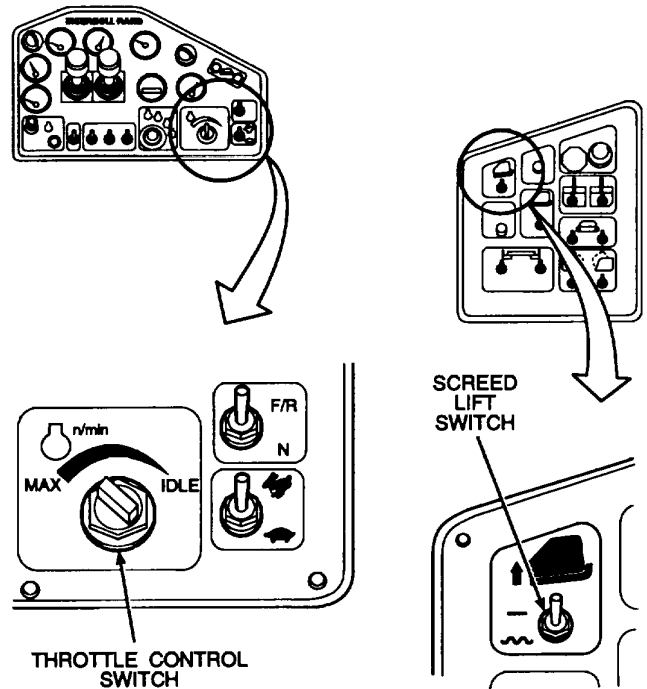
A complete listing of attachments are found in Appendix B, Components of the End Item (COEI). The procedures for installing equipment will address one side of the paving machine only. The procedure must be performed again on the opposite side. The tools required to install the equipment are located in the toolbox on the paving machine and listed in the Basic Issue Items (BII), Appendix B. Refer to paragraph 3.3.1 for toolbox access instructions.

NOTE

Equipment installation instructions are the same for both the left and right sides of the paving machine. Illustrations show installation on the right side of the paving machine.

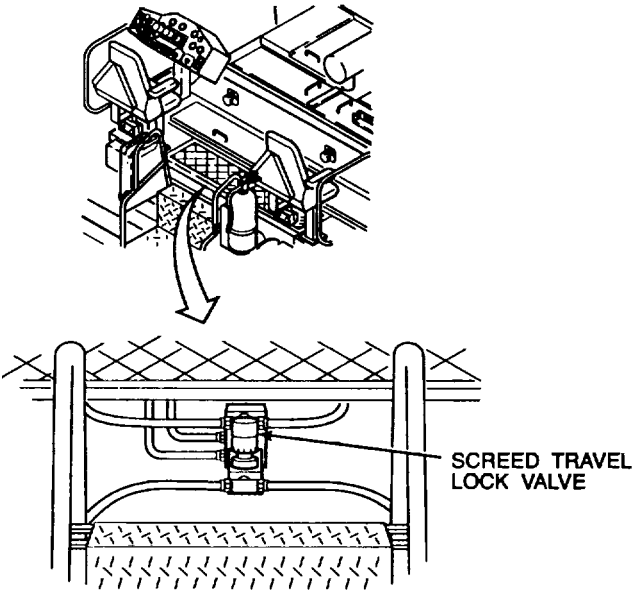
2.26.1 Cutoff Shoe Installation. To pave widths of 6 to 8 ft (1,8 to 2,4 m), one set of 1 ft (0,3 m) cutoff shoes must be installed on the paving machine. The cutoff shoes mount on the inside of each endgate, and are supported by a chain fastened to the strikeoff plate.

- a. Start paving machine per paragraph 2.10.
- b. Place throttle control switch to "MAX" position.

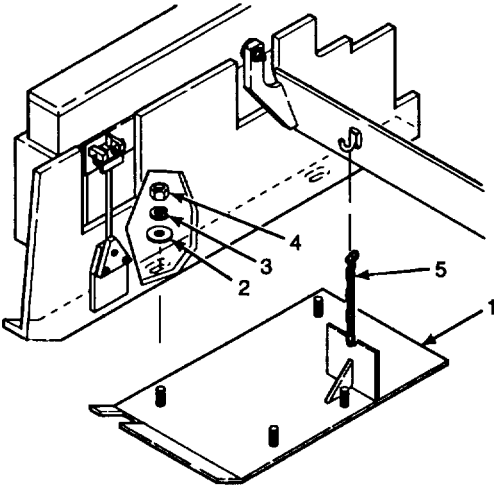


- c. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- d. Fully extend both left and right extension screeds per paragraph 2.19.
- e. Place wood support blocks under each end of main screed. Wood supports must be 9 in. high.

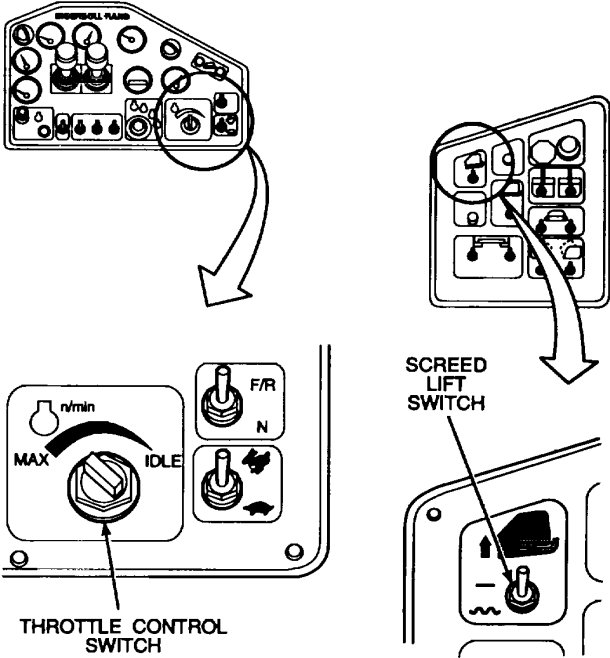
f. Ensure screed travel lock is open.



- g. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the wood blocks.
- h. Shut down paving machine per paragraph 2.11, steps a through g.
- i. Install cutoff shoe (1) on the endgate using flat washers (2), lockwashers (3), and hex nuts (4).
- j. Attach chain (5) to hook on strikeoff.



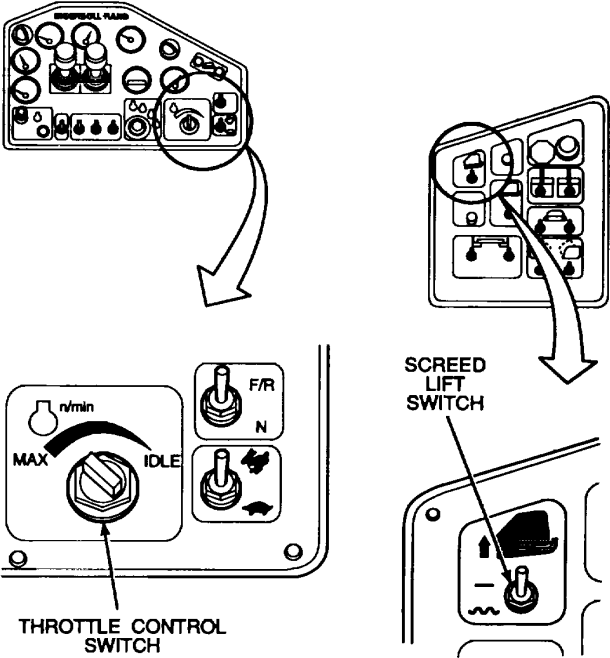
- k. Start paving machine per paragraph 2.10.
- l. Place throttle control switch to 'MAX' position.



- m. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- n. Remove wood support blocks from under each end of main screed.
- o. Retract both left and right extension screeds per paragraph 2.19.
- p. Ensure screed travel lock is open.
- q. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the ground.
- r. Shut down paving machine per paragraph 2.11, steps a through g.

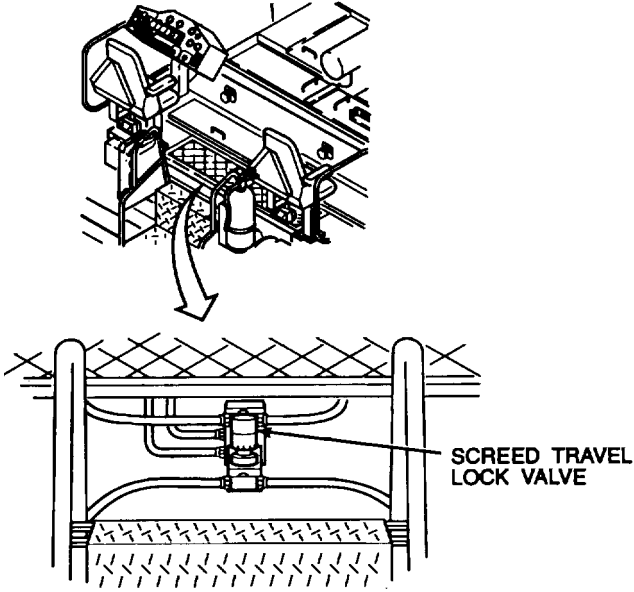
2.26.2 Cutoff Shoe Removal.

- a. Start paving machine per paragraph 2.10.
- b. Place throttle control switch to "MAX" position.

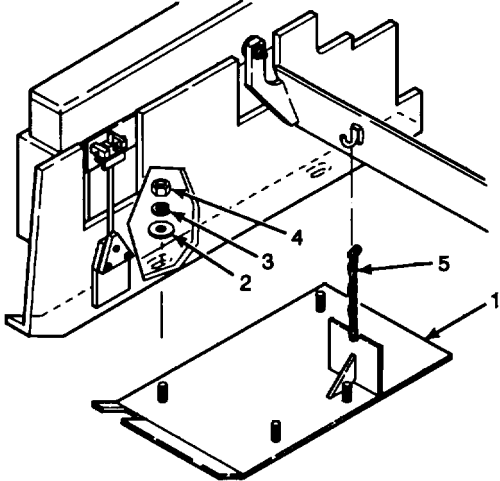


- c. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- d. Fully extend both left and right extension screeds per paragraph 2.19.
- e. Place wood support blocks under each end of main screed. Wood supports must be 9 in. high.

- f. Ensure screed travel lock valve is open.

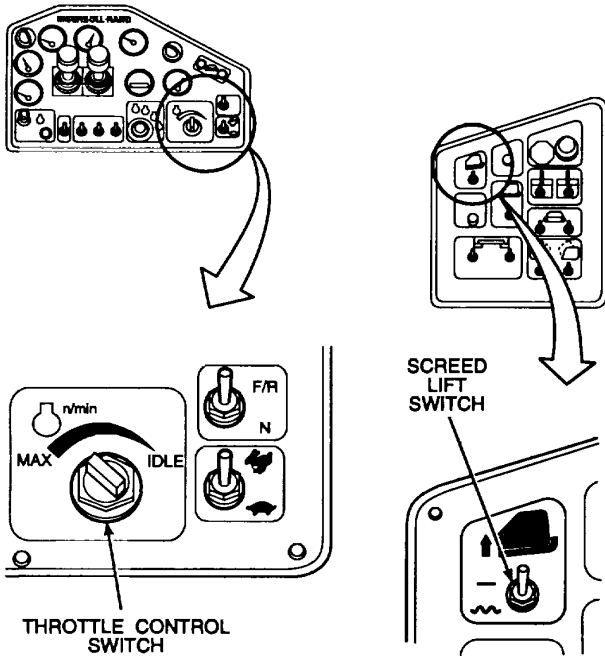


- g. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the wood blocks.
- h. Shut down paving machine per paragraph 2.11, steps a through g.
- i. Remove chain (5) from hook on strikeoff.



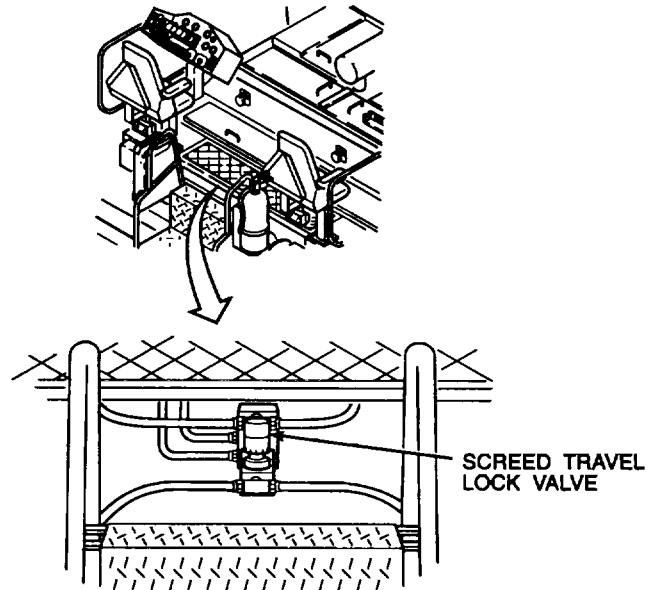
- j. Remove hex nuts (4), lockwashers (3), flat washers (2), and cutoff shoe (1).

- k. Install all removed hardware back on cutoff shoe for storage.
- l. Start paving machine per paragraph 2.10.
- m. Place throttle control switch to "MAX" position.



- n. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- o. Remove wood support blocks from under each end of main screed.
- p. Retract both left and right extension screeds per paragraph 2.19.

- q. Ensure screed travel lock valve is open.



- r. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the ground.
- s. Shut down paving machine per paragraph 2.11, steps a through g.

2.26.3 One Foot Auger and Fender Extension Installation.

NOTE

Equipment installation instructions are the same for both the left and right sides of the paving machine. Illustrations show installation on the right side of the paving machine.

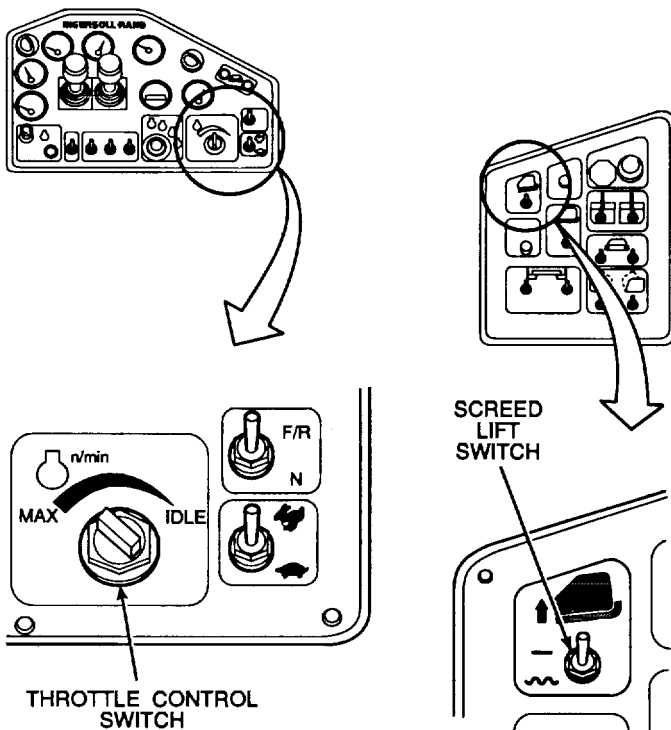
To pave widths of 10 to 12 ft (3,0 to 3,7 m), the 1 ft auger and fender extensions must be installed on both sides of the paving machine. The 1 ft augers and fenders must be compared to determine the left auger and fender from the right auger and fender. Ensure the spiral direction of the auger extension assemblies match that of the mating auger shaft. Failure to install the correct auger extension on the correct side of the paving machine will cause the paving material to build up in the auger chamber and not move the paving material out in front of the screed.

CAUTION

After installation of the 1 ft auger and fender extensions, extreme caution must be taken not to retract the screed extensions into the augers and fenders extensions. Damage to the endgate will result if the end gate is retracted too far.

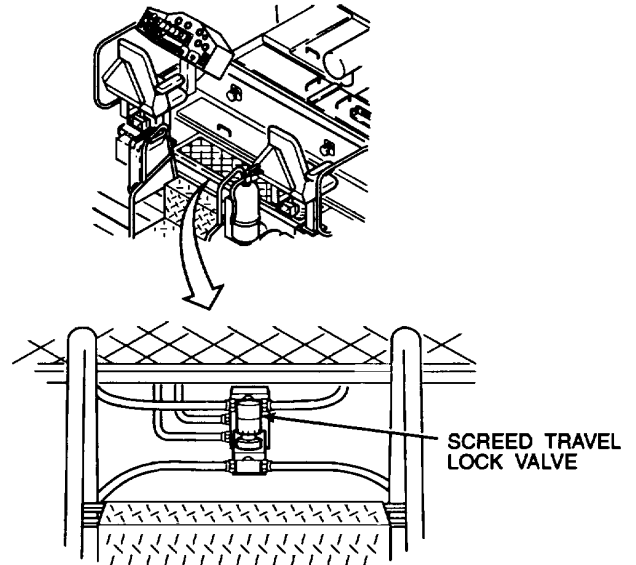
To reduce the paving width from between 12 ft (3,7 m) and 10 ft (3,0 m), carefully retract the extension screed to obtain the desired paving width.

- a. Start paving machine per paragraph 2.10.
- b. Place throttle control switch to "MAX" position.



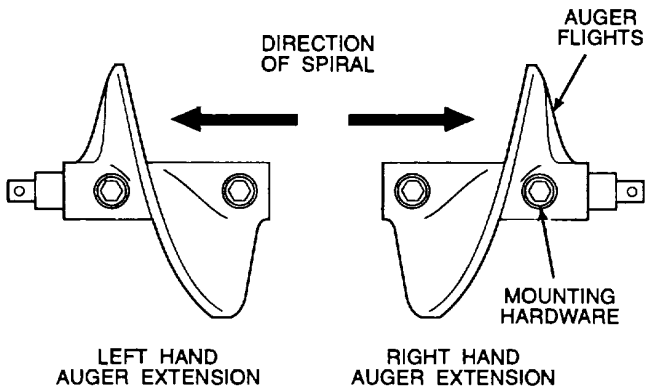
- c. Place screed lift switch to the up, RAISE position. Raise screed fully up.

- d. Fully extend both left and right extension screeds per paragraph 2.19.
- e. Place wood support blocks under each end of main screed. Wood supports must be 9 in. high.
- f. Ensure screed travel lock valve is open.



- g. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the wood blocks.
- h. Shut down paving machine per paragraph 2.11, steps a through g.
- i. Match up left and right 1 ft auger extensions with correct left and right side of mating main auger shaft.
 - (1) Visually match the spiral of each 1 ft auger extension with that of main auger shaft on both left and right sides. The direction of spiral should move the material outward from the center of the machine.

- (2) Place the 1 ft auger extensions so that the mounting hardware for the auger flights is oriented in the same direction as the mounting hardware on the mating auger shaft. If the spiral of the auger flights does not match that of the mating auger shaft, then the 1 ft auger extension being compared belongs on the opposite side.

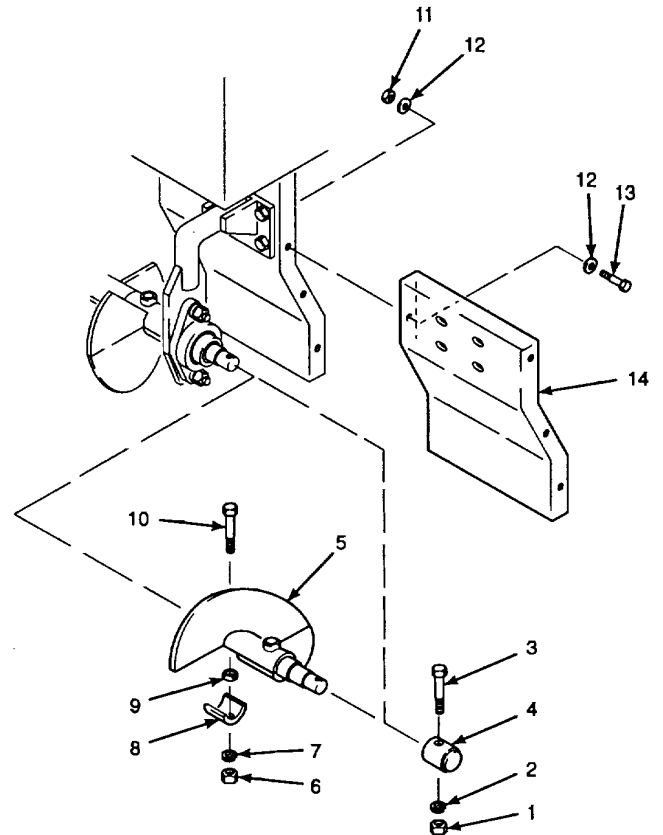


- j. Remove hex nut (1), lockwasher (2), and hex head cap screw (3) securing shaft cover (4). Remove shaft cover. These parts will be reinstalled on end of auger extension shaft.
- k. Locate female end of auger extension assembly (5) and remove hex nut (6), lockwasher (7), shaft cover (8), flat washer (9) and hex head cap screw (10).

NOTE

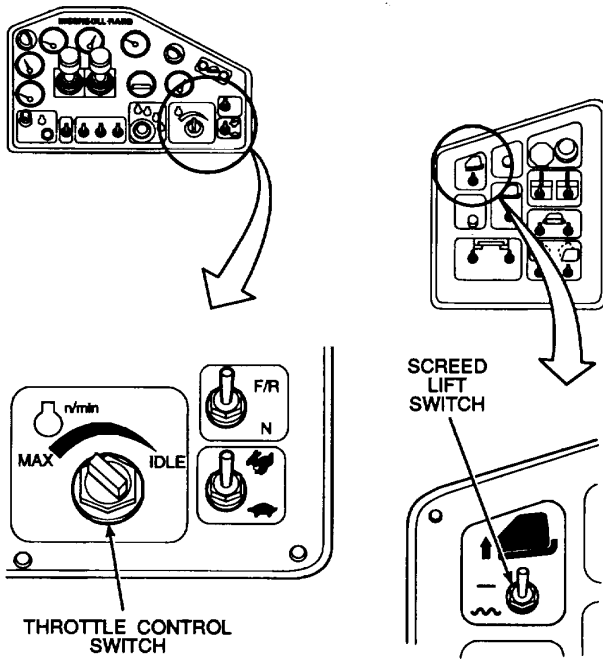
Auger extensions must be installed with the same spiral direction as the mating auger shaft. Failure to install auger extensions properly will cause poor distribution of paving material along the length of the screed and result in poor paving.

- l. Rotate auger extension so that mounting hardware for the auger flights is oriented in the same direction as the mounting hardware on the mating auger shaft. Ensure the spiral direction of the auger flights match the spiral direction of the mating auger shaft.



- m. Install female end of auger extension assembly (5) on the male end of the mating auger shaft using hex head cap screw (10), flat washer (9), shaft cover (8), lockwasher (7) and hex nut (6).
- n. Install shaft cover (4) using hex head cap screw (3), lockwasher (2), and hex nut (1).
- o. Remove hex nuts (11), flat washers (12), and hex head cap screws (13) from extension fender (14).
- p. Install extension fender (14) using hex head cap screws (13), flat washers (12), and hex nuts (11).
- q. Start paving machine per paragraph 2.10.

- r. Place throttle control switch to "MAX" position.



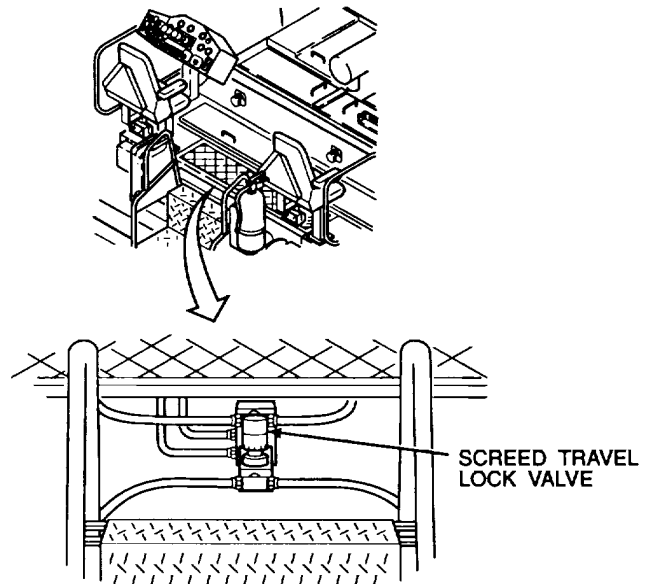
- s. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- t. Remove wood support blocks from under each end of main screed.

CAUTION

Use care when retracting extension screeds with 1 ft auger and fender extensions installed. Maximum retraction is 2 ft on each side. Damage to endgates will result if extension screeds are retracted too far.

- u. Retract both left and right extension screeds per paragraph 2.19.

- v. Ensure screed travel lock valve is open.



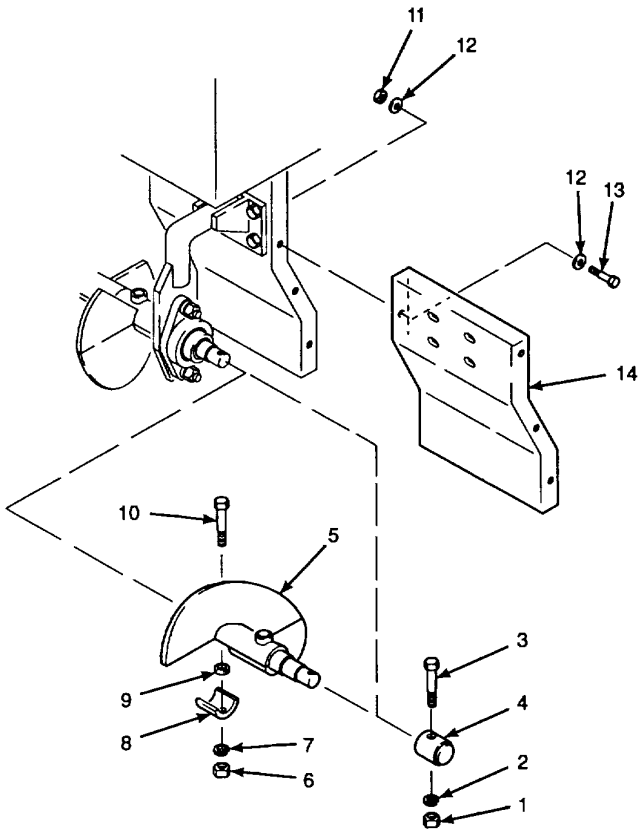
- w. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the ground.

- x. Shut down paving machine per paragraph 2.11, steps a through g.

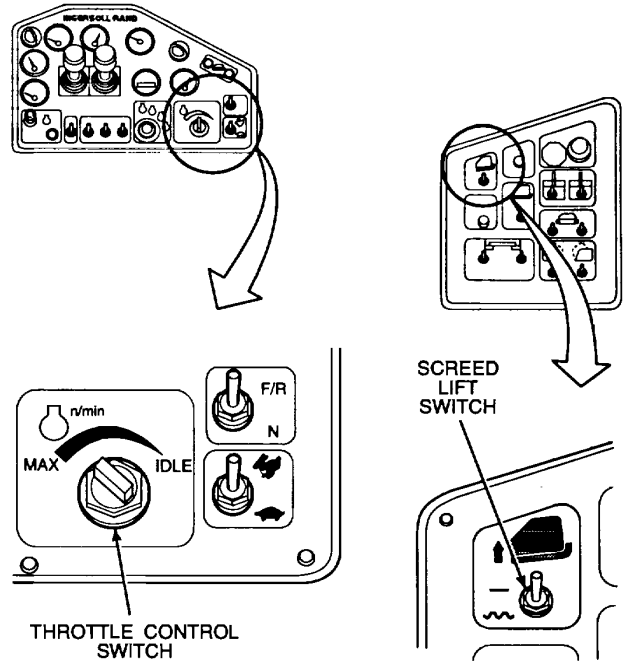
2.26.4. One Foot Auger and Fender Extension Removal.

- a. Start paving machine per paragraph 2.10.
- b. Place throttle control switch to "MAX" position.
- c. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- d. Fully extend both left and right extension screeds per paragraph 2.19.
- e. Place wood support blocks under each end of main screed. Wood supports must be 9 in. high.
- f. Ensure screed travel lock valve is open.
- g. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the wood blocks.
- h. Shut down paving machine per paragraph 2.11, steps a through g.

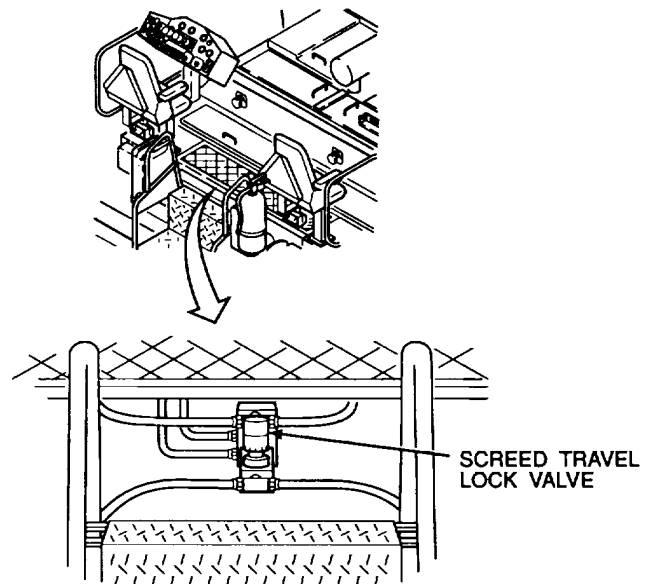
- i. Remove hex nuts (11), flat washers (12), and hex head cap screws (13). Remove extension fender (14). Replace hex head cap screws, flat washers, and hex nuts in extension fender mounting holes after removal.



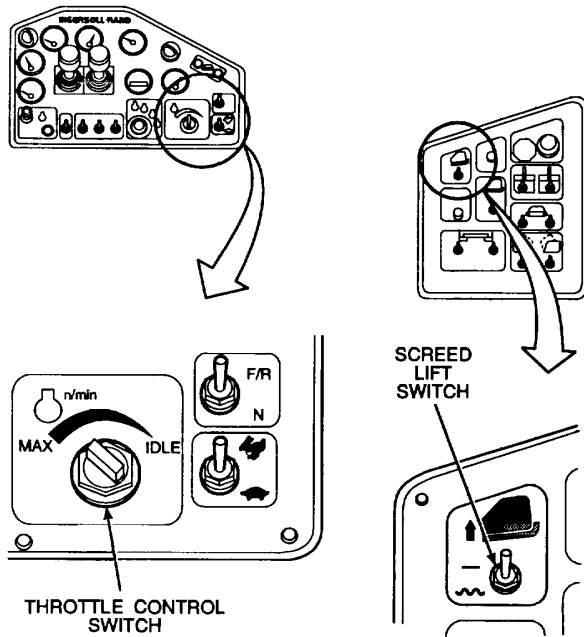
- j. Remove hex nut (1), lockwasher (2), hex head cap screw (3), and shaft cover (4) from end of auger extension shaft.
- k. Remove hex nut (6), lockwasher (7), shaft cover (8), and flat washer (9). Remove hex head cap screw (10) and auger extension assembly (5). Replace hex head cap screw, flat washer, shaft cover, lockwasher, and hex nut onto auger extension assembly after removal.
- l. Install shaft cover (4) on main auger shaft using hex head cap screw (3), lockwasher (2), and hex nut (1).
- m. Start paving machine per paragraph 2.10.
- n. Place throttle control switch to "MAX" position.



- o. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- p. Remove wood support blocks from under each end of main screed.
- q. Retract both left and right extension screeds per paragraph 2.19.
- r. Ensure screed travel lock valve is open.



- s. Place screed lift switch to the down, FLOAT position Lower the screed until the screed rests on the ground



- t. Shut down paving machine per paragraph 2.11, step. a through g.

2.26.5. Two Foot Auger and Fender Extension Installation.

NOTE

Equipment installation instructions are the same for both the left and right sides of the paving machine. Illustrations show installation on the right side of the paving machine.

To pave widths of 12 to 14 ft (3,7 to 4,3 m), the 2 ft auger and fender extensions must be installed on both sides of the paving machine. The 2 ft auger and fender extension must be compared to determine the left auger and fender extension from the right auger and fender extension. Ensure the spiral direction of the auger extension assemblies match that of the mating auger shaft. Failure to install the correct auger and fender extensions on the correct side of the paving machine will cause the paving material to build up in the auger chamber and not move the paving material out in front of the screed

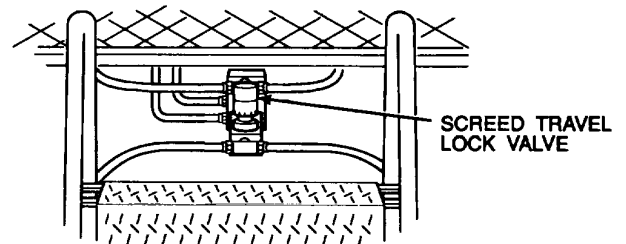
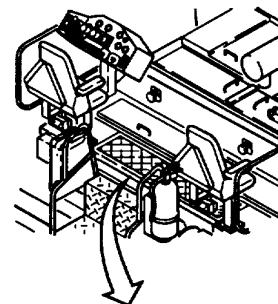
Two persons are required to install the 2 ft auger and fender extensions.

CAUTION

After installation of the 2 ft auger extensions, extreme caution must be taken not to retract the screed extensions into the augers and fenders extensions. Damage to the endgate will result if the endgate is retracted too far.

To reduce the paving width from between 14 ft (4,3 m) and 12 ft (3,7 m), carefully retract the extension screed to obtain the desired paving width.

- a. Start paving machine per paragraph 2.10.
- b. Place throttle control switch to "MAX" position.
- c. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- d. Fully extend both left and right extension screeds per paragraph 2.19.
- e. Place wood support blocks under each end of main screed. Wood supports must be 9 in. high.
- f. Ensure screed travel lock valve is open.



- g. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the wood blocks.

- h. Shut down paving machine per paragraph 2.11, steps a through g.
- i. First identify left or right 2 ft auger and fender extension to be installed. The left 2 ft extension has the bearing mount mounted on the outboard left side of the extension. The right 2 ft extension has the bearing mount mounted on the outboard right side of the extension.
- j. Remove hex nut (1), lockwasher (2), and hex head cap screw (3) securing shaft cover (4). Remove shaft cover. These parts will be reinstalled on end of auger extension shaft.
- k. Rotate auger extension on 2 ft auger and fender extension (10) so that mounting hardware cap screw heads for the auger flights are oriented in the same direction as the auger flight mounting hardware cap screw heads on the mating auger shaft. Ensure the spiral direction of the auger flights match the spiral direction of the mating auger shaft.
- l. Remove hex nut (5), lockwasher (6), shaft cover (7), flat washer (8), and hex head cap screw (9) from the end of the auger extension shaft.
- m. Remove hex nuts (13), flat washers (12), and hex head cap screws (11) from 2 ft auger and fender extension (10) hardware mounting locations.

