Remember the equipment that you are driving is a valuable resource and as a professional equipment operator you need to protect it to the best of your ability. Also remember what you do with the equipment can have a great effect on aircraft and its passengers. There can literally be hundreds of lives that you can have a direct effect upon. You as the operator are responsible for the vehicle you are operating.

You can't abuse your truck just because it's big and powerful.

Your truck needs as much care as your car does. In fact, your truck works a lot harder than your car ever will and is likely to require a lot more care.

Most experienced drivers can tell you all kinds of stories about trucks that were destroyed years too soon simply because somebody didn't check something or forgot to top it up or was too lazy to tighten it up.

We have various trucks at Winnipeg James Armstrong Richardson International Airport. As an example, we have sand trucks, single axle dump trucks, tandem dump trucks, chemical trucks and plow trucks.
Get to know these trucks and learn how to operate them properly.

Some or all of the following features are commonly found on most trucks:

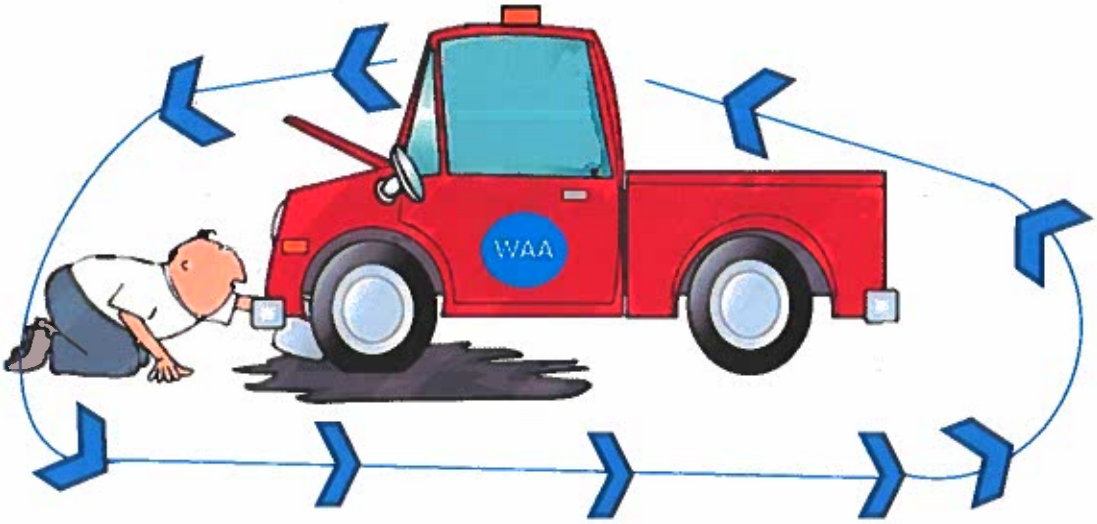
- ROTATING BEACON (must be on when you go airside)
- TWO-WAY RADIO (for airside use)
- PINTLE HOOK (trucks are often used for towing)
- BACK-UP ALARM (because you can't see behind you)
- SEAT BELTS (both seats)
- WEST COAST MIRRORS (better visibility)
- FIRE EXTINGUISHER
- LOW AIR PRESSURE ALARM

Most of the features are safety related.

THE CIRCLE CHECK

Before you climb into the cab of your truck, you want to make sure that your truck is ready to go.

- make sure your vehicle is safe
- Make sure you'll get through your shift without a breakdown.



PRIOR TO OPERATING ANY VEHICLE AT THE CSB YOU MUST DO THE FOLLOWING.

1. Check for any fluid leaks under Vehicle
2. Preform a walk around checking for damage to the vehicle (Report any damage found)
3. Pull the oil dip stick ***WIPE IT CLEAN*** insert it back into the vehicle and check the oil level.
4. Add washer fluid if needed
5. After any vehicle use ***ALWAYS ADD FUEL TO TOP UP THE TANK***
6. ***Make a One-Call ticket if needed at 204-987-9798***

It's impossible to give a detailed checklist in a manual such as this one. The one given here should serve as a guide to the things that you have to look after.

For example, the battery will probably be in different areas on different makes of trucks, but you know that you still have to check it, wherever it is.

Under The Hood Checks

- Engine Oil Level
- Radiator Level
- Power Steering Fluid Level
- All Belts for Tension and Wear
- Windshield Washer Level

Body Checks

- Cracked Lights and Lenses
- Mirrors
- Wheel Lugs
- Tire Pressure
- Tire Wear and Damage

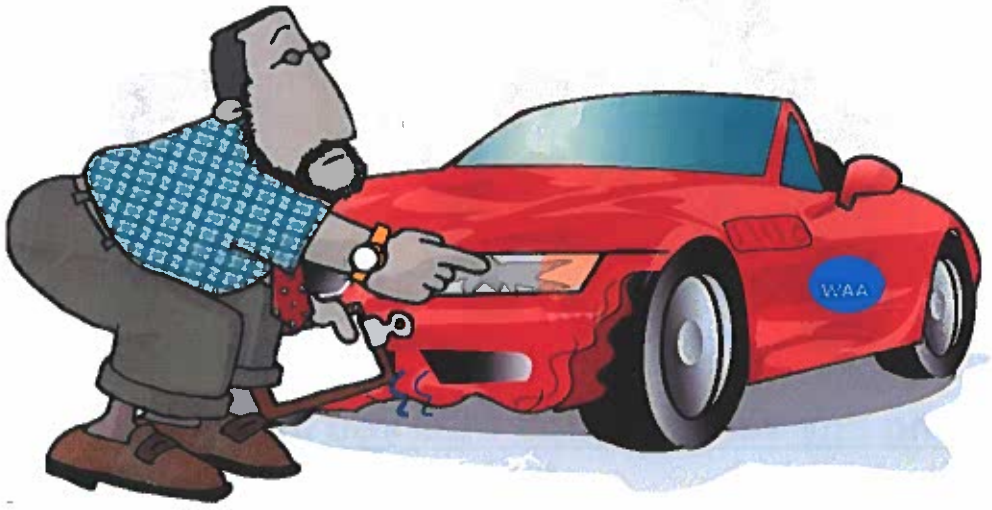
Check Components

- Battery Levels
- Battery Tie Downs
- Battery Connection
- Hydraulic Oil Level
- Check for Obstructions around Vehicle
- Cock Closed on Air Tanks

Other Checks

- Evidence of Oil Leaks
- Evidence of Anti-freeze Leaks
  Locate Source if Possible
- Hydraulic Pump and Drive shaft

Report all damaged and defective items to your supervisor. Do not operate a defective truck. A decision will be made by the supervisor if the truck will be taken out of service at that time.



Since it is not good to put a cold engine to work, you have time to run secondary checks while waiting for the engine to warm up.

Cab Equipment
- Fully Charged Fire Extinguisher
- Wiper Motor
- Wiper blades
- Windshield Washer
- Horn City/Highway

Radio
- Check for Proper Frequency
- Check with Tower for Proper Operation

Adjust
- Seat
- Mirrors

Lights (Working and Clean)
- Beacon
- Headlights
- Taillights
- Flashers
- Plow Lights
- Back-up Lights

Check
- Brake Operation
- Back-up Alarm
- Air pressure Build Up
- Air Leaks with Engine Off
- Automatic Transmission Oil

After using any vehicle at the CSB you must top up the fuel tank.

Date: _____

Equipment Number: _____

		✓	X	N/A
Walk Around	Leaks (Fluid/Air)			
	General Condition			
Under Hood	Oil Level			
	Transmission Fluid			
	Brake/PTO Fluid			
	Power Steering Fluid			
	Coolant/ Radiator			
	Belts			
	Hoses			
	Air Cleaner			
Battery	Cable Condition			
	Mountings/Hold Down			
	Cover Secured			
Tires	Tread/Match			
	Tire Condition			
	Tire PSI			
	Wheel/Lugnuts			
Hydraulics	Reservoir Level			
	PTO Operation			
	Hose Condition			
	Cylinder Condition			
Frame/ Suspension	Loose Bolts			
	Cracks			
	Springs/ U Blots			
	Mud Flaps			
Broom	Shroud Shoveled			
	Body Shoveled			
	Broom Core			

		✓	X	N/A
Cab	First Aid Kit			
	Fire Extinguisher			
	Warning Triangles			
	Seat Belts			
	WS/Windows			
	Wipers			
	Horn/Air Horn			
	Mirrors			
	Inspection Sticker			
	Stairs			
	Clean			
Brakes	Emergency Brake			
Bed	Ladder			
	Cover/Cap			
	Loose Cargo			
	Dump Bed Safety Bar			
	Bed Lock Lamp			
	Lift Cylinder & Pin			
	Tailgate Latch			
Lamps	Head/ Dimmer			
	Parking			
	Turn Signal			
	Four Way			
	Clearance Lamps			
	Tail Lamps			
	Reverse Lamps			
	License Plate Lamp			
Air Brakes	Air Pressure			
	Buzzer/Lamp			
	Tank Drain			
	Glad Hands/Hoses			

ELGIN®

Subsidiary of Federal Signal Corporation

Eagle®

ELGIN

Built for clean. Backed for life.

ELGIN EAGLE®

RELIABLE, HEAVY DUTY, VERSATILE MECHANICAL BROOM SWEEPER

If you need a proven mechanical broom sweeper with reliable heavy duty performance, high dump capability and superior operator comfort look to the Elgin Eagle®. The Eagle, first introduced as part of the Elgin family of sweepers in 1988 has been continuously improved, retaining all of the features that made it popular. These include a simplified dual-engine design, increased operator efficiency and productivity, along with the latest technology for superior results.

If you haven't tried sweeping with the Eagle – now is the time to take another look.

APPLICATION SOLUTIONS

Elgin Sweeper doesn't offer just one sweeping technology — we take an application-based approach to solving our customers' sweeping needs. Our team works with each customer to ensure that you get a machine that fits your specifications, with the right truck, engine configuration, fuel requirements, and options.

POWERFUL SUPPORT

Elgin sweepers are built for clean, backed for life. Throughout the life of the sweeper, we offer training to your team on proper use and maintenance. We have a world-wide network of experienced dealers with factory trained technicians and a local stock of OEM parts and accessories, to ensure total customer peace of mind.

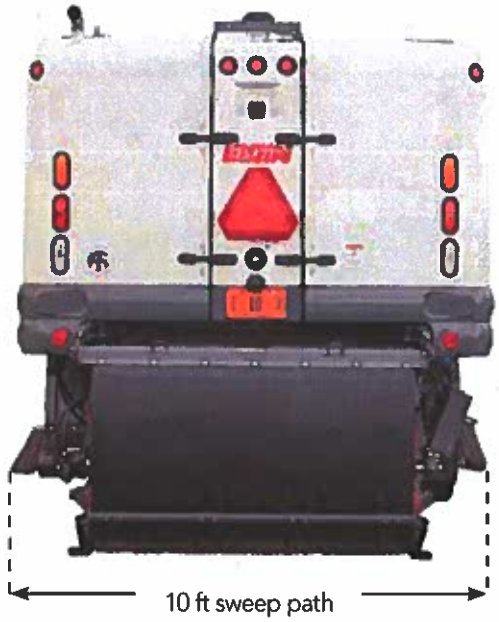
UNMATCHED QUALITY

The Eagle was introduced 25 years ago and has been continuously improved. Manufactured in an ISO:9001 certified plant, Elgin Sweepers are quality inspected and functionally tested prior to shipment. Paint prior to assembly ensures uniform, durable coverage. Eagles are proudly assembled in the U.S.A.

HIGH PRODUCTIVITY SWEEP SYSTEM

- Mounted on a selection of conventional or commercial cabover chassis. Conventional chassis feature a five speed overdrive automatic transmission and commercial cabover chassis feature a six speed wide ratio automatic transmission.
- Sweep system is powered by a low emission, 74hp Cummins diesel engine, (55 kW @ 2500 RPM), one of the most powerful standard auxiliary engines available on a mechanical sweeper.
- Control console, located between the operator stations, provides quick, easy access for increased productivity and safe operation.
- Dual free-floating gutter brooms adjust to variable road surfaces, a sweep path of 10 feet (305 cm) and a powerful free floating direct-drive main broom, ensure reliable and complete pickup of debris.
- Superior dust control is maintained with an in-cab zone-controlled diaphragm water pump and a 360 gallon (1363 L) water tank for long sweep times between refills.
- 4.5 cubic yard (3.4 cubic meters) hopper features a center mounted double-scissors lifting mechanism for greater stability and trouble-free operation. Dumping height is variable up to 10 feet (305 cm) and an 11 inch (279 mm) side shift enables a cleaner more efficient unloading of material.
- Flexible range of chassis choices including cabover or conventional chassis. The cabover chassis cab is dualized with OEM parts, including full factory controls, steering, and OEM gauge package that is identical for both left and right operator stations.

EASY TO OPERATE. EASY TO MAINTAIN. BUILT TO LAST.



MAIN BROOM

A free-floating trailing arm main broom conforms to road contours. Powered by the auxiliary engine, the main broom works at variable speeds that coincide with auxiliary engine RPM. Productivity is enhanced with automatic settings for down pressure, and wear control. Main broom lift, lower and down-pressure functions are controlled from the cab. The main broom arm bearings are sealed and self-aligning for self-adjustment when experiencing an uneven load. The self-adjusting system guards against premature wear.

SIDE BROOMS

46 inch (1168 mm) trailing arm, free-floating side brooms offer four-way motion and protection against damaging impacts. Pneumatic lift and extension control enhances performance while sweeping within a 10 foot (305 cm) wide path. Steel plate disc construction adds durability. Broom speed is controlled by hydraulic motors operating at variable speeds that coincide with auxiliary engine RPM. Automatic settings control down-pressure, digging-pressure and wear-control. In-cab side broom pressure gauges and down-pressure control are standard.

NO JAM DEBRIS CONVEYOR

The Eagle's conveyor comes standard with the Chevron Belt. This unique belt design uses molded-in full-width angled cleats that move large debris without jamming. High-strength belt material provides long wear and maximum uptime. The conveyor is controlled from in-cab, including reverse. A built-in washdown makes cleanup quick and easy.

AUXILIARY ENGINE

A low-emission 74 hp Cummins diesel engine (55 kW @ 2500 RPM) provides variable control over sweeper functions independent of the chassis. It is among the most powerful standard auxiliary engines available on a mechanical sweeper. Max fuel capacity is 50 gallons (189 L). The engine includes a two-stage, dry-type air cleaner with safety element, pre-cleaner, and optional in-cab restriction indicator. In-cab gauges and warning lights are displayed for all engine functions including tachometer, hour meter, volt meter, fuel level, coolant temperature, oil pressure, hydraulic oil filter restriction, engine running, and air filter restriction.

HYDRAULIC SYSTEM

The Eagle features a 34 gallon (128 L) reservoir with an external level indicator and thermometer, and a 13.5 GPM (51 LPM) triple section gear pump capacity at 1200 RPM of the auxiliary engine.

SIMPLE, EASY-ACCESS MAINTENANCE

The Eagle was designed so that systems are accessible and easy to service. Large access doors allow for 180 degree accessibility to engine maintenance components. The hydraulic system with o-ring face seal fittings is designed for long life and leak-free operation. Heavy-duty waterproof electrical connectors and color-coded wires have stamped identification for quick location during troubleshooting. A stainless steel toolbox provides additional storage.

LARGE VARIABLE HEIGHT DEBRIS HOPPER

The Eagle features a variable-height, right side dump hopper with a capacity of 4.5 cubic yard (3.4 cu meters) volumetric. All hopper lift and dump controls are hydraulic and easily operated from in-cab console mounted controls. A 50 degree dump angle allows material to easily slide out.

A unitized, twin-cylinder, double scissors lift rated at 11,000 lbs (4990 kg) unloads material at a minimum of 38 inches (965 mm) and a maximum of 10 feet (3048 mm). Payload capacity is 10,000 lbs (4536 kg) per load. An 11 inch (279 mm) side shift allows material to be unloaded into the center of a truck or container for cleaner dumping. A full hopper can dump and retract in 20 seconds for short intervals and up to 70 seconds at top height.

SUPERIOR DUST SUPPRESSION

A 360 gallon removable water tank is made of corrosion resistant polyethylene. A 16 foot, 8 inch long (5.1 m) fill hose and water level indicator lights located on the control console are standard. Water flow for the side and main brooms is controlled in-cab. The self-priming diaphragm pump (run dry type, 40 psi) provides effective dust control. Three spray nozzles are positioned on each side broom and three on the main broom.

MEMORY SWEEP®

Elgin's exclusive Memory Sweep feature allows the operator to resume all previous sweeper settings, even broom tilt if so equipped, with one touch control. This feature enhances operator productivity and reduces operator fatigue. Memory Sweep incorporates a multi-screen display that indicates engine hours and water tank level as well as system diagnostics. This screen also displays optional features such as broom tilt angle and broom hours.

UNIQUE APPLICATION VERSATILITY

*PATENTED CONVEYOR FLEXIBILITY

The Eagle comes standard with a no jam debris conveyor belt featuring molded-in full-width cleats that move debris without jamming. High-strength belt material provides long wear and maximum uptime. The Eagle is specifically designed to provide versatile and reliable performance in a wide range of applications including highway sweeping, general municipal sweeping, trash, leaves, and other organics.

The Eagle is also available with a squeegee-type conveyor for applications such as aggregate and granular material pick up of gravel and millings; ideal for road construction contractors. Conveyor rotation direction is controlled in-cab and conveyor speed is variable with auxiliary engine RPM providing maximum on-the-go productivity and ease of cleaning.

THE ELGIN BELT CONVEYOR

- Standard new Chevron Belt.
- Full-width angled cleats move more material quickly to hopper for maximum productivity.
- Direct-drive hydraulic motor for optimal power transfer to the conveyor system.
- Improved hopper fill by throwing debris towards center of hopper.
- Heavy-duty poly/nylon belt construction resists stretching and requires fewer adjustments.
- Ribs between cleats enhance effectiveness of moving fine debris into the hopper.

THE ELGIN SQUEEGEE CONVEYOR

- Chain side-plate constructed from through hardened steel for long life and smooth operation.
- Three-piece design for easy service without removing complete assembly.
- Thick, multi-ply rubber-edged flights provides efficient movement of debris into the hopper.
- Unique, interlocking, wavy-plate joint design prevents excessive wear and "thumping" over plate seams.
- Abrasion-resistant steel floor for durability.
- Direct-drive hydraulic motor for optimal power transfer to the conveyor system.

The Eagle conveyors are designed to be interchangeable should a customer have different applications throughout the sweep season.

WATERLESS DUST CONTROL

The Elgin Eagle is available with an optional dry dust control system. This model maintains all the features and performance that have made the Eagle a popular four wheel mechanical sweeper, but does not require water for dust suppression. This means increased pick-up of fine particles over wet dust control sweepers, reliable year-round sweeping, and considerable water conservation. The Eagle with dry dust control's patented dust control system includes a dust skirting system, dust separator in the hopper, and a dust control fan with a maintenance-free filter. Operators sweep more and spend less time filling tanks, enhancing productivity. This model is ideal for industrial applications where heavy, dry materials must be swept up while keeping dust emissions to an absolute minimum. *Consult factory for waterless model details.*

*U.S. Patent No. 9, 121, 150

OPTIONAL ENHANCEMENTS

CONVENTIONAL CHASSIS

Conventional chassis are built for sweeping and provide outstanding visibility, comfort, safety, and productivity. The short wheel base and unique steering geometry allow maximum maneuverability. A choice of Freightliner or International conventional chassis are also available.

LIFELINER® HOPPER SYSTEM

The LifeLiner® hopper system is a specially designed hopper liner and finish system that greatly improves the life, durability, and functionality of a sweeper hopper. The LifeLiner hopper system is backed by a lifetime warranty.*

IN-CAB SIDE BROOM TILT AND EXTENDED REACH

Allows operator to sweep effectively in variably-pitched gutters. On-the-go pitch adjustment with a simple variable rocker switch. Extended reach allows the side broom to follow curbs and tight cul-de-sacs.

ADDITIONAL OPTIONS:

- Outside cab, side broom down pressure control
- Outside cab, main broom down pressure control
- In-cab, side broom speed control
- Strobe lamp
- Arrowstick
- Automatic lubrication system
- Front spray bar
- Alternative Conveyor - Squeegee with rubber edging

SPECIFICATIONS:

SWEEP PATH

Main broom only:
60 in (1524 mm)

Main broom & one side broom:
90 in (2286 mm

Main broom and 2 side brooms:
120 in (3048 mm)

HOPPER CAPACITY

Volumetric Capacity: 4.5 yd^3 (3.4 m^3)
Material volume: 3.3 yd^3 (2.5 m^3)

HOPPER DUMPING

Minimum dump height: 38 in (965 mm)
Maximum dump height: 10 ft (3048 mm)

WATER SPRAY SYSTEM

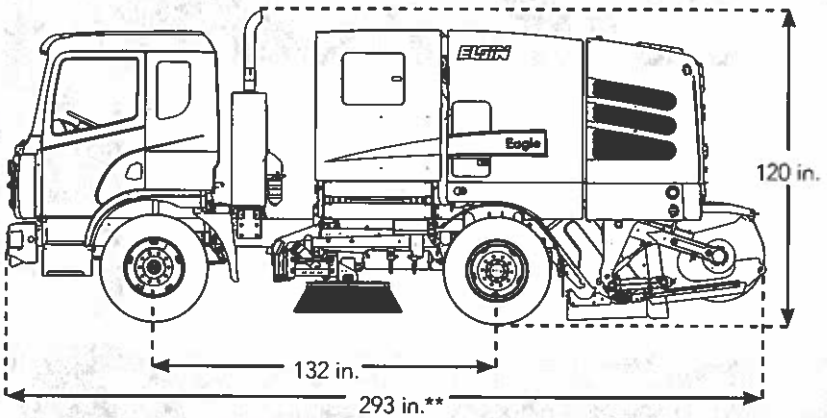
Tank capacity: 360 gal. (1362 L)

AUXILIARY ENGINE

Cummins 74hp EPA compliant engine

CHASSIS

Conventional or cab-over



*Consult factory for warranty details **Transport mode

ELGIN SWEEPER IS YOUR PARTNER...

IN THE PLANNING

Instead of one-size-fits-all solutions, we'll work with you to select the sweeping technology that fits your specific needs.

IN THE STREETS

We're here to help you maintain your Elgin and train your operators to ensure the job is done right.

INTO THE FUTURE

Our dealers don't just sell you an Elgin; they're available to answer your questions and provide service for the life of the machine.

WARRANTY

Elgin Sweeper Company backs the Eagle sweeper with a one-year limited warranty. The Eagle is warranted against defects in material or workmanship for a period of 12 months from the date of delivery to the original purchaser. Optional extended warranty packages are available. Consult your Elgin dealer for complete warranty information.

Your Local Elgin Dealer Is:

ELGIN
Built for clean. Backed for life.

elginsweeper.com

1300 W. Bartlett Road • Elgin, IL 60120 U.S.A.
(847) 741-5370 Phone • (847) 742-3035 Fax

General Specs

Sweep Path:
Main broom only: 60"
Main broom & one side broom: 90"
Main broom and 2 side Brooms: 120"
Chassis Commercial Class 7
Wheel Base Chassis dependent
Warranty Sweeper, 1 year parts & labor

Sweeper Engine

Make Cummins B 3.3
Type 4 cylinder
Displacement 3.3 L
Horsepower 74 @ 2600 RPM
Torque 181 lb. ft. (245 Nm)
Aspiration Turbo charged

Main Broom

Type Prefab disposable Polypropylene filled
Diameter 34" (864 mm)
Broom Material Polypropylene
Length 60" (1,473 mm)
Core Type Disposable steel tube
Speed Variable with engine RPM
Drive Hydraulic motor with direct drive
Digging Pressure & Wear Control Closed loop control hydraulic spring
Lift control Hydraulic
Mounting Full-floating trailing arm
Down Pressure Indicator In-cab dial

Side Broom

Type Disposable 5 or 6 segment, plastic
Diameter 46" (1,168 mm)
Broom material 26" wire (660 mm)
Disc Construction Steel
Speed Reversible and variable with engine RPM
Drive Full hydraulic
Digging Pressure & Wear Control Pneumatic spring
Lift control Pneumatic
Flexibility Free-floating and full side-ways oscillation
Mounting Trailing Arm
Down Pressure Indicator In-cab gauge

Conveyor

Type Belt with molded-in rubber cleats
Material (belt) Rubber reinforced fabric
Speed Variable with auxiliary engine RPM
Cleat Clearance Settable 1" to 4", in cab raisable up to 6" while sweeping
Adjustment Jack screw
Lift Control Hydraulic
Cascade Washdown With fill diverter

Instrumentation/Controls

Warning Lamps & Chime
Low hydraulic oil
Conveyor stall
Warning Lamps
Hydraulic oil temperature
Hydraulic oil filter restriction
Low water spray
Broom position
Hopper position
Water tank level

Electrical System (Sweeper)

Twelve Volt Negative Ground System 60 amp alternator
Battery 12v 1000 CCA
Circuit Protection Activated by ignition switched constant duty solenoid (except lights).
Wiring Hot stamp identified with weatherproof connectors

Hydraulic System (Sweeper)

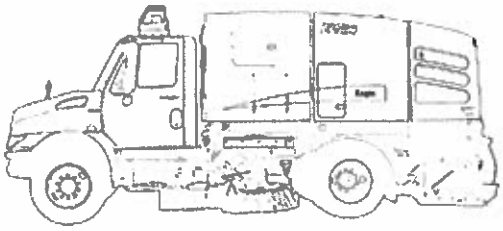
Sweep System Pump Triple section gear pump
Capacity 13.5 GPM @ 1200 RPM
Fittings O-ring face seal
Reservoir Capacity 35 gal (132 l)
Inlet strainer 100 mesh
Return filter 6 micron
Filter Restriction Indicator
Breather 10 micron
Cooler Externally mounted
Valves Electro-hydraulic

Hopper

Volumetric Capacity 4.5 yd^3 (3.4 m^3)
Material volume 3.3 yd^3 (2.5 m^3)
Hopper Lift and Dump Controls Electro/Hydraulic in-cab
Inspection Door
Offload
Right Side
Minimum dump height 38" (965 mm)
Maximum dump height 10' (3,048 mm)
Maximum hopper dump angle 50°
Design Lift capacity 10,000 lbs (4545kgs)
Lifting mechanism Two stage with with hydraulic cylinders

Water Spray System

Tank construction Polyethylene
Tank capacity 360 gals (1362 l)
Fill Hose 16' 8" (5080 mm) with 2.5" (64 mm) NST hydrant coupling
Pump Electric diaphragm
Spray nozzles 3 across main broom and over each gutter broom
Water Filter 80 mesh plastic housing
Controls In cab pump control and flow control valves at each side broom



Available Enhancements

- LED strobe
- Arrow stick
- Automatic lubrication system
- Fire extinguisher
- Broom camera system (rear standard)
- Front spray bar
- Hydrant wrench
- Lighting bundles
- Squeegee with rubber edging
- Extended side broom reach
- In-cab controlled variable speed side brooms

Paint

Body: High-gloss white powdercoat
Custom colors available
Undercarriage: Grey powdercoat

Chassis

Autocar Xpert, Freightliner M2, or International 4300. Contact your Elgin Dealer for detailed chassis specifications.

Warranty

Sweeper
1 year parts and labor
Engine
Consult Factory

Your Elgin Dealer is:

Elgin Sweeper Company
1300 W. Bartlett Rd.
Elgin, Illinois, U.S.A. 60120-7529
847-741-5370 Phone
847-742-3035 Fax
www.elginsweeper.com

Effective 01/14
Specifications subject to change without notice
P/N 0705395

Eagle Four Wheel Mechanical Sweeper

Eagle® E and F

ELGIN®

OPERATORS MANUAL

EAGLE® SERIES E and F

OPERATORS MANUAL

Sweeper Serial Number_____

Elgin Sweeper Company
Subsidiary of Federal Signal Corporation
1300 W. Bartlett Road, Elgin, IL 60120
Phone 847/741-5370
FAX 847/742-3035

P/N 0701480-D

Welcome to the World's Most Popular Four-Wheel Broom Sweeper - The Elgin Eagle® Series E and F

This manual will assist in the proper operation and care of the Elgin Eagle Series E and F Sweeper. It contains specific information on features and specifications, suggested operating techniques, preventive maintenance hints and instructions for making repairs and adjustments.

Read this manual carefully and completely before operating the sweeper. Working with unfamiliar equipment can lead to accidents. *Understand and follow all safety information when operating the sweeper.*

Elgin employees carefully inspected the sweeper before it left the factory. Your Elgin equipment dealer inspected the sweeper and made certain that it was in proper working order prior to delivery.

To keep the Eagle sweeper in good working condition, it is important to follow all maintenance and service schedules, including

DAILY SERVICE - After every shift or 10 hours

PERIODIC SERVICE - After each period of 50, 150, 500 or 1000 hours

Refer to the maintenance schedule in the Maintenance Section. This schedule is also displayed on the fuel tank.

Keep this manual in the cab of the sweeper for reference. If a problem develops with the sweeper, your Elgin Dealer has the factory-trained service personnel, genuine Elgin parts and necessary tools and equipment to meet your specific needs.

If you should need to contact the factory regarding operation, maintenance or repair, please feel free to call Elgin at 847/741-5370.

Subsidiary of Federal Signal Corporation

LIMITED WARRANTY

ELGIN SWEEPER COMPANY warrants each new machine manufactured by it against defects in material and workmanship provided the machine is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of twelve (12) months from the date of delivery to the original user-purchaser.

ELGIN SWEEPER COMPANY will cause to be repaired or replaced, as the Company may elect, any part or parts of such machine which the Company's examination discloses to be defective in material or workmanship.

Repairs or replacements are to be made at the selling Elgin distributor's location or at other locations approved by ELGIN SWEEPER COMPANY.

The ELGIN SWEEPER COMPANY warranty shall not apply to:

1. Major components or trade accessories such as trucks, engines, tires or batteries that have a separate warranty by the original manufacturer.
2. Normal adjustments and maintenance services.
3. Normal wear parts such as broom filters, broom wire, shoe runners and rubber deflector.
4. Failures resulting from the machine being operated in a manner or for a purpose not recommended by ELGIN SWEEPER COMPANY.
5. Repairs, modifications or alterations which, in the Company's sole judgment, have adversely affected the machine's stability or reliability.
6. Items subjected to misuse, negligence, accident or improper maintenance.

The use in the product of any part other than parts approved by ELGIN SWEEPER COMPANY may invalidate this warranty. ELGIN SWEEPER COMPANY reserves the right to determine, in its sole discretion, if the use of non-approved parts operates to invalidate the warranty.

Nothing contained in this warrant shall make ELGIN SWEEPER COMPANY liable for loss, injury or damage of any kind to any person or entity resulting from any defect or failure in the machine.

TO THE EXTENT LIMITED BY LAW, THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

This warranty is also in lieu of all other obligations or liabilities on the part of ELGIN SWEEPER COMPANY, including but not limited to, liability for incidental and consequential damages on the part of the Company or the seller.

ELGIN SWEEPER COMPANY makes no representation that the machine has the capacity to perform any functions other than as contained in the Company's written literature, catalogs or specification accompanying delivery of the machine.

No person or affiliated company representative is authorized to give any other warranties or to assume any other liability on behalf of ELGIN SWEEPER COMPANY in connection with the sale, servicing or repair of any machine manufactured by the Company.

ELGIN SWEEPER COMPANY reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

ELGIN SWEEPER COMPANY, Elgin, Illinois, U.S.A.

Table of Contents

SAFETY INFORMATION

RECOGNIZE SAFETY INFORMATION

⚠ This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

A signal word – DANGER, WARNING, or CAUTION – is used with the safety-alert symbol. DANGER identifies the most serious hazards.

This symbol and these signal words appear on the machine and in the operator's manual. Read and understand the following definitions of the signal words before operating or working on the machine.

⚠ DANGER DANGER is used to indicate the presence of a hazard which will cause severe personal injury, death, if the warning is ignored.

⚠ WARNING WARNING is used to indicate the presence of a hazard which can cause severe personal injury or death, if the warning is ignored.

⚠ CAUTION CAUTION is used to indicate the presence of a hazard which will or can cause minor personal injury, if the warning is ignored.

An additional signal word – NOTICE – is used to alert the reader to information that does not deal with personal safety.

NOTICE NOTICE is used to notify people of installation, operation, or maintenance information which is important but not hazard-related.

CALIFORNIA PROPOSITION 65 WARNING

CALIFORNIA
PROPOSITION 65 WARNING
Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

Please note this warning and remember:

- Always start and operate the engine in a well-ventilated area;
- If in an enclosed area, vent the exhaust to the outside;
- Do not modify or tamper with the exhaust system.

FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs.
Replacement safety signs are available from your Elgin Sweeper dealer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate the machine without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your Elgin Sweeper dealer.

WEAR APPROPRIATE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job. Exercise caution with anything that could be caught in the machinery, such as jewelry and long hair.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating the machine. Use caution while using a cellular telephone while operating the equipment.

HANDLE FUEL SAFELY — AVOID FIRES

Handle fuel with care. It is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks.

Always stop the engine before refueling the machine. Fill the fuel tank outside.

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

DRIVING THE SWEEPER

Operate the sweeper *only* when all guards are fitted and in their correct position. Before moving the machine, check the immediate vicinity of the machine for bystanders. Use the horn as a warning immediately before moving the machine.

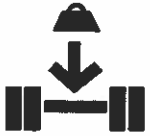
AVOID CONTACT WITH MOVING PARTS

Everyone must be clear of the sweeper before the engine is started and before the brooms are started.

Many moving parts, such as the side brooms, cannot be completely shielded, due to their function. Stay clear of these moving elements during operation.

Keep hands, feet, and clothing away from power driven parts.

AVOID OVERLOADS



Observe the maximum permissible axle loads and total weights.

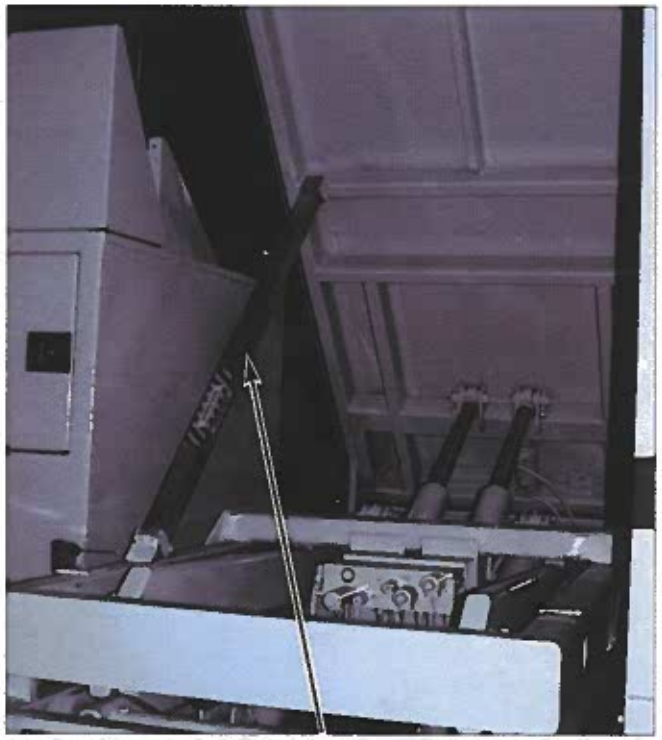
PARK SWEEPER SAFELY

Set the parking brake, turn off the engine and remove the keys.

HOPPER SAFETY SUPPORTS
(Serial number F-1000 and above)

⚠ WARNING
To prevent damage or injury, check for obstructions above and in front of the machine, before raising or tilting the hopper. When the EAGLE Series-F hopper is fully raised, its highest point is over 21 feet above the ground. Overhead wires, cables or tree branches can be easily snapped by the hopper and hardly felt by the operator.

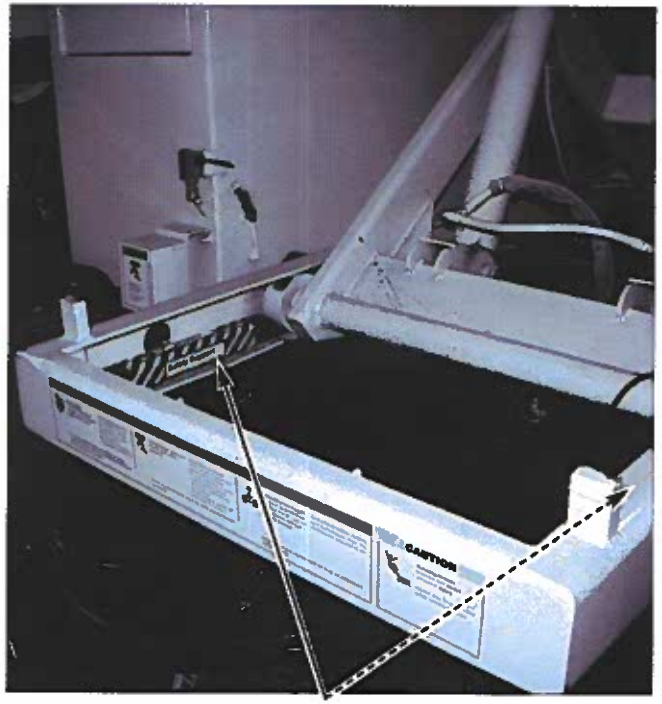
⚠ WARNING
DO NOT work under or around a raised hopper without adequate safety bracing to support the hopper in the event of a hydraulic failure. The best method for safe access to the machine behind the hopper is with the hopper tilted outward in the dump position with the hopper tilt support bar in place.



HOPPER TILT SUPPORT BAR (IN PLACE)

⚠ WARNING

DO NOT work under a raised hopper without adequate safety bracing to support the hopper in the event of a hydraulic failure. If access to the machine under the hopper is required, be certain the raised hopper safety bar is in place.