NOTE

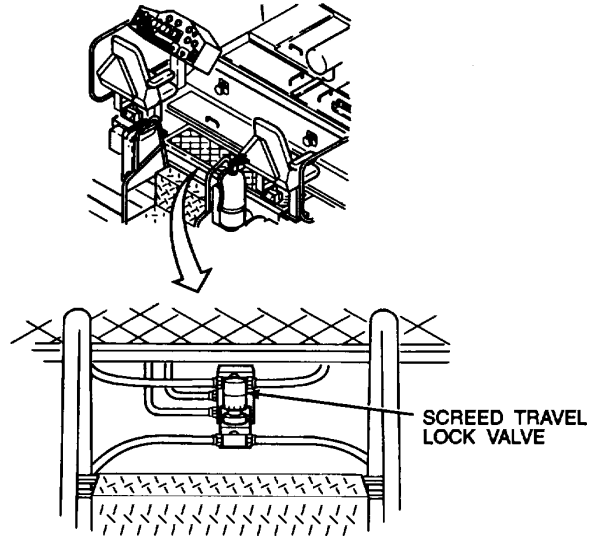
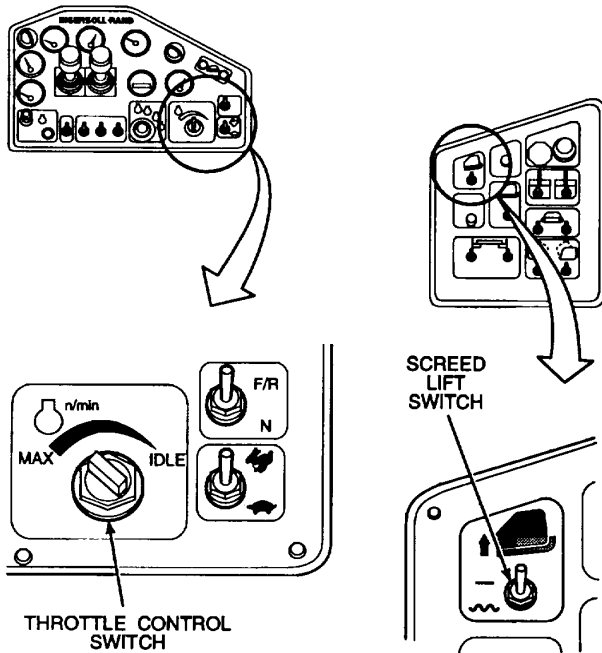
Auger extensions must be installed with the same spiral direction as the main auger shaft. Failure to install auger extensions properly will cause poor distribution of paving material along the length of the screed and result in poor paving.

WARNING

To avoid personal injury, do not attempt to lift and install the 2 ft auger and fender extension alone. 2 ft auger and fender extension weighs approximately 120 lbs (54,4 kg). Always use a second person to help hold the 2 ft extension in place during installation. Failure to do so may result in serious injury.

- n. With the help of a second person, install 2 ft auger and fender extension (10) female end on male end of mating auger shaft. Align 2 ft auger and extension fender with mounting surface on paving machine mainframe.
- o. Install hex head cap screws (11), flat washers (12), and hex nuts (13) to attach the auger and fender extension (10) fender to the main frame of the paving machine.
- p. Install hex head cap screw (9), flat washer (8), shaft cover (7), lockwasher (6), and hex nut (5). Tighten hex nut.
- q. Install shaft cover (4) using hex head cap screw (3), lockwasher (2), and hex nut (1). Tighten hex nut.
- r. Start paving machine per paragraph 2.10.

- s. Place throttle control switch to "MAX" position.



- t. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- u. Remove wood support blocks from under each end of main screed.

CAUTION

Use care when retracting extension screeds with 2 ft auger and fender extensions installed. Maximum retraction is 1 ft on each side. Damage to end gates will result if extension screeds are retracted too far.

- v. Retract both left and right extension screeds per paragraph 2.19.
- w. Ensure screed travel lock valve is open.

- x. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the ground.
- y. Shut down paving machine per paragraph 2.11, steps a through g.

2.26.6 Two Foot Auger and Fender Extension Removal.

Two persons are required to remove the 2 ft auger and fender extensions.

- a. Start paving machine per paragraph 2.10.
- b. Place throttle control switch to "MAX" position.
- c. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- d. Fully extend both left and right extension screeds per paragraph 2.19.
- e. Place wood support blocks under each end of main screed. Wood supports must be 9 in. high.
- f. Ensure screed travel lock is open.
- g. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the wood blocks.
- h. Shut down paving machine per paragraph 2.11, steps a through g.

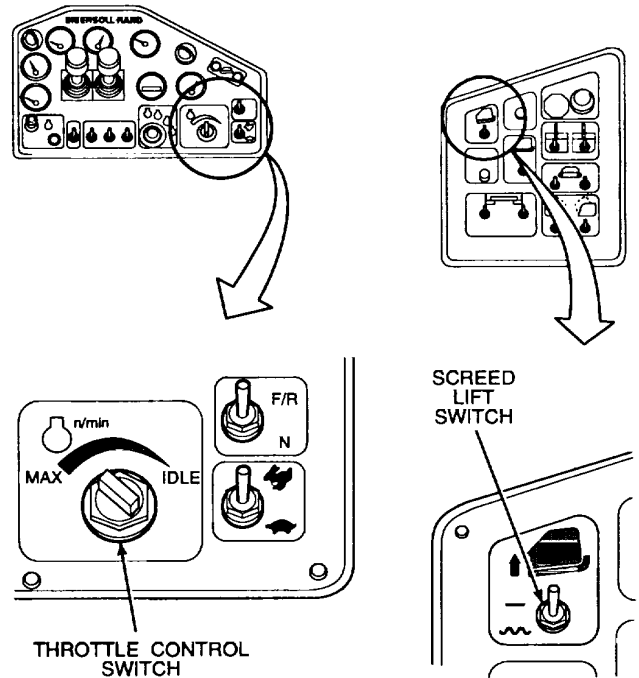
- i. Remove hex nut (1), lockwasher (2), hex head cap screw (3), and shaft cover (4) from end of auger extension shaft.
- j. Remove hex nut (5), lockwasher (6), shaft cover (7), flat washer (8), and hex head cap screw (9).

WARNING

To avoid personal injury, do not attempt to lift and remove the 2 ft auger and fender extension alone. 2 ft auger and fender extension weighs approximately 120 lbs (54,4 kg). Always use a second person to help hold the 2 ft extension during removal. Failure to do so may result in serious injury.

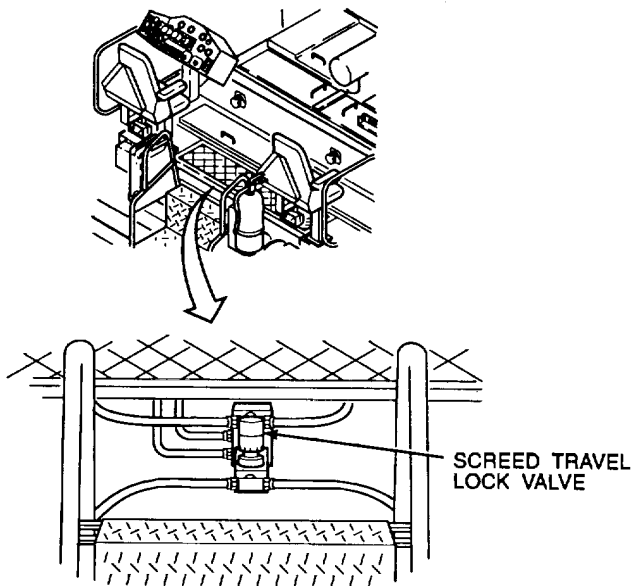
- k. With the help of another person, remove hex nuts (13), flat washers (12), hex head cap screws (11), and 2 ft auger and fender extension (10). Replace hex head cap screws, flat washers, and hex nuts in 2 ft auger and fender extension mounting holes after removal.

- l. Replace hex head cap screw (9), flat washer (8), shaft cover (7), lockwasher (6), and hex nut (5) onto 2 ft auger and fender extension auger shaft after removal.
- m. Install shaft cover (4) on main auger shaft using hex head cap screw (3), lockwasher (2), and hex nut (1).
- n. Start paving machine per paragraph 2.10.
- o. Place throttle control switch to "MAX" position.

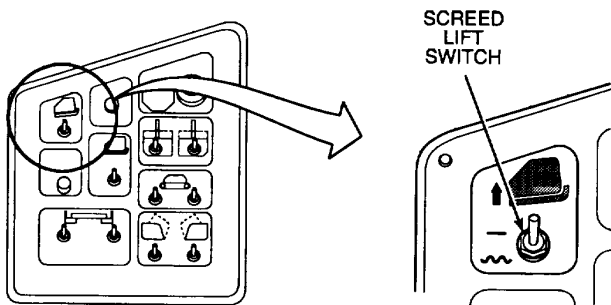


- p. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- q. Remove wood support blocks from under each end of main screed.
- r. Retract both left and right extension screeds per paragraph 2.19.

- s. Ensure screed travel lock valve is open.



- t. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the ground.



- u. Shut down paving machine per paragraph 2.11, steps a through g.

2.26.7 Bolt-on Screed Extension Installation.

NOTE

Equipment installation instructions are the same for both the left and right sides of the paving machine. Illustrations show installation on the right side of the paving machine.

To pave widths of 14 to 16 ft (4,3 to 4,9 m), the 1 ft auger and fender extensions and the 2 ft auger and fender extensions must be installed on both sides of the paving machine. This

results in a total of 3 ft of auger and fender extension on both sides of the paving machine. Also, there must be an extension added to the screed frame and the screed plate on both sides of the paving machine. The endgate must be removed for installation of the screed frame extension and screed plate extension and reinstalled after extensions are installed. Both the 1 ft and the 2 ft auger and fender extension must be compared to determine the left auger and fender extension from the right auger and fender extension. The screed frame extension and screed plate extension will only fit on the left or right side and are not interchangeable. Ensure the spiral direction of the auger extension assemblies match that of the mating auger shaft. Failure to install the correct auger and fender extensions on the correct side of the paving machine will cause the paving material to build up in the auger chamber and not move the paving material out in front of the screed.

Two persons are required to install the bolt-on screed extension.

CAUTION

During removal of 1 ft screed plate, ensure that the plate spacers around the studs securing the screed plate to the frame are not allowed to move or fall from the stud. If plate spacers are moved from their initial position on the screed plate, a full screed alignment is required on installation of the 1 ft screed plate. Notify your supervisor or Unit Maintenance.

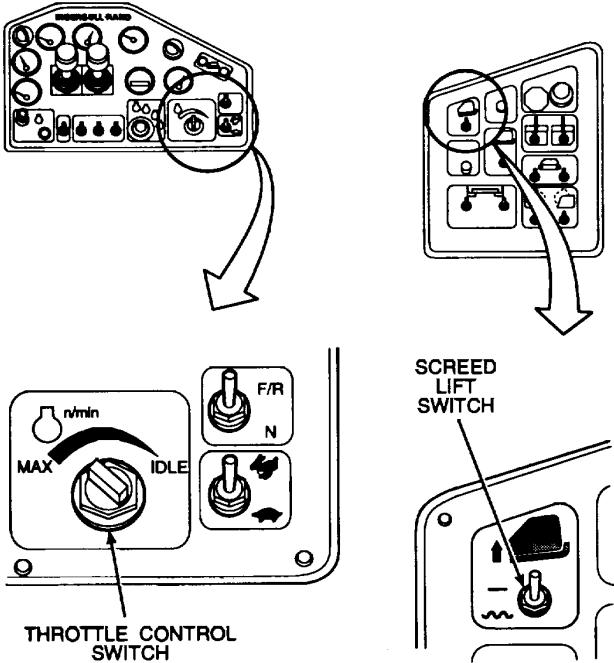
During removal of bolts from the studs on the extension screed plate, do not allow the plate spacers to move or fall off of the stud. If plate spacers are moved from their initial position on the extension screed plate during preparation for installation, a full screed alignment is required. Notify your supervisor or Unit Maintenance.

After installation of the 2 ft auger extensions, extreme caution must be taken not to retract the screed extensions into the augers and fenders extensions. Damage to the endgate will result if the endgate is retracted too far.

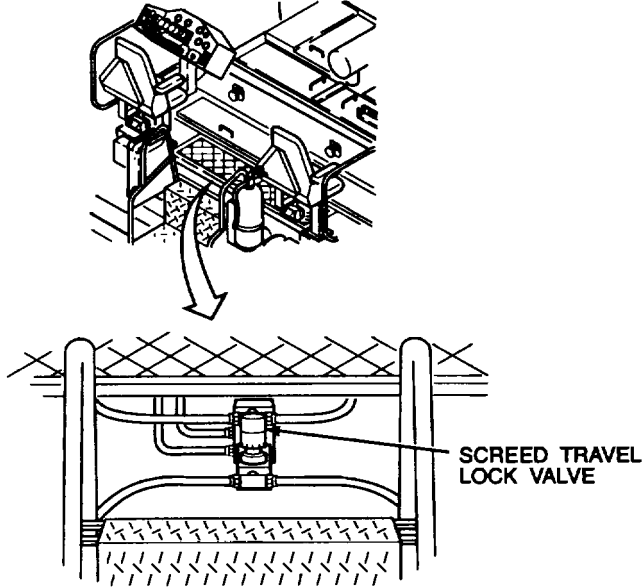
To reduce the paving width from between 16 ft (4,9 m) and 14 ft (4,2 m), carefully retract the extension screed to obtain the desired paving width.

- a. Start paving machine per paragraph 2.10.

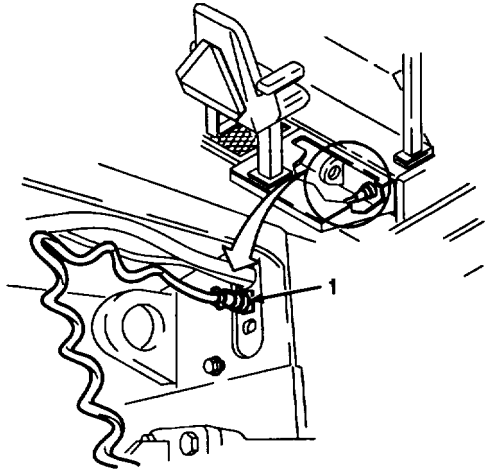
b. Place throttle control switch to "MAX" position.



- c. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- d. Fully extend both left and right extension screeds per paragraph 2.19.
- e. Place wood support blocks under each end of main screed. Wood supports must be 9 in. high.
- f. Ensure screed travel lock valve is open.

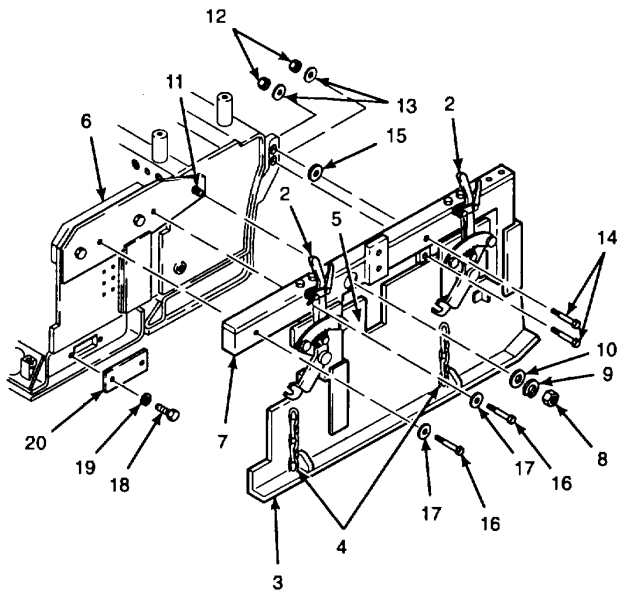


- g. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the wood blocks.
- h. Shut down paving machine per paragraph 2.11, steps a through g.
- i. Unscrew and disconnect feed limit switch connector (1) from the rear wall of the tractor.



j. Remove endgate assembly using the following steps.

(1) Release endgate hand levers (2) and lower endgate (3).



WARNING

To avoid personal injury, do not attempt to lift and remove the endgate. Endgate weighs approximately 126 lbs (57,1 kg). Use a second person to help remove endgate. Failure to do so may result in serious injury.

(2) Unhook chains (4) from endgate hand levers (2) and with the help of another person allow endgate (3) to lower enough for endgate mounting tab (5) to clear extension screed frame (6) during removal of endgate and endgate support arm (7).

(3) Remove hex nut (8), lockwasher (9), and flat washer (10) from cylinder extension rod (11).

(4) With the help of a second person, support endgate support arm (7), remove self-locking nuts (12), flat washers (13), hex head cap screws (14), and spacer (15).

(5) Remove hex head cap screws (16) and flat washers (17) securing endgate support arm (7) to extension screed frame (6).

WARNING

To avoid personal injury, do not attempt to lift and remove endgate support arm and endgate alone. Endgate support arm and endgate weighs approximately 126 lbs (57,1 kg). Use a second person to help lift and remove the endgate support arm and endgate from the screed extension frame. Failure to do so may result in serious injury.

(6) With the help of another person, lift endgate support arm (7) and endgate (3) from extension screed frame (6) and lay flat on the ground, out of the way.

(7) Replace flat washer (10), lockwasher (9), and hex nut (8) onto cylinder extension rod (11). Tighten hex nut.

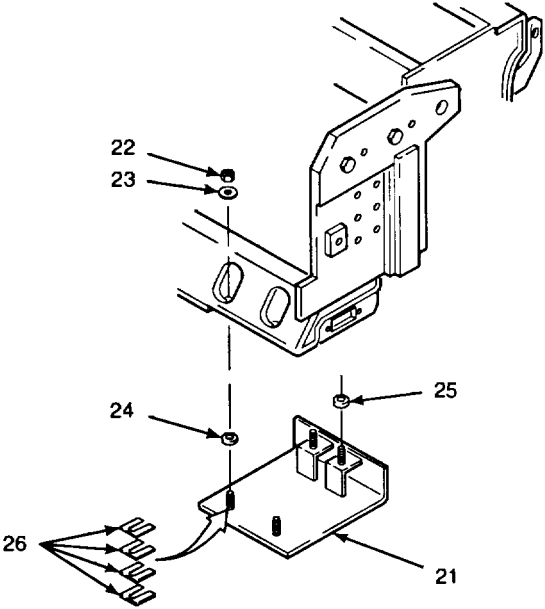
(8) Remove hex head cap screws (18), lockwashers (19), and remove cover plate (20).

CAUTION

During removal of outer extension screed plate, During removal of outer extension screed plate, ensure that the spacers and plate spacers around the studs securing the screed plate to the frame are not allowed to move or fall from the stud. If spacers or plate spacers are moved and not returned to their initial position on the screed plate, a full screed alignment is required on installation of the outer extension screed plate.

- k. Remove outer extension screed plate (21) by removing self-locking nuts (22) and flat washers (23). Carefully lower and remove extension screed plate. If spacers or plate spacers fall off of extension screed plate and cannot be replaced to their original position, a full screed alignment must be performed when installed.

l. Secure spacers (24 and 25) and plate spacers (26) onto removed outer extension screed plate (21) with flat washers (23) and self-locking nuts (22).



WARNING

To avoid personal injury, do not attempt to lift and install bolt-on screed extension frame alone. Bottom screed extension frame weighs approximately 42 lbs (19,0 kg). Use a second person to help lift and install the bolt-on screed extension frame to the extension and main screed frames. Failure to do so may result in serious injury.

- m. Install the bolt-on screed extension frame using the following steps.

WARNING

To avoid personal injury, do not attempt to lift and install bolt-on screed extension plate alone. Bolt-on screed extension plate weighs approximately 57 lbs (25,8 kg). Use a second person to help lift and install the bolt-on screed extension frame to the extension and main screed frames. Failure to do so may result in serious injury.

CAUTION

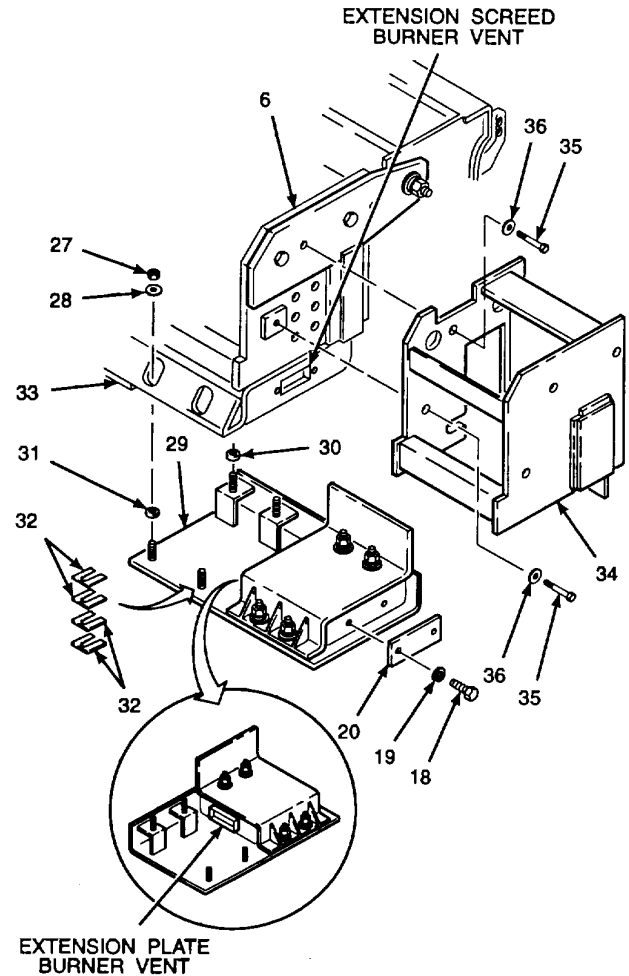
During installation of the screed extension plate, ensure that the spacers and plate spacers on the studs are not allowed to move or fall from the stud. If spacers or plate spacers are moved and not returned to their initial position on the screed extension plate, an alignment is required.

- (1) Remove self-locking nuts (27) and flat washers (28) from screed extension plate (29). Make sure spacers (30 and 31) and plate spacers (32) are in position on screed extension plate. With the help of a second person, raise screed extension plate up to extension screed frame (6). Align extension plate burner vent with extension screed burner vent and secure in place with flat washers (28) and self-locking nuts (27).

NOTE

After installing screed extension plate, visually check alignment of screed extension plate with left and right extension screed plates. If necessary remove plate spacers (32) to ensure both plates are flush. If plates cannot be aligned together, notify a supervisor.

- (2) Visually check alignment of screed extension plate (29) with extension screed plates (33). Remove plate spacers (32) if necessary to make the two plates aligned. If plates cannot be aligned by removing plate spacers, notify a supervisor.



- (3) One person should hold the front end and another hold the rear end and lift bolt-on screed extension frame (34) up to the extension screed frame (6). Install two 1-1/2 in. hex head cap screws (35) and flat washers (36) in holes shown.
- (4) Install cover plate (20) on end of screed extension plate (29) using lockwashers (19) and hex head cap screws (18).

q. Install 2 ft and 1 ft auger and fender assemblies using the following steps.

- (1) First identify left or right 2 ft auger and fender extension to be installed. The left 2 ft extension has the bearing mount mounted on the outboard left side of the extension. The right 2 ft extension has the bearing mount mounted on the outboard right side of the extension.
- (2) Remove hex nut (46), lockwasher (47), and hex head cap screw (48) securing shaft cover (49). Remove shaft cover.

NOTE

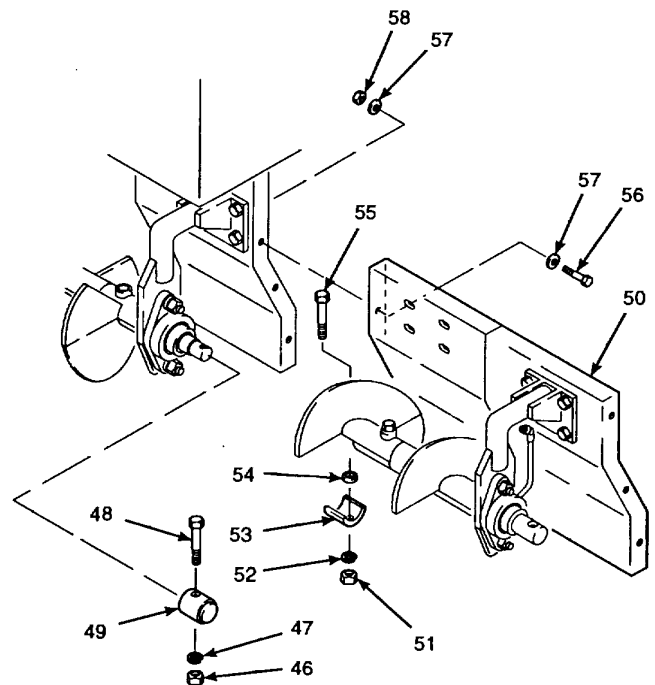
Auger extensions must be installed with the same spiral direction as the mating auger shaft. Failure to install auger extensions properly will cause poor distribution of paving material along the length of the screed and result in poor paving.

- (3) Rotate auger extension on 2 ft auger and fender extension (50) so that mounting hardware for the auger flights is oriented in the same direction as the mounting hardware on the mating auger shaft. Ensure the spiral direction of the auger flights match the spiral direction of the mating auger shaft.
- (4) Remove hex nut (51), lockwasher (52), shaft cover (53), flat washer (54) and hex head cap screw (55) from the end of the auger extension shaft.
- (5) Remove hex head cap screw (56), flat washers (57), and hex nuts (58) from mounting locations on 2 ft auger and fender extension (50).

WARNING

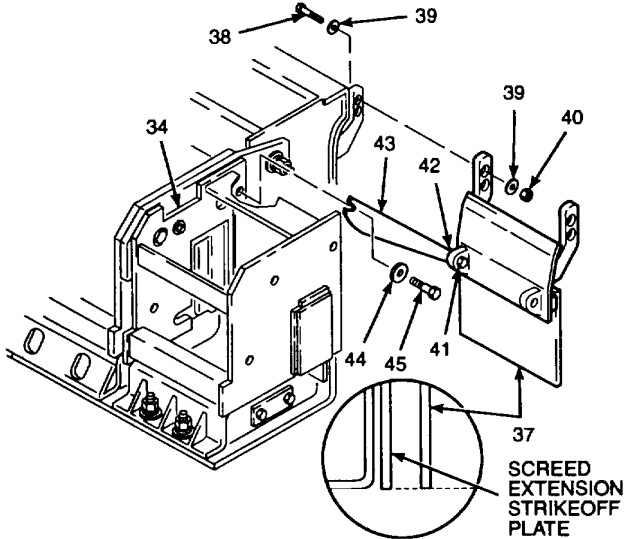
To avoid personal injury, do not attempt to lift and install 2 ft auger and fender extension alone. 2 ft auger and fender extension weighs approximately 120 lbs (54,4 kg). Always use a second person to help hold 2 ft extension in place during installation. Failure to do so may result in serious injury.

- (6) With the help of a second person, install 2 ft auger and fender extension (50) female end on male end of mating auger shaft. Align auger and extension fender with mounting surface on paving machine main frame.
- (7) Install hex head cap screws (56), flat washers (57), and hex nuts (58) to attach the auger and extension fender to the main frame of the paving machine.
- (8) Install hex head cap screw (55), flat washer (54), shaft cover (53), lockwasher (52), and hex nut (51).
- (9) Tighten hex nuts (51 and 58).



n. Install the strikeoff extension assembly using the following steps.

- (1) Install strikeoff extension assembly (37) using hex head cap screws (38), flat washers (39), and self-locking nuts (40). Visually check to see that bottom edge of bolt-on strikeoff extension assembly plate is even with the bottom of screed extension strikeoff plate.



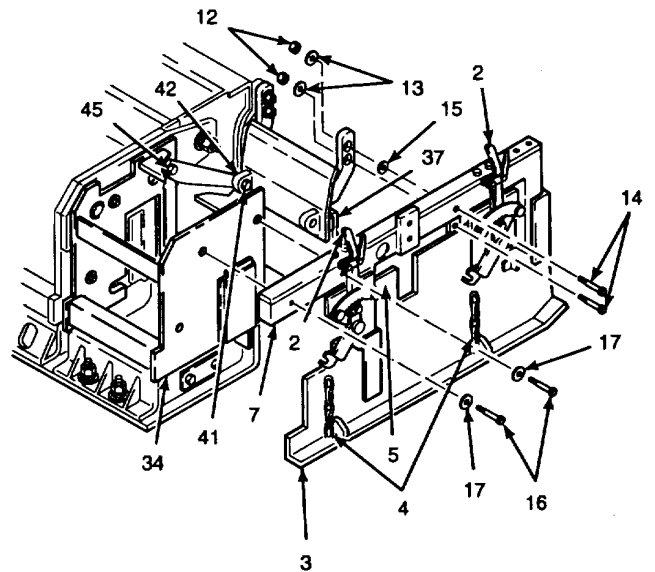
- (2) Loosen hex head cap screw (41) and self-locking nut (42). Line up strikeoff support (43) with hole in bolt-on screed extension frame (34) and install flat washer (44) and hex head cap screw (45). Do not tighten hex head cap screws (41 and 45).

o. Install the endgate assembly using the following steps.

WARNING

To avoid personal injury, do not attempt to lift and install endgate support arm and endgate alone. Endgate support arm weighs approximately 126 lbs (57,1 kg). Use a second person to help lift and install the endgate support arm and endgate to the screed extension frame. Failure to do so may result in serious injury.

- (1) With the help of a second person lift endgate (3) and endgate support arm (7) onto bolt-on screed extension frame (34) after inserting endgate mounting tab (5) in bolt-on screed extension frame. Secure endgate support arm with flat washers (17) and hex head cap screws (16).

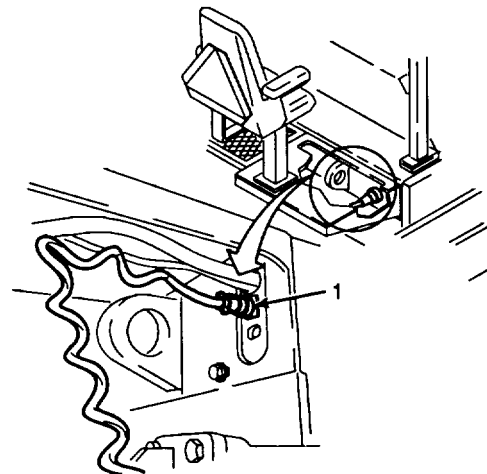


- (2) Carefully level endgate (3) and connect chains (4) to endgate hand levers (2).

- (3) Bolt endgate support arm (7) to the strikeoff extension assembly (37) using hex head cap screws (14), spacer (15), flat washers (13), and self-locking nuts (12).

- (4) Tighten hex head cap screws (45). Tighten hex head cap screw (41) and self-locking nut (42).

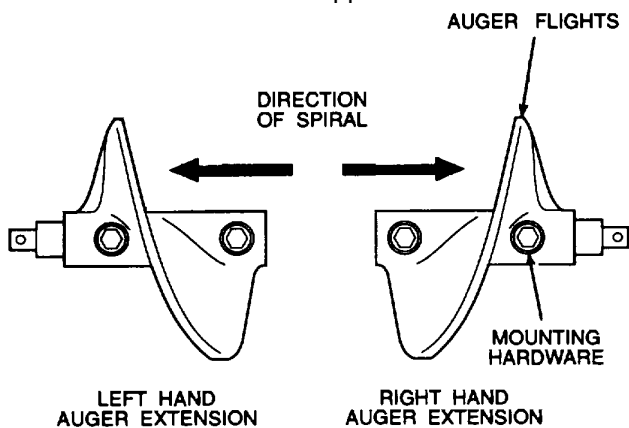
p. Connect feed limit switch connector (1) to the connector on the rear wall of the tractor.



- (10) Match up left and right 1 ft auger extensions with correct left and right side of mating auger shaft.

(a) Visually match the spiral of each 1 ft auger extension with that of 2 ft auger shaft on both left and right sides.

(b) Place the 1 ft auger extension so that the mounting hardware is oriented in the same direction as the mounting hardware on the 2 ft auger shaft. If the spiral of the auger flights does not match that of the 2 ft auger shaft, then the 1 ft auger extension being compared belongs on the opposite side.

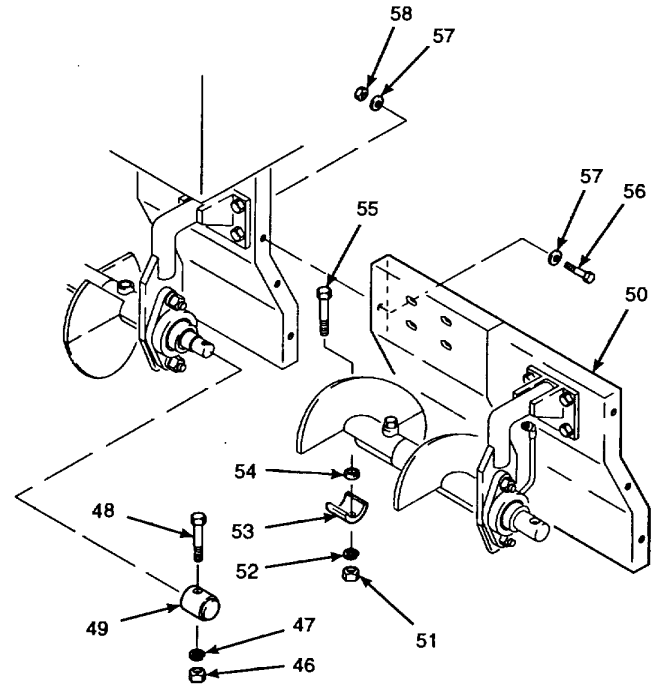


- (11) Locate female end of auger extension assembly (59) and remove hex nut (60), lockwasher (61), shaft cover (62), flat washer (63), and hex head cap screw (64).

NOTE

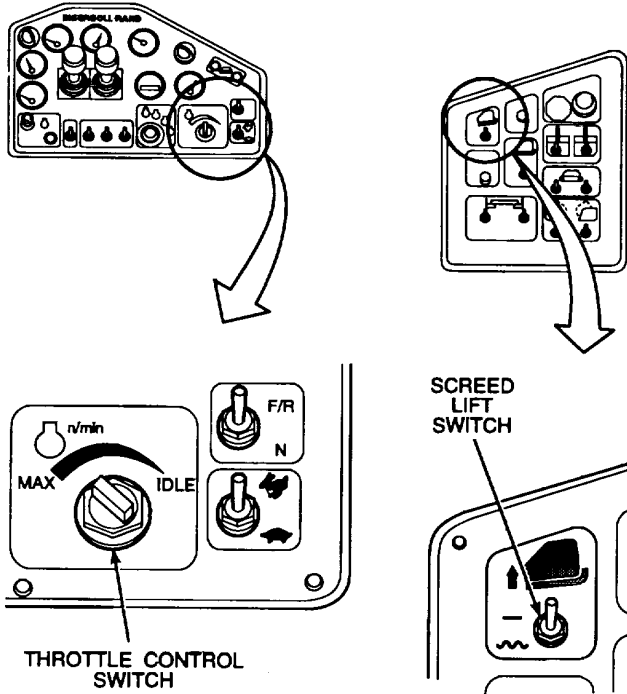
Auger extensions must be installed with the same spiral direction as the 2 ft auger shaft. Failure to install auger extensions properly will cause poor distribution of paving material along the length of the screed and result in poor paving.

- (12) Rotate auger extension so that mounting hardware for the auger flights is oriented in the same direction as the mounting hardware on the mating auger shaft. Ensure the spiral direction of the auger flights match the spiral direction of the 2 ft auger shaft.



- (13) Install female end of auger extension assembly (59) on the male end of the 2 ft auger shaft using hex head cap screw (64), flat washer (63), shaft cover (62), lockwasher (61), and hex nut (60).
- (14) Install shaft cover (49) using hex head cap screw (48), lockwasher (47), and hex nut (46).
- (15) Remove hex head cap screws (65), flat washers (66), and hex nuts (67) from mounting hardware location on extension fender (68).
- (16) Install extension fender (68) using hex head cap screws (65), flat washers (66), and hex nuts (67).
- (17) Tighten hex nuts (60 and 67).

- r. Start paving machine per paragraph 2.10.
- s. Place throttle control switch to "MAX" position.