RAISED HOPPER SAFETY BAR (IN PLACE)

AVOID ELECTRICAL POWER LINES

Do not raise the hopper while under power lines.

Do not raise the hopper while under trees, bridges, etc.

Lower the hopper to transport position before moving the machine.

AVOID MACHINE INSTABILITY

Parking brake must be set before raising the hopper.

Raise the hopper only when the sweeper is parked on firm, level surfaces.

Lower the hopper to transport position before moving the machine.

PRACTICE SAFE MAINTENANCE

Keep the area clean and dry. Remove any build-up of grease, oil or debris.

Never lubricate or service the machine while it is moving. Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts.

PREVENT BATTERY EXPLOSIONS

Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by

placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove the grounded (–) battery cable first and replace it last.

Do not charge a frozen battery; it may explode. Warm the battery to 60° F (16 °C).

AVOID OVERLOADING ELECTRICAL SYSTEM

Before modifying, adding, removing, etc. any electrical/electronic component(s), verify that the circuitry and components do not overload the electrical system.

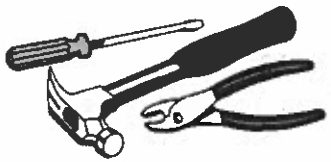
Contact your Elgin Sweeper dealer, if you have any questions or need assistance.

AVOID HIGH PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin, causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other high pressure lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids. If accident occurs, seek immediate medical attention.

Keep hands and body away from pinholes and nozzles which eject fluids under high pressure.

USE PROPER TOOLS



Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards. Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners, or vice versa. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting Elgin Sweeper specifications.

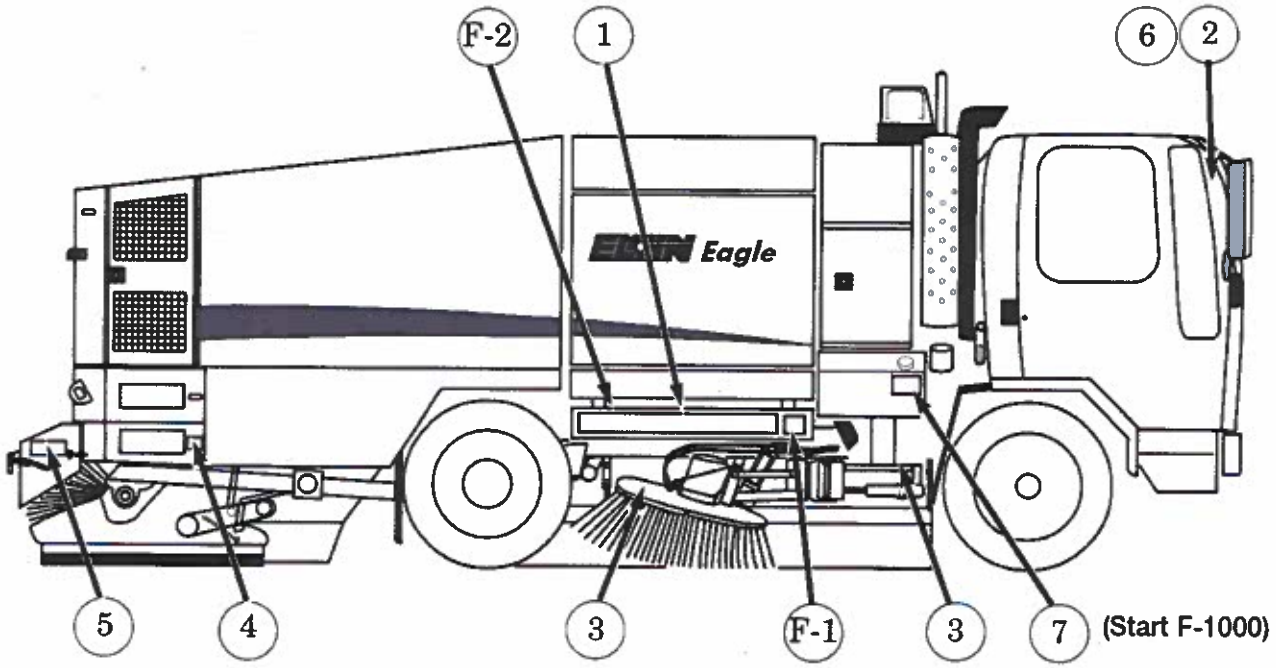
OBSERVE ENVIRONMENTAL PROTECTION REGULATIONS

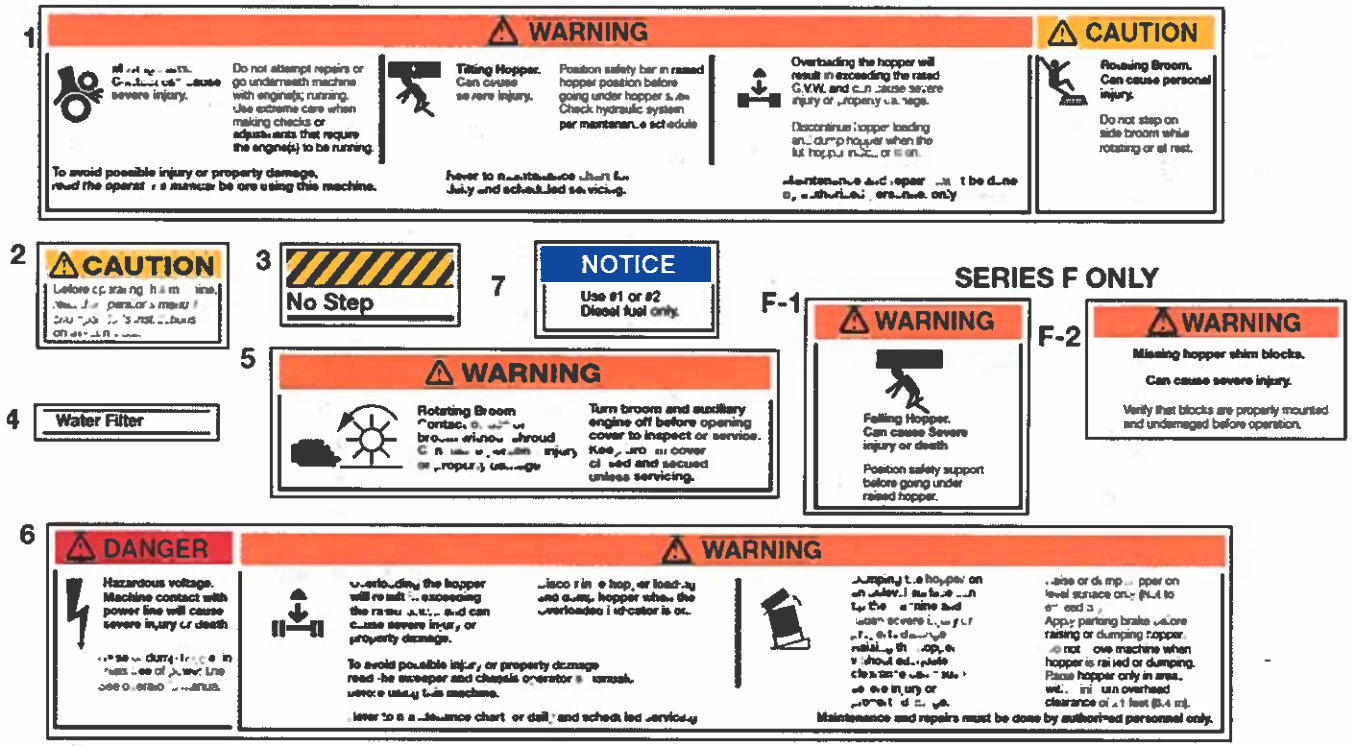
Be mindful of the environment and ecology.

Before draining any fluids, find out the correct way to dispose of them.

Observe the relevant environmental protection regulations when disposing of oil, fuel, coolant, brake fluid, filters, and batteries.

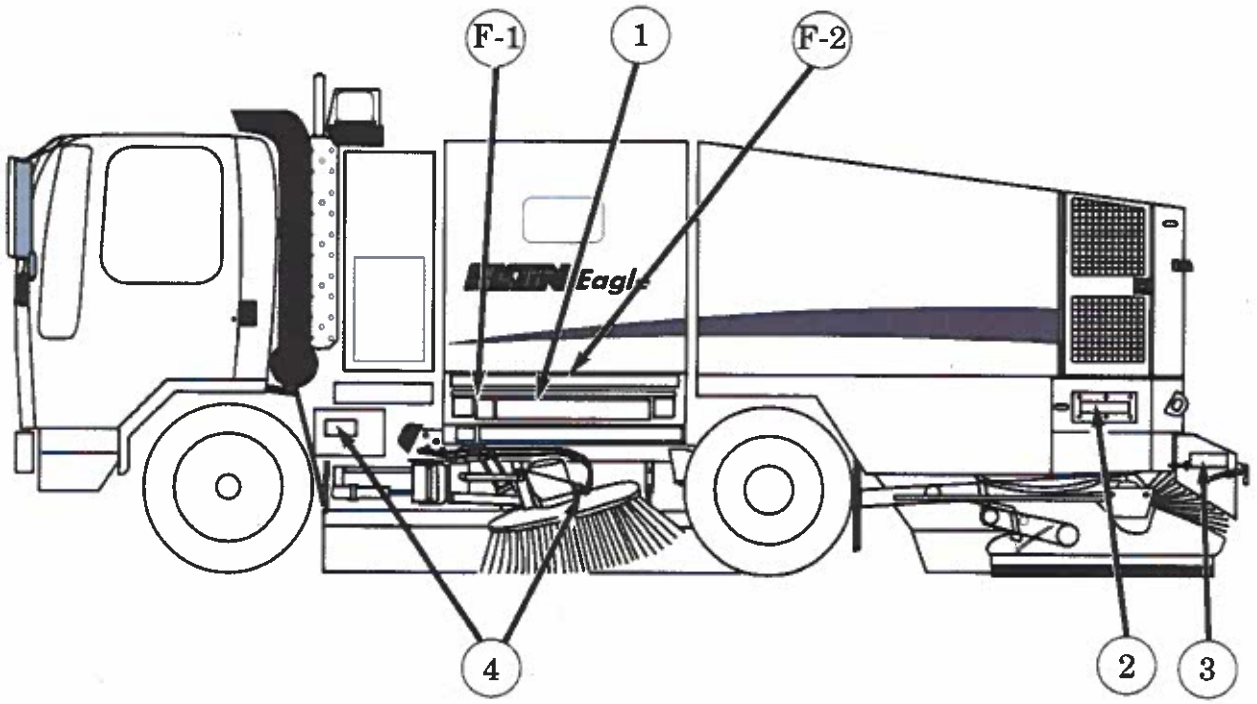
EAGLE SAFETY LABELS - PART ONE OF THREE

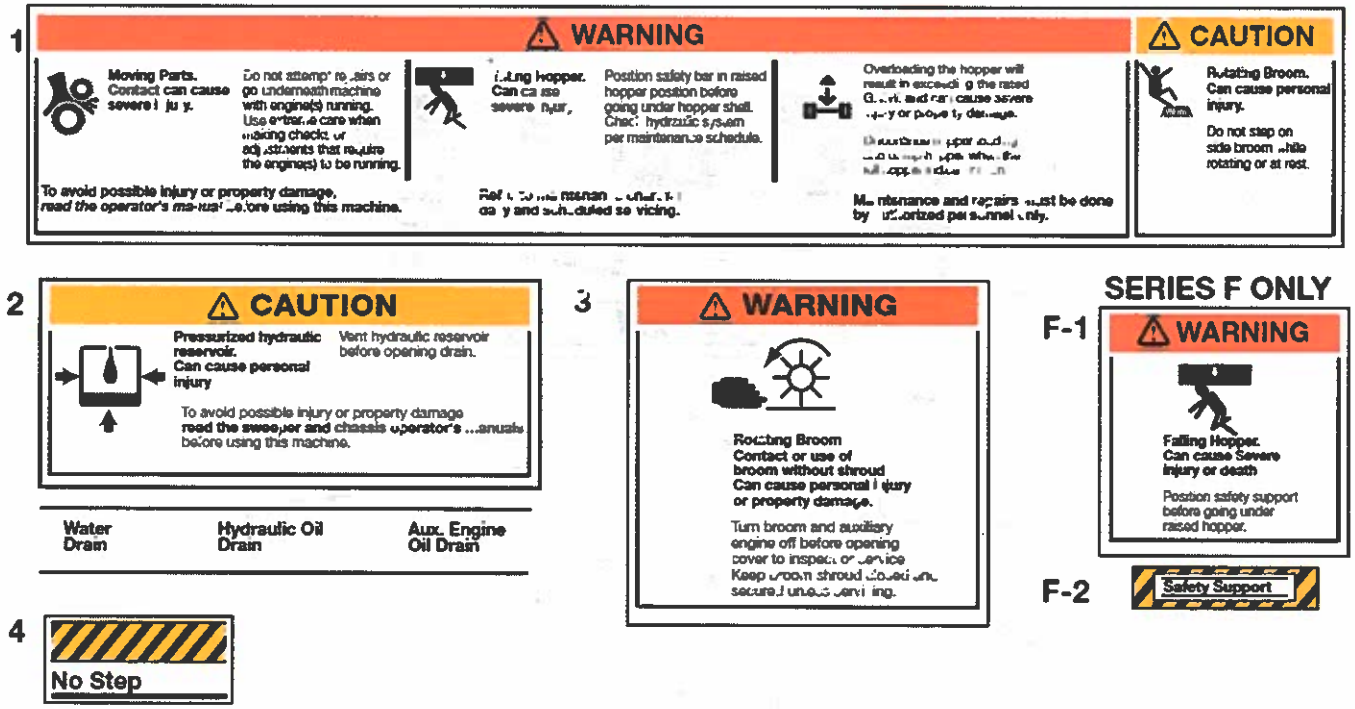




Safety decals - Right side of Eagle

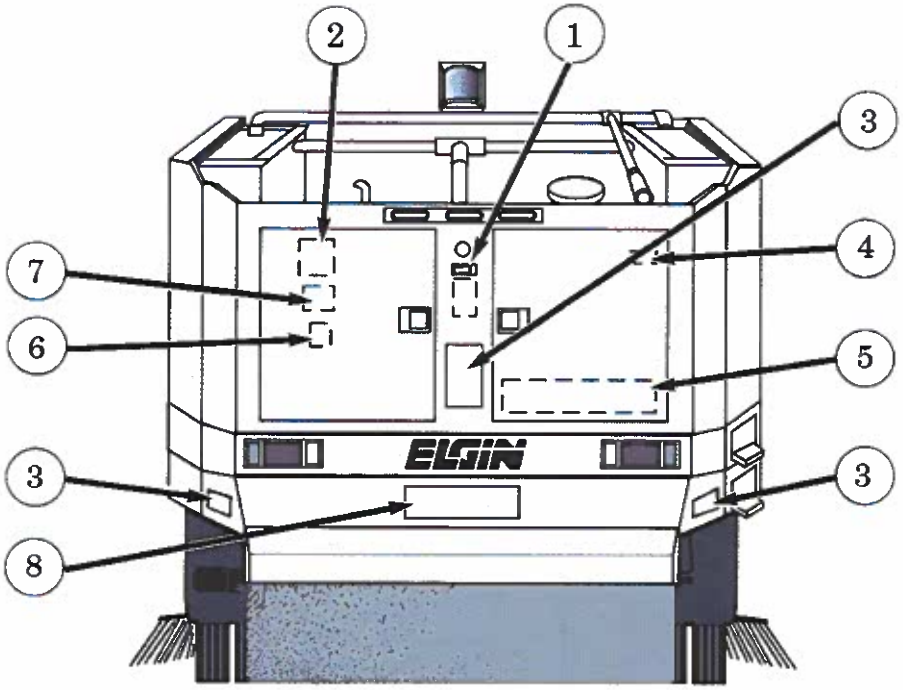
EAGLE SAFETY LABELS - PART TWO OF THREE

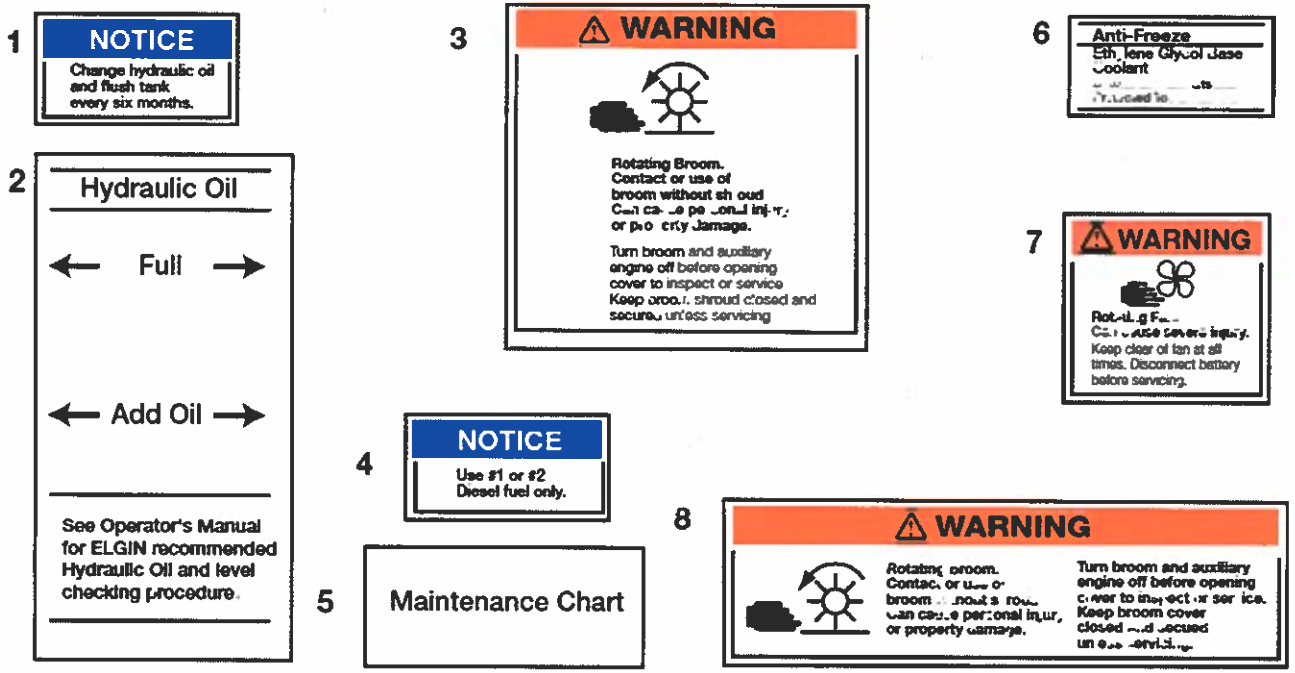




Safety decals - Left side of Eagle

EAGLE SAFETY LABELS - PART THREE OF THREE





Safety decals - Rear of Eagle

DESCRIPTION

ELGIN EAGLE® Series E & F Sweeper

efficiently cleans large, paved areas like streets, parking lots, and construction sites. Available in Series E, low dump or Series F, variable height dump. Side brooms and main broom help to bring debris out of the gutter and onto the conveyor.

HISTORY OF SWEEPING
PRINCIPLES OF OPERATION

WHY SWEEP?

Street sweeping is an essential part of sanitation. In health, ecology and aesthetics, the community benefits from clean streets. Clean streets reduce dust and dust-borne contaminants, bacteria from decomposition of organic matter, pollutants entering stormwater systems and accidents due to debris in the roadway. Community pride is enhanced by a clean environment. People are less likely to litter in a clean area. Tourists have a positive first impression of the community, which may encourage them to stay longer and return more often.

HISTORY OF SWEEPING

At the turn of the century, streets were in terrible condition. Most were unpaved, creating dust in dry seasons and mud in rainy seasons and harboring disease-producing bacteria. Gradually streets were paved with cobblestones and bricks. This decreased, but did not eliminate dust and mud. Droppings from horses, garbage, paper and other litter also needed to be removed. As populations grew, so did this problem. By 1914 motorized vehicles were becoming more popular, displacing horse-drawn vehicles and replacing one set of problems with

Figure D-1
1914 Elgin Sweeper in Boise, Idaho

another. That year Boise, Idaho received the first motorized street sweeper (Figure D-1), manufactured by Elgin Sweeper.

As society changed, the demands on sweepers also changed. Litter, dust, leaves and grass still remain. Add to that sand and salt from the winter's snow removal and metal and rubber from cars and trucks. Airport runways must be kept immaculate; a small piece of metal on a runway can cause havoc with a jet engine. Parking lots and garages have replaced stables. Environmental concerns mean not only cleaning the streets, but keeping the collected debris out of the air and waterways.

In 1964 Elgin introduced the most popular sweeper ever, the Pelican, a mechanical sweeper. Elgin's first vacuum sweeper, the Whirlwind, entered the market in 1969 and in 1983 the Crosswind, a recirculating air sweeper joined the ranks of Elgin street sweepers. Next, in 1988 came the Eagle, a four-wheel mechanical sweeper that can be driven at highway speeds. The year 1996 saw the addition of the Fast Sweeping Crosswind FSX and the GeoVac to the product line.These sweepers answer the needs of the modern community.

The acquisition of Vactor Manufacturing by Federal Signal Corporation, Elgin Sweeper's parent company, added the vacuum sweeper, Sunvac III, to the Elgin product line in 1994.

MECHANICAL/BROOM SWEEPERS

Mechanical, or broom, sweepers remove debris by sweeping it onto a conveyor. The conveyor carries the debris to a hopper. The No-Jam™ hopper conveyor of Elgin Eagle was originally patented. This revolutionary design sweeps debris up onto the conveyor, eliminating the problems of jamming.

EAGLE

The Eagle offers the patented No-Jam ™ conveyor of the world's most popular sweeper, the Elgin Pelican, in a 4-wheel sweeper capable of travelling at highway speeds between sweep locations. The Eagle picks up large objects, such as branches, hub

caps and bottles. When the debris hopper is full, the Eagle hopper dumps onto the ground or at a variable height up to 9.5 ft. (2895 mm) with Series F Eagle.

WATER SPRAY

A water spray system controls dust during sweeping. Three nozzles at the front edge of each side broom and three more at the main broom spray water to moisten the dust being swept by the brooms.

The Elgin-designed centrifugal water pump can run-dry without damage.

The amount of water is adjustable through use of a switch inside the cab. Large 280-gallon (1060 L) polyethylene water tank (Figure F-2) capacity is standard on the Eagle.

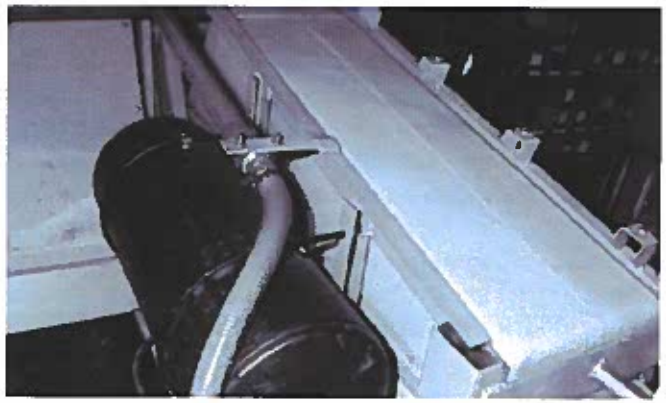


Figure D-2
Water tank (One of two)

BROOMS

Hydraulically-driven brooms sweep the debris on the street onto the conveyor. The main broom is located behind the lower edge of the conveyor and directs the debris toward the conveyor.

Figure D-3
Side broom

Large 42 in. (1.1 m) side brooms (Figure D-3) are available on both the right and left sides. For sweeping these are lowered and rotated to move gutter debris to the conveyor. Speed of the brooms is controlled in-cab, independently of the truck engine speed.

Digging pressure on all brooms is controlled from the cab. The pattern that the brooms produce when the sweeper is stationary is a tool to evaluate the most efficient positioning and pressure of the brooms. The brooms can be adjusted to produce the best pattern and the best result.

CONVEYOR

The heavy-duty, No Jam™ debris conveyor (Figure D-4) transports debris deposited on it by the main broom to the hopper. The high-strength belt-type conveyor conveys bulky items to the hopper without jamming.

Conveyor speed is controlled from in-cab and can reverse without reversing the brooms.Conveyor speed is independent of the truck engine speed.

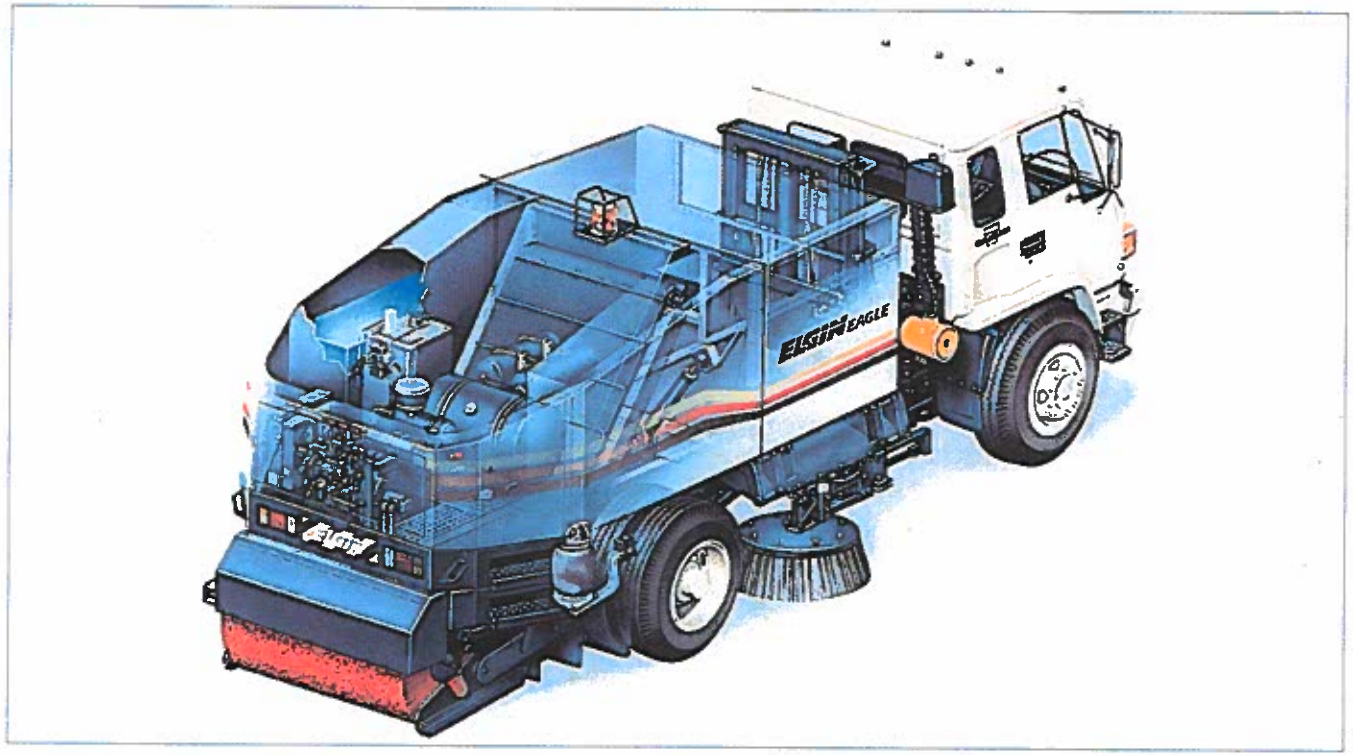


Figure D-4
Eagle cross section showing conveyor and hopper

Pavement contact is maintained by rubber dirt shoes on the sides and rubber deflectors under the chassis. Optional carbide dirt shoes are available.

HOPPER

The side dump hopper (Figure D-4) is center-mounted for the best possible stability. With a volumetric capacity of 5.5 cu. yd. (4.2 cu.m) the Eagle Series E debris hopper can handle a material volume of 4.5 cu. yd. (3.4 cu. m.) to be dumped at hopper height.

The Eagle series F hopper can hold a volumetric capacity of 4.12 cu. yd. (3.2 cu.m) for a material volume of 3 cu. yd. (2.3 cu.m) to be dumped at a variable dump height of 9.5 ft (2.9 m) when measured at the bottom of the discharge door.

After dumping the hopper should be washed down for maximum efficiency and long life.

AIR BAG SUSPENSION

Self-leveling air bags and shocks (Figure D-5) located on the rear axle provide a solid rear axle suspension to ensure stability while dumping and superior sweeping performance.

Figure D-5
Suspension air bags

Operator comfort is improved by this suspension due to the minimizing of rough road conditions. The sweeper remains level, regardless of the load.

CONTROLS

Controls for all sweeping functions, including brooms and hopper, are powered through in-cab controls (Figure D-5), located comfortably within reach.

For a complete description of all controls, see the Operation Section.

Figure D-4
Eagle in-cab controls

GENERAL DATA

Sweeping paths
- One side broom .....7.5 ft (2286 mm)
- Two Side brooms ..... 10 ft (3048 mm)

Water system
- Tank capacity.....280 gal (1060 L)
- Filter.....100 mesh screen
- Spray nozzles.....3 per gutter broom
  3 at main broom
- Fill hose length .....16 ft 8 in (5.1 m) with NST coupling
- Washdown .....Integral cascade hopper /conveyor wash
- Pump.....Centrifugal, 5 gpm @ 40 psi

Hydraulic system
- Pump .....Three section gear drive with dual inlet
- Capacity ..... 23 GPM (82 L) @1800 RPM
- Return filter .....10 micron, full-flow with bypass
- Breather ..... 10 micron, spin-on
- Inlet strainer..... 100 mesh
- Reservoir capacity .....20 gal (76 L)

Electrical system
- Alternator .....95 amp standard
- Battery .....12 volt

Brooms
- Side broom diameter .....42 in (1100 mm)
- Main broom diameter .....35 in (889 mm)
- Main broom length.....60 in (1524 mm)

Conveyor
- Type.....Multiple ply reinforced rubber belt
- Speed.....Variable/forward & reverse, independent of brooms
- Flexibility.....9 in oscillation for large object passage
- Lift control .....Pneumatic

Debris Hopper - SERIES F

Maximum dump height (Bottom of discharge door).....Up to 9 ft 6 in (2895 mm)
Design lift capacity .....9,000 lbs (4,080 kg)
Volumetric capacity ..... 4.12 yd^3 (3.2 m^3)
Material volume.....3 yd^3 (2.3 m^3)
Maximum hopper dump angle ..... 45°
Lifting method ..... Single cylinder, triple stage mast

Debris Hopper - SERIES E

Maximum dump height (Bottom of discharge door).....26 in (70 mm)
Design lift capacity .....13,500 lbs (6,124 kg)
Volumetric capacity ..... 5.5 yd^3 (4.2 m^3)
Material volume.....4.5 yd^3 (3.4 m^3)
Maximum hopper dump angle ..... 50°

Fuel tank capacity

Standard ..... common 50 gal (190 L)

Auxiliary Engine

Isuzu Diesel Model C-240

Cylinders .....4, in-line
Displacement .....144 CID (2.3 L)
Horsepower .....49 HP (40 kW) governed @ 2500 RPM
Torque..... 115 lb-ft (156 Nm) @ 2000 RPM
Compression Ratio 20:1
Bore..... 3.39 in (86 mm)
Stroke..... 4.02 in (102 mm)

Refill capacities

Engine crankcase with filter.....13.5 qt (13 L)
Hydraulic system .....140 qt (135.2 L)

NOTICE

Elgin Sweeper Company recommends Texaco Rando HDZ 68 or equivalent hydraulic oil.. Use of any fluid not approved by Elgin Sweeper Company can void all hydraulic component warranties.

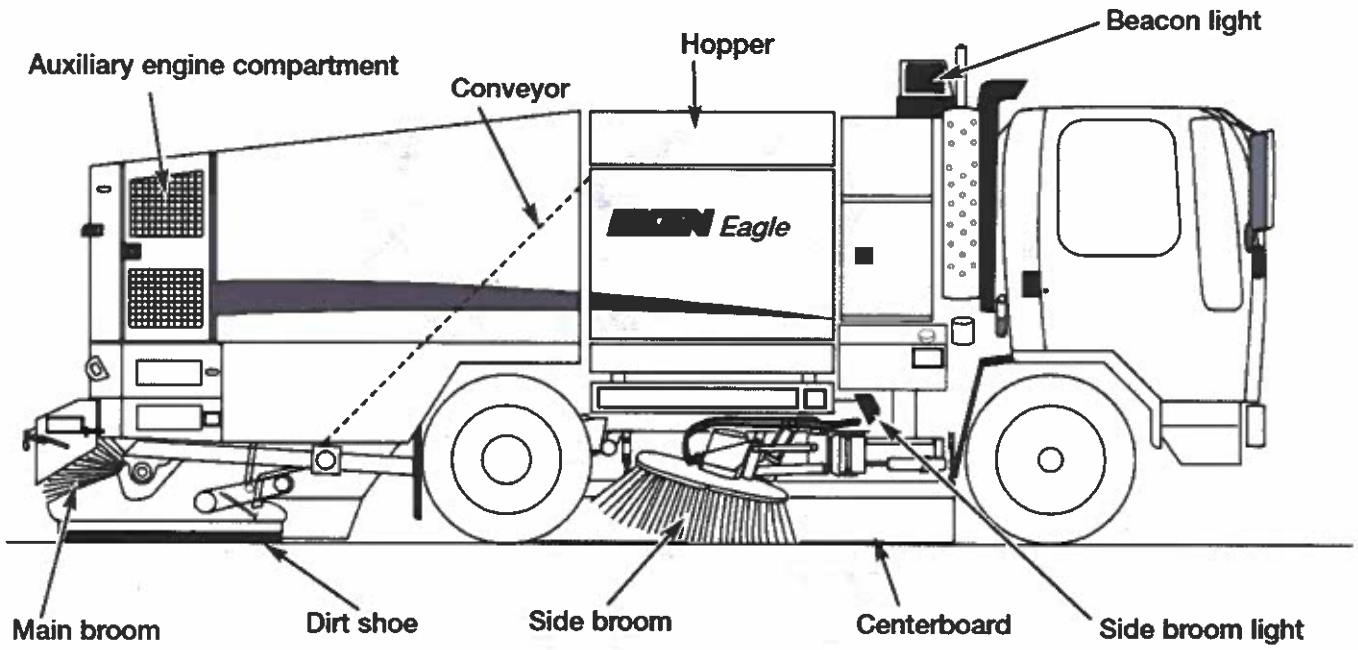


Figure D-7
Eagle F Side View

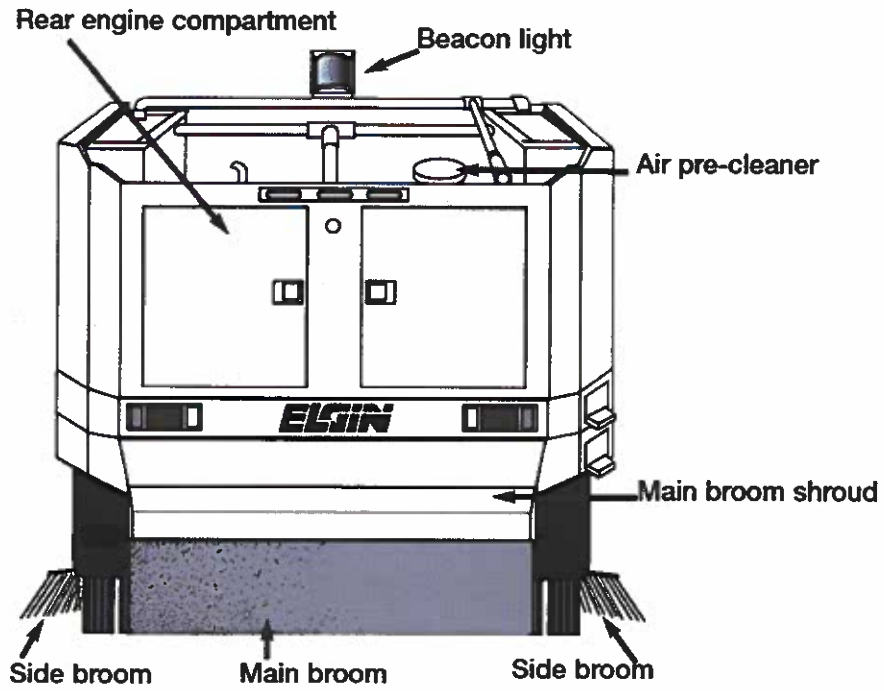


Figure D-9
Eagle F Rear View

OPERATION

Before operating the Elgin Eagle, be certain that you have read and unde. stand all safety and operation :nfo. mation. If you have any ,uestions, contact your supervisor before proceeding.

INSTRUMENTS AND CONTROLS

The numbers below refer to those indicated on Figure O-1 on page O-2.

1 **LEFT SIDE BROOM IN / OUT** - Controls movement of the left side broom in and out. Press switch until broom is fully extended.

2 **LEFT SIDE BROOM UP / DOWN / ROTATE** - Controls up and down movement and rotation of left side broom. After side broom is extended (Switch #1), press this switch forward to lower and rotate the broom.

3 **LEFT SIDE BROOM SPRAY WATER ON / OFF** - Turns the spray water at the left side broom and main broom on and off.

4 **LEFT SIDE BROOM LIGHT ON / OFF** - Turns the light at the left side broom on and off.

5 **RIGHT SIDE BROOM IN / OUT** Controls movement of the left side broom in and out. Press switch until broom is fully extended.

6 **RIGHT SIDE BROOM UP / DOWN / ROTATE** - Controls up and down movement and rotation of right side broom. After side broom is extended (Switch #5), press this switch forward to lower and rotate the broom.