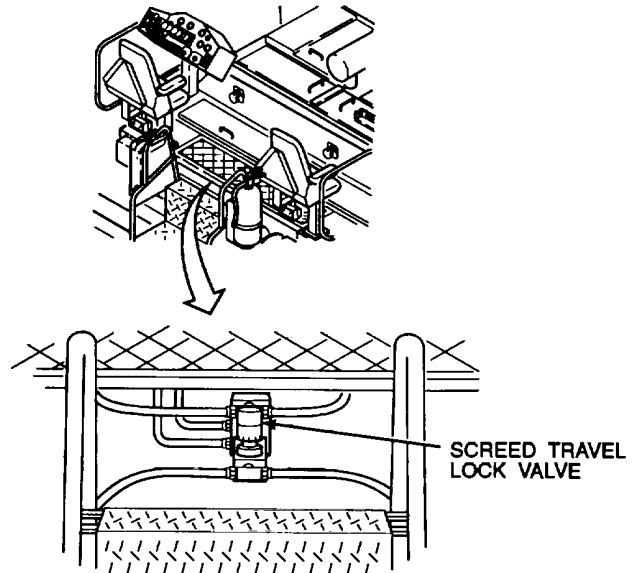


- t. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- u. Remove wood support blocks from under each end of main screed.

CAUTION

Use care when retracting extension screeds with bolt-on screed extensions installed. Maximum retraction is 1 ft on each side. Damage to end gates will result if extension screeds are retracted too far.

- v. Retract both left and right extension screeds per paragraph 2.19.
- w. Ensure screed travel lock valve is open.



- x. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the ground.
- y. Shut down paving machine per paragraph 2.11, steps a through g.

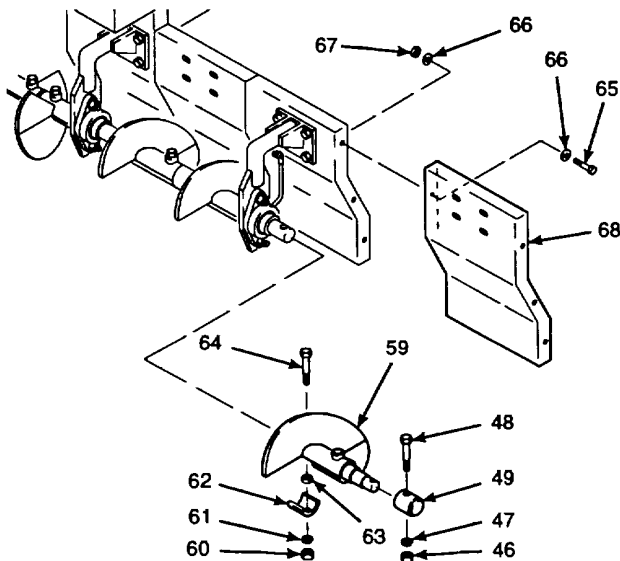
2.26.8 Bolt-on Screed Extension Removal.

Two persons are required to remove the bolt-on screed extension.

- a. Start paving machine per paragraph 2.10.
- b. Place throttle control switch to "MAX" position.
- c. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- d. Fully extend both left and right extension screeds per paragraph 2.19.
- e. Place wood support blocks under each end of main screed. Wood supports must be 9 in. high.
- f. Ensure screed travel lock valve is open.
- g. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the wood blocks.
- h. Shut down paving machine per paragraph 2.11, steps a through g.

i. Remove 1 ft and 2 ft auger and fender assemblies using the following steps.

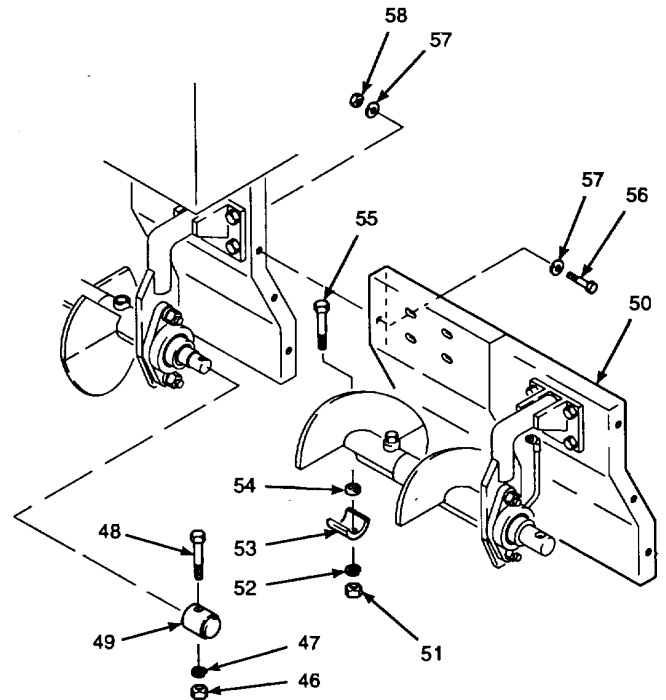
(1) Remove extension fender (68) by removing hex nuts (67), flat washers (66), and hex head cap screws (65). Replace hex head cap screws, flat washers, and hex nuts in extension fender mounting holes after removal.



(2) Remove hex nut (46), lockwasher (47), hex head cap screw (48), and shaft cover (49).

(3) Remove hex nut (60), lockwasher (61), shaft cover (62), and flat washer (63). Remove hex head cap screw (64) and auger extension assembly (59). Replace hex head cap screw, flat washer, shaft cover, lockwasher, and hex nut onto auger extension assembly after removal.

(4) Remove hex nut (51), lockwasher (52), shaft cover (53), flat washer (54), and hex head cap screw (55).



WARNING

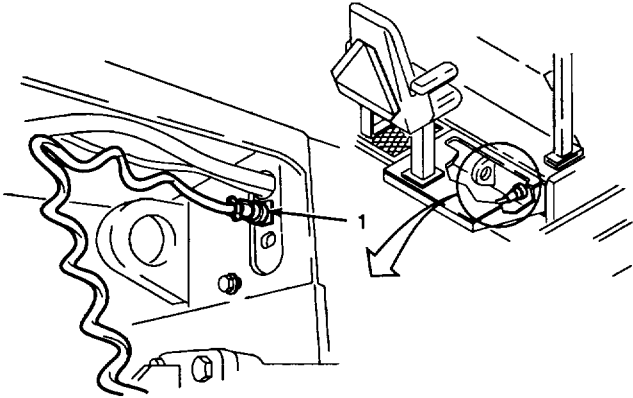
To avoid personal injury, do not attempt to lift and remove the 2 ft auger and fender extension alone. 2 ft auger and fender extension weighs approximately 126 lbs (57,1 kg). Always use a second person to help hold the 2 ft extension in place during removal. Failure to do so may result in serious injury.

(5) With the help of a second person, remove hex nuts (58), flat washers (57), hex head cap screws (56), and 2 ft auger and fender extension (50). Replace hex head cap screws, flat washers, and hex nuts in 2 ft auger and extension fender mounting holes after removal.

(6) Replace hex head cap screw (55), flat washer (54), shaft cover (53), lockwasher (52), and hex nut (51) onto 2 ft auger and fender extension auger shaft after removal.

(7) Install shaft cover (49) onto main auger shaft and secure with hex head cap screw (48), lockwasher (47), and hex nut (46).

- j. Unscrew and disconnect feed limit switch connector (1) from the rear wall of the tractor.



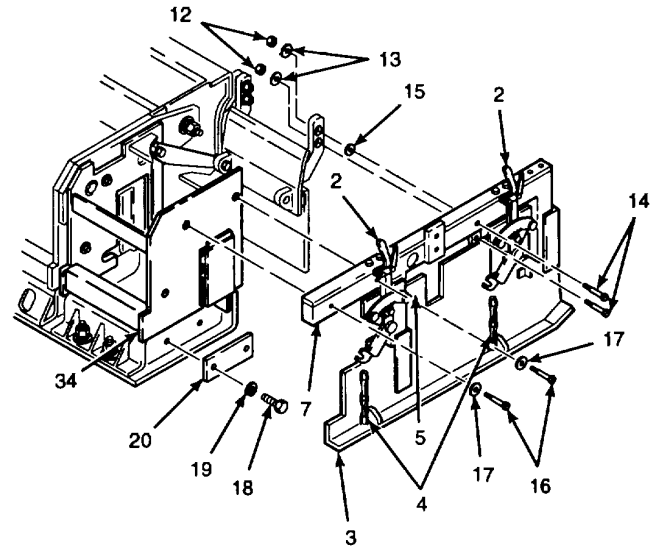
- k. Remove endgate assembly using the following steps.

WARNING

To avoid personal injury, do not attempt to lift and remove the endgate alone. Endgate weighs approximately 126 lbs (57,1 kg). Use a second person to help remove endgate. Failure to do so may result in serious injury.

- (1) Release endgate hand levers (2) and lower endgate (3).
- (2) Unhook chains (4) from endgate hand levers (2) and with the help of another person allow endgate (3) to lower enough for endgate mounting tab (5) to clear bolt-on screed extension frame (34) during removal of endgate and endgate support arm (7).
- (3) Remove self-locking nuts (12), flat washers (13), hex head cap screws (14), and spacer (15).

- (4) With the help of a second person, remove hex head cap screws (16) and flat washers (17) securing endgate support arm (7) to bolt-on screed extension frame (34).

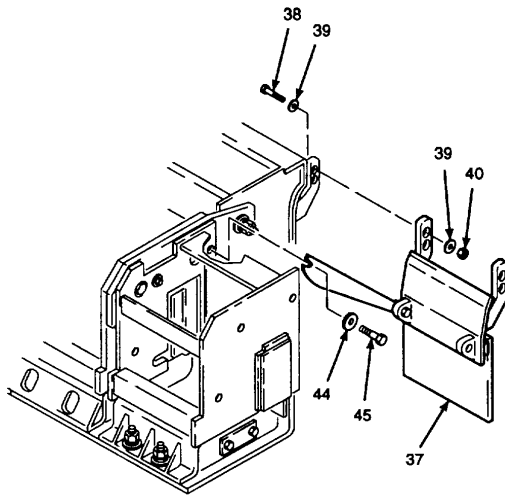


WARNING

To avoid personal injury, do not attempt to lift and remove endgate support arm and endgate alone. Endgate weighs approximately 126 lbs (57,1 kg). Use a second person to help remove endgate support arm and endgate from screed frame. Failure to do so may result in serious injury.

- (5) With the help of a second person, lift endgate support arm (7) and endgate (3) from bolt-on screed extension frame (34) and lay flat on the ground, out of the way.
- (6) Remove hex head cap screws (18), lockwashers (19), and cover plate (20).

1. Remove strikeoff extension assembly using the following steps.
 - (1) Remove hex head cap screw (45) and flat washer (44).



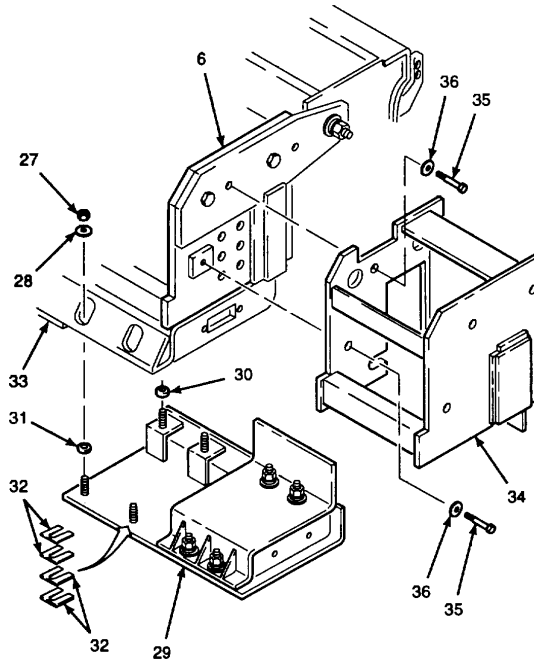
- (2) Remove self-locking nuts (40), flat washers (39), and hex head cap screws (38). Remove strikeoff extension assembly (37). Hardware will be used during installation of endgate assembly. Reinstall hardware onto strikeoff extension assembly (37).

- m. Remove the bolt-on screed extension frame using the following steps.

WARNING

To avoid personal injury, do not attempt to lift and remove the bolt-on screed extension frame alone. Bolt-on screed extension frame weighs approximately 57 lbs (25,9 kg). Use a second person to help hold the extension frame during removal. Failure to do so may result in serious injury.

- (1) With the help of a second person to support the bolt-on screed extension frame (34), remove hex head cap screws (35) and flat washers (36).



- (2) With one person holding the front end and another holding the rear end, lift and remove bolt-on screed extension frame (34) from paving machine.

CAUTION

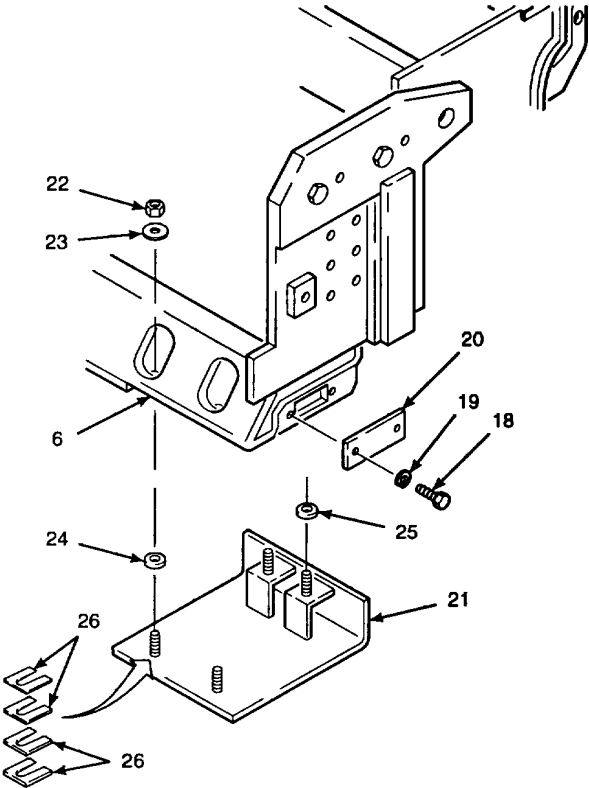
During removal of screed extension plate, ensure that the spacers and plate spacers around the studs securing the screed extension plate to the frame are not allowed to move or fall from the stud. If spacers or plate spacers are moved and not returned to their initial position on the screed plate, a screed alignment is required.

- (3) With the help of a second person, remove screed extension plate (29) by removing self-locking nuts (27) and flat washers (28). Carefully lower and remove screed extension plate from extension screed frame (6).
- (4) Secure spacers (30 and 31) and plate spacers (32) onto screed extension plate (29) with flat washers (28) and self-locking nuts (27). When reinstalling screed extension plate, spacers and plate spacers must be installed in the same locations from which they were removed.

CAUTION

During installation of outer extension screed plate, ensure that the spacers and plate spacers around the studs securing the outer extension screed plate to the frame are to allowed to move or fall from the stud. If spacers or plate spacers are moved and not returned to their initial position on the screed plate, a screed alignment is required.

- (5) Remove self-locking nuts (22) and flat washers (23) from outer extension screed plate (21). Spacers (24 and 25) and plate spacers (26) should be in place on outer extension screed plate.



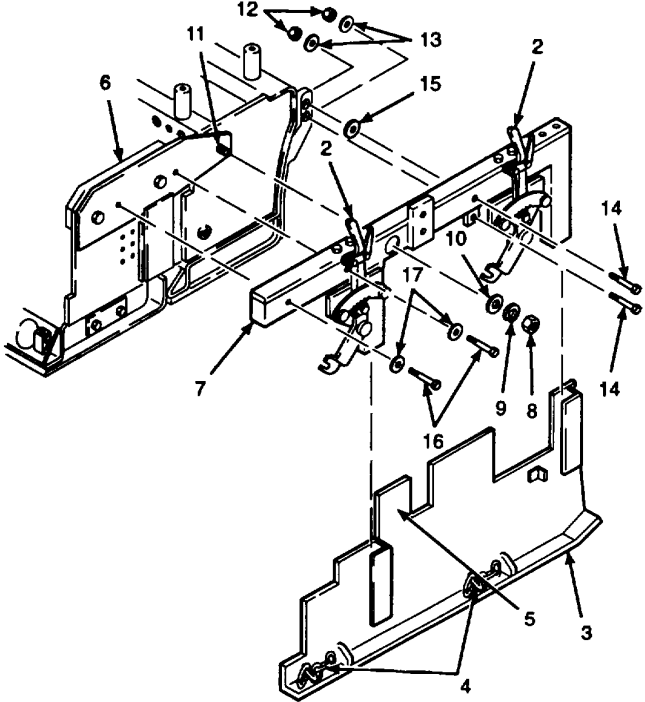
- (6) Raise outer extension screed plate (21) up to extension screed frame (6) and secure with flat washers (23) and self-locking nuts (22).
- (7) Install cover plate (20) using lockwashers (19) and hex head cap screws (18).

n. Install endgate assembly using the following steps.

- (1) Remove hex nut (8), lockwasher (9), and flat washer (10) from cylinder extension rod (11).

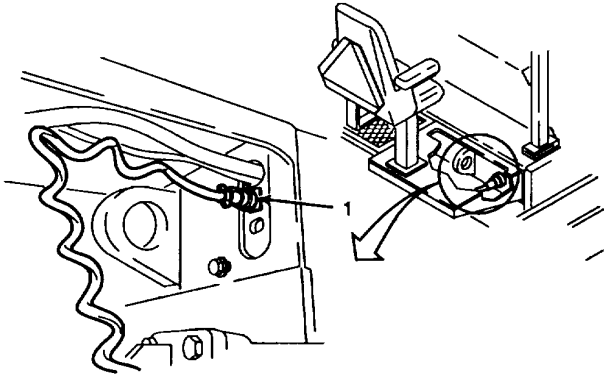
WARNING

To avoid personal injury, do not attempt to lift and install the endgate support arm and endgate alone. Endgate support arm and endgate weighs approximately 126 lbs (57,1 kg). Use a second person to help hold the endgate support arm and endgate in place during installation. Failure to do so may result in serious injury.

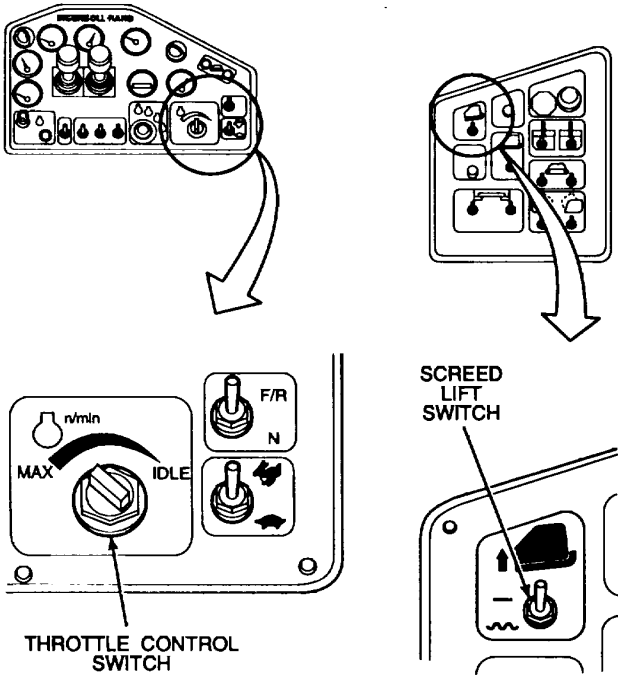


- (2) With the help of a second person, lift endgate (3) and endgate support arm (7) onto extension screed frame (6), inserting endgate mounting tab (5) into extension screed frame, and secure with flat washers (17) and hex head cap screws (16).
- (3) Install hex head cap screws (14), spacer (15), flat washers (13), and self-locking nuts (12).
- (4) Carefully level endgate (3) and connect chains (4) to endgate hand levers (2).
- (5) Install flat washer (10), lockwasher (9), and hex nut (8) onto cylinder extension rod (11) and tighten hex nut.

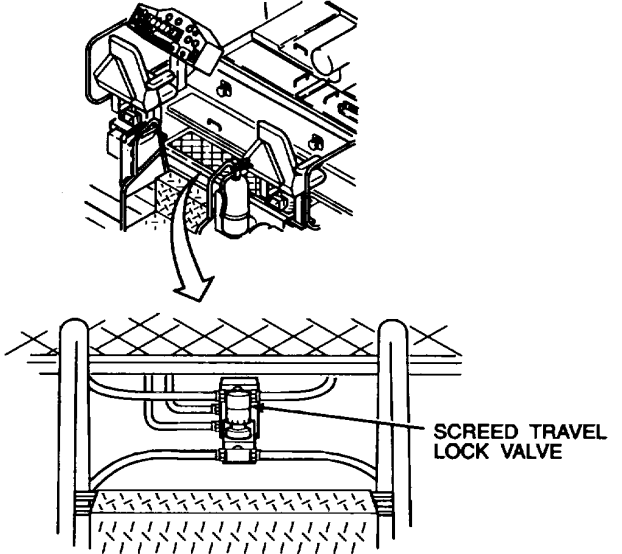
- o. Connect feed limit switch connector (1) to the connector on the rear wall of the tractor.



- p. Start paving machine per paragraph 2.10
- q. Place throttle control switch to "MAX" position.



- r. Place screed lift switch to the up, RAISE position. Raise screed fully up.
- s. Remove wood support blocks from under each end of main screed.
- t. Retract both left and right extension screeds per paragraph 2.19.
- u. Ensure screed travel lock valve is open.



- v. Place screed lift switch to the down, FLOAT position. Lower the screed until the screed rests on the ground.
- w. Shut down paving machine per paragraph 2.11, steps a through g.

2.26.9 Pinning the Tow Point. The tow point of the paving machine can be converted from being hydraulically controlled to being mechanically controlled by pinning the tow point to the tractor. Mat thickness up to 6 in. (152 mm) is achieved by hydraulically adjusting the tow point cylinder. Pinning the tow point allows mechanical mat thickness of 6 to 8 in. (152 to 203 mm) by using the thickness control.

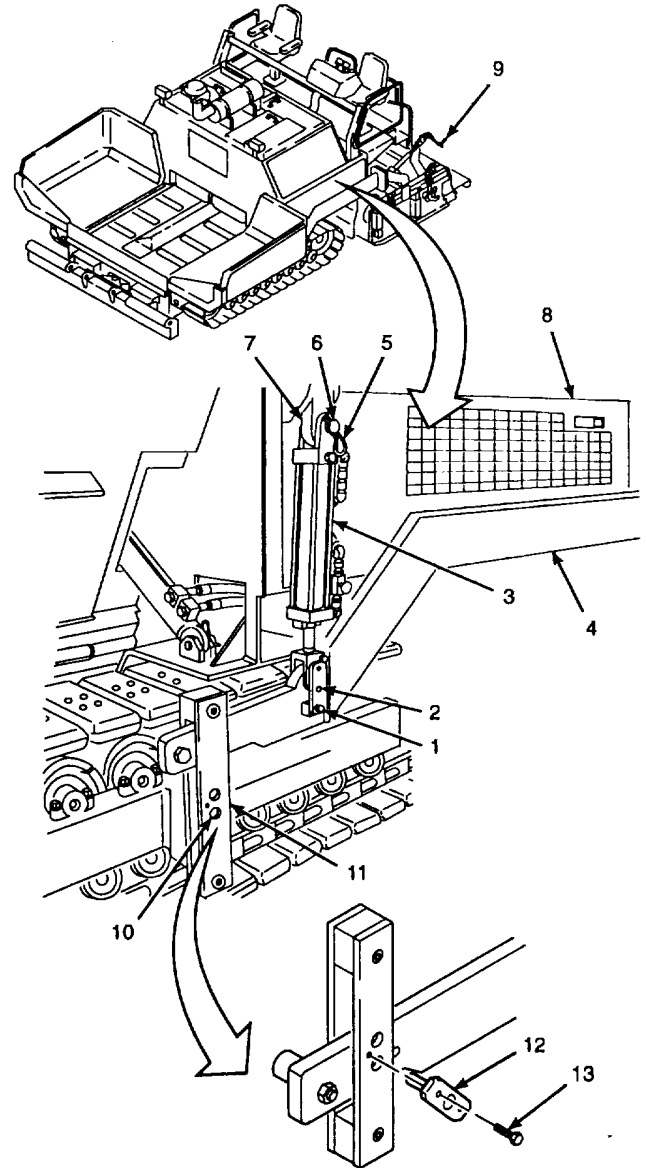
- a. Shut down paving machine and remove key from ignition switch per paragraph 2.11.
- b. Access toolbox per paragraph 3.3.1 and retrieve two screed tow arm locking pins with attached hex head cap screw and wrench set from toolbox.

NOTE

Procedures for pinning the tow point are the same for both left and right screed tow arms. Pin one side of the machine at a time. The left side of the machine is illustrated in this procedure.

- c. Use a wrench to remove hex head cap screw (1) and tow arm clevis pin (2) from bottom cylinder clevis head.
- d. Pull forward on tow point cylinder (3) to slide cylinder clevis head from screed tow arm (4).
- e. Pull top retaining clips (5) from top cylinder clevis pin (6).
- f. Remove clevis pin (6).
- g. Pull down on tow point cylinder to disengage it from mounting bracket (7).
- h. Pull tow point cylinder (3) backward and secure cylinder to the side access cover (8) by clipping retaining clips (5) through top and bottom clevis heads and attaching to grill of side access cover.
- i. Use screed thickness control (9) to align bottom locking pin hole (10) in tow arm support plate (11) with slotted hole in screed tow arm (4).
- j. Install locking pin (12) into bottom hole in tow arm support plate (11) and slotted hole in screed tow arm (4).

- k. Use a wrench to install hex head cap screw (13) into tow arm support plate and screed tow arm and tighten.
- l. Repeat pinning procedure for opposite tow point cylinder (3).
- m. Put wrench set back into toolbox and secure toolbox per paragraph 3.3.1.



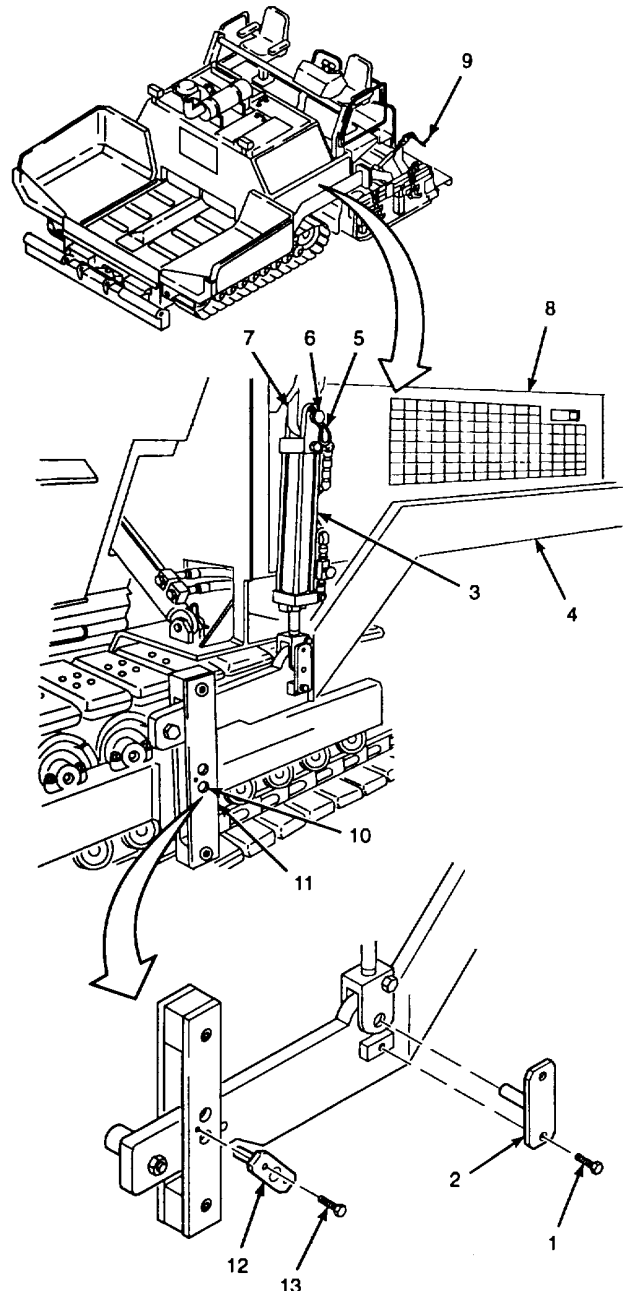
2.26.10 Unpinning the Tow Point. The tow point of the paving machine can be converted from being mechanically controlled to being hydraulically controlled by unpinning the tow point from the tractor and pinning to the tow point cylinder. Mat thickness up to 6 in. (152 mm) is achieved through hydraulic adjustment of the tow point cylinders.

- a. Shut down paving machine and remove key from ignition switch per paragraph 2.11.
- b. Access toolbox per paragraph 3.3.1 and retrieve wrench set from toolbox.

NOTE

Procedures for unpinning the tow point are the same for both left and right screed tow arms. Unpin one side of the machine at a time. For clarity, the left side of the machine is illustrated in this procedure.

- c. Use a wrench to remove hex head cap screw (13).
- d. If necessary, adjust screed thickness control (9) to remove load of screed tow arm (4) on tow arm locking pin (12).
- e. Remove locking pin (12) from lock pin hole (10) in tow arm support plate (11).
- f. Hold tow point cylinder (3) and pull retaining clips (5) to remove cylinder from side access cover (8).
- g. Line up holes in top cylinder clevis head and mounting bracket (7). Install clevis pin (6) and retaining clips (5) to secure top cylinder clevis head.
- h. Pull bottom cylinder clevis head down to line up with clevis mounting hole in screed tow arm (4).
- i. Install clevis pin (2) and hex head cap screw (1). Use a wrench to tighten hex head cap screw.
- j. Repeat unpinning procedure for opposite tow point cylinder (3).
- k. Put wrench set and screed tow arm locking pins (12) back into toolbox and secure toolbox per paragraph 3.3.1.



SECTION IV. OPERATION UNDER UNUSUAL CONDITIONS

2.27 UNUSUAL ENVIRONMENT/WEATHER.

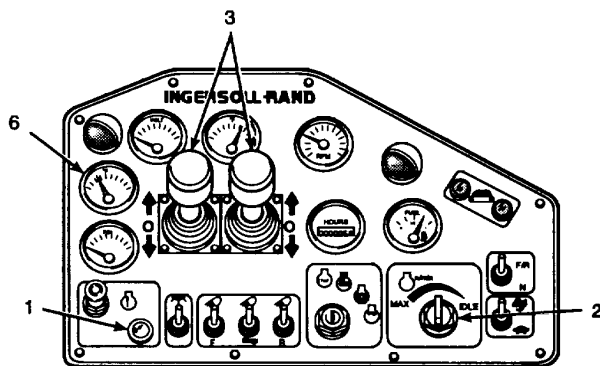
Due to the environmental conditions required for a successful paving operation, most of the paving machine hydraulic and electrical functions are not used in unusual environment/weather conditions. Most inclimate conditions that limit the ability to pave eliminate the machine's use as a paving machine. The paving machine can be driven under unusual environment and weather conditions with some precautions detailed in the following paragraphs.

2.27.1 Hot Weather Operations. The paving machine is equipped with a high temperature warning indicator light that turns on when engine coolant temperatures reach 214°F (101°C). A high temperature shutdown sensor will stop the engine when coolant temperature reaches 220°F (104°C). Coolant temperatures of 214°F (101°C) to 220°F (104°C) usually correspond with an ambient air temperature of 120°F (49°C) or greater. The paving machine can be operated at temperatures above 120°F (49°C) by using the following procedures.

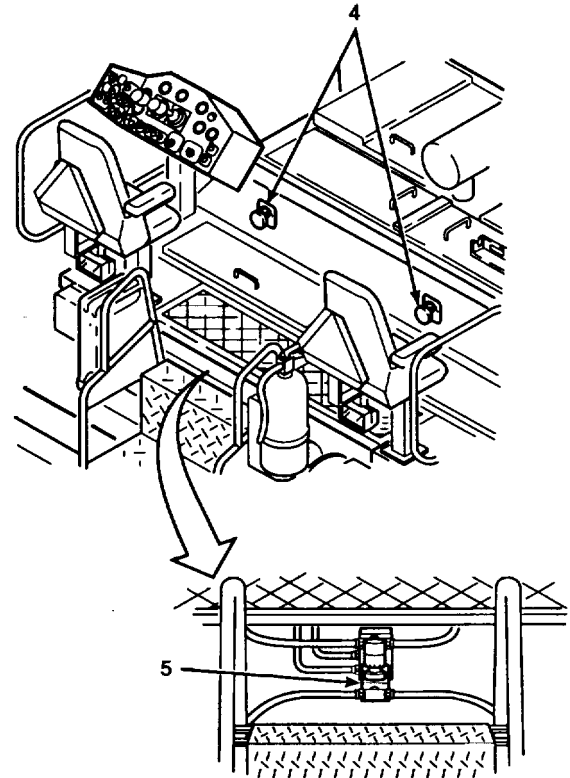
NOTE

When the throttle control switch is set to MAX throttle, maximum cooling is provided to the engine and hydraulic machine functions. Higher engine rpm creates faster circulation of coolant in the engine and hydraulic oil in the hydraulic systems.

- a. Set throttle control switch (2) to MAX throttle.



- b. Pull back on left and right control handles (3) to slowest efficient paving speed.
- c. Turn auger/conveyor speed control valve (4) to slowest possible paving speed setting.



- d. Turn screed vibration control valve (5) to slowest effective vibration setting.
- e. If high temperature warning indicator light comes on, stop paving and offload paving material per paragraph 2.28.1. When ambient air temperature drops below 120°F (49°C), resume paving.
- f. Engine oil must be changed every 50 hours when operating the paving machine in extreme heat where engine coolant temperatures average 200°F (93°C) for greater than 50 hours of machine operation. Refer to Unit Maintenance for oil change.

2.27.2 Cold Weather Operations.

- a. Use the following steps to start the paving machine at temperatures below 50°F (10°C).

- (1) Turn the ignition switch to the preheat position and hold for 10 seconds to heat the induction heater.

CAUTION

Starter motor may overheat if operated longer than 30 seconds. If engine does not start, allow starter motor to cool for two to three minutes before trying again. If engine fails to start after three attempts, notify Unit Maintenance.

- (2) Turn the ignition switch to the start position and immediately release when the engine starts. The switch will spring return to the ON position.

- b. Maximum extreme cold temperature for machine operation is -50°F (-46°C).

NOTE

Paving machine operation will be sluggish until the hydraulic oil reaches normal operating temperature.

- c. If the machine will start at temperatures higher than -50°F (-46°C), the machine can be operated after the engine coolant temperature starts to rise at the gauge panel temperature gauge. Other non-propulsion hydraulic functions cannot be operated until hydraulic oil temperature reaches 100°F (38°C). No other special operating procedures are required.

2-98 2.27.3 Extreme Dusty and Sandstorm Conditions.

- a. Under extreme wind driven dust conditions, check air cleaner service indicator every 1/2 hour of operation.
- b. Service the air cleaner per table 2-1, Operator PMCS, twice daily.
- c. Replace air cleaner filter element per paragraph 3.3.7 after every 50 hours of continuous operation in extreme dusty conditions.

WARNING

Death or serious injury could occur if compressed air is directed against skin. Do not use compressed air for cleaning or drying unless the pressure is/was reduced to 30 psi (207 kPa) or less. When working with compressed air, always use chip guards, eye protection, and other personal protective equipment.

- d. Use compressed air to blow out all dirt and debris from hydraulic oil cooler and radiator.
- e. The paving machine shall not be operated in a sandstorm. Take the following precautions to protect the machine from damage during a sandstorm.
- (1) Ensure extension screeds are retracted, hopper wings are open, and screed is in travel position to protect cylinder shafts from abrasive blowing sand.
 - (2) Coat chrome guide shafts on screed with a heavy coat of automotive and artillery grease (Item 5, Appendix D).
 - (3) Cover air cleaner cap assembly with sheet plastic.
 - (4) Install protective covers on operator console and screed crew control boxes.
 - (5) Close all access doors and covers.

2.27.4 High Altitude Operation. The paving machine diesel engine has a considerable amount of reserve horsepower to compensate for machine operation at altitudes up to 10,000 ft (3050 m). If engine bogs down at high altitude, reduce paving speed until engine runs smoothly.

2.27.5 Travel Over Rough Terrain.

Table 2-2. Terrain Limitations

Maximum Incline	15°
Maximum Decline	15°
Maximum Side Slope ¹	12°

¹The diesel engine is mounted sideways in the machine. Side slope limitations are due to limits of the engine lubrication oil pump and oil sump configuration to keep the engine lubricated.

- a. Lift screed to the travel position using screed lift switch and close the screed travel lock valve per paragraph 2.12.
- b. Select speed range, travel or pave, per paragraph 2.12, based on machine grade and slope limitations listed in table 2-2.

WARNING

The machine center of gravity with the screed raised is toward the back of the machine. Paving machine may rock backward on steep inclines when rough terrain is encountered. Travel at paving speeds only. Failure to do so may eject operator from operator platform resulting in serious personnel injury and possible equipment damage.

CAUTION

If traveling over rocky terrain, check oil pressure whenever the slope changes. If the oil pressure gauge needle fluctuates or drops, slope of terrain is excessive.

NOTE

Paving machine can be operated in reverse to counteract effects of excessive grade or slope.

- c. Use slower speeds when traveling over rough bumps, short inclines, or uneven terrain. The paving machine will rock backward on the screed if obstacles are encountered at too fast of a speed. When approaching a grade, make sure screed does not contact ground.
- d. As a safety precaution, move the operator control console to the upslope side of operator platform when traveling across a side slope. This will allow the operator to exit the machine upslope in case the machine should start to slip or roll.

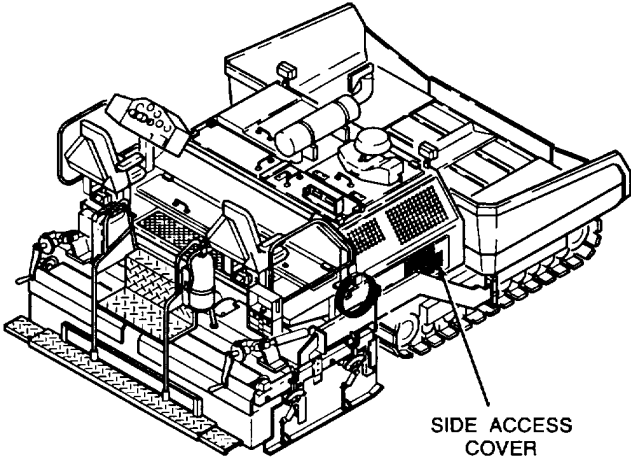
2.27.6 Fording. The paving machine is capable of traveling through water up to 30 in. (762 mm) deep.

CAUTION

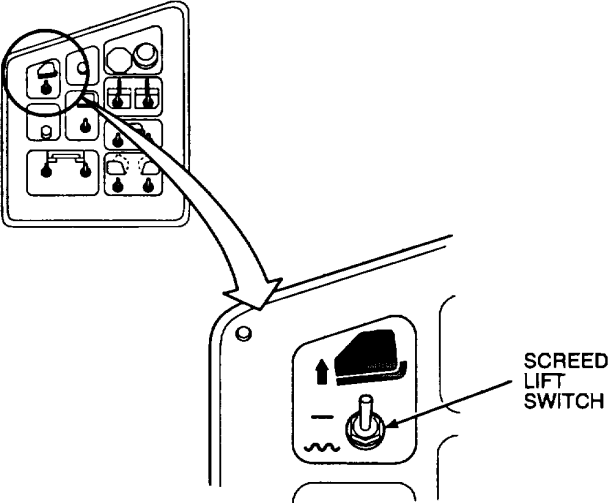
Hot screed plates must be permitted to cool off prior to fording. Direct contact with cold water will permanently damage hot screed plates.

NOTE

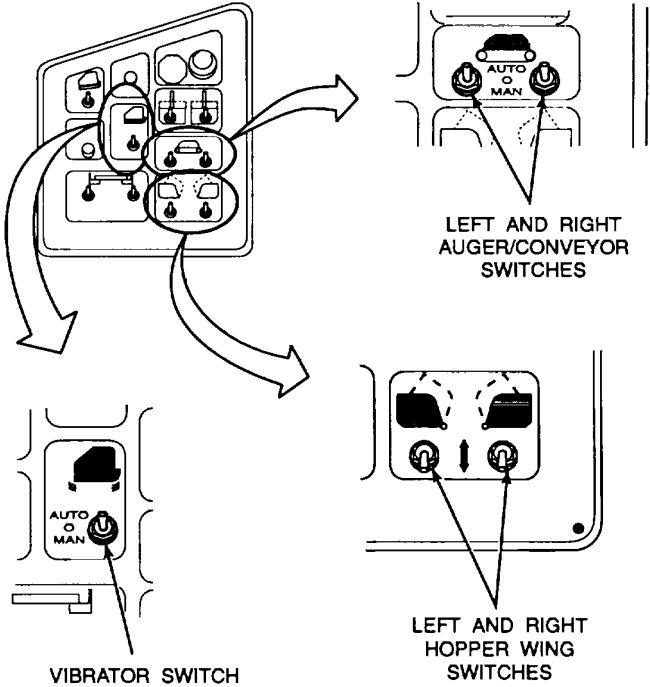
In a stream of water 30 in. (762 mm) deep, the high water level will be about 1 in. (25 mm) below bottom of side access covers. Paving materials in hopper shall be offloaded prior to fording.



- a. Lift screed to travel position and close screed travel lock valve per paragraph 2.1.4. Allow screed plates to air cool for one hour, minimum, prior to fording

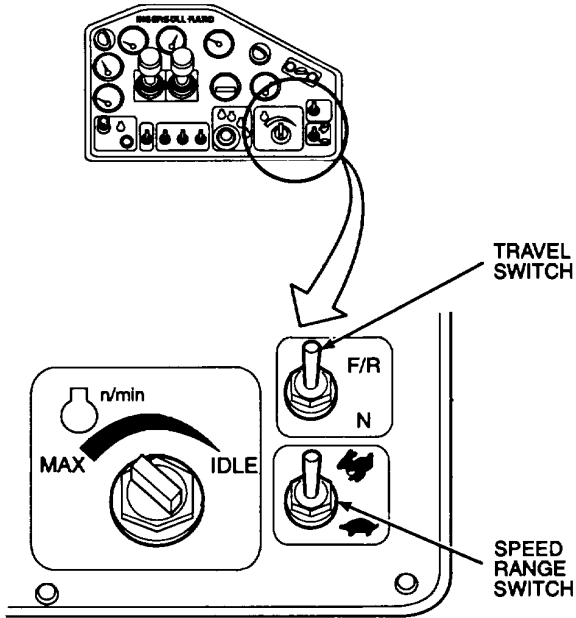


- b. For improved visibility, raise hopper wings to fully raised positions using hopper wing switches.



- c. Set auger/conveyor switch to center, OFF position.
- d. Set vibrator switch to center, OFF position.

- e. Place travel switch in F/R position and speed range switch in travel (hare) position.



- f. Slowly move both control handles to fully forward position and ford stream. No special lubrication or drainage procedures are required after fording.

2.28 EMERGENCY PROCEDURES.

2.28.1 Offloading Residual Asphalt. In an emergency situation where a fully loaded hopper has to be emptied immediately, use the following procedures to empty all paving material from the hopper.

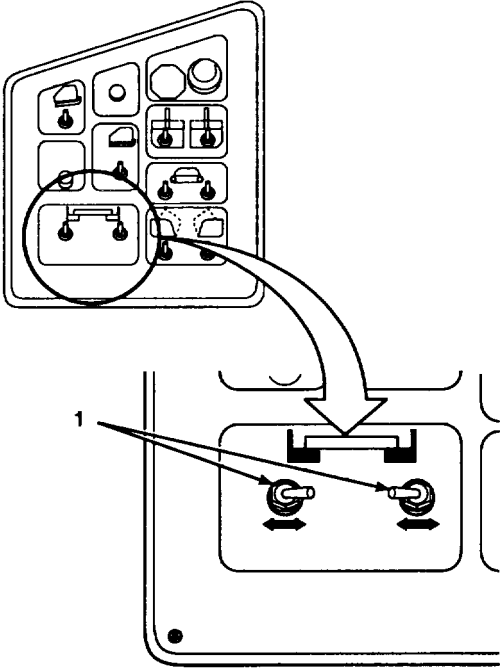
CAUTION

Use care when retracting extension screeds with any bolt-on extensions installed. Maximum retraction with bolt-on extensions is limited to 1 ft (305 mm) per side. Damage to endgates will result if extension screeds are retracted too far.

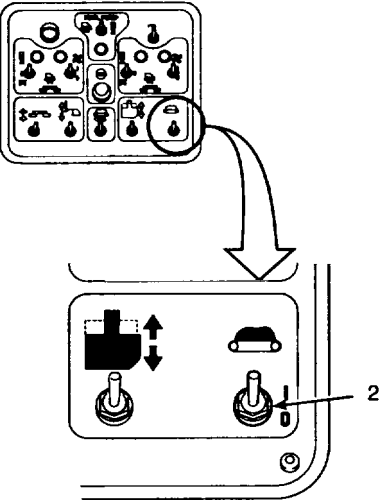
NOTE

Both paving machine operator and screed crew are needed to quickly perform an emergency hopper offload.

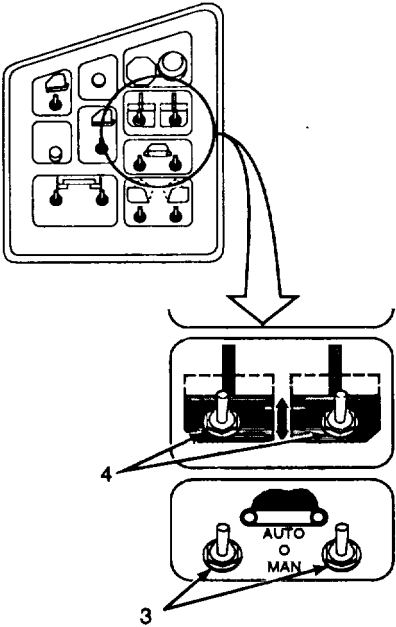
- a. Retract extension screeds if extended, using extension screed control switches (1).



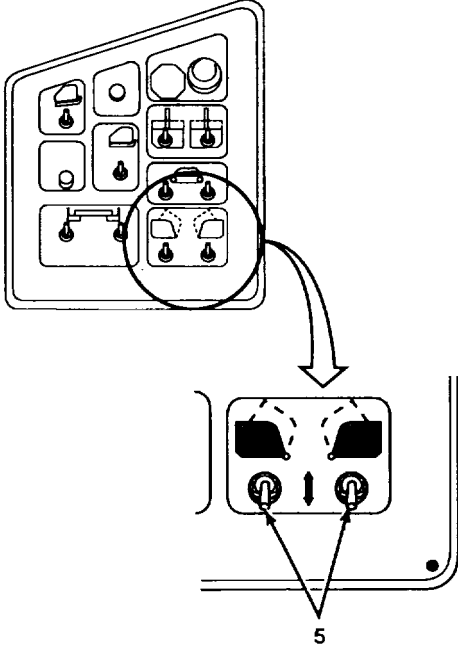
- b. Place left and right feeder control switches (2) to the up, ON position.



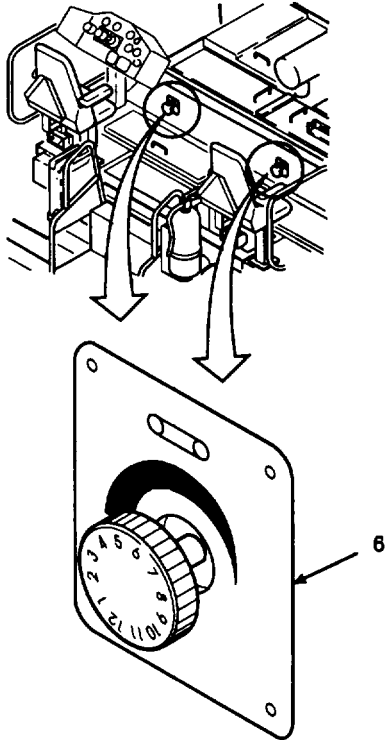
- c. Turn the left and right auger/conveyor switches (3) to the center, OFF position.
- d. Open flow gates by moving the left and right flow gate switches (4) to the up, OPEN position.



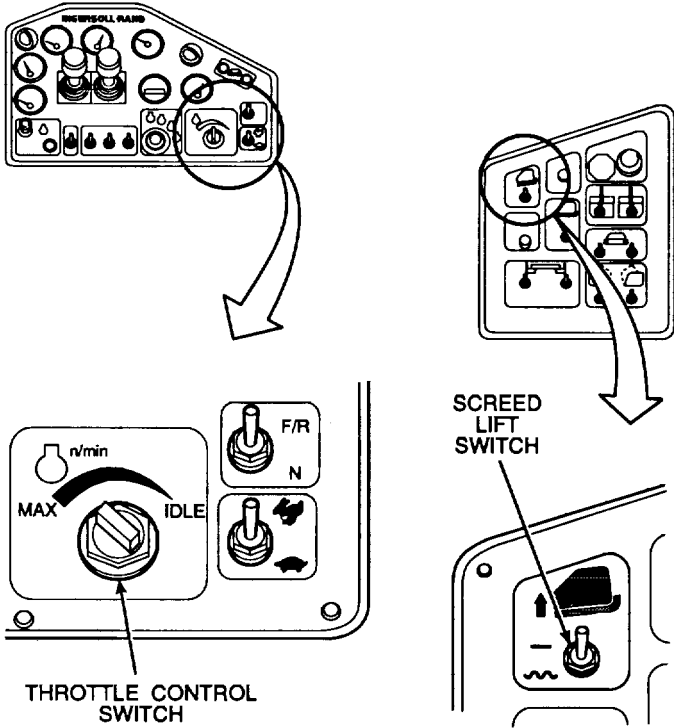
- e. Empty hopper wings of all residual paving material by moving hopper wing switches (5) to the up, RAISE position.



- f. Turn left and right auger/conveyor speed control valves (6) clockwise to the fully open position.

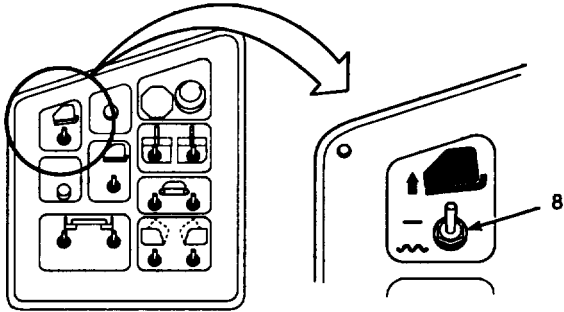


g. Turn throttle control switch (7) to MAX position.



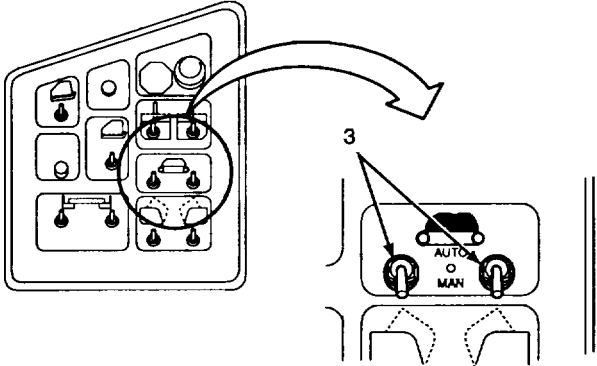
h. Instruct screed crew members to dismount the screed and instruct all surrounding personnel to stand clear of paver. Ensure all other equipment is cleared away of the paving machine.

i. Place screed lift switch (8) to the up, LIFT position.



j. Place speed range switch (9) to the up, HARE travel position.

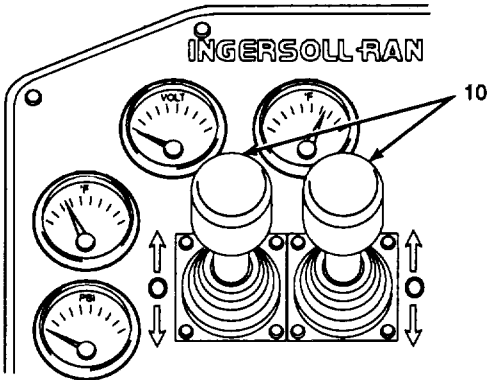
k. Turn left and right auger/conveyor switches (3) to the down, "MAN" position.



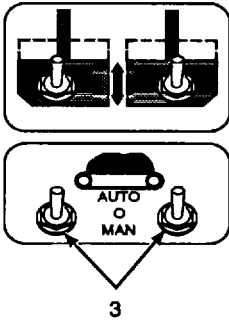
WARNING

Ensure all personnel and surrounding equipment is cleared away from the paving machine before placing control handles fully forward during an emergency hopper offload. Paving machine will jump forward. Failure to do so may result in serious injury or death to personnel and damage to the equipment.

l. Push left and right control handles (10) fully forward at maximum speed and empty hopper with auger/conveyor system operating at maximum speed.



- m. When hopper is empty, place auger/conveyor switches (3) to the center, OFF position.



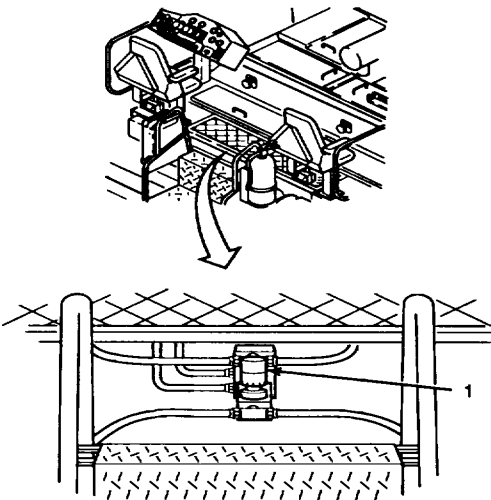
- n. Wash down paving machine per paragraph 3.3.7.
- o. Shut down paving machine and remove key from ignition switch per paragraph 2.11.

2.2 Chocking the Paving Machine. In an emergency situation where paving machine spring actuated hydrostatically released brakes fail to operate, chock the paving machine according to the following procedures.

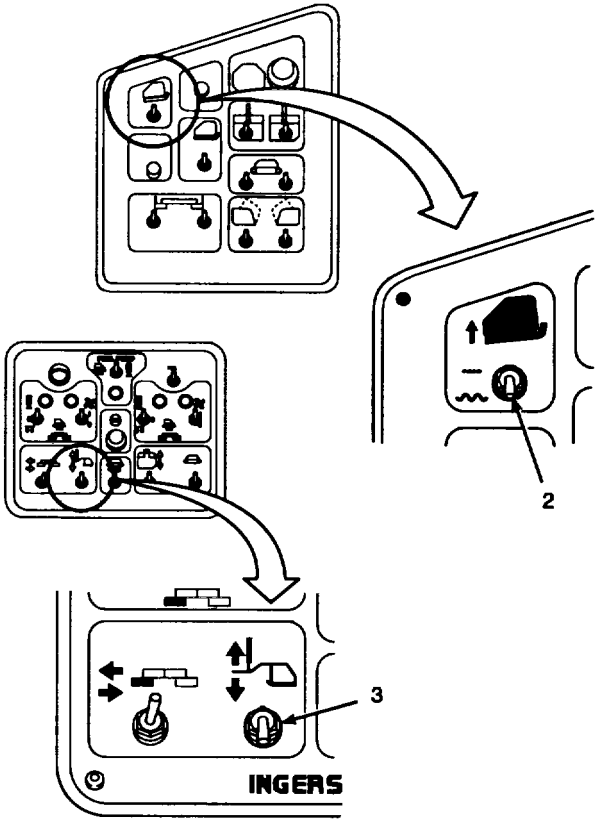
WARNING

Do not open the screed travel lock valve if anyone is near or under the screed. The screed can fall rapidly when the screed travel lock valve is opened. The falling screed can cause severe injury or death.

- a. Turn screed travel lock valve (1) counterclockwise to open.

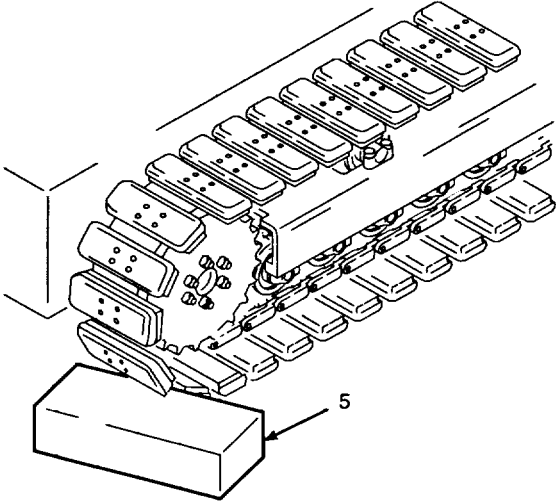
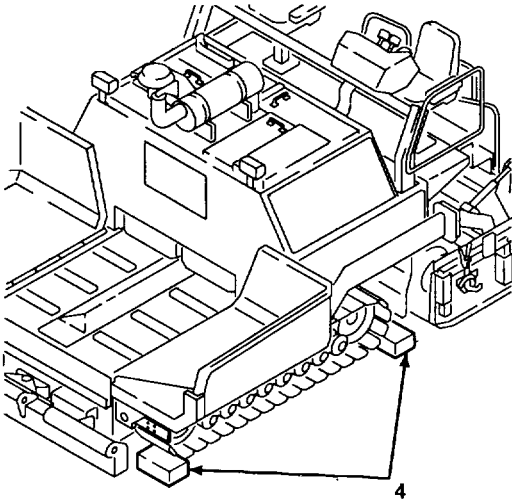


- b. Lower screed to the ground by moving screed lift switch (2) to the float position.



- c. Place tow point movement switch (3) to down, LOWER position and lower screed tow arms to exert more ground pressure on screed.

- d. Place 8 x 8 x 14 in. minimum wooden blocks (4) in front and behind crawler tracks.

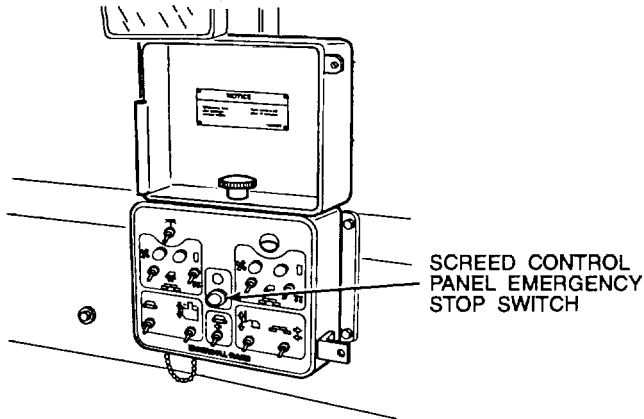
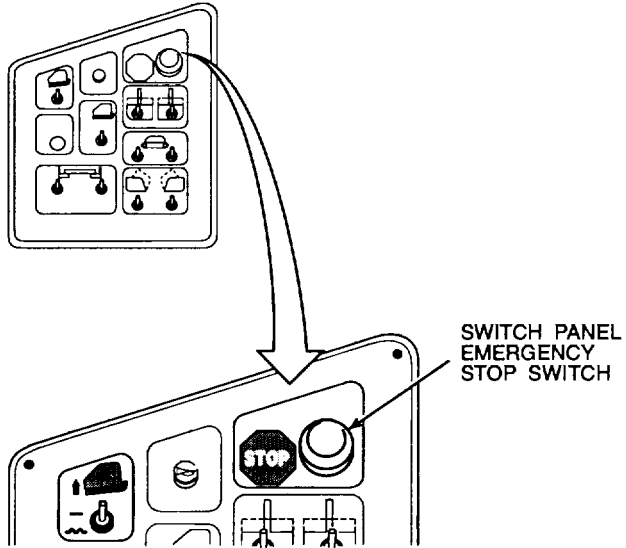


- e. If paving machine is disabled on a side slope, angle wooden blocks (5) on down slope side across the front and rear of the crawler tracks to prevent slippage.

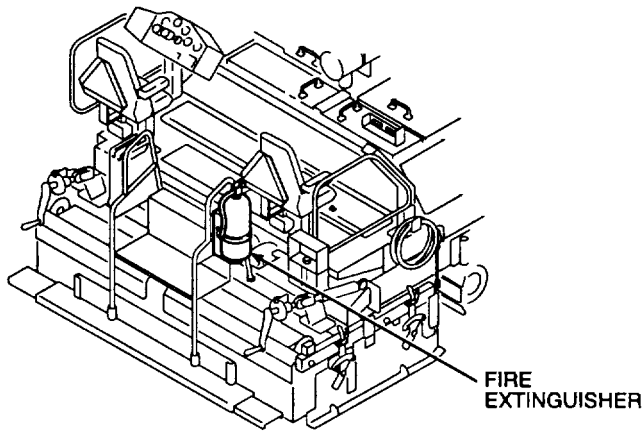
2.28.3 Pinning the Tow Point. The tow point of the paving machine can be converted from hydraulically controlled to mechanically controlled by being pinned to the tractor. Mechanical control may be required in an emergency situation where the hydraulic tow point cylinders fail. By pinning the tow point, the mat thickness can be adjusted to the full depth of 8 in. (203 mm) using the thickness control. Refer to paragraph 2.26.9 to pin the tow point.

2.28.4 Screed Burner Fire. Uncontrolled screed burner fires can occur when diesel fuel accumulates on the screed plates and the screed burners are ignited. Use the following procedures in the event of a screed burner fire.

- a. Push in any one of three emergency stop switches on either the operator control console switch panel or left and right screed control panels.



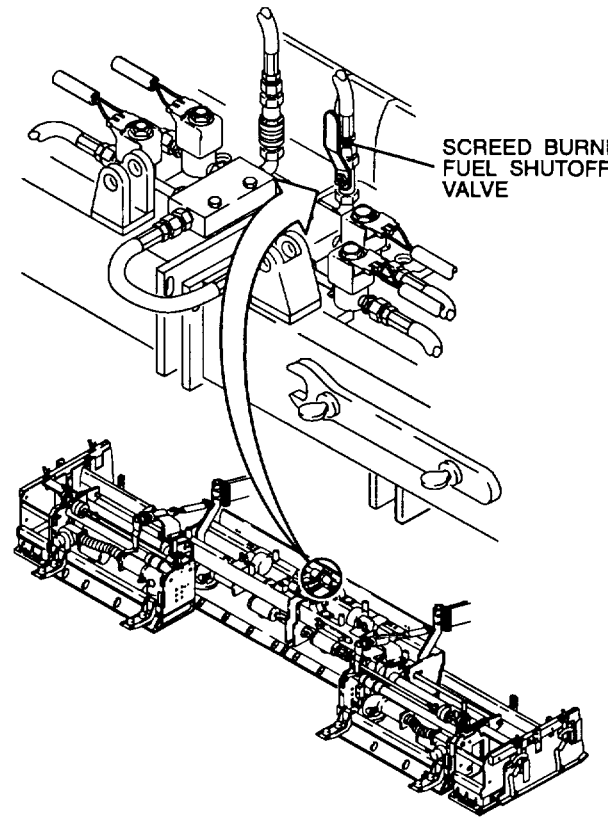
- b. Retrieve fire extinguisher mounted on right screed step railing on screed and direct fire extinguisher spray down into the screed plates. Fire will either be extinguished with the fire extinguisher or burn itself out when all fuel is consumed.



WARNING

Allow area of screed burner fire to cool. Failure to wait for area to cool will cause severe burns.

- c. After fire is extinguished, close screed burner fuel shutoff valve.
- d. Inspect screed plates for accumulation of excess diesel fuel remaining on screed plates. Inspect for burnt wires, hydraulic hoses, burner fuel line hoses, burner insulating foam, and other flammable materials. Report any damage to your supervisor.
- e. If there is no visible damage to hydraulic emergency stop switch and start the paving machine per paragraph 2.10.



- f. Raise screed to travel position per paragraph 2.12 to drain off any remaining diesel fuel on the screed plates.
- g. Extend left and right extension screeds.
- h. Turn on main and extension screed blowers per paragraph 2.16 and let run for one half hour to aid in fuel evaporation. Do not attempt to relight burners until all excess fuel is evaporated from screed plates.

2.28.5 Emergency Starting. Slave start the paving machine whenever a low battery charge condition prevents proper starter operation. All battery connections must be clean and secure for the slave start procedure to work properly. Use the following procedures to first check for secure battery connections and then to slave start the paving machine.

WARNING

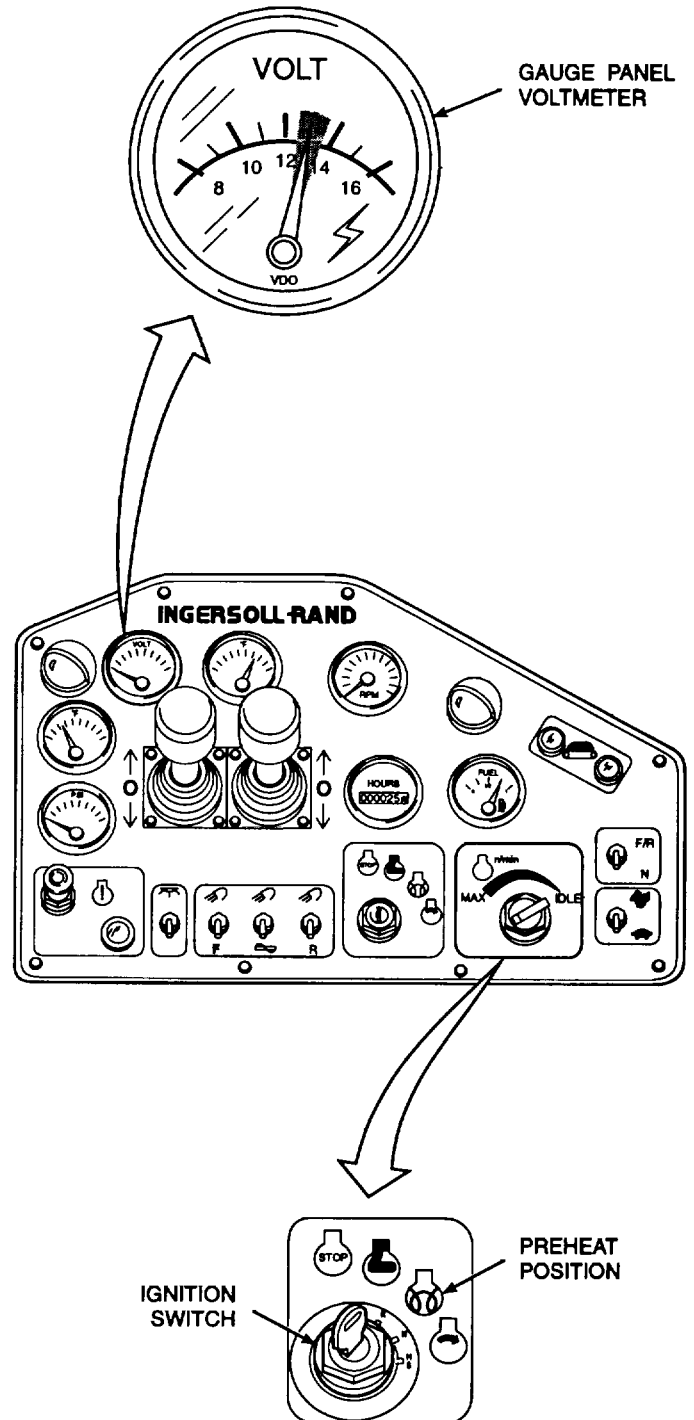
Always check for a voltage change at the gauge panel voltmeter before slave starting the paving machine. If the voltmeter does not indicate a voltage change, the batteries may not be properly connected. Damage to batteries and cables or serious injury to personnel may result if slave starting the paving machine with improperly connected batteries.

- a. While watching the gauge panel voltmeter, turn ignition switch to PREHEAT. Check for a change in the voltage indication at the gauge panel voltmeter. If no voltage change is seen, notify your supervisor. Do not try to slave start the paving machine unless a voltage change is seen at the gauge panel voltmeter.

NOTE

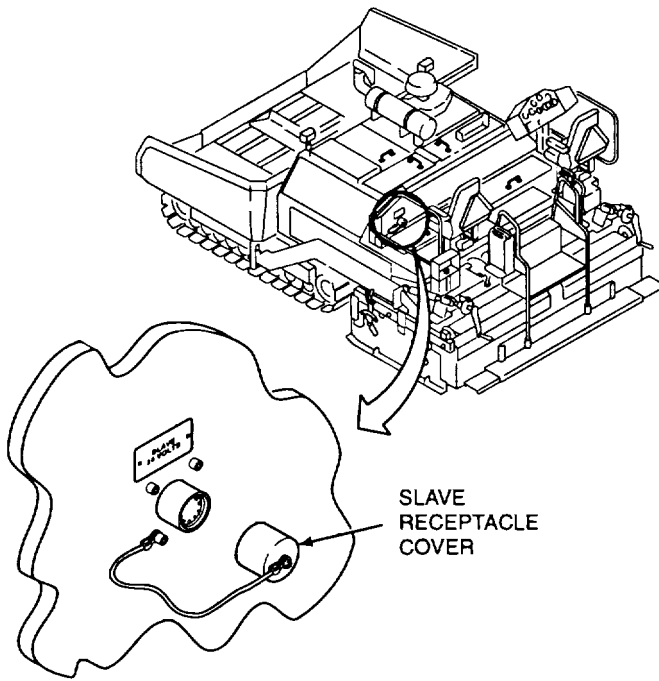
Slave starting the paving machine is a two-person task. One person is needed to operate the slaving vehicle while the second person starts the paving machine.

- b. Turn paving machine ignition switch off and remove the key.
- c. Position slaving vehicle close enough to the paving machine for slave cable hookup.



- d. Turn slaving vehicle ignition switch off and remove the key. Make sure all slaving vehicle electrical switches are turned off.

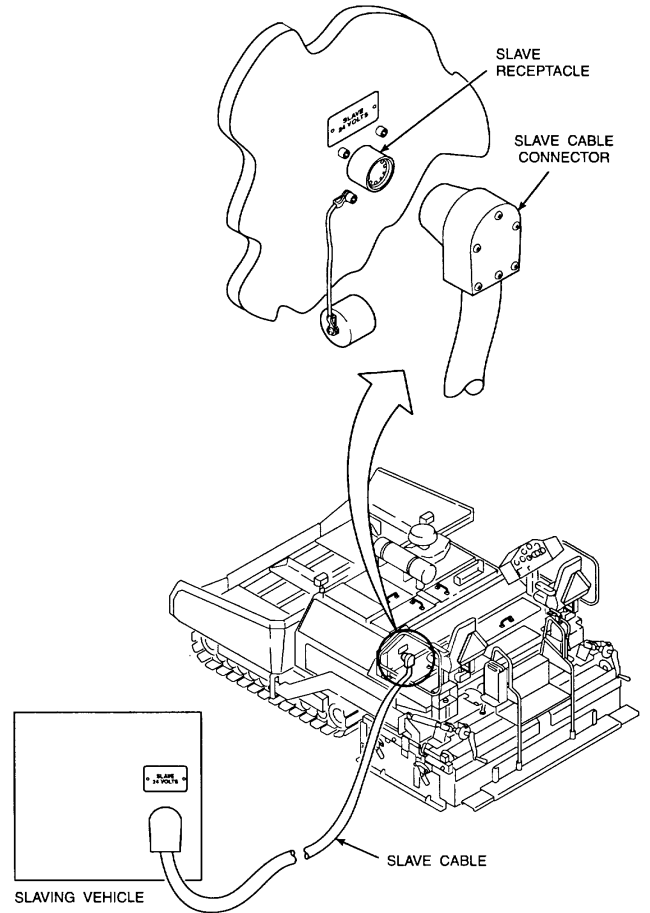
- e. Remove slave receptacle covers on paving machine and slaving vehicle.