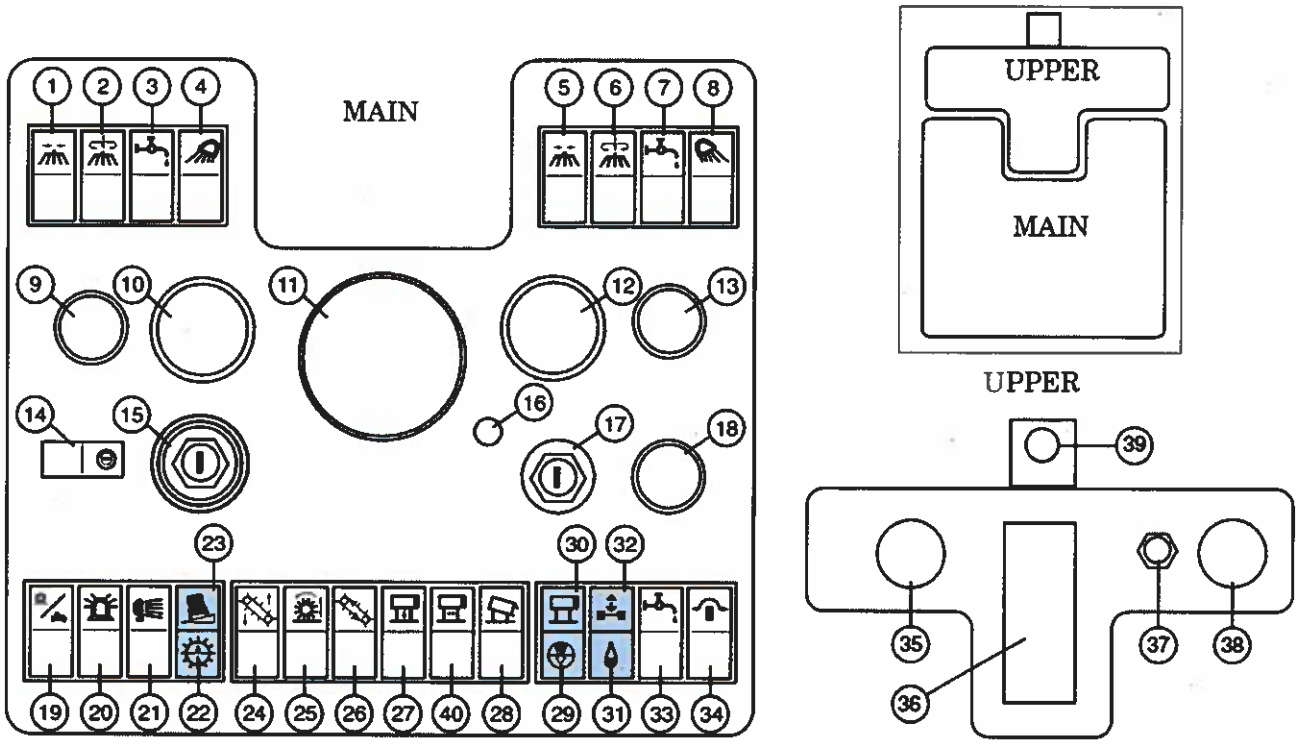


Figure O-1
Control Console

7 **RIGHT SIDE BROOM SPRAY WATER ON / OFF** - Turns the spray water at the right side broom and main broom on and off.

8 **RIGHT SIDE BROOM LIGHT ON / OFF** - Turns the light at the right side broom on and off.

9 **LEFT SIDE BROOM PRESSURE REGULATOR** - Regulates the downward pressure on the left side broom. Lift locking knob and turn to adjust. Push down on locking knob to lock at desired pressure setting.

10 **COOLANT TEMPERATURE GAUGE** - Indicates the temperature of the engine coolant. If the needle nears the highest temperature, stop and check the level of the coolant.

11 **TACHOMETER/HOUR METER** - Indicates the speed of the engine in thousands of revolutions per minute (rpm). After initial start-up idling, hour meter records engine running hours.

12 **OIL PRESSURE GAUGE** - Indicates engine oil pressure. If the needle indicates low oil pressure, stop and check the oil level.

13 **RIGHT SIDE BROOM PRESSURE REGULATOR** - Regulates the downward pressure on the right side broom. Lift locking knob and turn to adjust. Push down on locking knob to lock at desired pressure setting.

14 **STEERING CIRCUIT CONTROL** - Switches the dualized chassis steering from left to right.

15 **CHASSIS ENGINE IGNITION** - See Operator's Manual for truck chassis.

16 **AUXILIARY ENGINE RUN LIGHT** - When on, indicates that the auxiliary engine is running.

17 **AUXILIARY ENGINE IGNITION** - Turns the auxiliary engine, which powers the sweeping functions, on and off.

18 **MAIN BROOM PRESSURE REGULATOR** - Regulates the downward pressure on the main broom. Lift locking knob and turn to adjust. Push down on locking knob to to lock at desired pressure setting.

19 **SWEEP/TRANSPORT CIRCUIT SELECT** - Switches the sweeper from sweep to transport mode.

20 **BEACON LIGHT ON/OFF (Optional)** - Turns the optional beacon light on and off.

21 **FLOODLIGHT ON/OFF** - Turns the floodlight on and off. The right hand rear floodlight is standard. An optional Left hand floodlight is available.

22 **HYDRAULIC FILTER RESTRICTION INDICATOR** - Indicates that the return filter at the hydraulic fluid reservoir is clogged and in need of service.

23 **TILT WARNING INDICATOR** - Indicates that the machine is not level. If this light is on, the hopper must NOT be raised.

24 **CONVEYOR UP/DOWN** - Controls the lowering and raising of the conveyor. Pressing forward on the switch puts the conveyor and dirt shoes into sweep position. Pressing rearward raises conveyor and dirt shoes to transport position.

25 **MAIN BROOM UP / DOWN / ROTATE** - Controls the raising, lowering and rotation of the main broom. Pressing forward on switch will lower and rotate the main broom. Pressing rearward will raise broom and stop rotation.

26 **CONVEYOR ROTATE ON/OFF** - Controls the rotation of the conveyor, both forward and reverse. Pressing forward will rotate conveyor forward. Pressing rearward will rotate conveyor rearward.

27 **HOPPER UP/DOWN** (F-Series Only)- Raises and lowers the hopper. Press forward on switch to raise hopper until desired position is reached. Press rearward to lower hopper.

28 **HOPPER DUMP** - Causes the hopper to dump and to roll back to normal position. Pressing forward will open hopper door and tilt the hopper. Pressing rearward will roll back the hopper and close hopper door.

29 **AIR FILTER RESTRICTION INDICATOR** - Indicates that the engine air filter is clogged and in need of service.

30 **HOPPER UP INDICATOR** - Indicates that the hopper is in a raised position.

31 **NO SPRAY WATER INDICATOR** - Indicates that the supply in the water tank has been completely used up. Fill water tank to turn off indicator.

32 **HOPPER FULL INDICATOR** - Indicates that the hopper has reached its maximum weight limit.

33 **SPRAY WATER FLOW** - A three-way switch that controls the volume of water used..Can be set for Low, Medium or High

34 **SHUTDOWN OVERRIDE** (optional) - Automatic engine shutdown protects against damage from high coolant temperature, low engine oil pressure or low hydraulic oil level. To start an engine with this feature, depress this switch while starting the engine.

35 **MAIN BROOM AIR PRESSURE GAUGE** - Indicates digging pressure of the main broom. A lower pressure indicates

greater digging force. A higher pressure indicates less digging force.

36 **GEAR SHIFT SELECTOR** - See chassis manufacturer's Operator's Manual.

37 **AUXILIARY ENGINE THROTTLE CONTROL**- To raise engine rpm, depress button on throttle knob to relase lock and pull throttle knob up. For fine adjustments rotate knob.

38 **SIDE BROOM AIR PRESSURE GAUGE** (optional) - In digging pressure of the side broom(s). Lower pressure indicates greater digging force. A higher pressure indicates less digging force.

39 **AIR BRAKE**

40 **HOPPER SIDE SHIFT OUT/OFF/IN** - Moves the hopper horizontally.

OPERATING CHECKLIST

Successful operation of the Eagle depends on the following standard daily procedures.

Always follow all recommendations of the chassis manufacturer.

Engine (Auxiliary and Truck)
Always follow all recommendation of the truck and auxiliary engine manufacturers.

- Check engine oil level.
- Check radiator coolant level.
- Check battery fluid level (if applicable).
- Check belts for wear and proper tension.

NOTICE

Use #1 or #2 diesel fuel only.

- Check fuel tank. Fill, if necessary. Filling the tank at the end of the shift will prevent condensation in the tank as moist air cools.
- Clean engine pre-cleaner (if applicable).

- Check and clean the engine air filter if necessary.
- Drain the water separator on the fuel filter.
- Check hydraulic oil reservoir level.

Lights, Mirrors, Tires

- Check directional and safety lights.
- Check backup alarm.
- Check tires for correct pressure, according to tire manufacturer.
- Check mirrors for visibility.
- Check windshield wipers and wiper fluid.

Spray Water

- Check spray water filter.
- Fill water tank after flushing hydrant. Flush hydrant before connecting to fill hose to remove impurities in the water. Fill to overflowing.

Sweeping Components

- Build up air pressure to check sweep functions.
- Check dirt shoes and dirt deflectors for wear and for proper adjustment.
- Check main broom for wear.
- Check side brooms for wear.
- Check main broom pattern.
- Check side broom patterns.
- Check centerboard dirt deflector for wear and adjustment.
- Check conveyor for wear and alignment.

STARTING THE UNIT

⚠ WARNING

Always start and operate diesel engines in a well-ventilated area. If in an enclosed area, vent exhaust to the outside. DO NOT modify or tamper with exhaust system.

NOTICE

When getting into sweeper cab, always use grab handles. Do not use steering wheel. Pulling on steering wheel may damage steering column.

Follow all directions of the truck engine manufacturer.

1. Make sure parking brake is engaged.

2. Start the truck engine before the auxiliary engine.

3. Sweep/Transport Circuit Select Switch (#19) must be in transport mode. Do not start the auxiliary engine with switch in Sweep position.

3. If unit is equipped with the optional Shutdown Override to protect from damage due to high coolant temperature, low engine oil pressure or low hydraulic oil level, depress the Shutdown Override Switch (#34, Figure O-1) while starting the engine.

NOTICE

Never operate the starter for more than 10 seconds. Longer operation will lead to an over discharge of the batteries, as well as starter seizure. Wait at least 30 seconds between attempts to start the engine.

4. Start the engine by turning the auxiliary ignition switch (#17) clockwise as far as it will go. Hold the switch in that position until the engine begins running, but no longer than 10

seconds. If the engine fails to start within 10 seconds, wait at least 30 seconds before trying again.

5. Allow the engine to warm up at normal idling speed of 1000 rpm. To raise rpm, depress button on Engine Throttle Control (#36) to release lock and pull throttle knob up. For fine tuning, rotate the throttle control clockwise or counterclockwise. Bring throttle speed up to the recommended speed for the type of sweeping. See Table O-1.

6. Check oil pressure and fuel gauges to be sure there are no problems.

7. If necessary, turn on lights using Floodlight Switch (#21) and the optional Beacon Light Switch (#20).

COLD WEATHER STARTING

NOTICE

If operating the Eagle in temperatures below 32°F (0° C), any water in the spray system will freeze.

NOTICE

Never operate the starter for more than 10 seconds. Longer operation will lead to an over discharge of the batteries, as well as starter seizure. Wait at least 30 seconds between attempts to start the engine.

Follow all directions of the truck engine manufacturer.

To start the auxiliary engine when cold, the basic procedure is as follows:

1. Turn the starter switch key counterclockwise to PRE-HEAT position. This will heat the glow plugs on the engine.

The pre-heat time required varies according to the type of pre-heating system.

WITH INDICATION LAMP:
The indication lamp will go off in 20 seconds.

WITH CONTROL RESISTANCE:
The control resistance coil will heat red in 25 to 30 seconds.

2. Turn the starter switch key clockwise to START position as soon as the indication lamp goes off or the control resistance coil red heats..

TRANSPORT

⚠CAUTION

With dual steering — Turning both steering wheels at the same time will damage the steering mechanism. Use only one steering wheel at a time to steer the Eagle.

1. Release parking brake.

2. Side broom(s) and main broom must be stopped. Brooms and conveyor must be raised before transport. If necessary, stop side broom rotation (right - #6, left - #2), main broom rotation (#25) and conveyor rotation (#26). Stopping rotation will raise the brooms. Raise the conveyor using Conveyor Up / Down (#24).

3. Move the side brooms in using Side Broom In / Out (right - #1, left - #5).

4. Set Sweep/Transport Circuit Select (#19) to transport.

Air springs on the rear axle will automatically raise the sweeper when the sweeper is switched to transport mode. This will provide smoother, more comfortable ride, utilizing full suspension.

When the sweeper is put into sweep mode, the air springs will automatically lower to provide solid rear axle support during sweeping and optimal stability for dumping.

SWEEPING

1. Before engaging sweeping components, bring the Eagle to a complete stop and idle the engine at 1000 rpm.

2. Select left or right steering using Steering Circuit Control (#14).

NOTICE

Never operate the starter for more than 10 seconds. Longer operation will lead to an over discharge of the batteries, as well as starter seizure. Wait at least 30 seconds between attempts to start the engine.

3. Start the engine by turning the auxiliary ignition switch (#17) clockwise as far as it will go. Hold the switch in that position until the engine begins running, but no longer than 10 seconds. If the engine fails to start within 10 seconds, wait at least 30 seconds before trying again.

If unit is equipped with optional Shutdown Override to protect from damage due to high coolant temperature, low engine oil pressure or low hydraulic oil level, depress the Shutdown Override Switch (#34, Figure O-1) while starting the engine.

4. Lower the conveyor, using the Conveyor Up / Down switch (#24).

5. Start conveyor rotation using the Conveyor Rotate Switch (#26).

6. Lower the main broom, using the Main Broom Up / Down / Rotate (#25).

7. Move the side brooms out using the Side Broom In/Out switches (#1 - left, #5 - right).

8. Lower the side broom(s), using the Side Broom Up / Down / Rotate Switch(es) (#2 - left, #6 - right).

9. Activate spray water, using the appropriate Side Broom Spray Water On / Off Switch (right - #3, left #7).

10. During sweeping, monitor the level of water in the spray water tank. Sweeping without water will result in poor dust suppression. The No Spray Water Indicator will light when the tank is empty.

Sweeping Conditions	Engine RPM	MPH
Light	2000	8 (15 km/h)
Medium	2250	5 - 8 8 - 15 km/h)
Heavy	2500	1 - 5 (2 - 8 km/h)

Table O-1
General Sweeping Guidelines

11. During sweeping, adjust the amount of spray water using Spray Water Flow (#33).

12. If necessary, turn on lights using:
    Side Broom Light Switch (left-#4, right-#8)
    Beacon Light Switch (optional) (#20)
    Floodlight Switch (standard for right side, optional for left side) (#21).

13. Use the Engine Throttle Control (#36) to set the recommended rpm according to sweeping conditions. See Chart O-1 for rpm and mph.

14. Shift transmission to Neutral.

15. Shift two-speed axle to Low.

16. Shift transmission to desired range for sweeping.

Sweeping with the axle in low range and the transmission in first gear will improve ground speed control and reduce the need to apply the brakes. This will also allow system air pressure to be maintained more easily.

The side mirror must be correctly adjusted to view side broom operation and location.

If during sweeping objects become jammed in the conveyor, the conveyor can be reversed. the Conveyor Rotate switch (#26) should be put in the neutral (center) position to stop the conveyor, then pressed rearward to reverse the conveyor.

NOTICE

Never operate the conveyor in reverse for more than 30 seconds. Doing so may cause misalignment of the belt and result in damage.

NOTICE

If the sweeper itself is shifted into reverse, the Elgin Eagle will automatically raise the sweeping components. These components will return to sweeping positions when the sweeper is shifted back to neutral or drive.

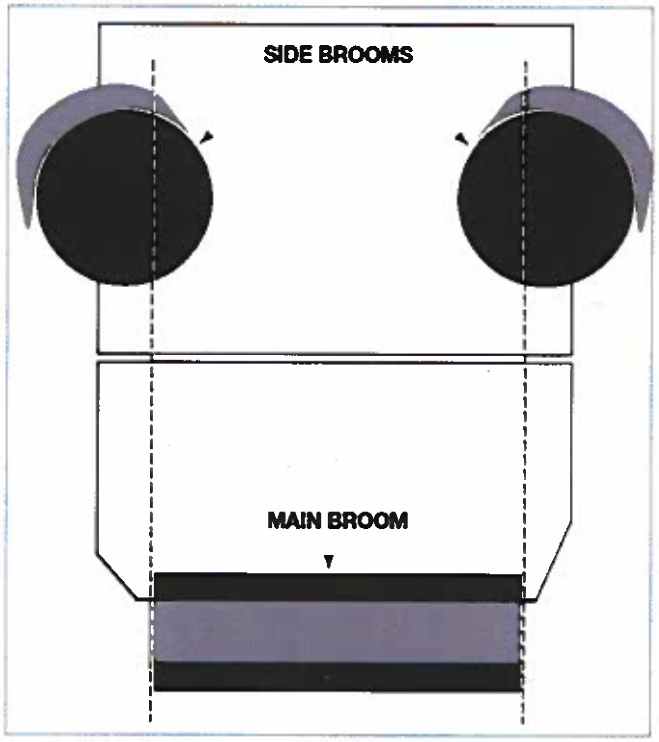


Figure O-2
Eagle Broom Patterns

SWEEPING PATTERNS

Broom sweeping patterns are a guideline of sweeping performance. Patterns should be checked daily.

The Eagle can produce sweeping paths of two widths:

With one side broom: 7.5 ft (2286 mm)
With two side brooms: 10 ft (3048 mm)

A pattern narrower than that in Figure O-5 indicates that there is too little broom contact, which will result in poor sweeping performance.

A pattern wider than the diagram will indicate excessive broom pattern, which will cause excessive broom wear.

If a side broom is set too flat, debris will be scattered instead of being directed to the path of the conveyor. This will result in poor sweeping performance.