NOTE

The paving machine is not equipped with a slave cable nor is it intended for use as a slaving vehicle.

- f. Connect the slave cable to the slave receptacle of both vehicles.
- g. Instruct the slaving vehicle operator to start the slaving vehicle and run the engine at high idle.



h. Set the paving machine controls to the following positions:

WARNING

Engine operation causes hazardous noise levels that may cause hearing loss. Wear ear protection while operating or working near paving machine.

Conveyor movement may cause injury or death. Ensure no personnel are in hopper when starting engine.

<u>Gauge Panel</u>	<u>Position</u>
Control handles	Neutral
Work light switches	Off
Throttle control switch	Idle
Speed range switch.....	"Tortoise" Pave
Travel switch.....	Neutral "N"

Switch Panel

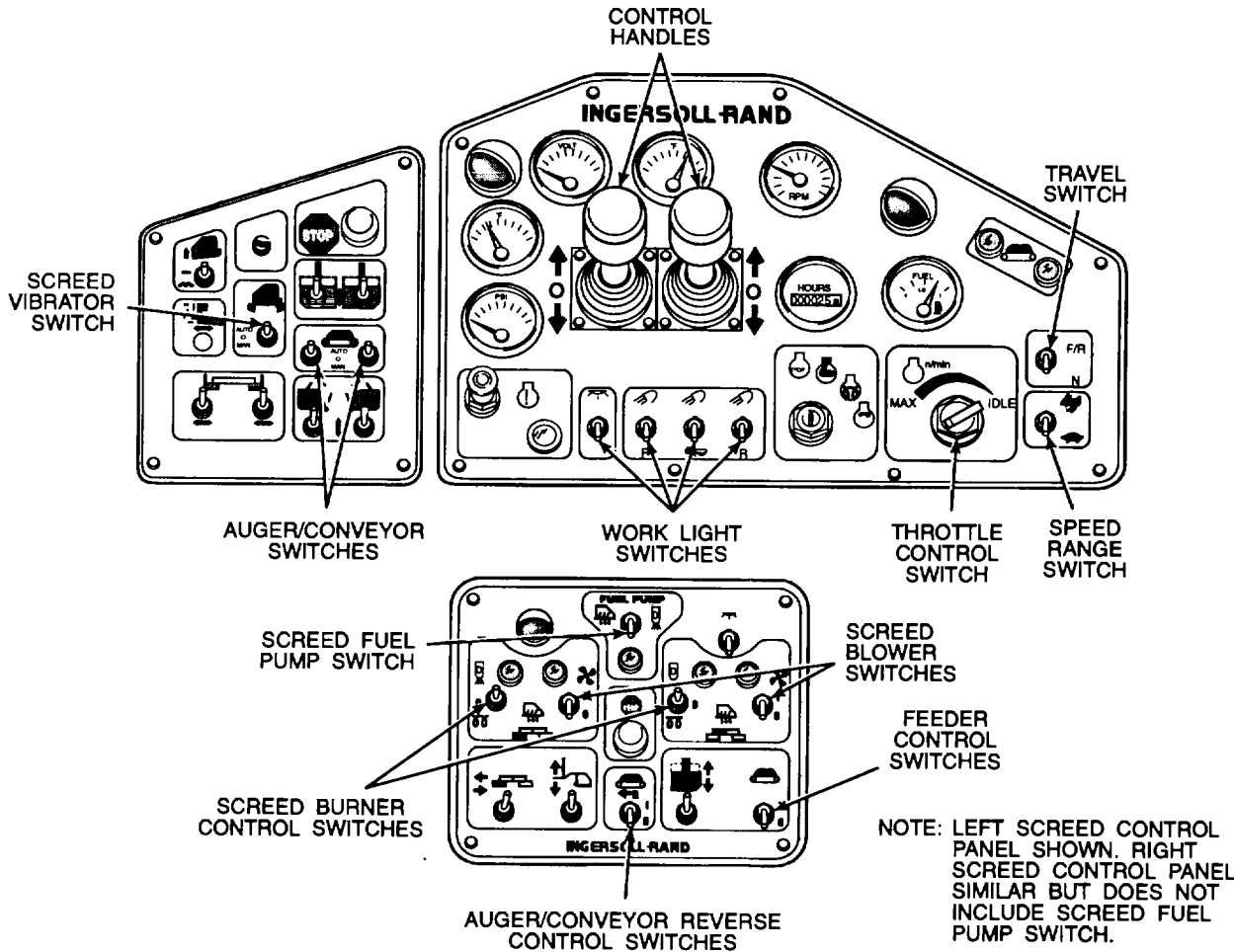
Screed vibrator switch	Off
Auger/conveyor switches.....	Off

Screed Control Panel

Screed fuel pump switch	Off
Screed burner control switches	Off
Screed blower switches.....	Off
Feeder control switches	Off
Auger/conveyor reverse control switches.....	Off

NOTE

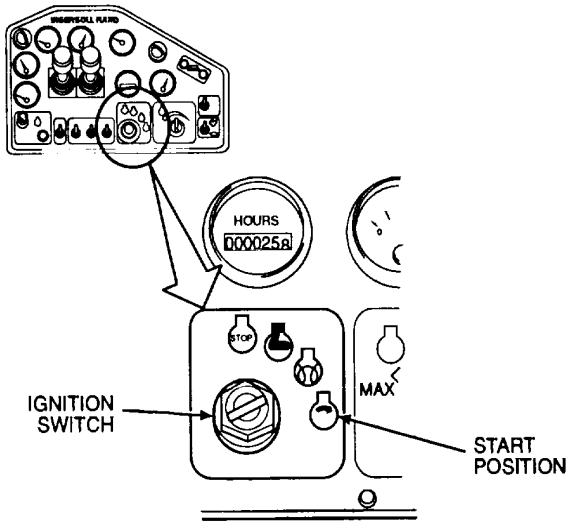
Prior to operating in unusual environment/weather conditions, refer to operation in unusual environment and weather, paragraph 2.27.



CAUTION

Starter motor may overheat if operated longer than 30 seconds. If engine does not start, allow starter to cool for two to three minutes before trying again. If engine fails to start after three attempts, notify Unit Maintenance.

- i. Turn the ignition switch to the START position and immediately release when the engine starts. The switch will spring return to the ON position.



CAUTION

Incorrect oil pressure can cause engine damage. If gauges do not display proper readings, shut down engine and correct malfunction before operation.

- j. Check engine oil pressure. If no engine oil pressure develops, immediately shut down the engine. Engine oil pressure gauge should read 10 to 15 psi (0,9 to 1,3 bar) minimum at low idle and 30 to 100 psi (2,6 to 8,6 bar) maximum at high idle.

- k. Disconnect the slave cable from both vehicles and install slave receptacle covers.

CAUTION

Incorrect oil pressure or temperature can cause engine damage. If gauges do not display proper readings, shut down engine and correct the malfunction before operation.

Do not idle unnecessarily for long periods of time. Idling the engine unnecessarily for long periods of time wastes fuel and fouls injector nozzles. Unburned fuel causes carbon buildup, oil dilution, and formation of lacquer or gummy deposits on the valves, pistons, and rings.

- l. After startup, observe engine gauges and warning lights for proper readings.

<u>Gauge</u>	<u>Reading (Low Idle)</u>
RPM	560 to 850
Oil Pressure	10 to 15 psi (0,9 to 1,3 bar)
Coolant Temperature	170° to 200°F (77° to 93°C)
Hydraulic Oil Temperature	100° to 200°F (38° to 93°C)
Voltage	12 to 14 VDC

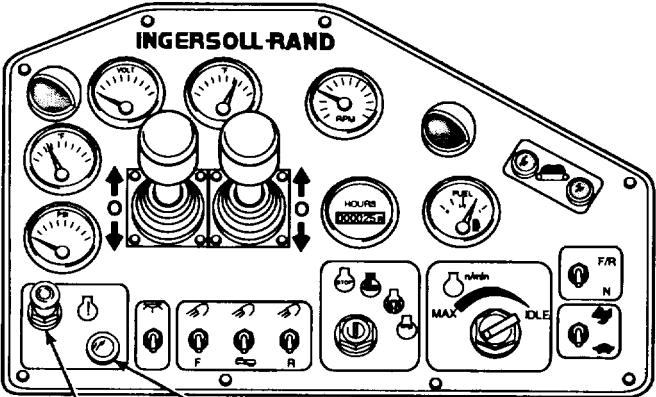
- m. Run the engine at IDLE for five minutes before paving operation begins. Do not race the engine during the warmup period.

2.28.6 Emergency Travel Using High Temperature Manual Override Button.

If the paving machine must be moved but is automatically shut down due to a high engine temperature condition, start up and move the machine according to the following procedures.

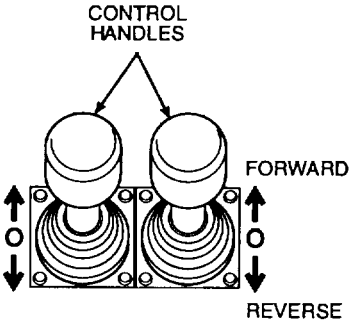
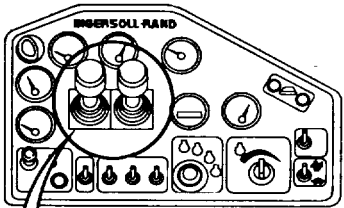
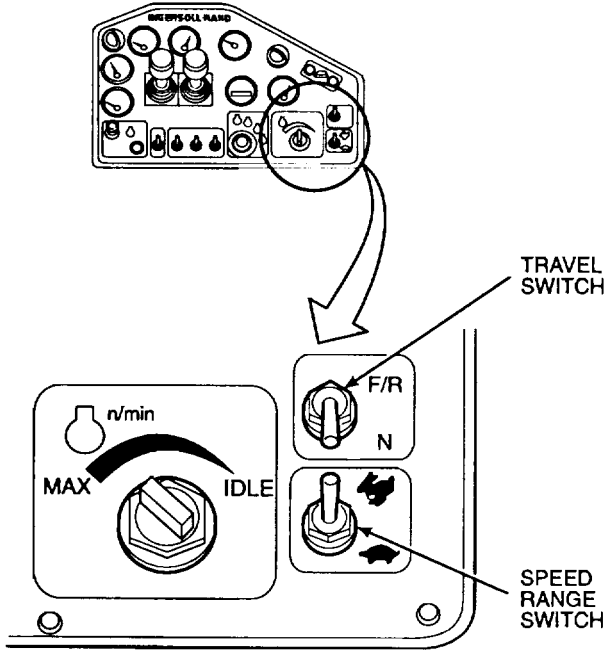
NOTE

When engine coolant temperature reaches 214°F (101 C) high temperature warning indicator light turns on and remains on until ignition switch is turned off or engine coolant temperature drops below 214°F (101°C). If engine coolant temperature reaches 220°F (104°C) paving machine shuts down automatically.



HIGH TEMPERATURE WARNING INDICATOR LIGHT
HIGH TEMPERATURE MANUAL OVERRIDE BUTTON

- a. Place both control handles in center (neutral) position.



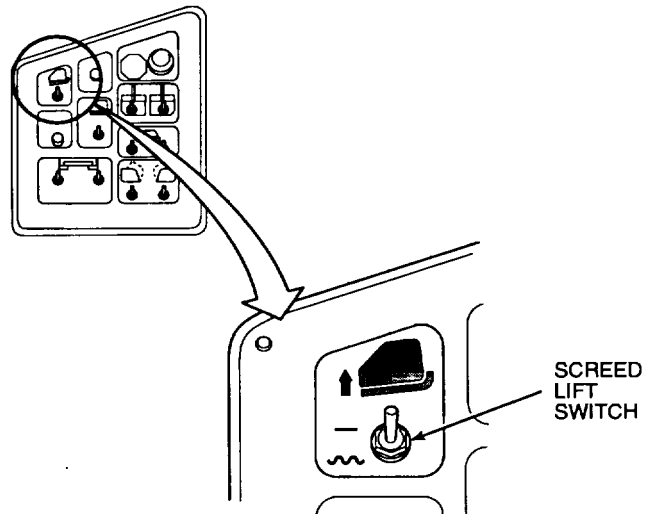
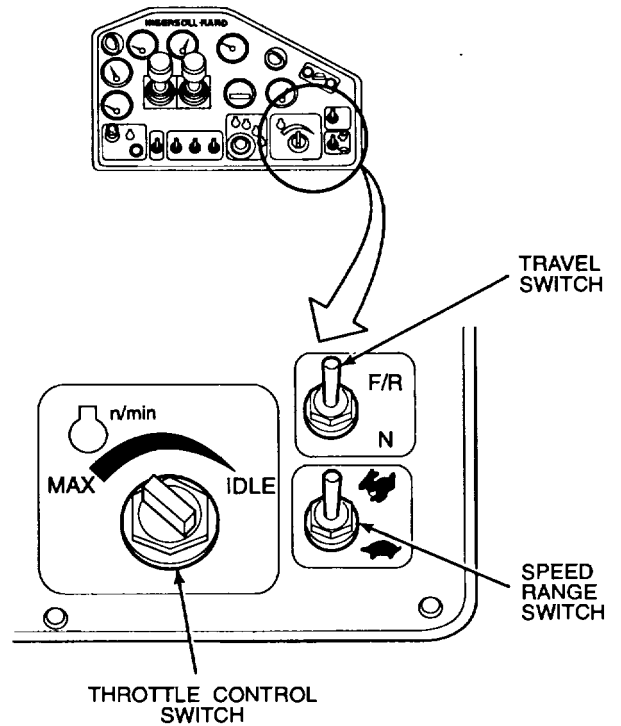
- b. Push in high temperature manual override button. Keep manual override button pushed in until paving machine is started and moved..

CAUTION

Do not operate engine at high temperature any longer than necessary. Continued operation at high temperature will cause permanent damage to the engine.

Starter motor may overheat if operated longer than 30 seconds. If engine does not start, allow starter to cool for two or three minutes before trying again. If engine fails to start after three attempts, refer problem to Unit Maintenance.

- c. Turn the ignition switch to the START position and immediately release when the engine starts. The switch will spring return to the ON position.
- d. Place throttle control switch in MAX position, travel switch in F/R position, and speed range switch in travel (hare) position.
- e. Set screed lift switch to the up, RAISE position.
- f. Slowly move control handles forward and move paving machine. Choose nearest out-of-the-way location for paving machine shutdown. Do not run overheated engine any longer than necessary.
- g. Release high-temperature manual override button.
- h. Shut down paving machine per paragraph 2.11. Refer overheated engine problem to Unit Maintenance.



CHAPTER 3

MAINTENANCE INSTRUCTIONS

	Page
SECTION I LUBRICATION INSTRUCTIONS	3-1
SECTION II TROUBLESHOOTING PROCEDURES	3-1
3.1 Introduction	3-1
3.2 Troubleshooting	3-3
SECTION III OPERATOR MAINTENANCE INSTRUCTIONS	3-18
3.3 Introduction	3-18

SECTION I. LUBRICATION INSTRUCTIONS

All lubrication of the 780T Bituminous Asphalt Paving Machine shall be in accordance with Lubrication Order, LO 53895-373-12.

SECTION II. TROUBLESHOOTING PROCEDURES

3.1 INTRODUCTION.

Table 3-1 contains troubleshooting procedures for locating and correcting most operating troubles, which are the responsibility of the operator. Each malfunction for a component or system is followed by a list of tests or inspections that will help determine probable causes and corrective actions to take. Perform the tests, inspections, and corrective actions in the order listed.

This manual cannot list all possible malfunctions that can occur nor all tests or inspections and corrective actions. If a malfunction is not listed, or if a malfunction is not

fixed by corrective actions listed, contact the supervisor. Only those functions within the scope of operator maintenance are listed.

Refer to the malfunction index on the following page. Locate the malfunction that is the same or most nearly the same as the trouble occurring with the paving machine. The malfunction index lists the malfunction number of the troubleshooting information for that problem and references the page number for troubleshooting information. Follow the troubleshooting steps one by one and perform the corrective actions listed.

Malfunction Index

Malfunction Number	Description	Page
1	Engine will not crank	3-3
2	Engine cranks but will not start	3-3
3	Engine oil pressure low	3-3
4	Engine water temperature high	3-4
5	Hydraulic oil temperature over 200°F (930C)	3-4
6	Engine speed low	3-5
7	Fuel gauge reading incorrectly	3-5
8	All hydraulic functions inoperative	3-5
9	Hydraulic functions operate slowly or sluggishly	3-5
10	Paving machine will not move	3-5
11	Auger/conveyor systems will not operate	3-6
12	One auger/conveyor system will not operate	3-7
13	Auger/conveyor system runs slowly	3-7
14	Vibrators will not vibrate in manual mode	3-8
15	Vibrators will not vibrate in automatic	3-9
16	Tow point cylinder will not move	3-10
17	Screed will not lower	3-11
18	Fuel spray washdown system will not spray	3-12
19	Screed burners inoperative	3-14
20	Screed burners give off black smoke	3-15

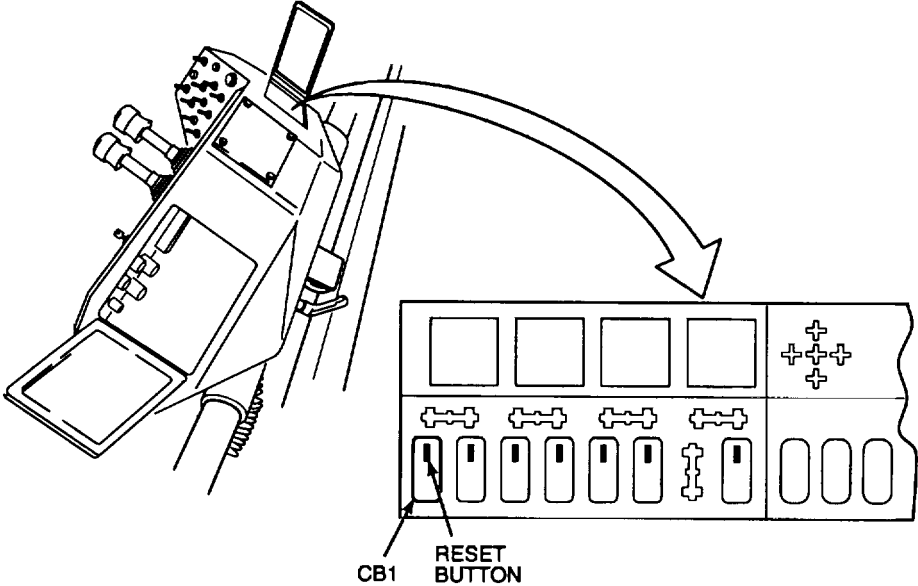
3.2. TROUBLESHOOTING.

Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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1. ENGINE WILL NOT CRANK.

- Step 1. Check control handle position.
Place both control handles in the center, neutral, position per paragraph 2.1.1.
- Step 2. Check position of emergency stop switches.
Pull out all three emergency stop switches per paragraph 2.1.2 and 2.2.1.
- Step 3. Check position of CB1.
Reset CB 1. If CB 1 trips a second time, inform supervisor.



2. ENGINE CRANKS BUT WILL NOT START.

- Step 1. Turn ignition switch to the preheat position per paragraph 2.1.1. Check for voltage drop on the voltmeter when the induction heater comes on.
Inform supervisor if voltage does not change.
- Step 2. Check for smoke from the exhaust system when cranking engine.
If smoke from the exhaust is white, check fuel tank level and refill as necessary per paragraph 3.3.3. If smoke from the exhaust system is black, check the air cleaner. If the air cleaner filter element is dirty or clogged, replace the element per paragraph 3.3.6. If fuel level and air cleaner filter element are OK, inform supervisor of problem.

3. ENGINE OIL PRESSURE LOW. Refer to Table 3-2.

- Shut down the engine and check engine oil level.
If engine oil level is low, add engine oil as necessary per paragraph 3.3.2. If engine oil level is OK, inform supervisor of problem.

Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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4. ENGINE WATER TEMPERATURE HIGH. Refer to Table 3-2.

WARNING

Hot engine coolant can scald. Always inspect coolant level with engine stopped. Remove the radiator cap slowly to relieve pressure. Steam can cause personal injury.

Step 1. Shut down the engine and check engine coolant level.
Add engine coolant as necessary per paragraph 3.3.5.

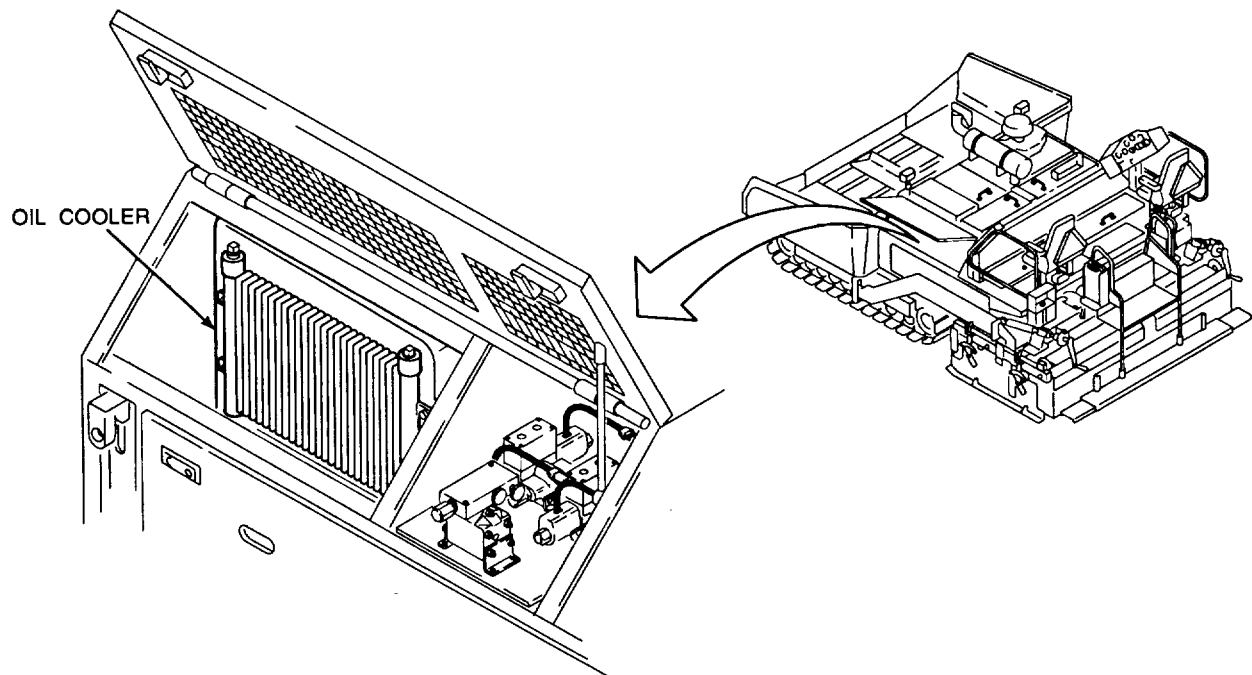
Step 2. Check the oil cooler for obstructions to air flow.
Remove obstructions from the oil cooler.

Step 3. Check to see if fan belt is missing, frayed, or cracked.
Inform supervisor if the fan belt is missing, frayed, or cracked.

Step 4. If coolant level, radiator, oil cooler, and fan belt are OK, inform supervisor of problem.

5. HYDRAULIC OIL TEMPERATURE OVER 200°F (93°C). Refer to Table 3-2.

Step 1. Check the oil cooler for obstructions to air flow.
Remove obstructions from the oil cooler.



Step 2. Check hydraulic reservoir oil level.

If hydraulic oil level is low, add hydraulic oil as necessary per paragraph 3.3.4.

Step 3. If oil cooler is not clogged and hydraulic oil level is OK, inform supervisor of problem.

Table 3-1. Troubleshooting Table - Continued.

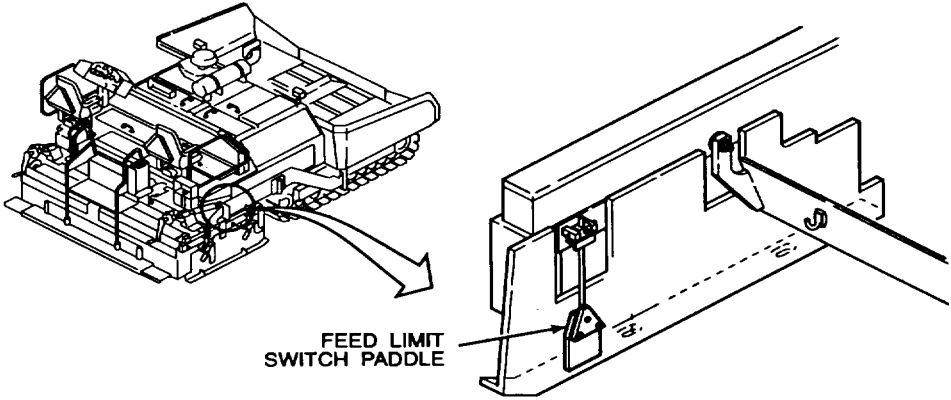
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
6. ENGINE SPEED LOW. Refer to Table 3-2.	Check throttle control switch position.	Return throttle control switch to the desired position between MAX and IDLE per paragraph 2.1.1. If engine speed does not increase, inform supervisor of problem.
7. FUEL GAUGE READING INCORRECTLY.	Remove fuel tank cap and visually check fuel tank level.	
NOTE		
Fuel tank level may only be visible when the fuel tank is almost completely full. Refill fuel tank as necessary. Inform supervisor of incorrect fuel gauge reading.		
8. ALL HYDRAULIC FUNCTIONS INOPERATIVE.	Check hydraulic reservoir level.	If hydraulic oil level is low, add hydraulic oil as necessary per paragraph 3.3.4. If oil level is OK, inform supervisor of problem.
9. HYDRAULIC FUNCTIONS OPERATE SLOWLY OR SLUGGISHLY.	Step 1. Check hydraulic reservoir level.	If hydraulic oil level is low, add hydraulic oil as necessary per paragraph 3.3.4.
	Step 2. Check engine speed.	If maximum engine speed is below 2600 rpm, place the throttle control switch in the MAX position to raise engine speed per paragraph 2.1.1. If engine speed does not increase, inform supervisor of problem.
10. PAVING MACHINE WILL NOT MOVE.	Step 1. Check the position of the travel switch.	If travel switch is in neutral position, place the travel switch in the forward/reverse position per paragraph 2.1.1.
	Step 2. Change the position of the speed range switch.	If paving machine moves in only one speed range, inform supervisor of problem. If paving machine will not move in either speed range, inform supervisor of problem.

Table 3-1. Troubleshooting Table - Continued.

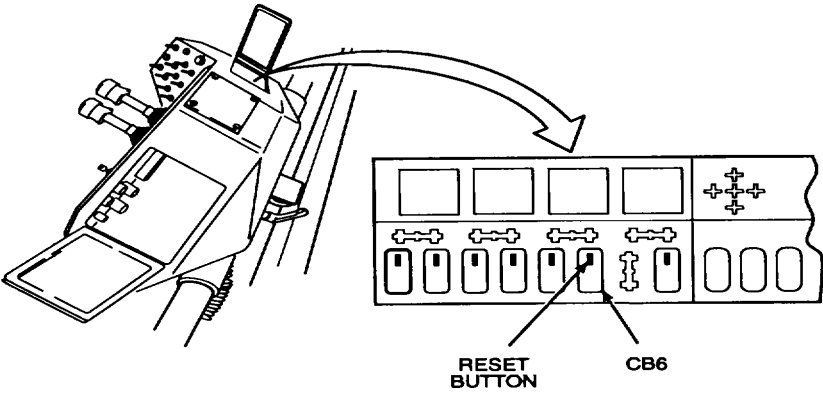
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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11. AUGER/CONVEYOR SYSTEMS WILL NOT OPERATE.

- Step 1. Check hydraulic reservoir level.
If hydraulic oil level is low, add hydraulic oil as necessary per paragraph 3.3.4.
- Step 2. Check auger/conveyor speed control valve settings.
If auger/conveyor speed control valves are closed (fully clockwise), open valves to increase auger/conveyor speeds per paragraph 2.1.3.
- Step 3. Check the position of the feeder control switches.
Place the feed control switches in the up, ON, position per paragraph 2.2.1.
- Step 4. Check the feed limit switch paddle for free movement.
Free feed limit switch paddle by removing any obstructions.



- Step 5. Check position of CB6.
Reset CB6. If CB6 trips a second time, inform supervisor.



- Step 6. If hydraulic oil level, speed control valve settings, feed control switch settings, feed limit switch paddles, and circuit breaker CB6 are OK, inform supervisor of problem.

Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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12. ONE AUGER/CONVEYOR SYSTEM WILL NOT OPERATE.

Step 1. Check auger/conveyor speed control valve setting.

If auger/conveyor speed control valve is closed (fully clockwise), open valve to increase auger/conveyor speed per paragraph 2.1.3.

Step 2. Check the position of the feeder control switches.

Place the feeder control switches in the up, ON, position per paragraph 2.2.1.

Step 3. Check for jamming of the conveyor.

Attempt to move the conveyor in the reverse direction per paragraph 2.2.1. If the conveyor moves in the reverse direction, jog the conveyor forward and reverse to free the jam. If conveyor will not move in reverse and jamming is still suspected, use fuel spray washdown system to dissolve any hardened asphalt per paragraph 3.3.7.

Step 4. If speed control valve and feeder control switch settings are OK and conveyor is not jammed, inform supervisor of problem.

13. AUGER/CONVEYOR SYSTEM RUNS SLOWLY.

Step 1. Check hydraulic reservoir level.

If hydraulic oil level is low, add hydraulic oil as necessary per paragraph 3.3.4.

Step 2. Check position of the auger/conveyor speed control valve.

Turn the speed control knob counterclockwise to increase speed.

Step 3. If hydraulic oil level and auger/conveyor speed control valve setting are OK, inform supervisor of problem.

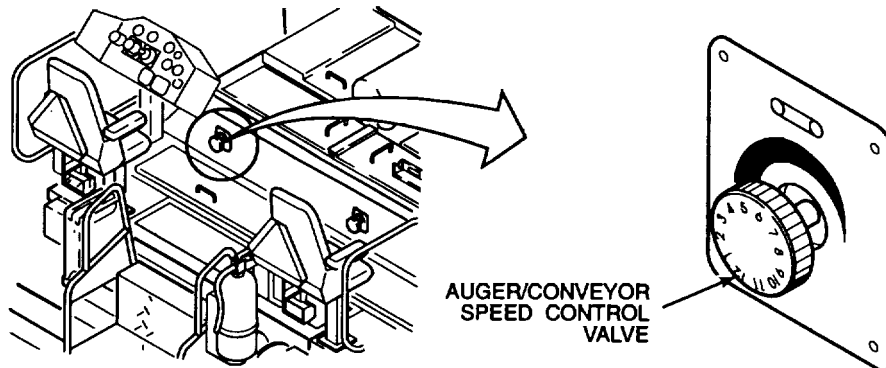


Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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14. VIBRATORS WILL NOT VIBRATE IN MANUAL MODE.

Step 1. Check the position of the screed vibrator switch.

If the screed vibrator switch is in the AUTO or OFF position, move it to the Manual position per paragraph 2.23.2.

Step 2. Check hydraulic reservoir level.

If hydraulic oil level is low, add hydraulic oil as necessary per paragraph 3.3.4.

Step 3. Check position of the screed vibration control valve.

Reposition the screed vibration control valve as necessary to achieve the desired speed. Turn the control valve clockwise to increase speed and counterclockwise to decrease speed.

Step 4. If the screed vibrator switch setting, hydraulic oil level, and screed vibration control valve setting are OK, inform supervisor of problem.

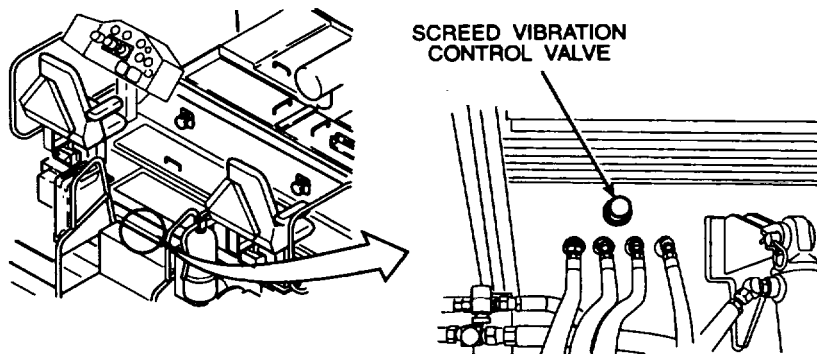
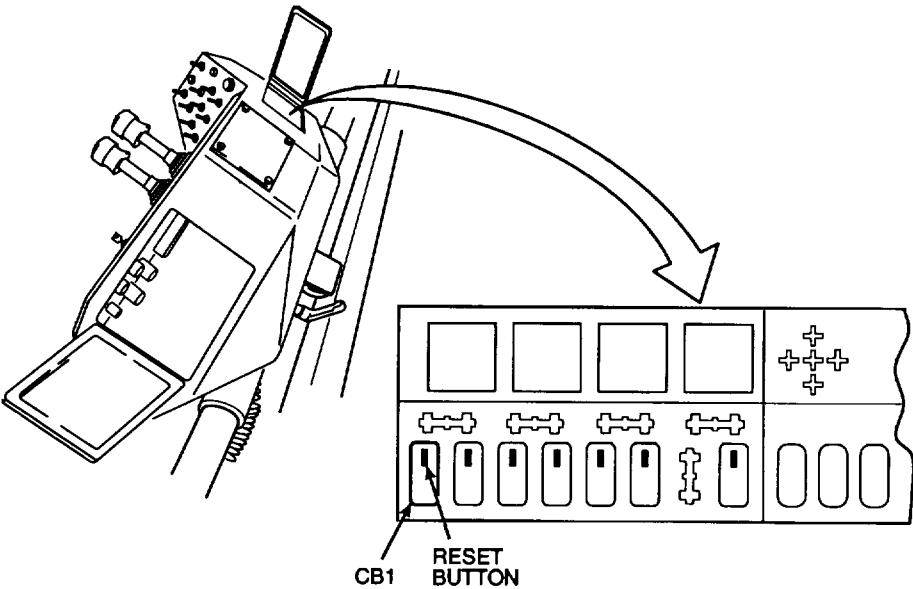


Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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15. VIBRATORS WILL NOT VIBRATE IN AUTOMATIC.

- Step 1. Check operation of screed vibrators with screed vibrator switch in Manual position per paragraph 2.23.2.
If the screed vibrators fail to work in the manual operating mode, refer to malfunction 14.
- Step 2. Check position of the screed vibration control valve.
Reposition the screed vibration control valve as necessary to achieve the desired speed per paragraph 2.2.2. Turn the control valve clockwise to increase speed and counterclockwise to decrease speed.
- Step 3. Check the position of the control handles.
Move both control handles out of the center, neutral, position per paragraph 2.1.1. If vibration is desired but paving machine motion is not desired, run the screed vibrators in manual.
- Step 4. Check operation of control handles with the travel switch in the forward/reverse position.
If the control handles fail, check circuit breaker CBI 1. If CB I is tripped, reset it. If CB1 is not tripped, inform supervisor of problem.



Step 5. If screed vibration control valve setting, control handle positions, and control handle operation are OK, inform supervisor of problem.

Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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16. TOW POINT CYLINDER WILL NOT MOVE.

- | | | |
|---|--|--|
| Step 1. Check hydraulic reservoir level.
If hydraulic oil level is low, add hydraulic oil as necessary per paragraph 3.3.4. | | |
| Step 2. Check for the installation of the tow point locking pin.
Remove tow point locking pin per paragraph 2.26.10. | | |
| Step 3. Check the position of the tow point flow shutoff valve.
Open the tow point flow shutoff valve by turning knob counterclockwise. | | |
| Step 4. Check position of the tow point flow control valve adjustment knob.
Open tow point flow control valve and time tow point movement. Full cylinder stroke should take 20 seconds.
Adjust tow point flow control valve adjustment knob for tow point movement from limit to limit in 20 seconds. | | |
| Step 5. If tow point flow shutoff valve is open and tow point flow control valve adjustment does not improve cylinder operation and if hydraulic oil level is OK and tow point locking pin is removed, inform supervisor of problem. | | |

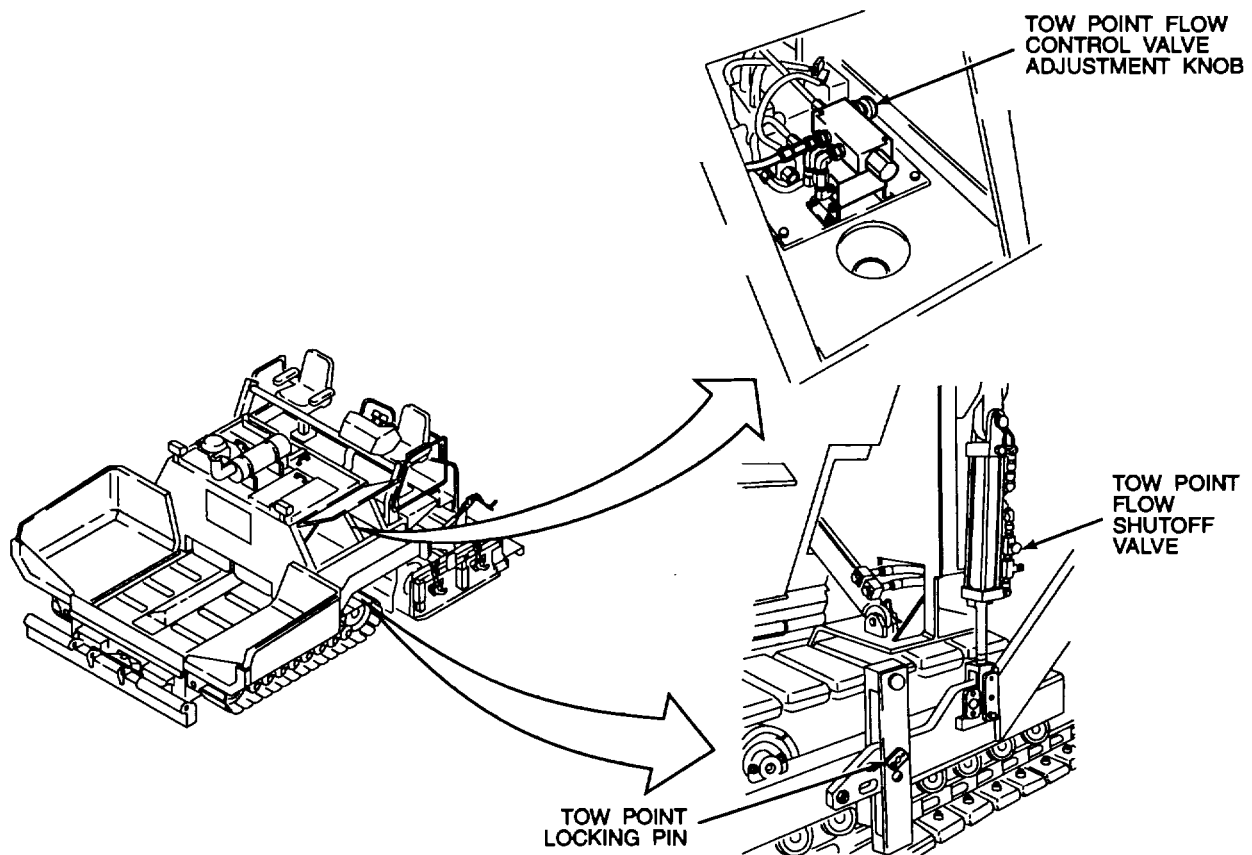


Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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17. SCREED WILL NOT LOWER.

Step 1. Check screed travel lock valve.

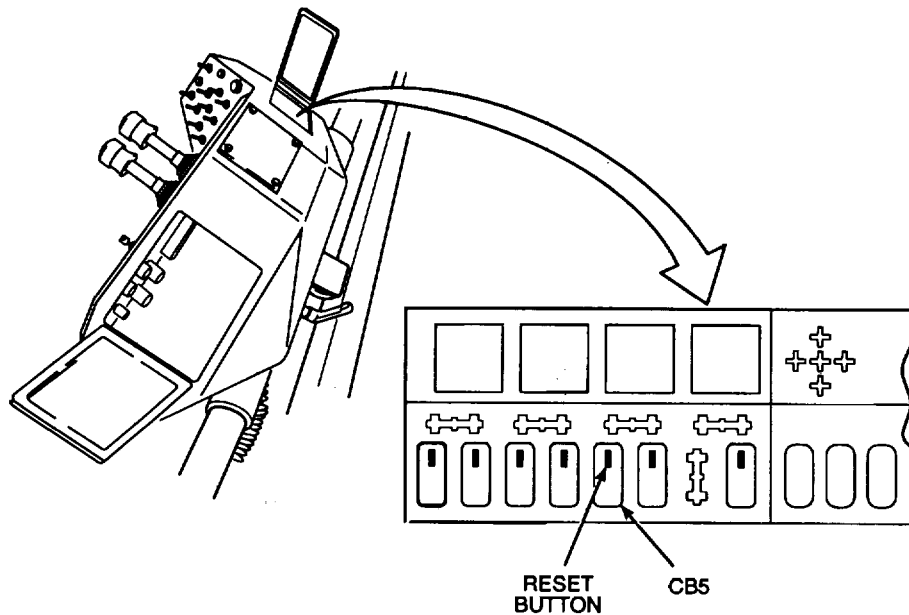
WARNING

Do not open the screed travel lock valve if anyone is near or under the screed. The screed can fall rapidly when the screed travel lock valve is opened. The falling screed can cause severe injury or death.

Carefully open screed travel lock valve per paragraph 2.23.1.

Step 2. Check position of CB5.

Reset CB5. If CB5 trips a second time, inform supervisor of problem.



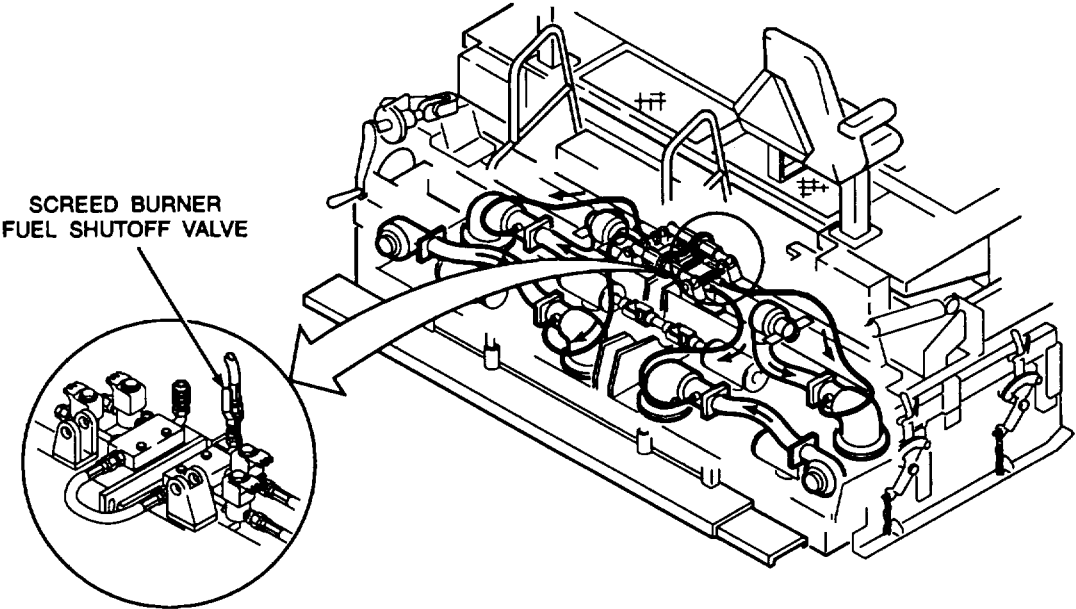
Step 3. If screed travel lock valve is open and circuit breaker CB5 is not tripped, inform supervisor of problem.

Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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18. FUEL SPRAY WASHDOWN SYSTEM WILL NOT SPRAY.

- Step 1. Check the fuel tank level.
Refill the fuel tank as necessary per paragraph 3.3.3.



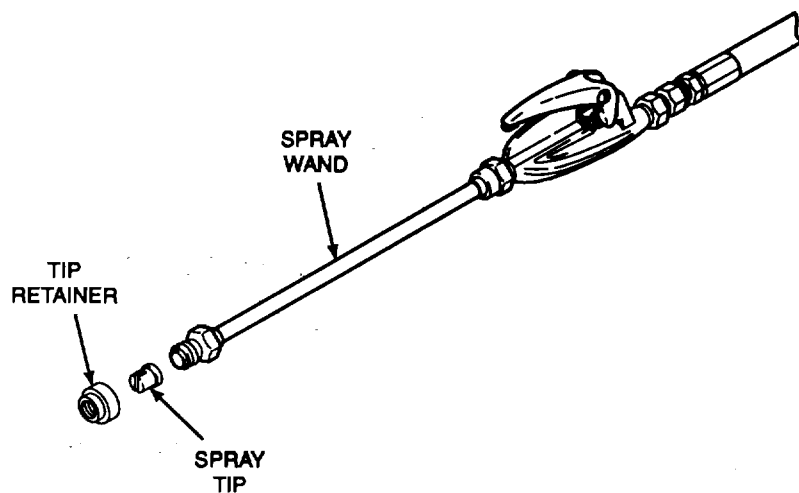
- Step 2. Check the position of the screed burner fuel shutoff valve.
Turn the screed burner fuel shutoff valve lever to the 12 o'clock, ON, position.
- Step 3. Check the position of the screed fuel pump switch.
Place the screed fuel pump switch in the up, ON position, per paragraph 2.2.1.
- Step 4. Check the position of the ignition switch.
Place the ignition switch in the ON position per paragraph 2.1.1.

Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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18. FUEL SPRAY WASHDOWN SYSTEM WILL NOT SPRAY - Continued.

- Step 5. Check the quick disconnect coupling from the fuel spray wand assembly to the screed burner manifold.
Ensure the quick disconnect coupling is connected properly per paragraph 3.3.7.
- Step 6. Remove the fuel spray wand spray tip and check the tip for blockage.
Clean the fuel spray wand spray tip.



- Step 7. If screed burner shutoff valve, fuel pump switch, and ignition switch are ON and if spray wand quick disconnect coupling is connected properly, spray wand tip is clean, and fuel tank is filled, inform supervisor of problem.

Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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19. SCREED BURNERS INOPERATIVE.

- Step 1. Check the position of the screed burner fuel shutoff valve.
Turn the screed burner fuel shutoff valve lever to the 12 o'clock, ON, position.
- Step 2. Check left and right main screed burners and left and right extension screed burners to see if screed burner vent cover plates are fully open.
Loosen hex head cap screw and fully open vent cover plates. Tighten cap screw.
- Step 3. Check the position of the screed fuel pump switch.
Place the screed fuel pump switch in the up, ON position, per paragraph 2.2.1.
- Step 4. Check the position of the ignition switch.
Place the ignition switch in the ON position per paragraph 2.1.1.
- Step 5. Inspect the wire electrical connectors leading to the screed burner solenoid valves and the wires leading to the screed burner glow plugs. Inform supervisor of any broken, disconnected, or missing wires.
- Step 6. If screed burner fuel shutoff valve, screed fuel pump switch, and ignition switch are ON and if screed burner vent cover plates are open, inform supervisor of problem.

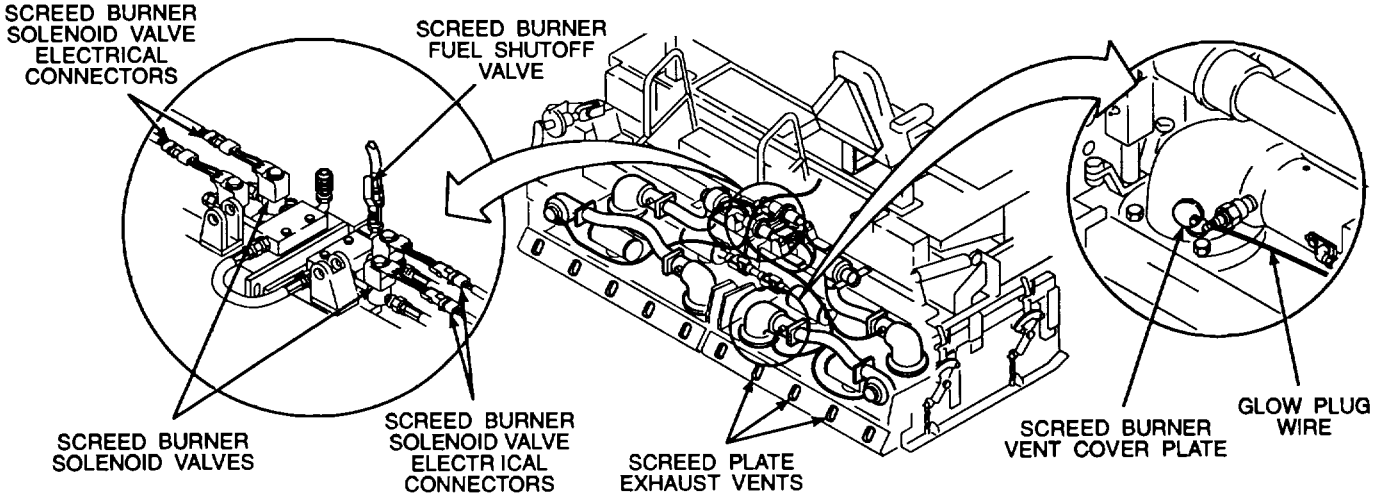


Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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70. SCREED BURNERS GIVE OFF BLACK SMOKE.

CAUTION

Excessive heat can cause damage to screed plates. Do not operate burners longer than 15 minutes.

- Step 1. Check left and right main screed blowers and left and right extension screed blowers to see if screed blower air control plates are properly adjusted. Loosen thumbscrews and adjust screed blower air control plates for an orange/white screed burner combustion flame and a loud combustion roar.

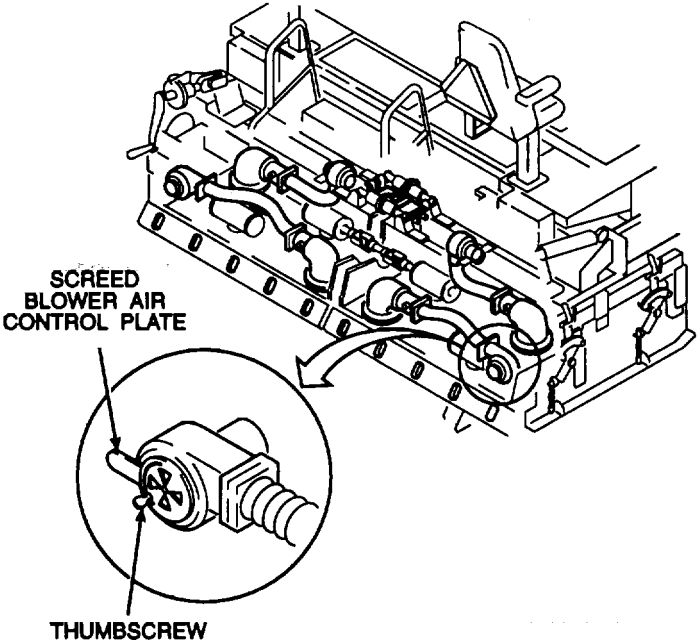


Table 3-1. Troubleshooting Table - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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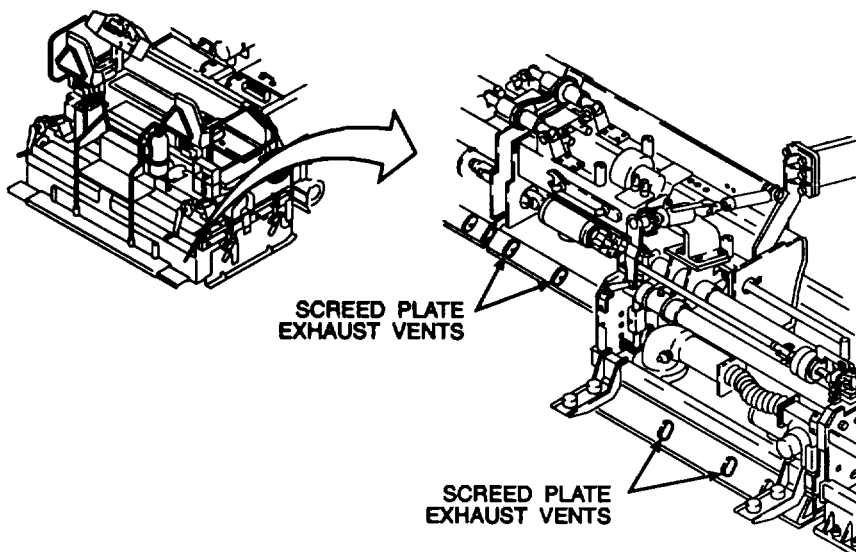
20. SCREED BURNERS GIVE OFF BLACK SMOKE - Continued.

Step 2. Check for clogged exhaust vents on the trailing edge of the screed plates.

CAUTION

Do not spray diesel fuel on hot screed plates. Allow screed plates to cool 30 minutes, minimum, prior to spraying. Spraying hot screed plates with cool diesel fuel can cause permanent damage to the screed plates.

Clean exhaust vents using the fuel spray washdown system per paragraph 3.3.7.



Step 3. If screed blower air control plates are properly adjusted and screed exhaust vents are not clogged, inform supervisor of problem.

Table 3-2. Normal Operating Values.

RPM	Low Idle:	500 to 850 rpm
	High Idle:	2600 to 2680 rpm
	Governed:	2400 rpm
Engine Oil Pressure	Low Idle:	10 to 15 psi (69 to 103 kPa) (0,7 to 1,0 bar)
	High Idle:	30 to 100 psi (207 to 688 kPa) (2,0 to 6,8 bar)
Engine Coolant Temperature	Normal:	1700 to 2000F (770 to 93°C)
Hydraulic Oil Temperature	Normal:	1000 to 2000F (380 to 93°C)
Voltage	Normal:	12 to 14 VDC

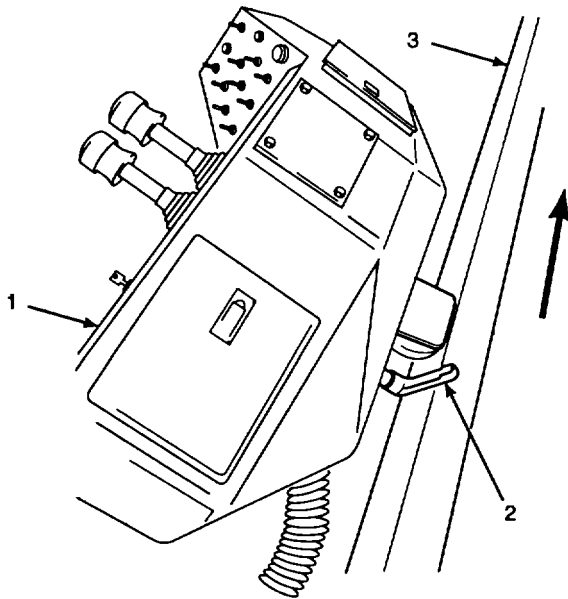
SECTION III. OPERATOR MAINTENANCE INSTRUCTIONS

3.3 INTRODUCTION.

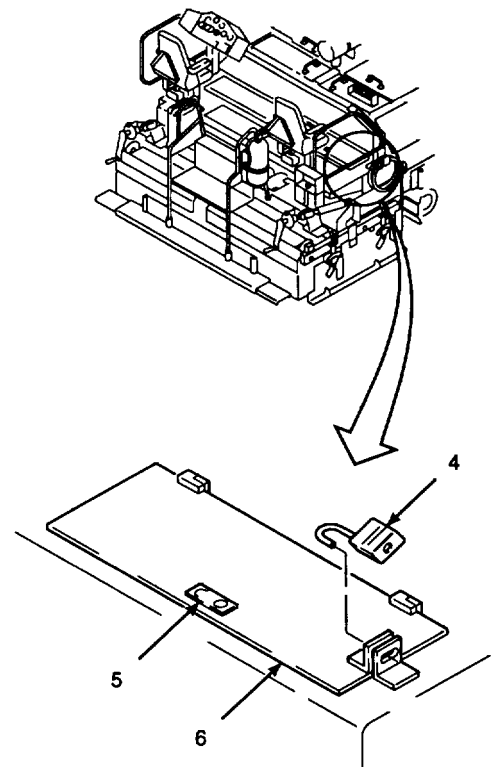
This section covers maintenance instructions for maintenance functions authorized to the operator by the Maintenance Allocation Chart (MAC). Minor adjustments, maintenance, and removal and installation procedures are provided to assist in the efficient operation of the paving machine.

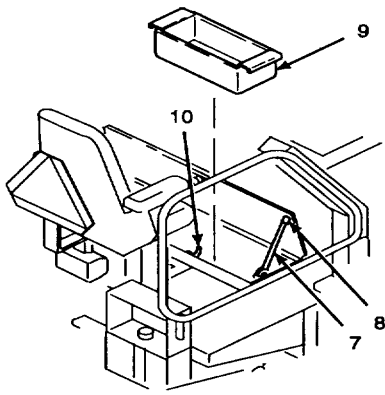
3.3.1 Toolbox Access. The paving machine toolbox is located on the operator platform underneath the rear top right access door. To access the toolbox perform the following steps.

- a. Shut off the paving machine engine.
- b. Position operator control console (1) to the left side of the operator platform.
 - (1) Turn console brake handle (2) counterclockwise to unlock the console.
 - (2) Slide console along guide shaft (3) to the left until it stops.



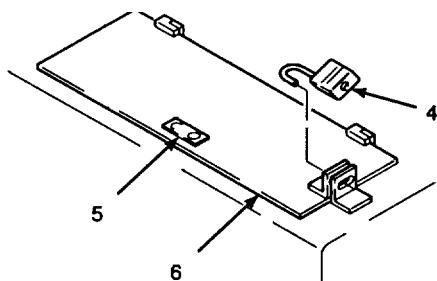
- (3) Lock the console in place by turning console brake handle clockwise.
- c. Unlock and remove toolbox padlock (4).
- d. Raise latch (5) and turn 90°, lift rear top right access door (6).
- e. Turn the latch (5) 90° and lower to lock.





- f. Support access door open by placing support rod (7) in support rod socket (8).
- g. If required, toolbox (9) can be removed by lifting it straight up out of the paving machine main frame.
- h. To secure access to toolbox, perform the following steps.

- (1) Lift the access door to release the support rod (7) from the support rod socket (8).
- (2) Place the support rod (7) on the stowage hook (10).
- (3) Using the edge of the access door (6), lower the access door.
- (4) Push in on one end of the latch (5) and lift the other end, then turn 90°.
- (5) Lower access door (6).
- (6) Turn the latch (5) 90° and lower to lock.
- (7) Secure access door closed with padlock (4).



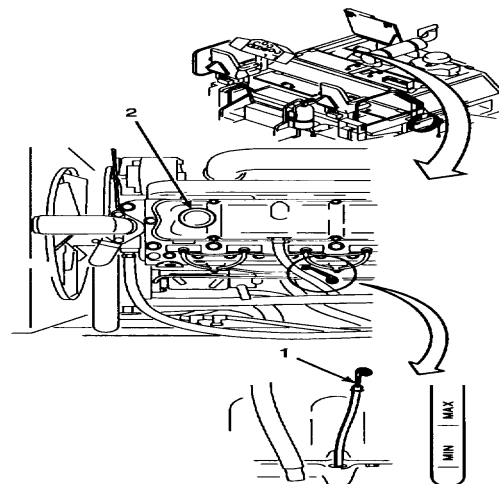
- a. Park the paving machine on level ground. Shut off the engine per paragraph 2.11. Wait approximately 5 minutes to let the oil drain from the upper parts of the engine.
- b. Open front top left access door per paragraph 2.24.1.

WARNING

Engine surfaces may be extremely hot. Use a thick waste cloth or like material as protection from burns when touching hot engine parts. Contact with hot engine parts can lead to serious burns to fingers and hands.

- c. Check engine oil level using engine dipstick as follows.

- (1) Remove engine dipstick (1) and wipe clean with a shop cloth.



- (2) Replace engine dipstick into crankcase and pull out again to read engine oil level. Engine oil level should be between the MIN and MAX marks on the dipstick. Replace dipstick into crankcase.

- d. If engine oil is below the MIN mark on the dipstick, add engine oil as follows.

- (1) Remove oil filler opening cap (2) located on top of the engine by turning 1/4 turn counterclockwise and pull straight up.

3.2 Adding Engine Oil

WARNING

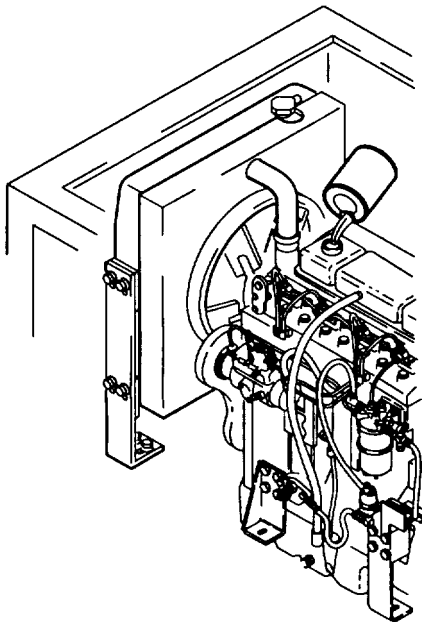
Engine oil can be moderately flammable and can be an irritant to the skin, eyes, and respiratory system. Avoid prolonged exposure. Eye protection and rubber gloves must be worn when working with engine oil.

CAUTION

Add only enough engine oil to bring oil level to the MAX mark on the dipstick. Overfilling engine can cause engine oil to foam and damage internal engine components.

(2) Pour engine oil (Item 7, Appendix D) through oil filler opening periodically checking oil level on dipstick. Add engine oil as necessary to bring oil level to the MAX mark on the dipstick.

(3) Replace oil filler opening cap and turn 1/4 turn clockwise to tighten.



- e. Start engine per paragraph 2.10, and run for approximately 5 minutes. Check engine oil level and add oil as necessary per steps c and d.
- f. Close front top left access door per paragraph 2.24.2.

3.3.3. Adding Fuel.

WARNING

Post signs that read "NO SMOKING WITHIN 50 FEET" when working with open fuel lines or fuel tanks.

When refueling, stop vehicle, shut down engine. Never add fuel with engine running. Do not have operator seated when adding fuel. After fuel is added, securely close tank cap; a loose cap can cause a fuel leak or be a fire hazard. Before starting vehicle, check that no fuel is spilled on or around vehicle. If fuel is spilled, wipe up spilled fuel immediately with rags. Dispose of contaminated rags in accordance with local procedures.

- a. Park the paving machine on level ground. Shut off engine and remove key from ignition switch per paragraph 2.11.

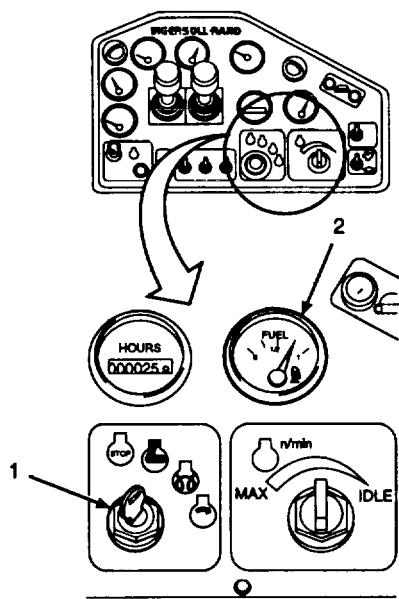
CAUTION

If the fuel tank is run dry during paving operation, the fuel system must be primed and air bled out of the system after refueling. Failure to do so may cause damage to fuel pump and cause fuel system failure. If the fuel tank is dry, notify a supervisor.

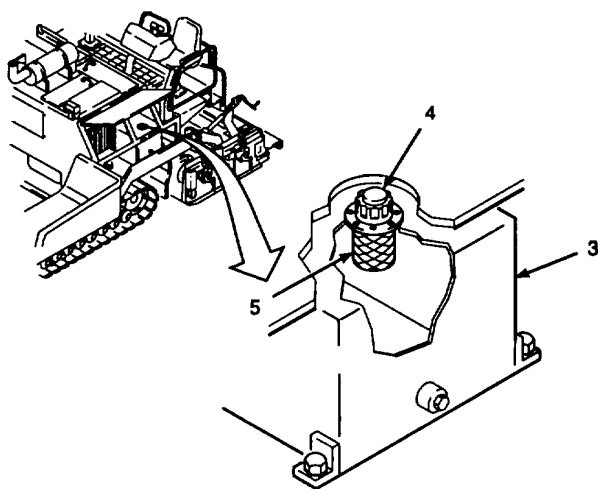
NOTE

Approximately 5 gallons (19 0) of diesel fuel should be remaining in the tank when the fuel level gauge reads "0".

- b. Turn ignition switch (1) to ON position and check fuel gauge (2) for the amount of fuel in the fuel tank.



- c. Open left access door per paragraph 2.24.1.
- d. Use a cleaning cloth (Item 1, Appendix D) and wipe dirt and any foreign material from area on top of fuel tank (3) around fuel tank cap (4).
- e. Unscrew fuel tank cap (4) and set cap aside.



WARNING

Fuel is very flammable and can explode easily.

To avoid serious injury or death: Always wear safety glasses/goggles at all times.

Keep fuel away from open flame or any spark (ignition source).

Keep at least a B-C fire extinguisher within easy reach when working with fuel or on a fuel system.

Do not work on fuel system when engine is hot; fuel can be ignited by a hot engine.

Clean fuel tank to purge any flammable liquid or vapors before welding, grinding, or using any heat producing device near the fuel tank.

Post signs that read "NO SMOKING WITHIN 50 FEET" when working with open fuel lines or fuel tanks.

CAUTION

Do not overfill fuel tank. When diesel fuel in fuel tank begins to foam up into filler neck the tank is full. Spilled fuel may accumulate in hard to reach areas inside paving machine engine compartment and cause a fire hazard. Wipe up any spilled fuel immediately after refueling. Dispose of contaminated rags in accordance with local procedures.

- f. Check for any foreign material accumulated in filler neck strainer (5). Notify Unit Maintenance if any foreign material is observed.
- g. Place fuel nozzle into filler neck and begin adding diesel fuel (Item 4, Appendix D). Periodically stop fueling and check fuel gauge for level of fuel in tank. Fuel tank is full when gauge needle points to "1" increment mark. Do not overfill the fuel tank; stop fueling when fuel in tank starts to foam up into filler neck.
- h. Turn ignition switch (1) to stop position and remove ignition key.

WARNING

Fuel is slippery and can cause falls. To avoid injury, wipe up spilled fuel with rags.

- i. Use a cleaning cloth (Item 1, Appendix D) to wipe up any spilled diesel fuel and replace fuel cap. Dispose of contaminated cleaning cloth in accordance with local procedures.
- j. Close left access door per paragraph 2.24.2.

3.3.4 Adding Hydraulic Oil.

- a. Park the paving machine on level ground. Shut off engine and remove key from ignition switch per paragraph 2.11.
- b. move right access cover and open center top right access door per paragraphs 2.24.5 and 2.24.1.

CAUTION

Cleanliness is extremely important when adding hydraulic oil. Add hydraulic oil in a clean area protected from blowing dust, dirt, and other debris. Failure to do so may result in excessive component wear or failure.

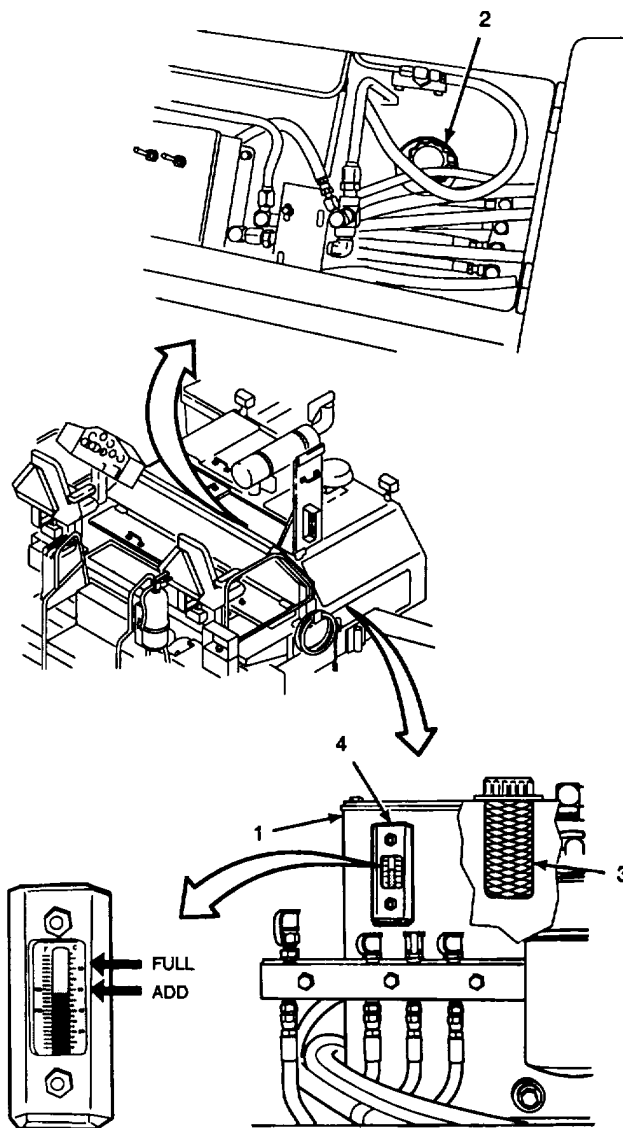
- c. Use a cleaning cloth (Item 1, Appendix D) and wipe dirt and any foreign material from area on top of hydraulic reservoir (1) around hydraulic reservoir cap (2).
- d. Unscrew hydraulic reservoir cap and set cap aside.

WARNING

Hydraulic oil can be moderately flammable and can be an irritant to the skin, eyes, and respiratory system. Avoid prolonged exposure. Eye protection and rubber gloves must be worn when working with hydraulic oil.