To check the broom pattern:

1. Reduce engine speed to 1000 rpm.

2. Lower conveyor using Conveyor Up / Down (#24).

3. Lower and rotate the main and side broom(s).

4. Increase engine speed to 2500 rpm.

5. Check broom patterns by sweeping in one spot on a level paved surface for approximately 15 seconds.

6. Reduce engine speed to 1000 rpm.

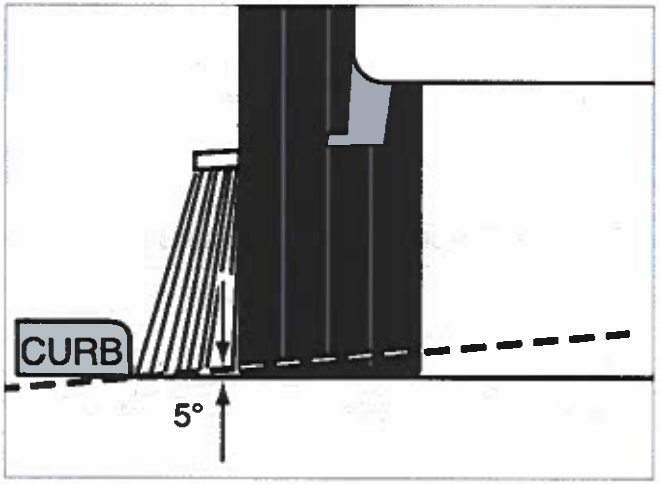


Figure O-3
Side Broom Outside Tilt

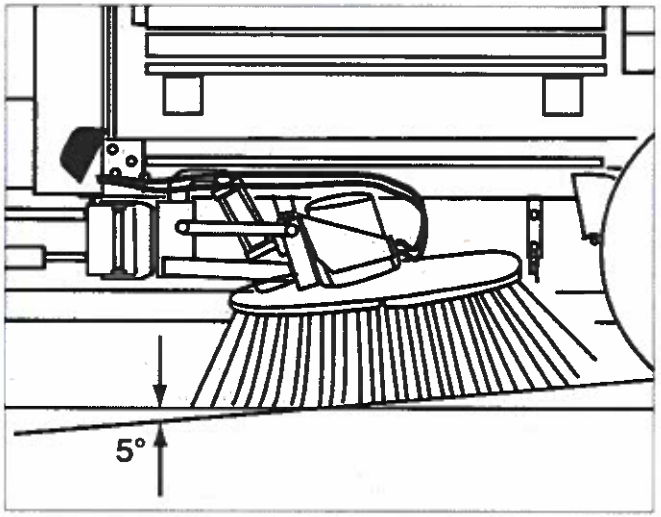


Figure O-4
Side Broom Forward Tilt

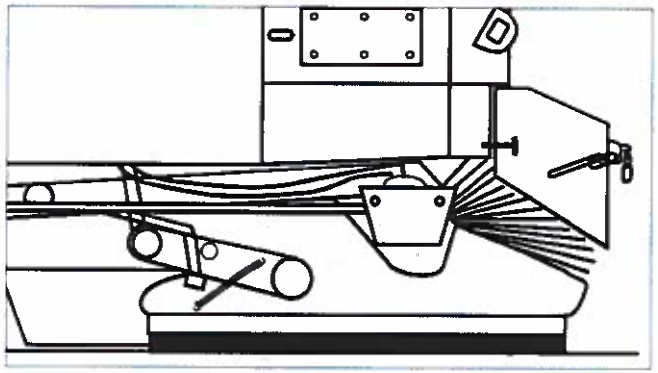


Figure O-5
Dirt Shoe

7. Raise the brooms and drive forward to reveal the patterns left by the brooms.

8. Side broom patterns should be crescent-shaped and approximately 4 inches wide at the top and should overlap the main broom pattern (Figure O-2).

9. Main broom pattern should be an even 4 to 6 inches wide and should not taper. After sweeping, the broom tips should have an even amount of dirt on all of them.

If the patterns do not conform to those in Figure O-2, adjust the brooms. See procedures in the Service Procedures Section.

10. Check side broom tilt with a protractor. The broom should tilt 5° forward and 5° to the outside for best sweeping performance under normal conditions (Figures O-3 and O-4). If the street to be swept is highly crowned, a greater angle may be needed.

Procedures to adjust side broom tilt are located in the Service Procedures Section.

While checking the broom patterns, also check the dirt shoes (Figure O-5) on each side of the main broom.

The dirt shoe housings should be flush with the main broom.

The dirt shoes should be level with the ground. Procedures for adjusting the dirt shoes are in the Service Procedures Section.

REVERSING THE CONVEYOR

The conveyor may be reversed, if necessary, for example, during washdown or if an object is jammed in the conveyor.

NOTICE

Do not operate the conveyor in reverse for more than 30 seconds. Doing so may cause misalignment of the conveyor belt and subsequent damage.

To reverse the conveyor, press the 3-position Conveyor Rotate Switch (#28) to Off and then to Reverse.

DUMPING THE HOPPER

⚠ DANGER

Before dumping the hopper check for adequate side and overhead clearance. Avoid all power lines, bridges, trees and any other possible hazards.

Series E sweeper requires approximately 50 in. (1.3 m) side clearance and 12.5 ft (3810 mm) overhead clearance.

Series F sweeper requires side by side align ment with receptacle. The hopper may tilt from a raised position of 11 in. (280 mm) up to 11.5 ft. (3505 mm). An overhead clearance of 21 ft. (6400 M) is required for Series F.

⚠ CAUTION

Overloading the hopper can cause personal injury or damage to the sweeper. Dump hopper frequently when loading heavy materials. Do NOT exceed Gross Vehicle Weight. If Full Load Indicator (#33, Figure O-1) is lit, stop sweeping and dump hopper.

1. Come to a complete stop on a level surface, aligned with debris receptacle or desired ground location.

2. Shift transmission to neutral.

3. Make sure parking brake is engaged.

NOTICE

The rear suspension air bags must be deflated (Sweep Mode) prior to dumping. The conveyor must be in the raised position. Interlock switches prevent dumping, if the suspension and conveyor are not properly positioned.

4. Put sweeper into sweep mode, using Sweep / Transport Circuit Select (#19).

5. Check Tilt Level Indicator (#23) to make sure sweeper is level. If this indicator light is on, move sweeper to level ground.

6. Stop rotation of conveyor, main broom and side broom(s) and raise using
   - Conveyor Rotate Switch (#26),
   - Conveyor Up / Down (#24)
   - Main Broom Rotate / Up / Down (#26)
   - Side Broom Rotate /Up / Down Switches (left - #2, right - #6).

7. Retract side brooms using Left Side Broom In / Out (#1) and/or Right Side Broom In / Out Switch (#4).

8. On Series F only, press Hopper up / Down switch (#27) to raise the hopper to the desired height

9. If there is room, press Hopper Side Shift switch (#40) to Out position to move hopper closer to receptacle.

NOTICE

Before dumping into receptacle, make sure the hopper is clear of the top of the receptacle.

10. Use Hopper Dump Switch (#28) to cause the hopper to dump.

11. After dumping is complete, press Hopper Dump Switch (#28) rearward to roll back hopper.

12. If hopper was shifted, press Hopper Side Shift switch (#40) to In position, until hopper returns to its normal position.

13. On Series F only, press Hopper Up / Down Switch (#27) rearward to lower hopper.

14. Put sweeper into transport mode, using Sweep / Transport Circuit Select (#19).

STOPPING THE SWEEPER

When stopping the sweeper, use the Engine Throttle Control to set the engine speed to Idle (1000 rpm). Allow the engine to idle for a few minutes. The exact length of time will vary according to the temperature of the air and the temperature of the engine.

This idling time will allow the lubricating oil and coolant to cool the combustion chambers, bearings, shafts, etc.

NOTICE

Engine speed must be reduced to idle (1000 rpm) for at least two minutes before shutdown. Failure to let the engine cool down will result in severe damage to the turbocharger.

AT END OF SHIFT

At the end of each shift the sweeper must be thoroughly washed down for continued high performance.

After washdown is complete, daily maintenance must be performed.

Complete instructions for washdown and daily maintenance can be found in the Service Procedures Section.

MAINTENANCE

SCHEDULED MAINTENANCE

Wash down machine after every sweeping shift. See Daily Washdown procedure later in this chapter.

DAILY SERVICE CHECKLIST

The numbers below correspond with the locations on Figures M-1, and M-2.

Service after every shift or 10 hours

1 Check Engine Oil Level - Oil Dipstick
2 Check Hydraulic Oil Level - Sight Tube
3 Check Radiator Coolant Level
4 Check Tire Inflation Pressure
5 Inspect Pre-Cleaner - Air Filter (Accessory)
6 Drain Water Separator - Engine
8 Wash Down Entire Machine - Flush Out Lower Conveyor Roller
9 Check Windshield Washer Fluid Level
10 Grease Lower Conveyor Roller Bearings (2)
11 Grease Upper Conveyor Roller Bearings (2)
12 Grease Dirt Shoe Pivot (2)
13 Check Side Broom Contact Pattern
Check Main Broom Contact Pattern
14 Inspect Water Filter
15 Service Truck Chassis

PERIODIC SERVICE CHECKLIST

The numbers below correspond with the locations on Figures M-1, and M-2.

Service after 50 hours Series E & F

16 Grease Side Broom Turnbuckles (2) (4)

17 Grease Dirt Shoe Pivot Plate

18 Grease Side Broom Pivot Pin

19 Inspect Spray Water Pump

20 Grease Dirt Shoe Cam Follower
Drain Sweep System Air Tank

The numbers below correspond with the locations on Figures M-1 and M-2.

Service after 150 hours Series E & F

24 Replace Engine Oil & Filter

25 Inspect Engine Air Intake System (or per indicator light)

26 Check Brake Master Cylinder Fluid Level (If Applicable)

27 Inspect Engine Drive Belts
Inspect V-belt of Spray Water Pump

28 Inspect and Clean Radiator Cooling Fins

ADDITIONAL Service after 150 hours
(Only for serial numbers up to F999)

Check mast chains for freeness and apply SAE #30 oil
Grease Chain Rollers
Flush Zirks as required
Check chains for tension
Check carriage and rails for sloppiness. Reshim if necessary

The numbers below correspond with the locations on Figures M-1, M-2, M-3 and M-4.

Service after 500 hours

33 Change Hydraulic Oil Reservoir Breather

34 Replace Hydraulic Oil Filter (or per indicator light)
Check Hydraulic Tank Cover Seals
Drain & Flush Hydraulic Oil Reservoir
Refill with new hydraulic oil..

NOTICE

Elgin Sweeper Company recommends Shell Tellus T-68 or equivalent hydraulic oil.. Use of any fluid not approved by Elgin Sweeper Company can void all hydraulic component warranties.

35 Check Side Broom For Wear
Check Main Broom For Wear

36 Check Anti-Freeze - Water Temperature Gauge

The numbers below correspond with the locations on Figures M-1, M-2, M-3 and M-4.

Service after 1000 hours Series E & F

41 Inspect Engine Fan Hub

42 Change / Flush Coolant - Ethylene Glycol Anti-Freeze

ADDITIONAL Service after 1000 hours (Only for serial numbers up to F999)

Clean mast chains completely either by steam or kerosene bathing; dry completely; lubricate with SAE #30 oil.

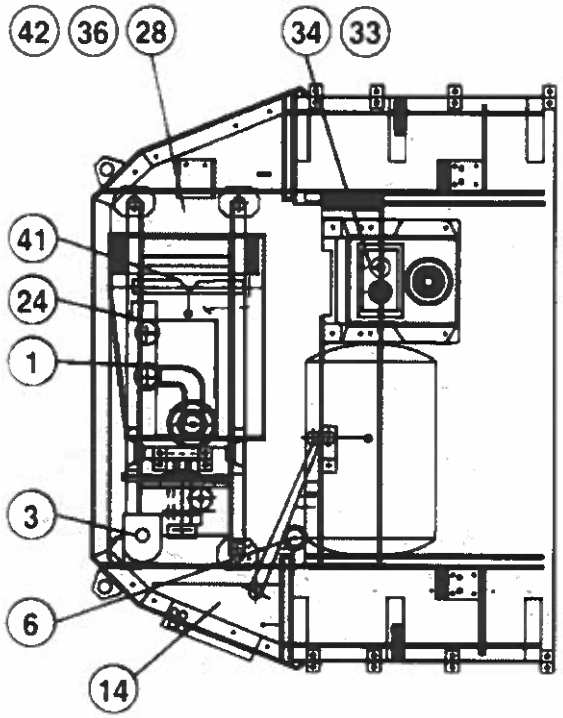


Figure M-1 Eagle Top View — Scheduled Maintenance Items

The reference numbers on this page and on the subsequent chart on Page M-6 refer to the numbers on the Maintenance Schedule on Pages M-1 through M-3.

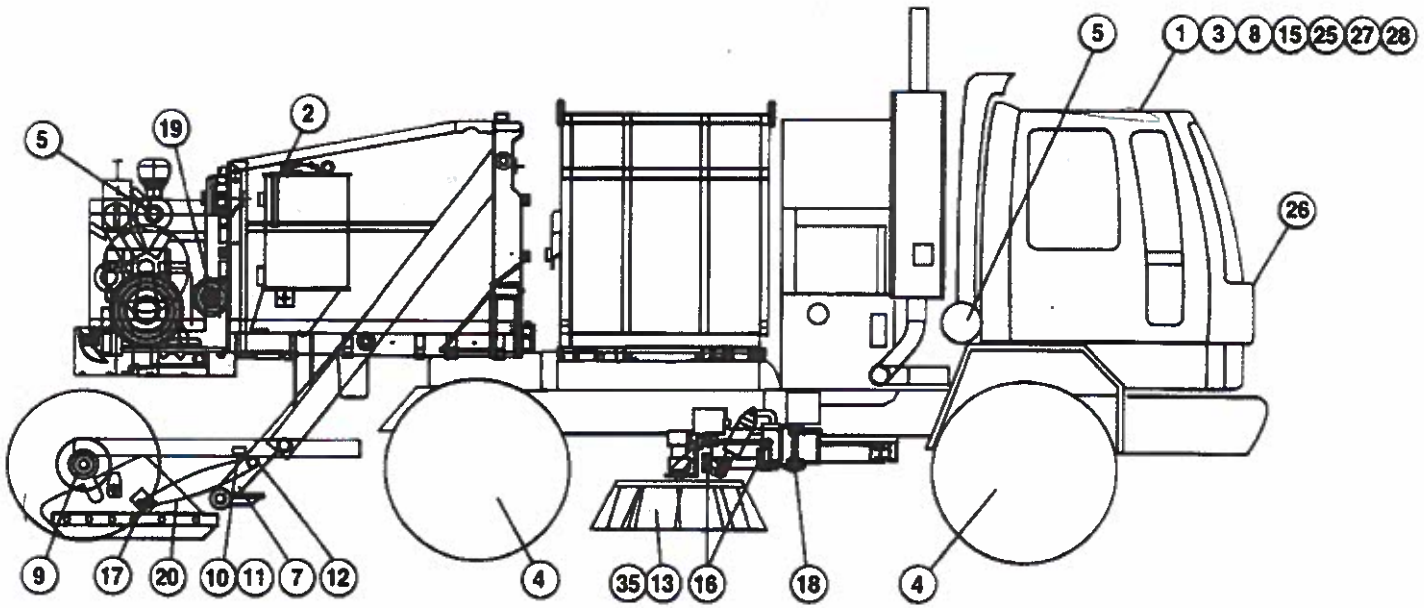


Figure M-2 Eagle Side View — Scheduled Maintenance Items

DAILY WASHDOWN

A very important step in sweeper maintenance is a washdown after each run. Use the following procedure in washing the sweeper.

NOTICE

Wash down the machine after every sweeping shift.

1. Park the sweeper on a level surface.

2. Lower conveyor and start rotation using Conveyor Up / Down (Figure M-4, #24) and Conveyor Rotate (#26).

3. Lower the main broom using Main Broom Up / Down / Rotate (Figure M-4, #25)

4. Fill the water tank until it overflows, allowing the water to flush the conveyor belt. This will remove heavy material from the conveyor and conveyor deflectors.

   Turn on the lower roller flush valve (Figure M-3), located below the washdown hose quick disconnect coupling.

5. Periodically reverse the conveyor (for no more than 30 seconds) to dislodge material between the lower roller and the edge of the scraper bar.

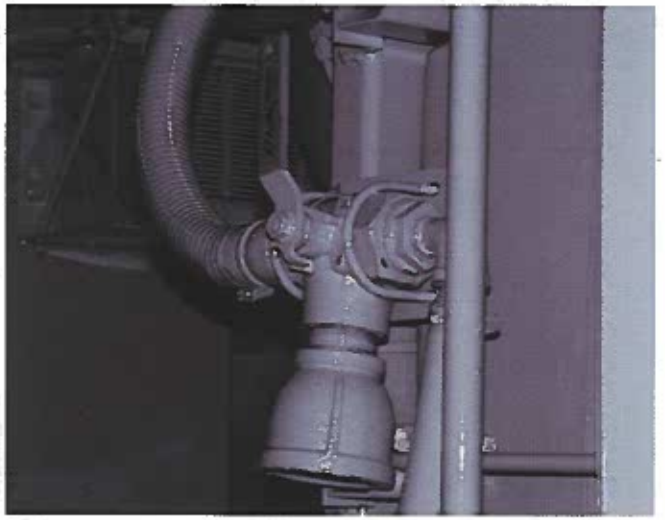


Figure M-3
Lower Roller Flush Valve

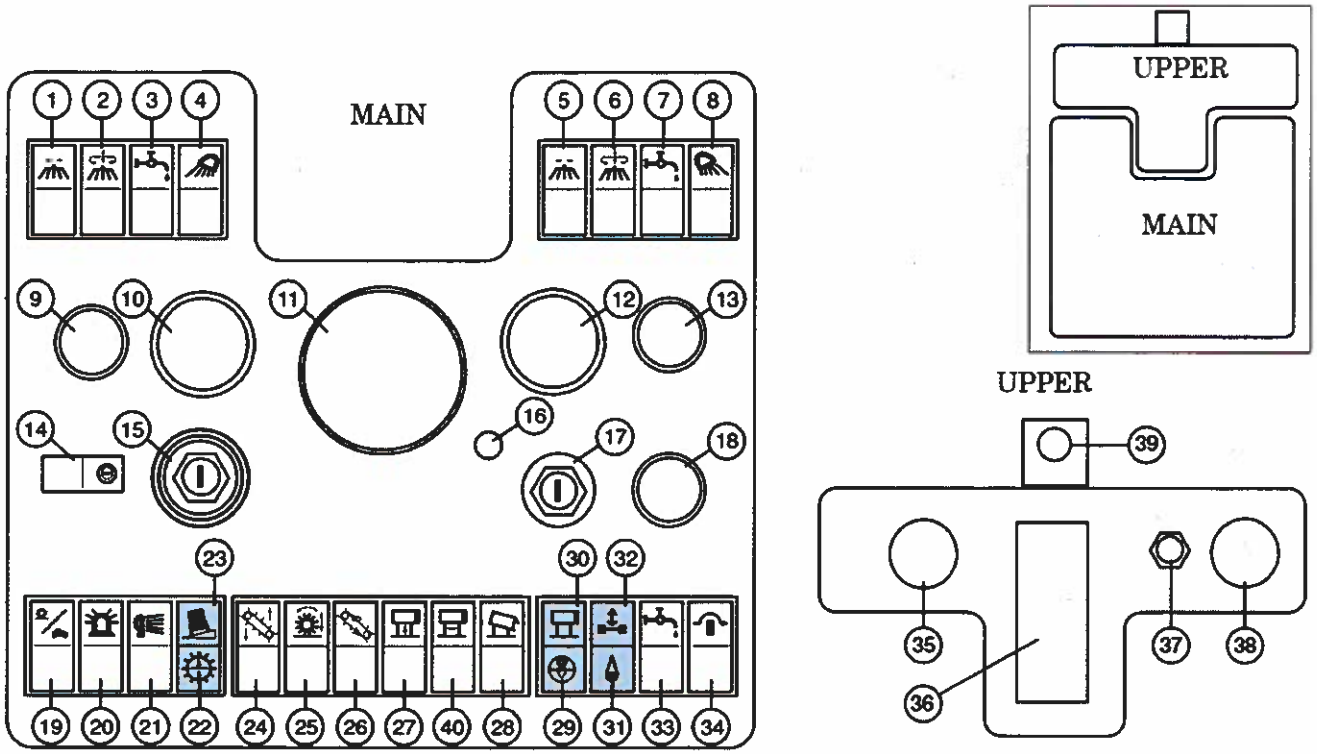


Figure M-4
Control Console

6. Stop conveyor rotation and return the main broom and conveyor to transport mode. Return the lower roller flush valve to its original position.

⚠DANGER

Falling hopper can cause severe injury or death. Hopper support bar must be in position before anyone goes under hopper.

7. Tilt the hopper using Hopper dump (Figure M-4, #28) and install the hopper support bar (Figures M-5, M-6).

8. With the conveyor running, use a high pressure water hose (connected to a hydrant or other high volume source) to flush the conveyor and belt backing plate. If a high pressure hose is not available, use the sweeper's washdown hose (Figure M-7).

9. Flush out the hopper, all undercarriage parts, side broom(s), and dirt shoes.

Figure M-5
Hopper Support Bar In Place
(Start F-1000)

Figure M-6
Safety Support in position
(Up to F-999)

10. Use a high pressure hose to dislodge material between the lower roller and the edge of the scraper bar. Flush the lower roller from both sides of the sweeper.

NOTICE

An engine must never be washed or steam cleaned while it is running. Cold water on a hot manifold could crack the manifold.

NOTICE

A high pressure hose should never be used to clean a radiator or oil cooler. The high pressure water can damage cores.

Figure M-7
Location Of Washdown Hose

10. Before washing down the engine compartment, be certain that the engine is cool. Be sure to clean out the engine radiator and oil cooler.

11. After the washdown, take the following steps.

    a. Make any adjustments that are needed.

    b. Visually inspect for damage or unusual signs of wear.

    c. Complete the daily or weekly maintenance.

    d. Secure machine components as required.

SERVICE PROCEDURES

General service procedures are provided in this chapter for simple and routine service. For detailed service procedures, see the Eagle Service Manual.

TOWING

Elgin Sweeper Company recommends that all towing be performed by a professional towing service. The following procedure is provided in the event that the Eagle must be towed by other than a towing service.

In all cases the procedure below must be followed, proper equipment must be used and all laws applying to vehicles in tow must be obeyed.

⚠CAUTION

Maximum towing speed must not exceed 55 mph (90 km/h).

NOTICE

To avoid damage when towing the Eagle, follow all towing instructions in the truck operator's manual

If the Eagle can be steered, it can be towed from the front with all wheels on the ground. If the sweeper must be towed, proceed as follows.

⚠WARNING

Steering will NOT have power assist.

1. Raise all sweeping components to the transport position, using Side Broom In / Out (right #5, left - #1), Side Broom Rotation / Up / Down (Figure SP-1, right - #6, left - #2), Main Broom Rotation / Up / Down (#25) and Conveyor Up / Down (#24).

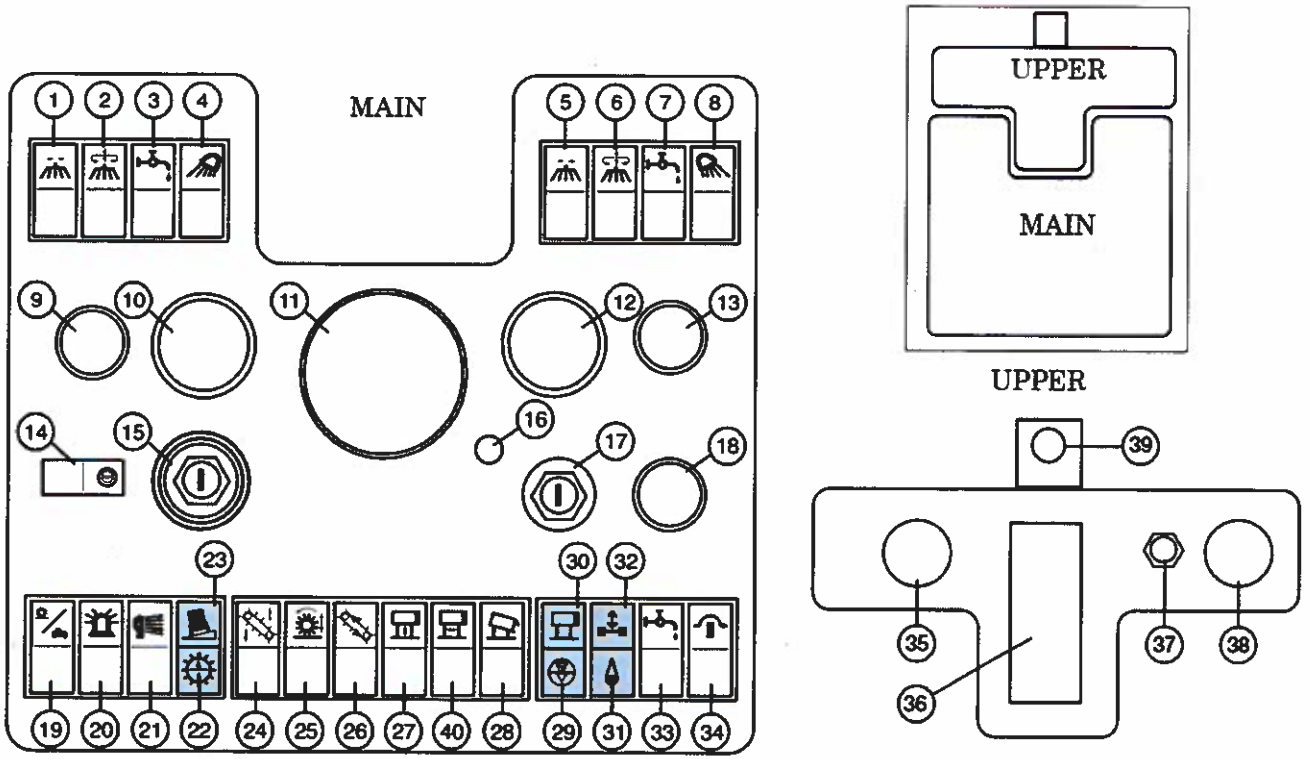


Figure SP-1
Control Console

2. Set Sweep/Transport Circuit Select (#19) to transport. Air springs will automatically raise the sweeper when the sweeper is switched to transport mode, provided there is air pressure.

3. Set parking brake.

4. Check all components for adequate road clearance. If necessary, chain up or remove the centerboard, dirt shoes and any other component that might be too low to the ground.

5. Block the wheels.

6. Disconnect the propeller shaft at the rear axle, and secure the shaft to the frame or a cross member.

7. If damage to the rear axle is suspected, remove the axle shafts and cover hub openings to prevent dirt contamination or loss of lubricant.

8. Connect the towing vehicle to a main structural part of the sweeper. Do not connect to a bumper. Use tow bar and safety chain system.

9. Unblock the wheels.

NOTICE

If the sweeper has air brakes and the air supply has been exhausted, the brakes will lock and will need to be released.

After towing is completed, proceed as follows:

1. Block the wheels securely BEFORE disconnecting the sweeper from the towing vehicle.

2. Install the propeller shaft.

3. If axle shafts were removed before towing, uncover hub openings and install the axle shafts.

4. Check for proper phasing of the universal joints.

5. Check sweeper position to make sure it will not roll and unblock the wheels.

AUXILIARY ENGINE

The auxiliary engine (Figure SP-2) should be maintained in accordance with the manufacturer's recommendations as found in the engine owner's manual. A copy of the engine owner's manual is supplied with every Eagle.

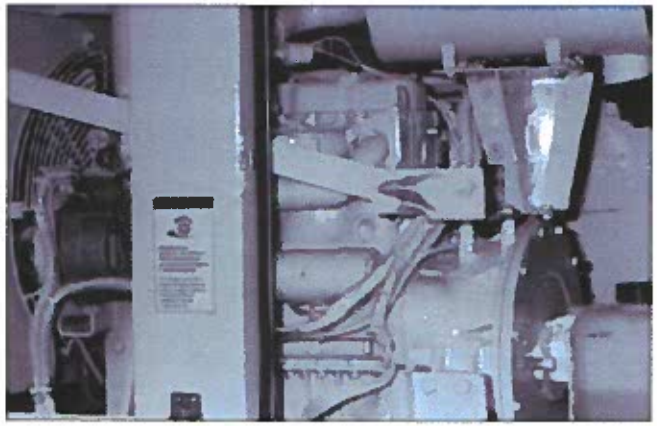


Figure SP-2
Auxiliary Engine

⚠CAUTION
The parking brake must be set before work is performed on the sweeper.

Air Pre-Cleaner

The dust level in the air pe-cleaner (Figure SP-3) may be checked through the transparent bowl of the pre-cleaner. After each sweeping shift, or if the dust reaches the "Full" line, the pre-cleaner must be cleaned using the following procedure.

1. Loosen the thumb screw at the top of the pre-cleaner.

2. Remove the cover and bowl.

NOTICE
Care must be taken to avoid damaging the bowl when tapping or cleaning.

3. Carefully tap the outside of the bowl with your hand to loosen any material on the inside of the bowl.

4. Dump the contents of the bowl and wipe the inside of the bowl. The bowl may be washed using a non-sudsing detergent, such as dishwasher liquid, and water. Bowl must be completely dry before reinstallation.

5. Reinstall the bowl with the "Full" line positioned so that it is easily visible.

Figure SP-3
Air Pre-cleaner

6. Reinstall the cover and secure the bowl and cover in place with the thumb screw.

Air Cleaner

The engine is equipped with a dual-element, dry-type air cleaner with an automatic rubber dump valve (Figure SP-4).

A sensor in the air cleaner signals when air flow is restricted, causing the Air Filter Restriction Indicator (Figure SP-1, #29) to light on the control panel. This indication alerts the operator that the air filter needs servicing.

To inspect the air filter, use the following procedure:

1. Remove the center retaining bar from the filter canister, then remove the canister cover.

2. Remove the outer element.

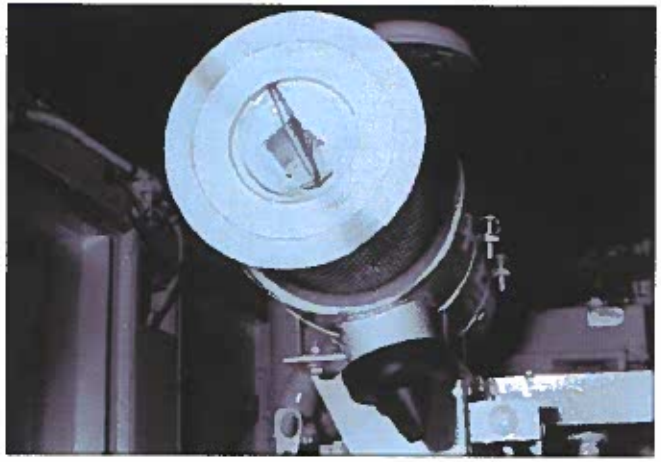


Figure SP-4
Air Cleaner

NOTICE

A dirty outer element should be discarded, not cleaned for further use. Cleaning an element voids the warranty and makes the element less effective.

3. If the outer element is dirty, replace it with a new one.

NOTICE

A loose, damaged or missing seal will allow dust to clog the inner element.

4. Check the rubber seal on the open end of the outer element. If the seal is loose, damaged or missing, replace the element with a new one.

NOTICE

If a new outer element must be installed, a new inner element must also be installed.

5. Visually inspect the inner element while it is in the canister. If the inner element is dirty, remove it and install a new one. The inner element cannot be cleaned.

6. Visually check the rubber dump valve and pinch the lips of the valve to remove any accumulation of debris.

7. Before installing a new or cleaned element, clean the inside of the air cleaner canister with a damp, lint-free cloth.

8. Install the outer element.

9. Secure the element with the retaining bar, making sure the bar is in the correct position.

Auxiliary Engine Fluids

To drain the oil from the auxiliary engine, use the plug (Figure SP-5) at the rear left side of the Eagle.

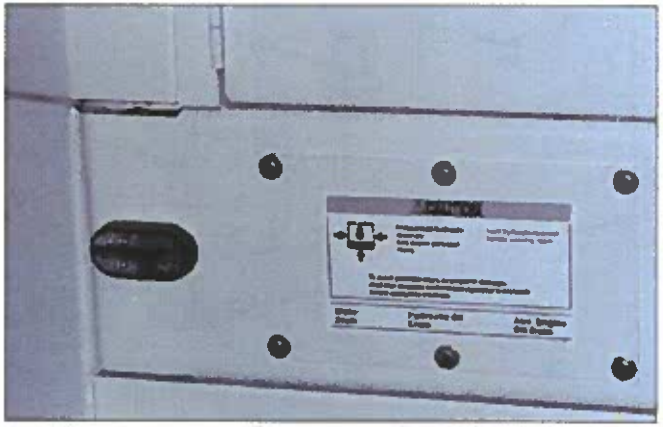


Figure SP-5
Drain plug

Refer to the engine operator's manual for engine oil recommendations.

For radiator coolant fluid Elgin Sweeper Company recommends a 50/50 solution of standard permanent automotive anti-freeze and water to protect to -25° F (-32° C).

Fuel System

The fuel lift pump (C, Figure SP-6) draws fuel from the fuel tank (K) and pushes it through the fuel filter (G) to the injection pump (A). The injection pump forces fuel through the injectors (E), which atomize the fuel and spray it into the combustion chamber of each cylinder. The low pressure leak-off return line (H) from the injection pump passes through each injector and returns to the fuel tank.

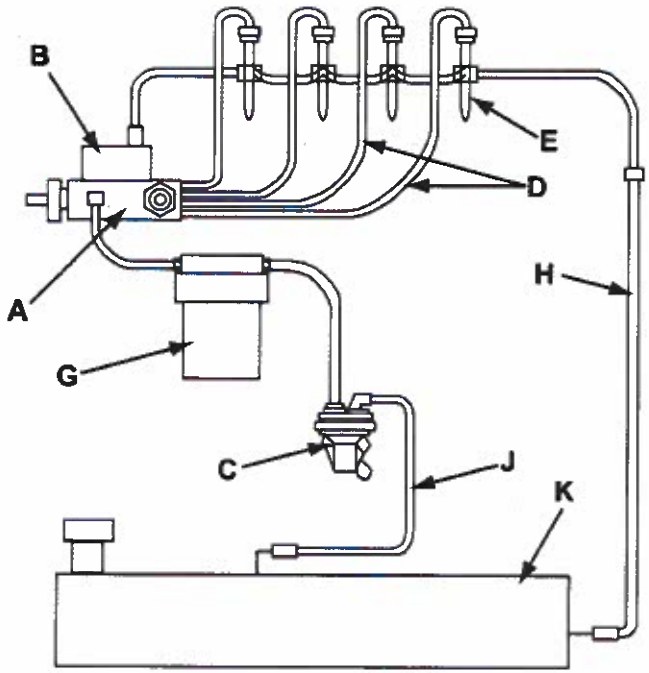


Figure SP-6
Fuel System

The fuel filter (Figure SP-7) is located near the fuel tank assembly and may be accessed through the right-hand door at the rear of the Eagle.

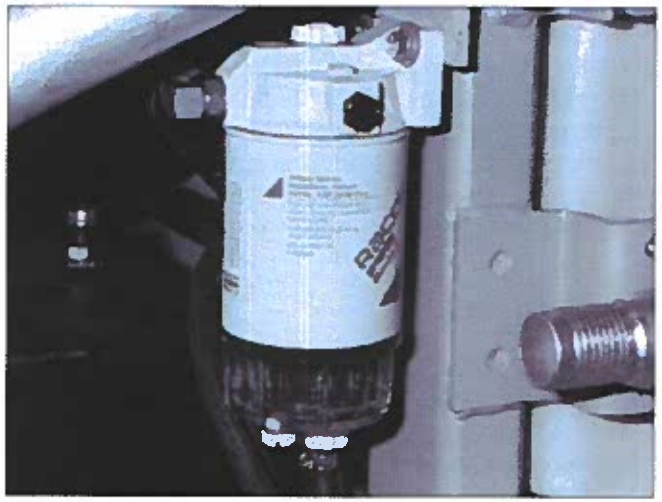


Figure SP-7
Fuel Filter

DRAINING THE FUEL WATER SEPARATOR

The water separator on the bottom of the fuel filter should be checked daily and drained when needed. Frequency of draining will be determined by operating conditions and quality of the fuel.
To drain the separator, use the following procedure:

1. Place a container capable of holding at least 0.5 pint (0.2 L) at the end of the hose underneath the drain plug.

2. Loosen the drain plug and air intake plug until water begins to flow.

3. Allow the water and any contaminated fuel to drain into a pan.

4. When flow no longer contains water, install and tighten the drain plug and air intake plug. The drain must always be closed before starting the engine.

5. Bleed air from the fuel system by following the instructions in the operator manual supplied by the manufacturer of the truck engine and auxiliary engine.

6. Start the engine, then make sure that no fuel is leaking from the filter.

NOTICE

The presence of a large amount of water in the filter may indicate that water should be drained from the fuel tank. If so, the cause of the water build-up should be found.

CHANGING FUEL FILTER

To change the fuel filter (Figure SP-7), use the following procedure:

1. Loosen the spring clamp to remove the filter from the filter head.

2. Inspect the filter for water build-up before discarding it.
3. Clean the filter sealing surface.

4. Apply a light coat of engine oil to the surface of the filter gasket.

5. Install a new filter in the filter head and secure it with the spring clamp.

6. Bleed the fuel system, using the following procedure.

BLEEDING THE FUEL SYSTEM

Air must be removed from the fuel system after the fuel filter has been changed, other fuel system components have been serviced or the engine has run out of fuel.

To bleed the fuel system, use the following procedure:

1. Loosen the bleed plug on the filter head.

NOTICE

If the hand-operated lift pump lever does not pump fuel, use the starter to rotate the engine 1/4 turn so that the cam-actuated lever is not on the high side of the lobe.

2. Use the lift pump lever to manually operate the fuel lift pump until no more air bubbles are present in the fuel flowing at the bleed plug. Return the lift pump lever to the storage position.

3. Tighten the bleed plug.

⚠ WARNING

Do not bleed the high pressure lines when the engine is hot. Stand clear of any moving parts or drive belts that could cause injury.

4. Loosen the fittings on the high pressure lines at the four injectors.

⚠CAUTION

Never operate the starter for more than 10 seconds. Longer operation will lead to an over discharge of the batteries, as well as starter seizure. Wait at least 30 seconds between attempts to start the engine.

5. Operate the starting motor until there is no air in the fuel flowing from the fittings.

6. Tighten the fittings.

HYDRAULIC SYSTEM

The hydraulic pump of the Eagle is spline shaft driven. There are no belts to break or pulleys to adjust. The Eagle is equipped with an hydraulic sweep system containing an hydraulic oil reservoir pressurized to 7 psi (Figure SP-8).

The hydraulic oil reservoir is located on the left side of the rear engine compartment. With the sweeper in transport mode, check the oil level in the reservoir using the sight gauge on the side of the tank.