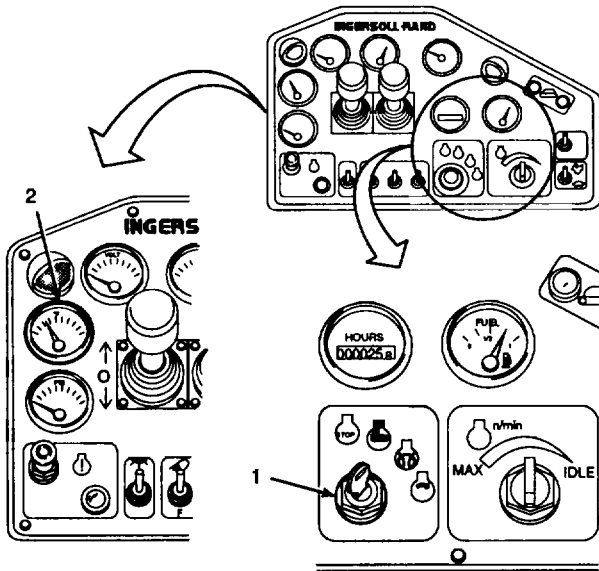
- e. Check for any foreign material accumulated in filler neck strainer (3). Notify Unit Maintenance if any foreign material is observed.

- f. Add hydraulic oil (Item 6, Appendix D) to hydraulic reservoir until oil level in reservoir is near top of combination sight liquid indicator (4).
- g. Replace hydraulic reservoir cap and turn clockwise until tight.
- h. Wipe up any spilled hydraulic oil with a cleaning cloth (Item 1, Appendix D). Dispose of contaminated cleaning cloth in accordance with local procedures.
- i. Install right access cover and close center top right access door per paragraphs 2.24.6 and 2.24.2.

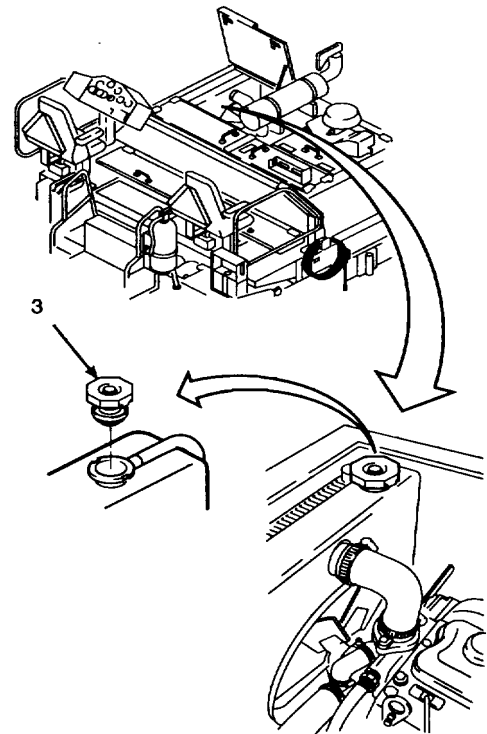


3.3.5 Adding Engine Coolant.

- a. Park the paving machine on level ground. Shut off the engine per paragraph 2.11. After the engine stops, place the ignition switch (1) to the ON position.
- b. Check coolant temperature gauge (2) on gauge panel J until water temperature cools to 120°F (49°C). Place ignition switch to the STOP position.



- e. After pressure is released, remove radiator cap (3).



- c. Open front top left access door per paragraph 2.24.1.

WARNING

Extreme care should be taken when removing radiator cap if temperature gauge reads above 180°F (82°C). Contact by steam or hot coolant may result in injury or death to personnel

Use a clean, thick, waste cloth or like material to remove the cap. Avoid using gloves. If hot water soaks through gloves, personnel could be burned.

Use extreme care when removing the radiator pressure cap. Sudden release of pressure can cause a steam flash which could seriously injure personnel.

- d. Use a cleaning cloth (Item 1, Appendix D) to slowly loosen radiator cap (3) to the first stop to release pressure.

- f. Visually check engine coolant level. Proper coolant level is below filler neck and above the radiator fins.

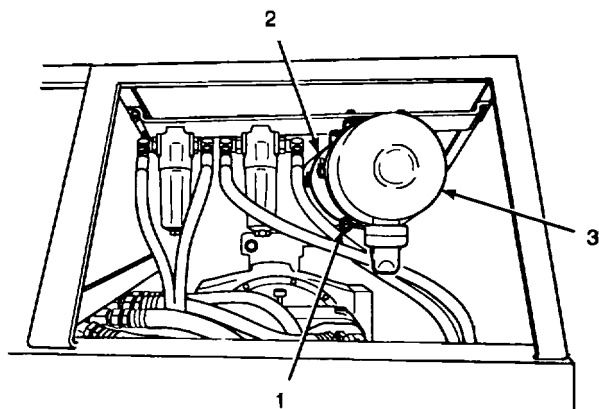
CAUTION

A 50:50 ratio of antifreeze to water mixture must be premixed before adding coolant to the radiator. The ability of antifreeze to remove heat from the engine is not as good as water. Pouring antifreeze into the engine first could cause an overheated condition before the liquids are completely mixed.

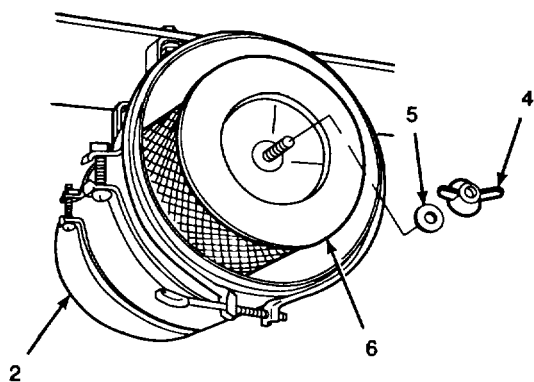
- g. Mix the required amount of 50:50 ratio of antifreeze (Item 2, Appendix D) to water mixture and fill radiator to proper level.
- h. Replace radiator cap (3) and tighten.
- i. Close front top left access door per paragraph 2.24.2.

3.3.6 Air Cleaner Filter Element Replacement.

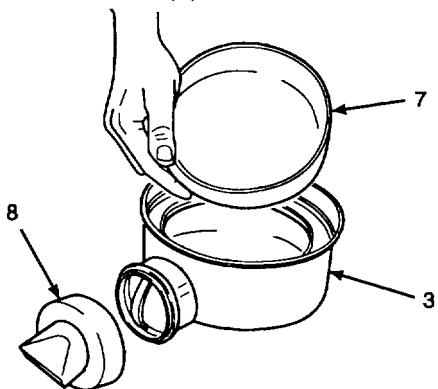
- a. Open right access door per paragraph 2.24.1.
- b. Loosen clamp (1) between air cleaner deflector (2) and air cleaner intake (3).



- c. Remove air cleaner intake (3).
- d. Remove wing nut (4) and seal washer (5) holding the air cleaner filter element (6).



- e. Slide air cleaner filter element (6) out of air cleaner deflector (2) and discard.
- f. Remove baffle (7) from air cleaner intake (3).



- g. Remove vacuum diaphragm (8).

WARNING

Cleaning solvent, P-D-680, is TOXIC and flammable. Wear protective goggles and gloves.

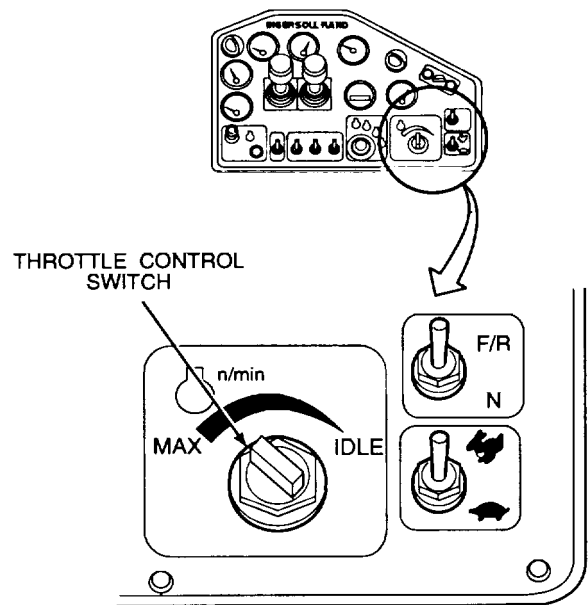
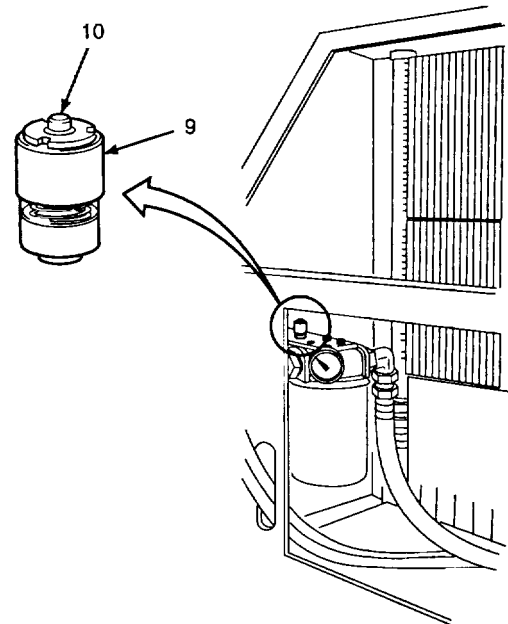
Use only in a well ventilated area. Avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type III cleaning solvent is 200°F (93,3°C).

Failure to do so may result in injury or death to personnel.

If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, flush eyes with water and get immediate medical attention.

- h. Clean the interior of the air cleaner as follows.
 - (1) Use a cleaning cloth (Item 1, Appendix D) moistened with cleaning solvent (Item 8, Appendix D) and clean the interior of air cleaner deflector (2).
 - (2) Use a cleaning cloth (Item I, Appendix D) and detergent to clean air cleaner intake (3), baffle (7), and vacuum diaphragm (8).
 - (3) Rinse air cleaner intake (3), baffle (7), and vacuum diaphragm (8) in clean water and air dry.
- i. Install air cleaner filter element (Item 3, Appendix D) as follows.
 - (1) Install vacuum diaphragm (8) onto air cleaner intake (3). Make sure it is fully seated onto intake.
 - (2) Install baffle (7) until fully seated into air cleaner intake (3).
 - (3) Install new air cleaner filter element (6) in air cleaner deflector (2).
 - (4) Install seal washer (5) and wing nut (4), securing air cleaner filter element (6). Tighten finger tight.
 - (5) Install air cleaner intake (3) and secure with clamp (1). Tighten band.

- j. Close right access door per paragraph 2.24.2.
- k. Open left access door per paragraph 2.24.1.
- l. Reset air cleaner service indicator knob (9) by pressing button (10) on top of service indicator knob.
- m. Start engine per paragraph 2.10.
- n. Set throttle control switch to MAX.
- o. Run paving machine engine at MAX speed for two minutes.
- p. Shut down paving machine per paragraph 2.11.
- q. Check air cleaner service indicator knob (9). If red flag is raised, notify unit maintenance.
- r. Close left access door per paragraph 2.24.2.



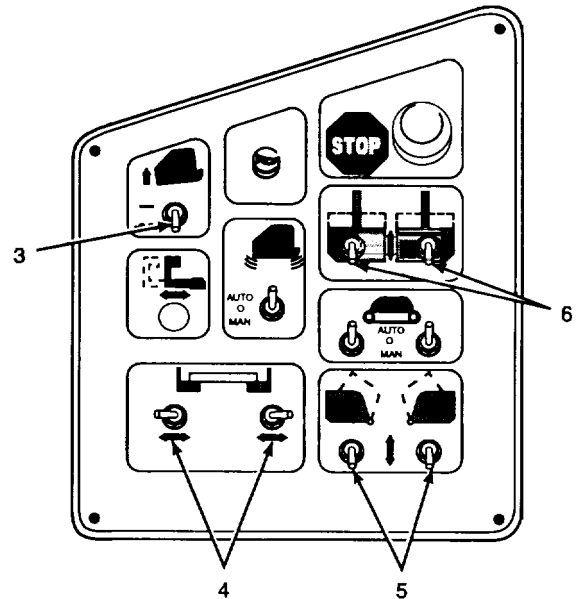
3.3.7 Fuel Spray Washdown System Operation. The spray washdown system should be used at the end of each paving operation. The paving machine should be washed down if the machine will be sitting idle for long enough to allow hot paving material to cool and harden. Use the following procedures for operating the spray washdown system.

WARNING

Consult your installation environmental control officer for your installation's proper procedures for disposing, or reclaiming, sprayed diesel fuel before washing down paving machine.

- a. Park the paving machine on level ground, and leave the machine running.
- b. Place control handles (1) in neutral.
- c. Place the paving machine in the following configuration prior to starting spray washdown.
 - (1) Place travel switch (2) in the down, neutral "N" position.
 - (2) Raise the screed by holding the screed lift switch (3) to the up LIFT position.

(3) Move left extension screed control switch (4) to the left and the right switch to the right to fully extend both extension screeds.



WARNING

The screed can fall rapidly. Do not lower the screed if anyone is near or under the screed. Falling screed can cause severe injury or death.

- (4) Lower the screed to the ground by holding screed lift switch (3) in the down, FLOAT position.
 - (5) Lower hopper wings by holding both hopper wing switches (5) in the down, LOWER position.
 - (6) Lower flow gates by holding the flow gate switches (6) in the down, CLOSE position.
- d. Perform paving machine shutdown procedure per paragraph 2.11.

e Retrieve fuel wand assembly (8) from fuel spray wand hanger located to the right of the operator platform. Grab the screed steps at the back edge of the top step and pull back and away from the tractor. Remove protection cover from quick disconnect coupling (9). Connect the spray wand assembly to quick disconnect coupling on screed burner manifold (10) by pressing down on quick disconnect lock ring and inserting fuel spray hose coupling.

f Place ignition switch (7) to the ON position.

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death:

Always wear safety glasses/goggles at all times.

Never operate the spray washdown system with the screed burners operating.

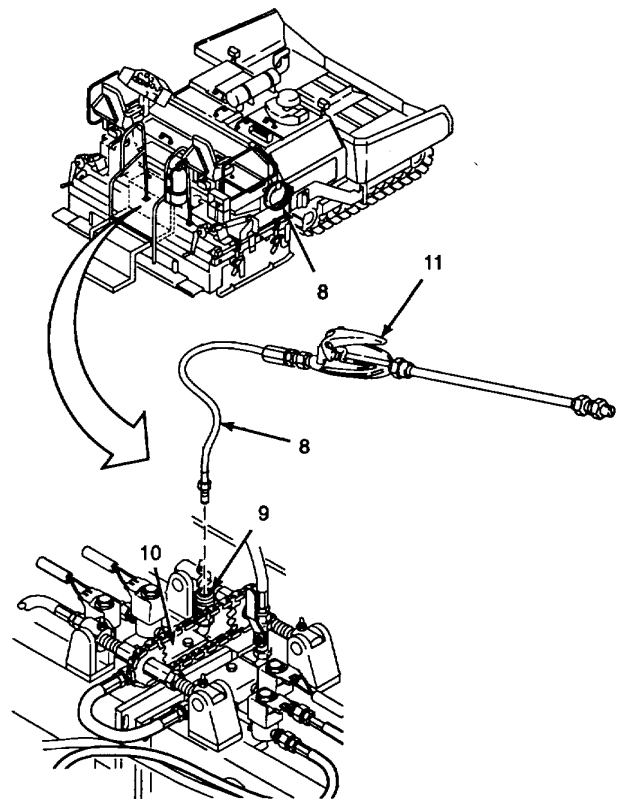
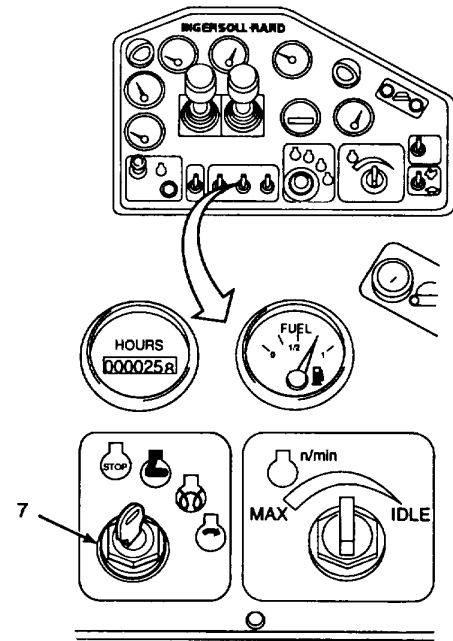
Keep fuel away from open flame or any spark (ignition source).

Keep at least a B-C fire extinguisher within easy reach when working with fuel or on a fuel system.

Post signs that read "NO SMOKING WITHIN 50 FEET" when working with open fuel lines or fuel tanks.

Always wear personal protective equipment such as a face shield, protective clothing, and gloves.

g Use the following instructions to complete an entire paving machine washdown. Washdown all parts of the paving machine that come into contact with paving material. To operate the fuel spray control (11), depress the trigger to start the spray.



WARNING

Fuel is very flammable and can explode easily.

To avoid serious injury or death: Always wear safety glasses/goggles at all times.

Never operate the spray washdown system with the screed burners operating.

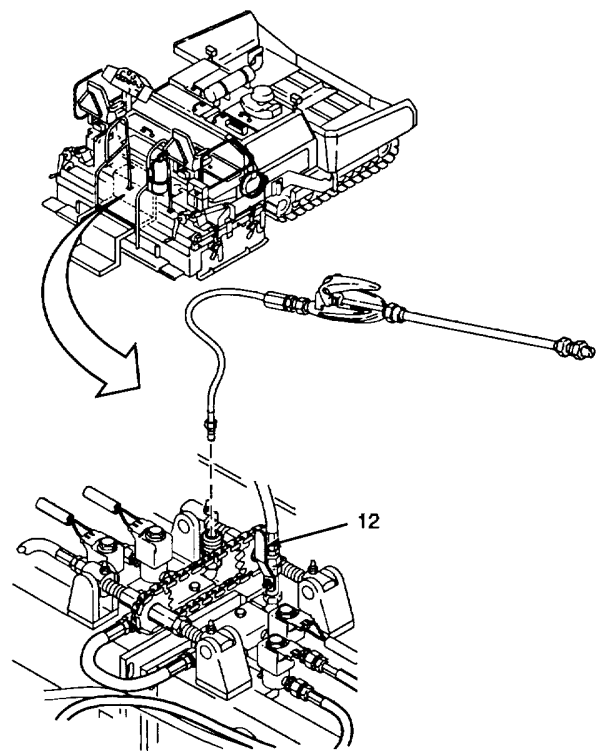
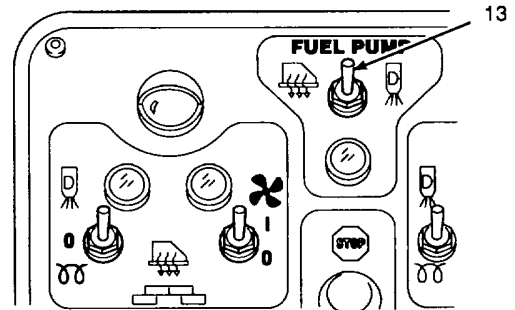
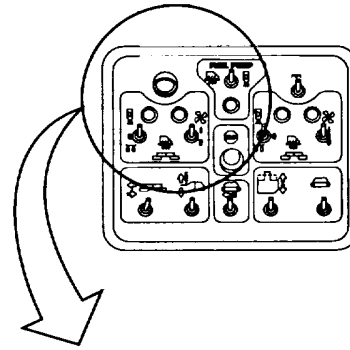
Keep fuel away from open flame or any spark (ignition source).

Keep at least a B-C fire extinguisher within easy reach when working with fuel or on a fuel system.

Post signs that read "NO SMOKING WITHIN 50 FEET" when working with open fuel lines or fuel tanks.

Always wear personal protective equipment such as a face shield, protective clothing, and gloves.

- (1) Set screed burner fuel shutoff valve (12) to open by turning the valve handle to the 12 o'clock position.
- (2) Turn the screed fuel pump switch (13), located on the LH screed control panel, to the "UP", on, position.



WARNING

Fuel is very flammable and can explode easily.

To avoid serious injury or death: Always wear safety glasses/goggles at all times.

Never operate the spray washdown system with the screed burners operating.

Keep fuel away from open flame or any spark (ignition source).

Keep at least a B-C fire extinguisher within easy reach when working with fuel or on a fuel system.

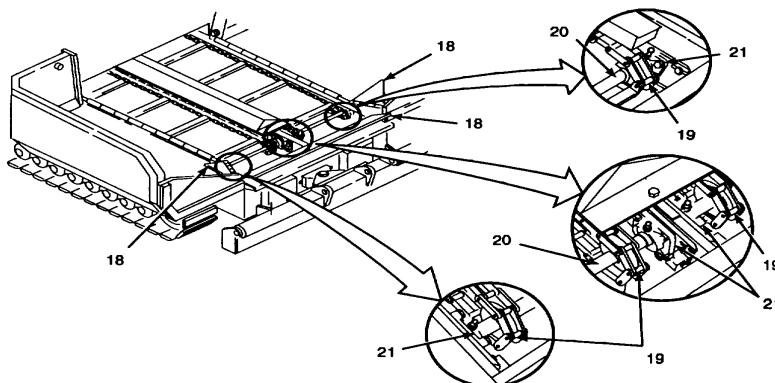
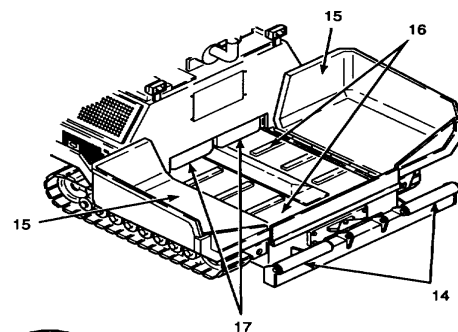
Post signs that read "NO SMOKING WITHIN 50 FEET" when working with open fuel lines or fuel tanks.

Always wear personal protective equipment such as a face shield, protective clothing, and gloves.

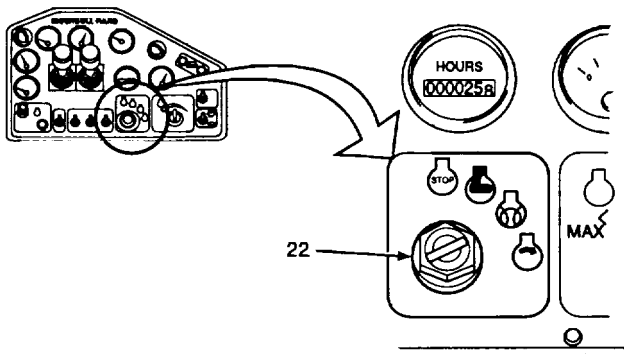
CAUTION

Do not spray fuel on hot screed plates. Allow screed plates to cool 30 minutes, minimum, prior to spraying. Spraying hot screed plates with fuel can cause permanent damage to the screed plates.

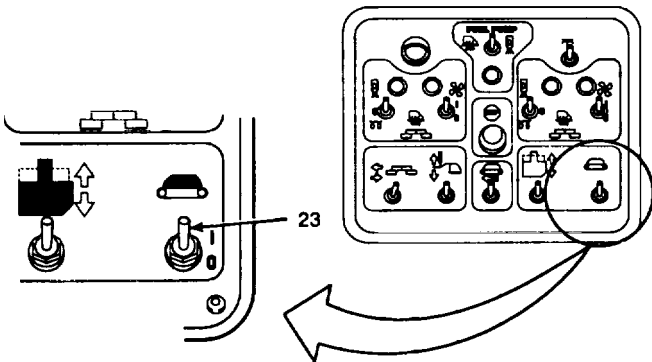
- (3) Spray a light coat of fuel on push rollers (14), hopper wings (15), conveyors (16), and flow gates (17). Use enough fuel to dissolve hardened paving material. Manually scrape off deposits that do not wash off easily.
- (4) Open all three hinged access doors (18) at the front of the hopper. Spray a light coat of fuel on exposed conveyor chains (19), conveyor rollers (20), and bearing units (21).



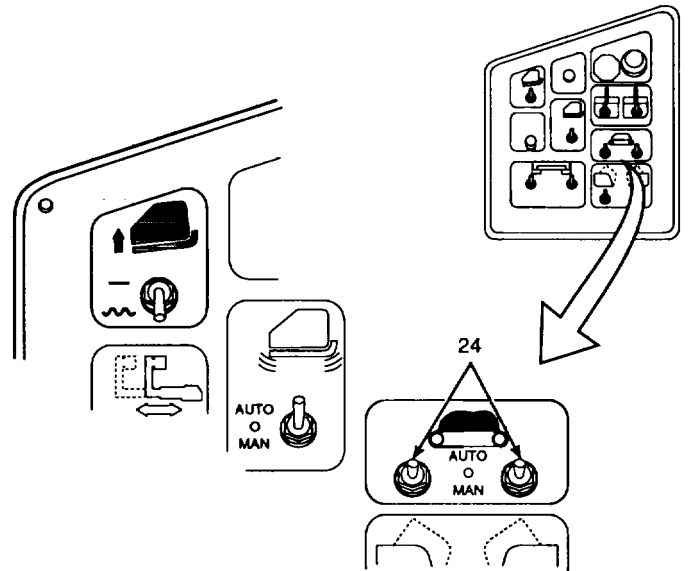
- (5) Turn the ignition switch (22) to the START position and immediately release when the engine starts.



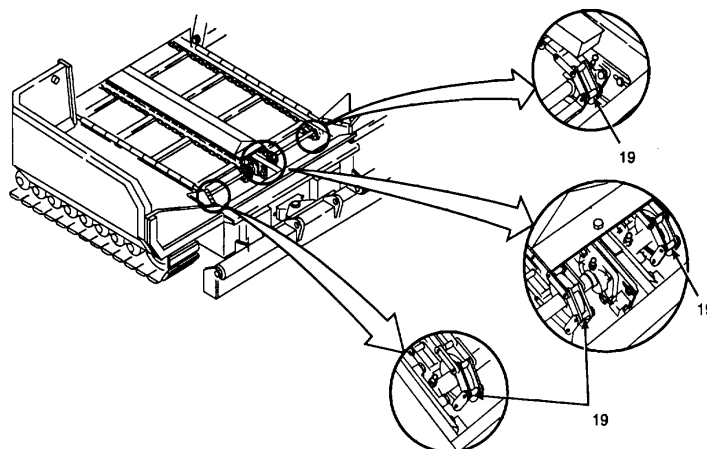
- (6) Place the feeder control switches (23) on both screed control panels to up, ON position.



- (7) Place the auger/conveyor switches (24) to up, ON position one at a time.



- (8) Spray all of both sets of conveyor chains (19).
- (9) Place auger/conveyor switches (24) to center, OFF position.
- (10) Place the feeder control switches (23) on both screed control panels to down, OFF position (11) Turn the ignition switch (22) to the STOP position.
- (12) After the engine stops, turn the ignition switch (22) to the ON position.
- (13) Close access doors.



NOTE

If auger and fender extensions, bolt-on screed extensions, or cutoff shoes were used in paving operations, ensure these are included in the spray washdown when cleaning the auger/conveyor area and screed areas.

WARNING

Fuel is very flammable and can explode easily.

To avoid serious injury or death: Always wear safety glasses/goggles at all times.

Never operate the spray washdown system with the screed burners operating.

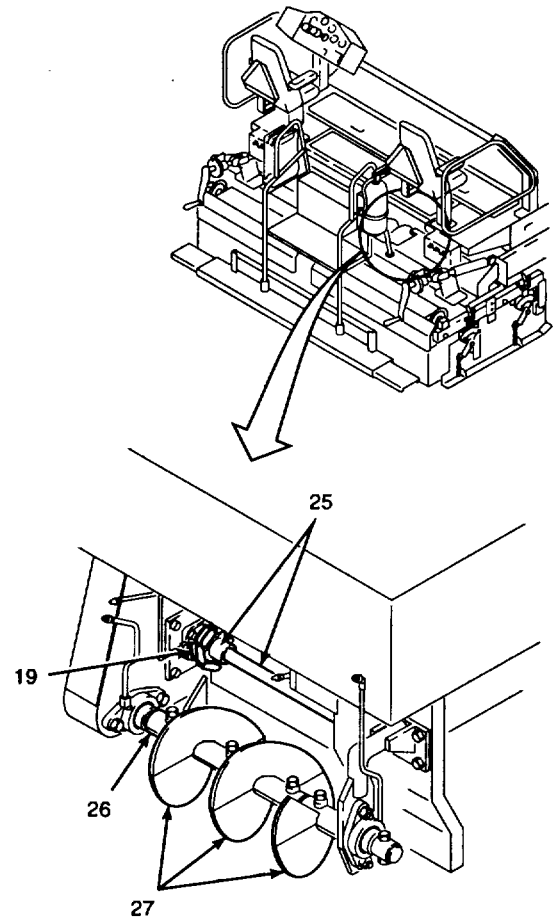
Keep fuel away from open flame or any spark (ignition source).

Keep at least a B-C fire extinguisher within easy reach when working with fuel or on a fuel system.

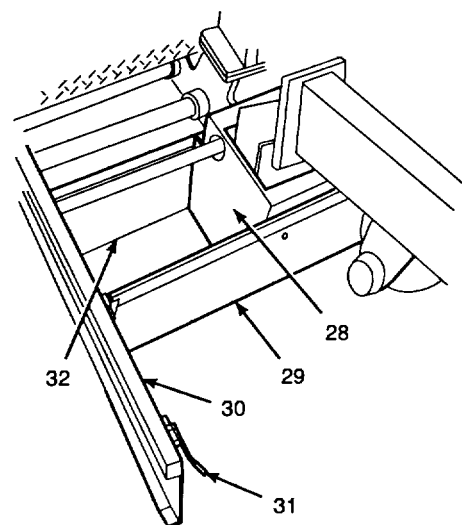
Post signs that read "NO SMOKING WITHIN 50 FEET" when working with open fuel lines or fuel tanks.

Always wear personal protective equipment such as a face shield, protective clothing, and gloves.

(14) Spray a light coat of fuel on conveyor shaft and sprocket wheel (25), exposed conveyor chain (19), auger shaft (26), and auger flights (27). Ensure that both left and right conveyor chains and auger shafts and flights are sprayed with fuel.



(15) Wash down main screed side plate (28), strikeoff plate (29), inside of endgate (30), feed limit switch paddle (31), and extension screed (32). Ensure that both left and right sides of the screed are washed down.



WARNING

Fuel is very flammable and can explode easily.

To avoid serious injury or death: Always wear safety glasses/goggles at all times.

Never operate the spray washdown system with the screed burners operating.

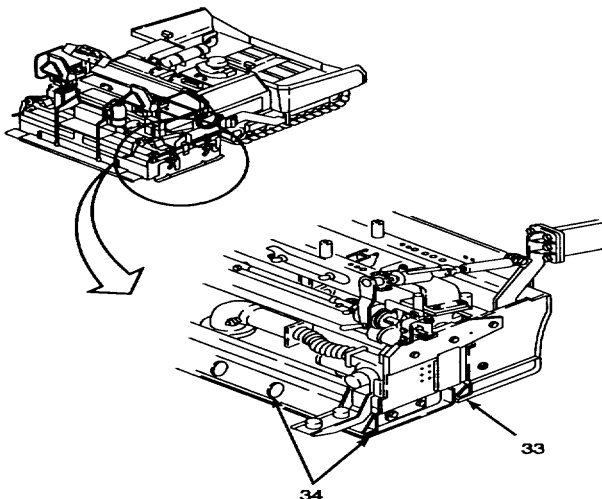
Keep fuel away from open flame or any spark (ignition source).

Keep at least a B-C fire extinguisher within easy reach when working with fuel or on a fuel system.

Post signs that read "NO SMOKING WITHIN 50 FEET" when working with open fuel lines or fuel tanks.

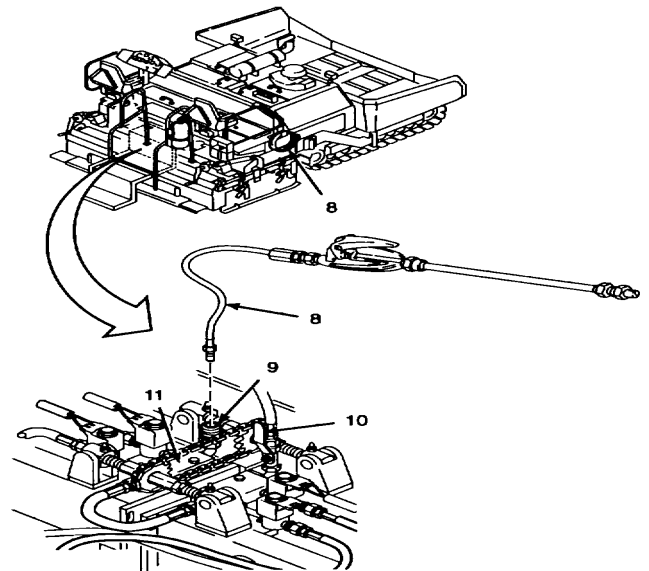
Always wear personal protective equipment such as a face shield, protective clothing, and gloves.

(16) Clean the trailing edge of main screed plate (33) and left and right extension screed plates (34). Ensure paving material does not build up in recesses of screed frame.



- (17) Place screed fuel pump switch to the down, OFF position.
- (18) Close screed burner fuel shutoff valve (10) by turning valve handle to the 3 o'clock position.

h Disconnect the fuel spray wand assembly (8) from quick disconnect coupling (9) on screed burner manifold (11). Install protection cover to quick disconnect coupling.



- i Lift and push screed steps forward until fully seated.
- j Coil up and return spray wand assembly to fuel spray wand hanger to the right of the operator platform.
- k Start paving machine engine per paragraph 2.10.

- l Place auger/conveyor switches (31) in the down, "MAN" position.
- m Place both LH and RH feeder control switches (32) in the up, ON position, and run the auger/conveyor system for one minute to distribute diesel fuel over all components of the system.
- n After one minute, place both feeder control switches (32) in the down, OFF position.

WARNING

The screed can fall rapidly. Do not lower the screed if anyone is near or under the screed.

Falling screed can cause severe injury or death.

- o Place screed lift switch (4) in the up, LIFT position and lift screed up off the ground 6 in. (152 mm).
- p Cycle left and right extension screeds three or four times in and out using extension screed control switches (3).

WARNING

The screed can fall rapidly. Do not lower the screed if anyone is near or under the screed.

Falling screed can cause severe injury or death.

- q Lower screed to the ground by placing screed lift switch in the down, FLOAT position.
- r Shut off engine and remove key from ignition switch per paragraph 2.11.
- s Inspect areas of paving machine that come into contact with paving material and repeat washdown procedures to remove any remaining build up of paving material.

APPENDIX A

REFERENCES

A1 SCOPE

This appendix lists all forms, field manuals, and technical manuals referenced in this manual. The following index should be consulted frequently for latest changes or revisions or references given in this appendix and for new publications relating to material covered in this manual.

A2 FORMS

Equipment Inspection and Maintenance Worksheet DA Form 2404
 Recommended Changes to Publications DA Form 2028
 Recommended Changes to Equipment
 Technical Manuals DA Form 2028-2
 Product Quality Deficiency Report SF 368

A3 OTHER PUBLICATIONS

Logistics Assistance Program AR 700-4

 The Army Maintenance Management System DA PAM 738-750

 NBC Decontamination FM 3-5

 First Aid for Soldiers FM 21-111

 Basic Cold Weather Manual FM 31-70

 Paving Machine, Bituminous Material; Crawler Mounted, Diesel Engine Driven, Ingersoll-Rand Company Model 780T Lubrication Order LO 5-3895-373-12

Noise and Conservation of Hearing TB MED-501

 Prevention of Heat Stress Related Injuries TB MED-507

 Paving Machine, Bituminous Material; Crawler Mounted, Diesel Engine Driven, Ingersoll-Rand Company Model 780T Warranty Information TB 5-3895-373-14

 Hand Portable Fire Extinguisher Approved for Army Use TB 5-4200-200-10

 Organization and Unit Maintenance Manual Including Repair Parts and Special Tools List (RPSTL) for Decontamination Maintaining Apparatus, Portable 14 liter, M13 and Decontamination Apparatus, Portable 14 liter, M13 (Practice) TM 3-4230-214-12 & P

 Volume D-I; Asphalt and Concrete Equipment TM 5-331D

 Paving and Surfacing Operations TM 5-337

 Care and Use of Hand Tools and Measuring Tools TM 9-243

 Procedures for Destruction of Tank - Automotive Equipment to Prevent Enemy Use TM 750-244-6

APPENDIX B

**COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII)
SECTION I. INTRODUCTION**

B.1 SCOPE.

This appendix lists components of end item and basic issue items for the 780T Asphalt Paving Machine to help you inventory items required for safe and efficient operation.

B.2 GENERAL.

The components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Component of End Item (COEI). This listing is for informational purposes only and is not an authority to requisition replacements. These items are part of the end item but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items. LH screed extension plate (10) and RH screed extension plate (11) are mated to a paving machine by installation of shims (not included) through alignment of the screed. When a new or repaired screed extension plate is received, notify unit maintenance to perform screed alignment procedure.

b. Section III. Basic Issue Items (BII). These are the minimum essential items required to place the paving machine in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BI must be with the paving machine during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

B.3 EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings.

- a. Column (1) Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

NOTE

Assemblies identified as "Not procurable as an assembly" are for reference only. Order individual parts for any required replacements.

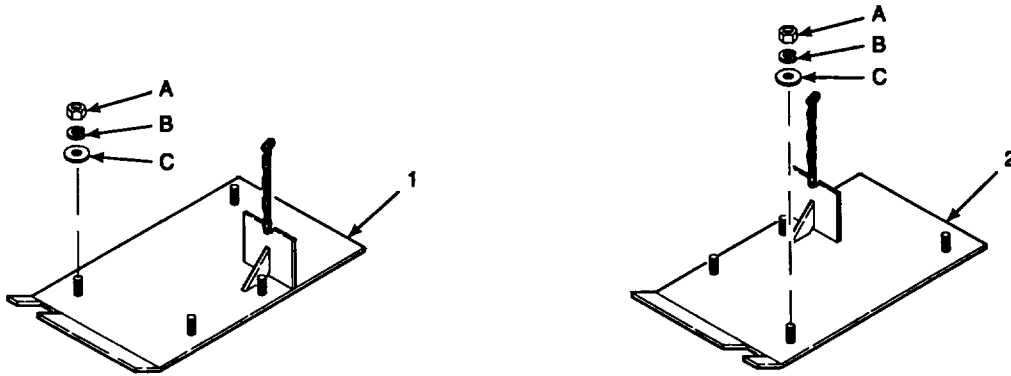
b. Column (2) National Stock Number. Indicates the National Stock number assigned to the item and will be used for requisitioning purposes.

c. Column (3) Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the CAGE (in parentheses) followed by the part number.

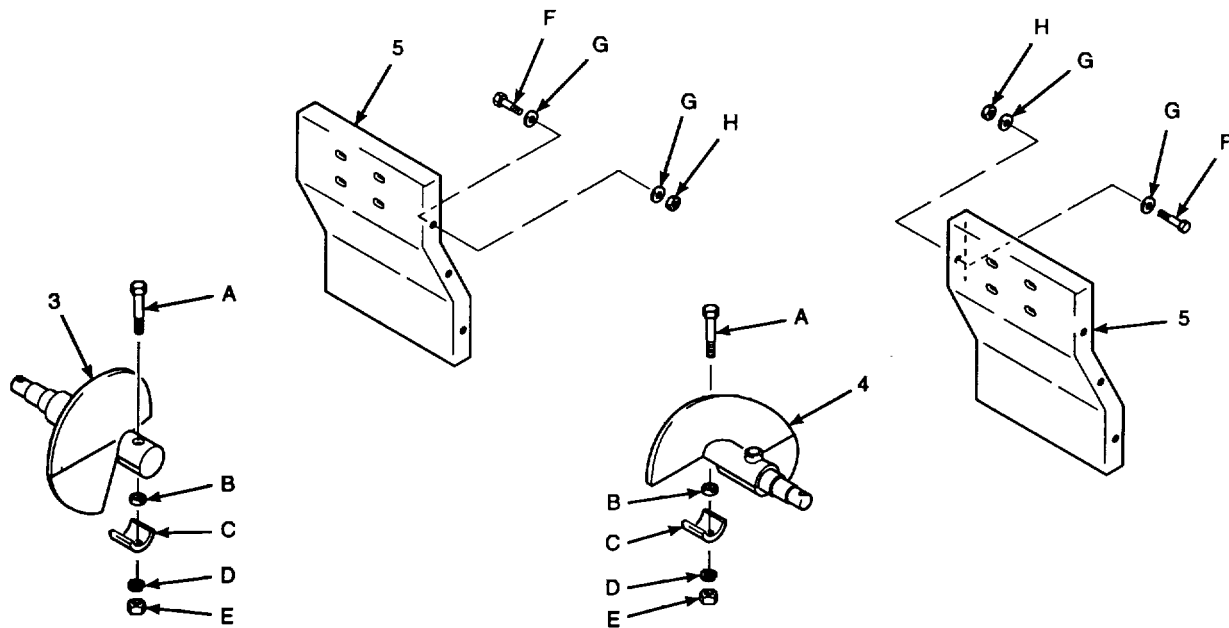
d. Column (4) Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g, ea, in., pr).

e. Column (5) Quantity required (Qty Rqd). Indicates the quantity of the item authorized to be used with/on the paving machine.

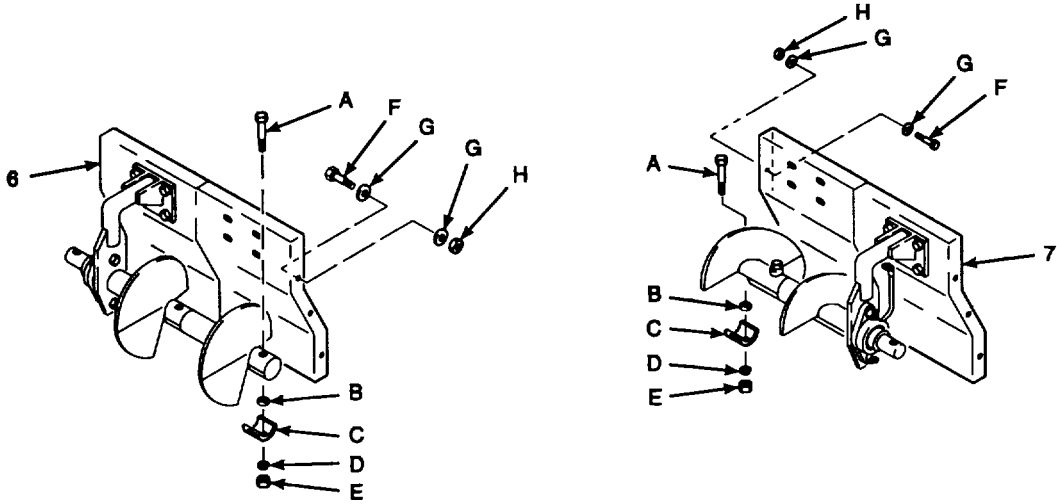
SECTION II. COMPONENTS OF END ITEM



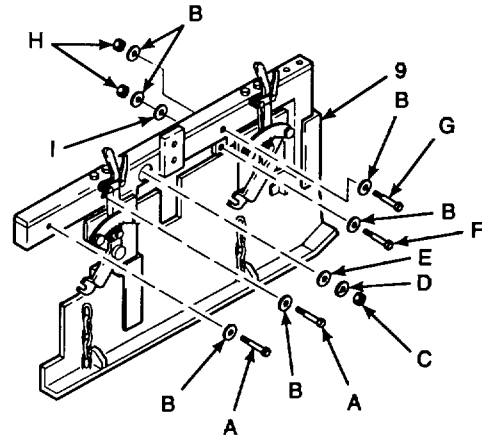
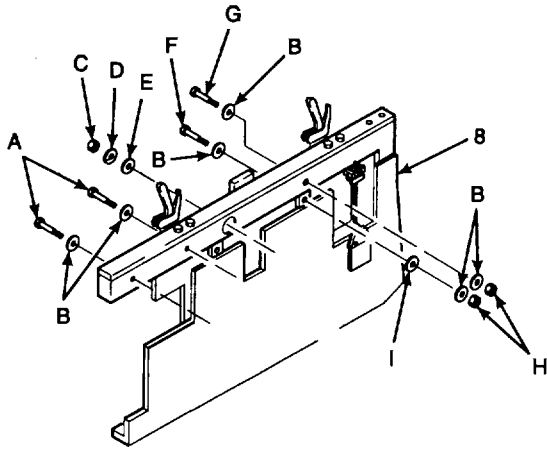
(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGE and Part Number	(4) U/M	(5) QTY Reqd
1		CUTOFF SHOE, RH Shoe, Cutoff, RH (1S654) 13085477	EA	1
2		CUTOFF SHOE, LH Shoe, Cutoff, LH (1S654) 13085469	EA	1
A	5310-01-288-8893	(ATTACHING PARTS - Quantities indicated are per side) Nut, Plain, Hexagon 11/2-13UNC-2B Grade C (99207) 21C2538-59	EA	2
B	5310-01-216-7390	Washer, Lock 1/2 IN Helical Spring (96906) MS51415-9	EA	2
C	5310-01-267-1684	Washer, Flat 1/2 IN (96906) MS51412-10	EA	2



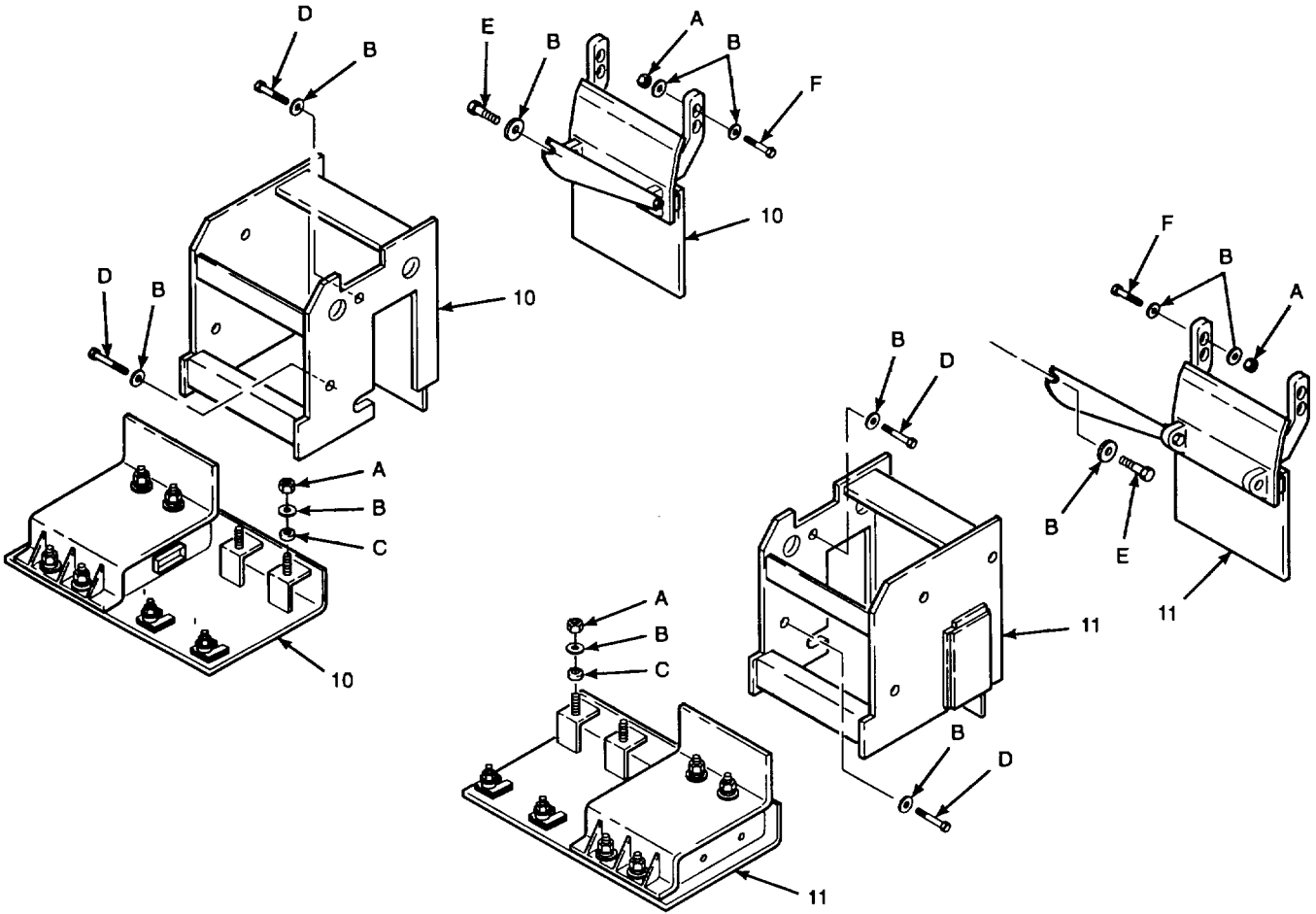
(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGE and Part Number	(4) U/M	(5) QTY Reqd
3		1 FT AUGER EXTENSION, LH (Not procurable as an assembly. Assembled at Unit Maintenance) (19207) DLHRMW1	EA	1
4		1 FT AUGER EXTENSION, RH (Not procurable as an assembly. Assembled at Unit Maintenance) (19207) DLHRMW2	EA	1
A	5305-00-071-2078	(ATTACHING PARTS - Quantities indicated are per side) Cap Screw, Hex Head 1/2-13UNC x 3.75 IN. LG (80204) B 1821BH050C375N	EA	1
B	5310-01-400-2751	* Washer, Flat (1S654) 10461846	EA	2
C		* Cover, Shaft (1S654) 13071857	EA	1
D	5310-01-216-7390	* Lockwasher, 1/2 (96906) MS51415-9	EA	1
E	5310-01-288-8893	* Nut, Plain, Hexagon, 1/2-13UNC-2B Grade C (99207) 21C2538-59	EA	1
5		1 FT FENDER EXTENSION Fender (1S654) 13071865	EA	2
F	5305-00-821-3869	(ATTACHING PARTS - Quantities indicated are per side) * Cap Screw, Hex Head, 3/8-16UNC x 1.75 IN. LG (80204) B1821BH03C175N	EA	3
G		* Washer, Flat, Hard (1S654) 59565036	EA	6
H	5310-01-399-7981	* Nut, Plain, Hexagon, 3/8-16UNC (1S654) 59327841	EA	3



(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGE and Part Number	(4) U/M	(5) QTY Reqd
6		2 FT AUGER AND FENDER EXTENSION, LH (Not procurable as an assembly. Assembled at Unit Maintenance) (19207) DLHRMW3	EA	1
7		2 FT AUGER AND FENDER EXTENSION, RH (Not procurable as an assembly. Assembled at Unit Maintenance) (19207) DLHRMW4	EA	1
A	5305-00-071-2078	(ATTACHING PARTS - Quantities indicated are per side) • Cap Screw, Hex Head 1/2-13UNC x 3.75 IN. LG (80204) B1821BH050C375N	EA	1
B	5310-01-400-2751	• Washer, Flat (1S654) 10461846	EA	2
C		• Cover, Shaft (1S654) 13071857	EA	1
D	5310-01-216-7390	• Lockwasher, 1/2 (96906) MS51415-9	EA	1
E	5310-01-288-8893	• Nut, Plain, Hexagon, 1/2-13UNC-2B Grade C (99207) 21C2538-59	EA	1
F	5305-00-821-3869	• Cap Screw, Hex Head, 3/8-16UNC x 1.75 IN. LG (80204) B1821BH03C175N	EA	3
G		• Washer, Flat, Hard (1S654) 59565036	EA	2
H	5310-01-K61-8189	• Nut, Plain, Hexagon, 3/8-16UNC (1S654) 59327841	EA	3

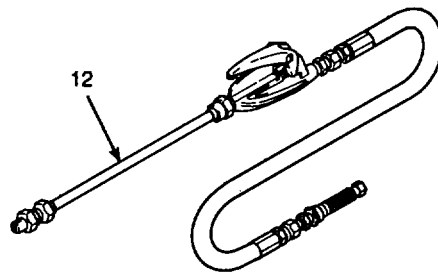


(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGE and Part Number	(4) U/M	(5) QTY Reqd
8		ENDGATE ASSEMBLY, LH (Not procurable as an assembly. Assembled at Unit Maintenance) (1S654) 13073630	EA	1
9		ENDGATEASSEMBLY, RH (Not procurable as an assembly. Assembled at Unit Maintenance) (1S654) 13073648	EA	1
A	5305-00-071-2075	(ATTACHING PARTS - Quantities indicated are per side) • Cap Screw, Hex Head 1/2-13UNC x 3 IN.LG (80204) B 1821BH050C300N	EA	2
B	5310-01-K61-8184	Washer, Flat (1S654) 59537266	EA	6
C	5310-00-971-7990	• Nut, Plain, Hexagon, 7/8-14UNF-2B (96906) MS35691-69	EA	1
D	5310-01-399-0159	Washer, Lock, 7/8 ID, Helical Spring (96906) MS51415-12	EA	1
E	5310-00-809-8340	• Washer, Flat, 0.938 IN. ID x 1.750 IN. OD x 0.134 IN. thick (96096) MS27183-25	EA	1
F	5305-00-071-2069	• Screw, Cap, Hexagon, 1/2-13UNC-2A x 1-1/2 IN. LG, Grade 8 (80204) B1821BHO50C150N	EA	1
G	5305-00-071-2079	• Cap Screw, Hex Head, 1/2-13UNC x 4 IN. LG (80204) B 182 BH050C400N	EA	1
H	5310-01-400-2759	• Nut, Self-locking, 1/2-13UNC (7T423) NT8413CB	EA	2
I		• Spacer (1S654) 10346674	EA	1

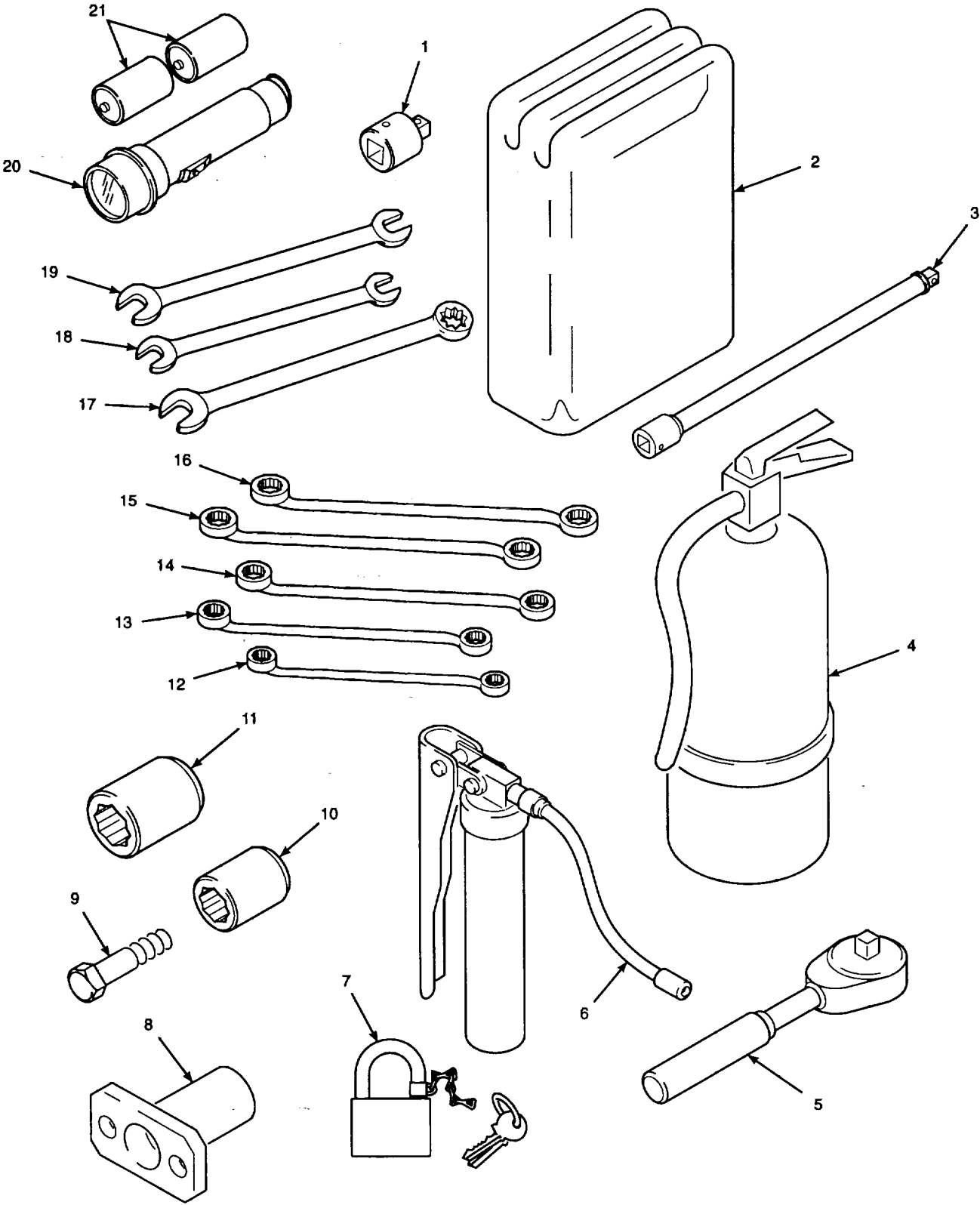


(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGE and Part Number	(4) U/M	(5) QTY Reqd
10		BOLT-ON SCREED EXTENSION, LH (Not procurable as an assembly. Assembled at Unit Maintenance) (15654) 10422475	EA	1
11		BOLT-ON SCREED EXTENSION, RH (Not procurable as an assembly. Assembled at Unit Maintenance) (15654) 10422483	EA	1
A	5310-01-400-2759	(ATTACHING PARTS - Quantities indicated are per side) • Nut, Self-locking, 1/2-13UNC (7T423) NT8313CB	EA	10
B	5310-01-K61-8184	• Washer, Flat, Hardened (1S654) 59537266	EA	15
C		• Spacer (1S654) 10346591	EA	4

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGE and Part Number	(4) U/M	(5) QTY Reqd
D	5305-00-071-2069	<ul style="list-style-type: none"> Cap Screw, Hex Head, 1/2-13UNC x 1.5 IN. G (80204) B1821BHO50CI50N 	EA	2
E	5305-00-071-2071	<ul style="list-style-type: none"> Cap Screw, Hex Head, 1/2-13UNC x 2 IN.LG (80204) B 1821BH05OC200N 	EA	1
F	5305-00-071-2072	<ul style="list-style-type: none"> Cap Screw, Hex Head, 1/2-13UNC x 2.25 IN.LG (80204) B 1821BH050C225N 	EA	2



(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGE and Part Number	(4) U/M	(5) QTY Reqd
12	730-01-K61-8350	SPRAY WAND ASSEMBLY (IS654) 10497642	EA	1



SECTION III. BASIC ISSUE ITEMS

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGE and Part Number	(4) U/M	(5) QTY Reqd
1	120-00-144-5207	Adapter, Socket Wrench, 3/4 in. male to 1/2 in. female (55719) GLA12	EA	1
2	4230-01-133-4124	Decontamination Apparatus, M13 (81361) ES-51-527	EA	1
3	5120-00-227-8074	Extension, Socket Wrench, 10 in. length, 1/2 in. drive (93389) 5463	EA	1
4		Extinguisher, Fire (61649) 466206	EA	1
5	5120-00-230-6385	Handle, Socket Wrench (80204) B 107. 10MTYCL2	EA	1
6	4930-00-253-2478	Lubricating Gun, Hand (81349) M3859/1-14	EA	1
7	5340-00-158-3807	Padlock (96906) MS35647-9	EA	1
8	5315-01-407-1676	Pin, Locking, Tow Point (IS654) 13029293	EA	2
9	5305-00-543-2419	Screw, Cap, Hexagon Head (80204) B1821BH038C113N	EA	2
10	5120-00-189-7985	Socket, Socket Wrench, 3/4 in. opening, 1/2 in. drive (80204) B107.1 CLISTA	EA	1
11	5120-00-232-5681	Socket, Socket Wrench, 1-5/16 in. opening, 3/4 in. Drive (24789) 1242	EA	1
12	5120-00-224-3146	Wrench, Box, 3/8 x 7/16 (22888) P457	EA	1
13	5120-00-277-3364	Wrench, Box, 1/2 x 9/16 (58536) A-A-1342	EA	1
14	5120-00-224-3148	Wrench, Box, 9/16 x 5/8 (95683) 41W619-628	EA	1
15	5120-00-277-1438	Wrench, Box, 11/16 x 3/4 (55719) XD2224	EA	1
16	5120-00-222-1593	Wrench, Box, 13/16 x 7/8 (93389) 1140	EA	1
17	5120-00-228-9516	Wrench, Box and Open End Combination, 1-1/8 x 1-1/8 (05506) 1172	EA	1
18	5120-00-277-2342	Wrench, Open End, 3/8 x 7/16 (05506) 1723	EA	1
19	5120-00-187-7124	Wrench, Open End, 1/2 x 9/16 (05506) 1725B	EA	1
20	6230-00-163-1856	Flashlight (58536) A-A-1974	EA	1
21	6135-00-835-7210	Battery, D Size (81349) BA 3030/U	EA	2

B-9/(B-10 blank)

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

SECTION I. INTRODUCTION

C.1 SCOPE.

This appendix lists additional items that you are authorized for the support of the Bituminous Material Paving Machine, Crawler Mounted, Diesel Engine Driven.

C.3 EXPLANATION OF LISTING.

National Stock Numbers, description, and quantities are provided to help you identify and request the additional items you require to support this equipment. Since there are no other models of this equipment the "Used On Code" column is not used.

C.2 GENERAL.

This list identifies items that do not have to accompany the paving machine and that do not have to be turned in with it. These items are authorized by CTA, MTDE, TDA, or JTA.

SECTION II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE CAND PART NUMBER	(3) U/M	(4) QTY AUTH
7920-00-267-2967	Broom, Push (80244) H-B-71-TY-1	EA	1
7920-00-141-5452	Handle, Circular Taper (80244) NH-H- 104 T42523LG4.5	EA	1
5120-01-121-5030	Rake, Asphalt (89942) 16193	EA	1
5120-00-224-9326	Shovel, Hand (80244) GGG-5-326 TYSCLAST 1 STISZ2 Automatic Grade and Slope (AGS) System (56009) PC2E2R-CSMM	EA EA	2

C-1/(C-2 blank)

APPENDIX D

EXPENDABLE AND DURABLE ITEMS LIST

SECTION I. INTRODUCTION

D.1 SCOPE.

This appendix lists expendable and durable items that you will need to operate and maintain the Bituminous Material Paving Machine, Crawler Mounted, Diesel Engine Driven. This listing is for information only and is not an authority to requisition the listed items. These items are authorized to you by CTA 50- 790, Expendable/Durable Items (except medical, class V repair parts, and heraldic items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

D.2 EXPLANATION OF COLUMNS.

a. Column 1. Item Number. This number is assigned to the entry in the listing and is referenced in

the narrative instructions to identify the item (e.g. "Use cleaning solvent, Item 8, Appendix D".)

b. Column 2. Level. This column identifies the lowest level of maintenance that requires the item.

c. Column 3. National Stock Number. This is the national stock number assigned to the item which you can use to requisition it.

d. Column 4. Item name, description, Commercial and Government Entity Code (CAGEC), and part number. This provides the other information you need to identify the item.

e. Column 5. Unit of measure. This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

**SECTION II. EXPENDABLE/DURABLE SUPPLIES
REQUIREMENTS LIST**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UM/UI
1	C,O F,H	7920-00-044-9281	Cloth, Lint-Free, Type II (10-lb box) (MIL-C-85043)	LB
2	C,O F	6850-01- 181-7929 6850-01-181-7933 6850-01-181-7940	Coolant, Antifreeze, Ethylene Glycol Inhibited, Heavy Duty (MIL-A-46153) 1-gal bottle 5-gal can 55-gal drum	GL GL GL
3	C,O	2940-00-979-3806	Element, Filter, Air Cleaner	EA
4	C,O	9130-01-305-5597	Fuel, Aviation Turbine, JP-8, NATO F-34 (MIL-T-83133)	GL
5	C,O F	9150-01-197-7688 9150-01-197-7690 9150-01-197-7689 9150-01-197-7692	Grease, Automotive and Artillery (MIL-G-10924) 2.25-oz tube 1.75-lb can 6.5-lb can 35-lb can	OZ LB LB LB
6	C,O F,H	9150-00-189-6727 9150-00-186-6668 9150-00-191-2772	Oil, Hydraulic (MIL-L-2104) 1-qt can 5-gal can 55-gal drum	QT GL GL
7	C,F H	9150-01-152-4117 9150-01-152-4118 9150-01-152-4119	Oil, Lubricating, Internal Combustion Engine, Tactical Service, OE/HDO 15/40 (MIL-L-2104) 1 -qt can 5-gal can 55-gal drum	QT GL GL
8	C,O F,H	6850-01-331-3349	Solvent, Dry Cleaning, Type HI (5-gal can) (P-D-680)	GL
			D-2	

APPENDIX E

STOWAGE AND SIGN GUIDE

E.1 SCOPE.

This appendix shows the location for stowage of equipment and material required to be carried on the 780T Asphalt Paving Machine.

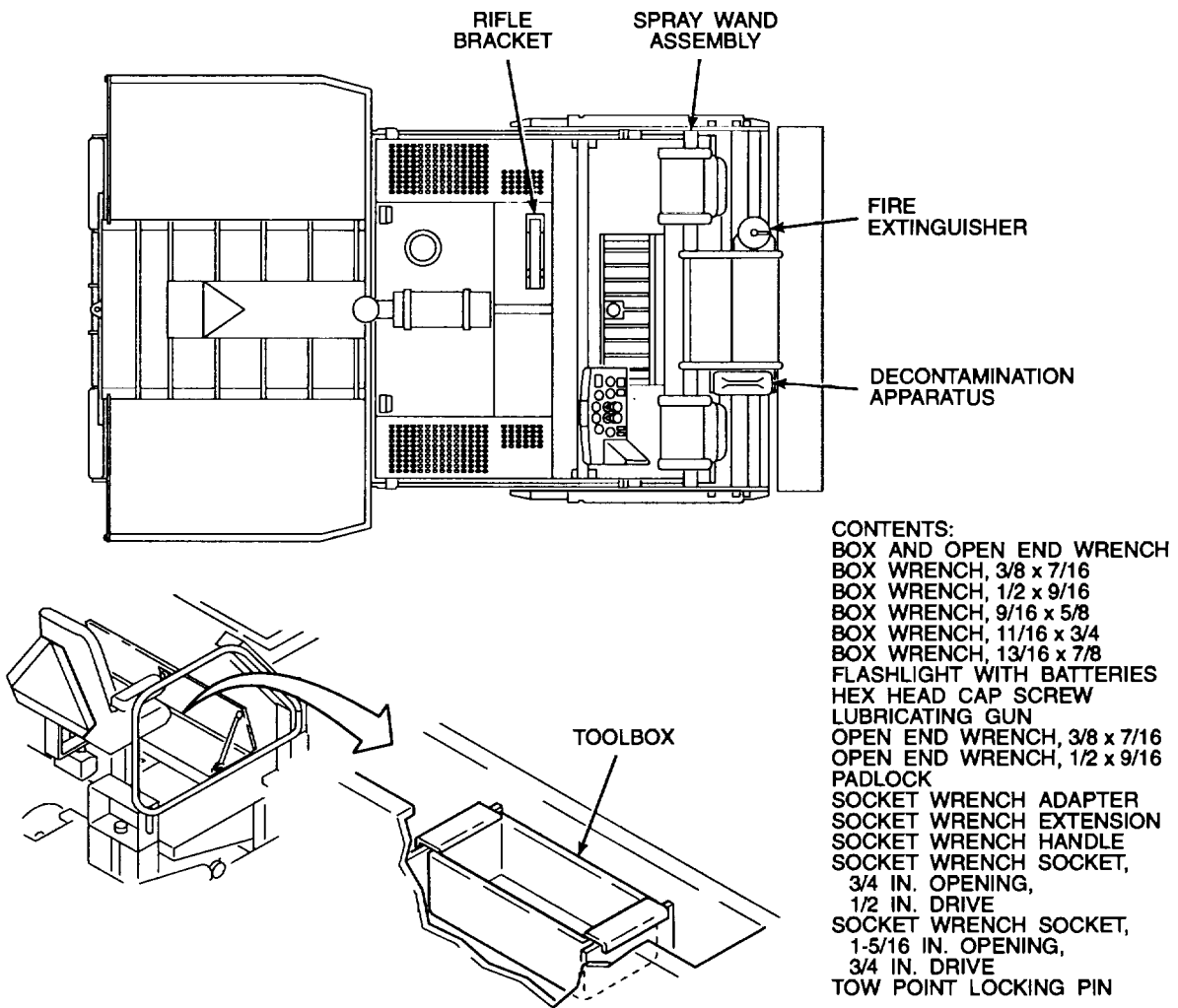
E.2 GENERAL.

The equipment stowage locator is designed to help inventory items required for safe and efficient operation. This equipment locator is representative of BII and applicable AAL stowage on the Bituminous Material Paving Machine.

E.3 STOWAGE LOCATIONS.

E.4 SIGN GUIDE.

See paragraph 2.25, Decals and Instruction Plates.



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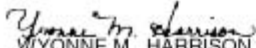
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By Order of the Secretary of the Army:

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

- 1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
- 1 Meter = 100 Centimeters = 1,000 Millimeters = 39.37 Inches
- 1 Kilometer = 1,000 Meters = 0.621 Miles

SQUARE MEASURE

- 1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
- 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
- 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

- 1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches
- 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

- 1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
- 1 Liter = 1,000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE

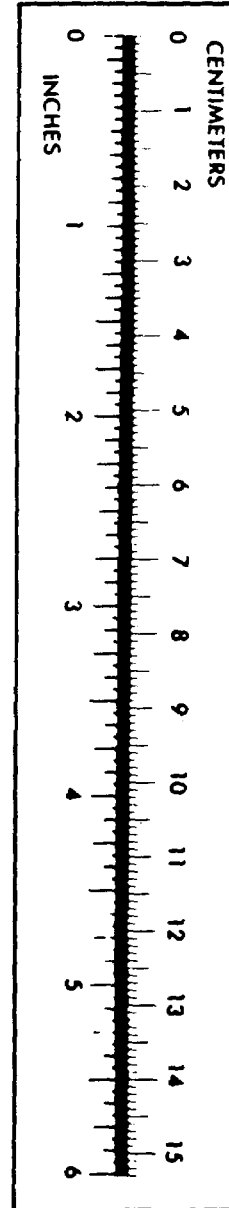
- $5/9 (°F - 32) = °C$
- 212° Fahrenheit is equivalent to 100° Celsius
- 90° Fahrenheit is equivalent to 32.2° Celsius
- 32° Fahrenheit is equivalent to 0° Celsius
- $9/5 C° + 32 = F°$

WEIGHTS

- 1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces
- 1 Kilogram = 1,000 Grams = 2.2 lb.
- 1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds Per Square Inch	Kilopascals	6.895
Miles Per Gallon	Kilometers Per Liter	0.425
Miles Per Hour	Kilometers Per Hour	1.609
TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds Per Square Inch	0.145
Kilometers Per Liter	Miles Per Gallon	2.354
Kilometers Per Hour	Miles Per Hour	0.621



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