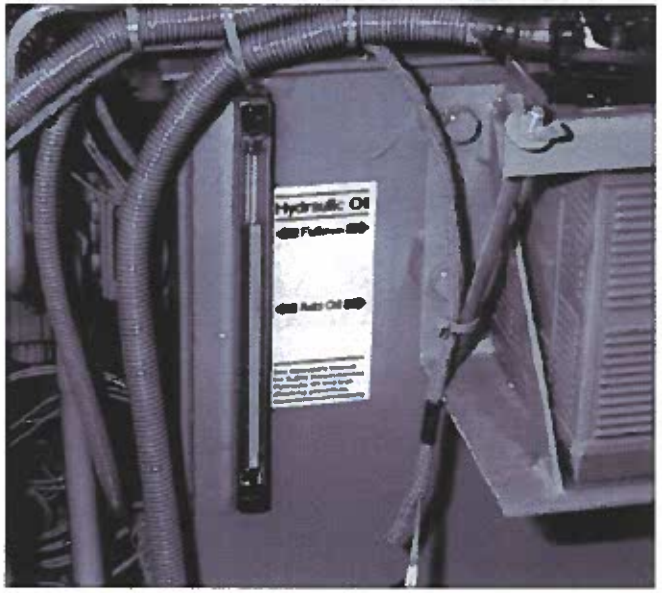


Figure SP-8
Hydraulic Oil Reservoir

⚠CAUTION

Hydraulic reservoir is pressurized to 7 psi. Depressurize before adding oil or changing filter.

NOTICE

Elgin Sweeper Company recommends Texaco Rando HDZ 68 or equivalent hydraulic oil...

After every 500 hours of use, or every 6 months, whichever occurs first, the hydraulic oil should be changed and the tank flushed. Oil must be new, clean oil and meet all Elgin requirements for hydraulic oil.

When adding oil, remove the hex head plug on the top of the return filter and add oil. This will pre-filter the oil added to the tank.

Used hydraulic filter elements should be replaced with new, clean filters per scheduled maintenance or when indicated by the Hydraulic Filter Restriction indicator (Figure SP-1, #22). Never reuse a filter.

To drain oil from the hydraulic oil reservoir, use the plug at the left side of the rear of the sweeper.

SPRAY WATER SYSTEM

Water applied during sweeping through spray nozzles (Figure SP-9) suppresses dust and moistens the debris for better settling in the hopper.

Two interconnected 140 gal. (529.8 L) (total of 280 gal. [1060 L]) polyethylene water tanks (Figure SP-10) supply water for the spray water system.

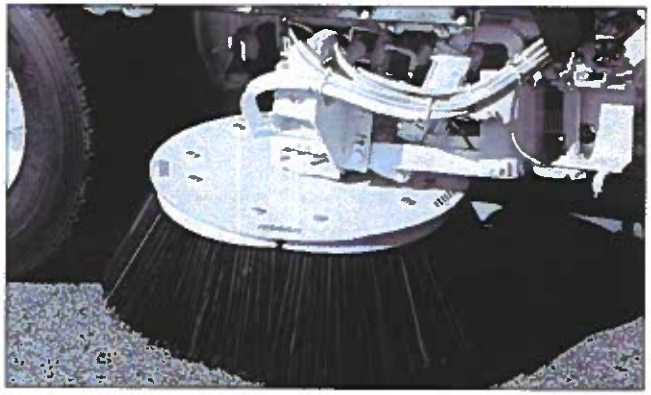


Figure SP-9
Side Broom

Three spray nozzles are located at each side broom and at the main broom. An optional front spray bar is available.

A fill hose is stored in the right side of the rear engine compartment. Before filling the water tank(s), always allow the hydrant to run to flush out any sediment or debris in the hydrant.

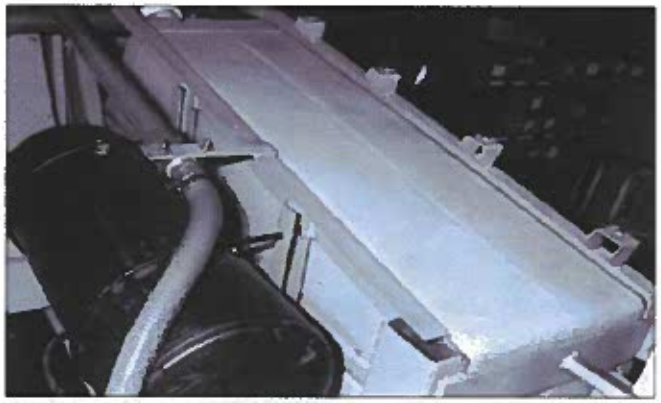


Figure SP-10
Top Of Spray Water Tank

The No Spray Water Indicator (Figure SP-1, #31) will light when the spray water tanks are empty and must be refilled.

Water for the spray water system passes through a 100 mesh filter prior to entering the water pump. This stainless steel strainer filter is located behind the rear right hand side panel and should be cleaned daily.

To clean the water filter strainer, use the following procedure:

1. Close the manual shutoff valve (Figure SP-11) located between the water filter and the water tank.
2. Unscrew the water filter housing from the filter head and remove the strainer.
3. If the strainer needs cleaning, open the shutoff valve and flush the screen with water, then close the valve.
4. Install the strainer and screw the water filter housing back into the filter head.

Figure SP-11
Side Broom Spray Water Shutoff Valve

5. Turn on the shutoff valve.

The filter should be changed only if it has been damaged.

SWEEPING PATTERNS

Broom sweeping patterns are a guideline of sweeping performance. Patterns should be checked daily according to the procedure in the Operations Section of this manual.

If the patterns do not conform to those shown in the Operations Sections, the following procedures should be performed to correct the pattern.

Side Broom Adjustment

SIDE-TO-SIDE ANGLE

For most sweeping conditions, the side-to-side angle of the side broom(s) should be 5°. For severely angled gutters, a larger angle may be required for optimum sweeping performance.

To correct the side broom pattern, if it does not register 5° side-to-side angle on the protractor, use the following procedure:

1. Park the sweeper on a level, paved area.

2. Start the auxiliary engine.

3. Lower the side brooms to the sweeping position using Side Broom In / Out (right #5, left - #1), Side Broom Rotation / Up / Down (Figure SP-1, right - #6, left - #2).

4. Turn off auxiliary engine.

5. Turn key to ON without starting engine.

6. Place a protractor on the side broom disc and perpendicular to the side of the sweeper.

7. If the angle is incorrect, loosen the two bolts securing the motor bracket. Tilt the broom to the desired angle and tighten the two bolts.

8. Start auxiliary engine.

9. Retract brooms using Side Broom In / Out (right #5, left - #1), Side Broom Rotation / Up / Down (Figure SP-1, right - #6, left - #2).

10. Stop auxiliary engine.

NOTICE

This setting will require additional adjustment when sweeping areas with deep gutters. Best results are obtained by setting the broom contact pattern at the location with the unusual gutter configuration.

FRONT-TO-BACK ANGLE

To correct the side broom pattern, if it does not register 5° (or desired) front-to-back angle on the protractor:

1. Park the sweeper on a level, paved area.

2. Start the auxiliary engine.

3. Lower the side brooms to the sweeping position using Side Broom In / Out (right #5, left - #1), Side Broom Rotation / Up / Down (Figure SP-1, right - #6, left - #2).

4. Turn off auxiliary engine.

5. Turn key to ON without starting engine.

6. Place a protractor on the side broom disc and parallel to the side plate of the sweeper.

7. Loosen the jam nut on the turnbuckle (Figure SP-12).

8. Turn the turnbuckle to set the broom at the desired angle.

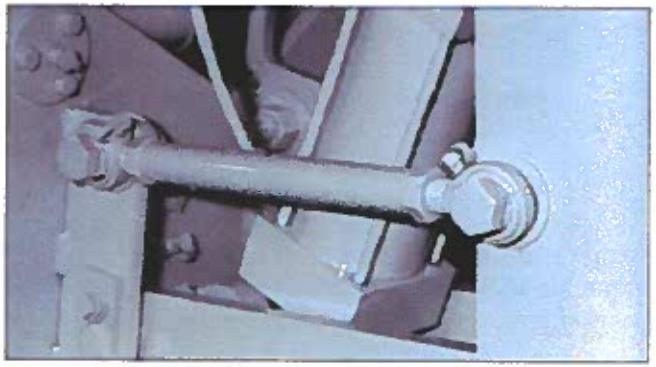


Figure SP-12
Side Broom Turnbuckle

9. When the broom angle is properly set, tighten the jam nut on the turnbuckle.

8. Start auxiliary engine.

9. Retract brooms using Side Broom In / Out (right #5, left - #1), Side Broom Rotation / Up / Down (Figure SP-1, right - #6, left - #2).

10. Stop auxiliary engine.

DOWN PRESSURE

Adjusting the down pressure at a side broom will change the size of the broom pattern. More down pressure makes a larger pattern. To correct side broom downpressure, use the Side Broom Pressure Regulator (Figure SP-1, #9) located on the control console.

⚠CAUTION

Rotating broom can cause personal injury. Do not touch or step on side broom.

Main Broom Adjustment

To adjust the main broom contact area, use the Main Broom Pressure Regulator located on the Control Console (Figure SP-1, #18).

DIRT SHOE ADJUSTMENT

Dirt shoes (Figure SP-13) ride perpendicular to the ground to act as a guide to keep debris between the main broom and the conveyor.

The main broom rotates between the two dirt shoes. Wings at the rear of each dirt shoe assure that the bristles are turned in and ride flush within the dirt shoe housings.

Both dirt shoes should be correctly aligned and ride level with the surface of the road. If incorrectly aligned, the rubber will wear unevenly. If they are not correctly positioned, this should be corrected immediately.

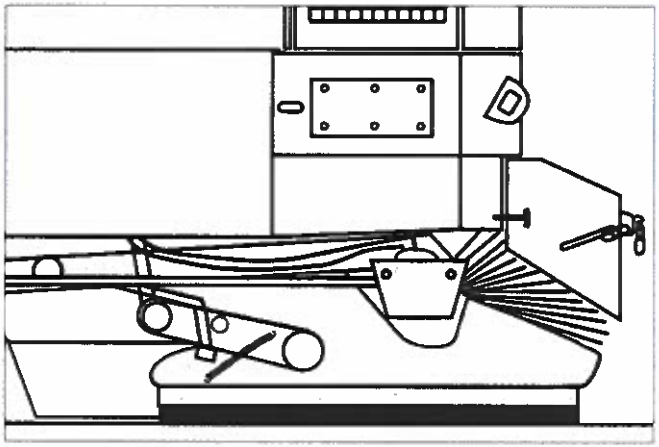


Figure SP-13
Dirt Shoe

To check for proper dirt shoe adjustment:

1. Lower the conveyor using Conveyor Up / Down (Figure SP-1, #24).

2. Lower main broom and start rotation using Main Broom Up / Down / Rotate (Figure SP-1, #25).

⚠WARNING

Contact with moving parts of main broom drive can cause severe injury. Do not attempt repairs with engine running.

3. Drive the sweeper forward to allow brooms to attain proper sweeping position.

4. Visually inspect the rotation of the main broom between the dirt shoes.

The ground clearance of the dirt shoes during transport is set by the airbags. Dirt shoe ground clearance should be approximately 8 inches (30 cm).

If the transport position of the dirt shoes is not 8 inches:

1. Adjust the lift pin roller to the bottom of the slot at the center of the tow bar weldment.

2. Adjust the arm bracket to level the dirt shoe.

3. Check the pivot to ensure that it is not binding.

An improperly adjusted dirt shoe may cause the shoe to nose dive during transport.

DIRT DEFLECTOR

A centerboard dirt deflector runs under the center of the Eagle between the side brooms and main broom. The deflector provides better sweeping by preventing material swept by the side brooms from being thrown beyond the reach of the main broom. Adjusting chains are used to keep the deflector in the proper position with the rubber portion in contact with the street while in sweeping mode.
The dirt deflector should be inspected regularly and changed if damaged or worn.

CONVEYOR

The conveyor (Figure Sp-14) carries debris swept up by the main broom to the hopper. Proper conveyor operation depends on correct belt tension and clean upper and lower rollers.

The conveyor is adjusted properly when the tips of the conveyor belt cleats clear the conveyor housing frame. If too loose, the belt may slip and the cleats will show excessive wear from rubbing the conveyor housing or frame. If too tight, the belt will fail prematurely.

Before adjustment, the conveyor belt must be clean and the lower roll flushed out.

⚠CAUTION

On Series F Eagles, never raise the hopper when working in the conveyor area.

To adjust the belt tension, follow this procedure:

1. Make certain that the conveyor belt is clean and the lower roller is completely flushed out before adjusting belt.

NOTICE

Accumulation of debris in the lower roller and scraper area may result in damage to the conveyor belt and lower roller.

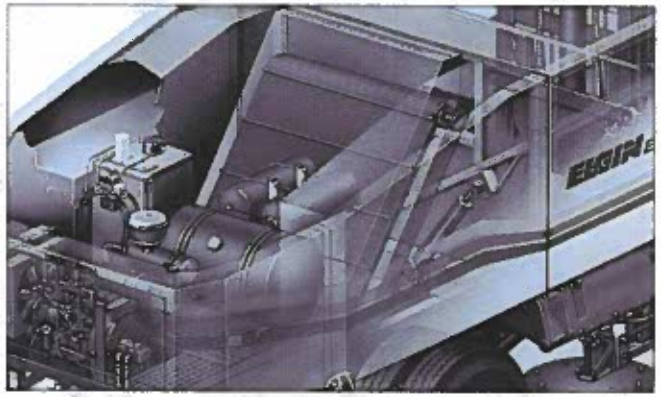


Figure SP-14
Cutaway showing conveyor

2. With the hopper empty, tilt the hopper.

3. Place the hopper support bar (Figure SP-15. 16) into proper position. Avoid contact with truck exhaust pipe.

⚠DANGER

Falling hopper can cause severe injury or death. Hopper support bar must be in place before working under the hopper.

⚠CAUTION

Standing or climbing on truck frame may be dangerous. Use caution. Do not step on side broom disks.

4. Lower the conveyor to sweep position using the Conveyor Up / Down switch (Figure SP-1, #24).

5. Loosen the jam nuts (Figure SP-17) and turn the adjustment nuts on both sides of the upper conveyor assembly. Counterclockwise will increase tension. Clockwise will decrease tension.

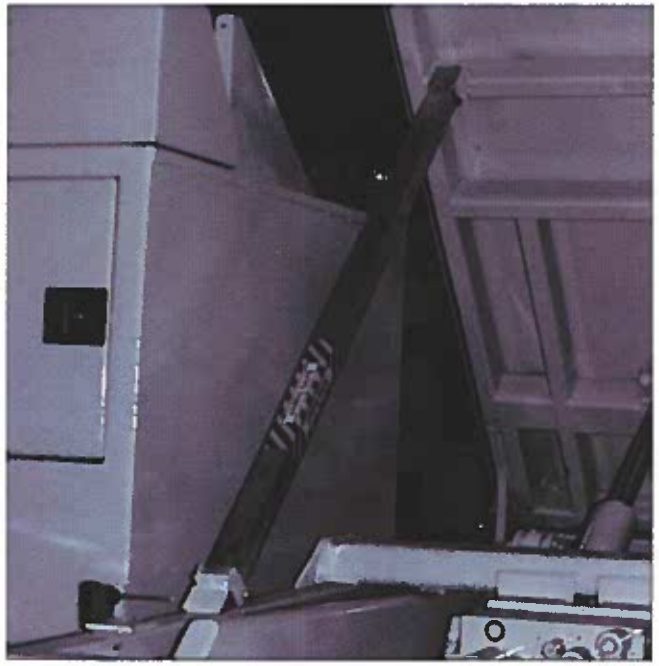


Figure SP-15
Hopper Support Bar In Place
(Start F-1000)

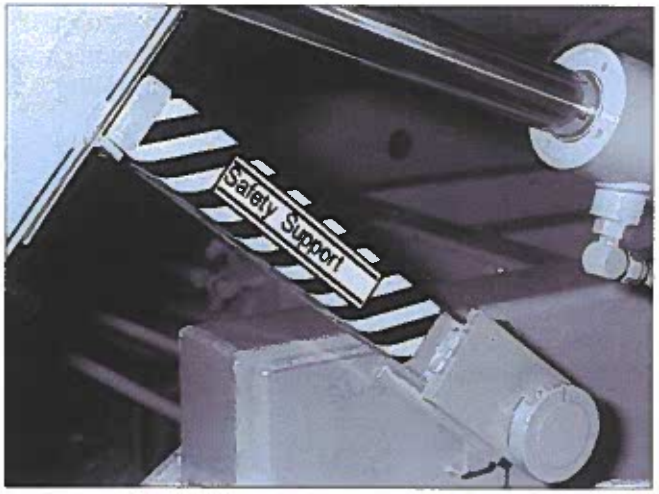


Figure SP-16
Safety Support In Place
(Up to F-999)

NOTICE

Use small adjustments (no more than 1/4 turn). Run the belt for several minutes with an engine speed of 1800 rpm to check results before making any additional adjustments.

6. If belt runs to the left (as viewed facing toward the front of the (sweeper), increase tension on the left side. Then decrease tension an equal amount on the right side.

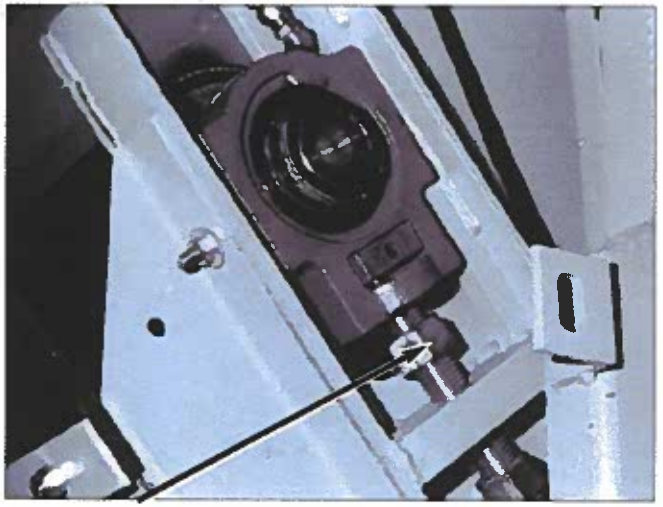


Figure SP-17
Upper Conveyor Assembly

7. When adjustment is complete, tighten the jam nuts.

8. Return conveyor to transport position using Conveyor Up / Down switch (Figure SP-1, #24).
9. Lower the safety support.

10. Return the hopper to transport position.

DAILY WASHDOWN

A very important step in sweeper maintenance is a washdown after each run. Use the following procedure in washing the sweeper.

NOTICE

Wash down the machine after every sweeping shift.

1. Park the sweeper on a level surface.

2. Lower conveyor and start rotation using Conveyor Up / Down (Figure SP-1, #24) and Conveyor Rotate (#26).

3. Lower the main broom using Main Broom Up / Down / Rotate (Figure SP-1, #25)

4. Fill the water tank until it overflows, allowing the water to flush the conveyor belt. This will

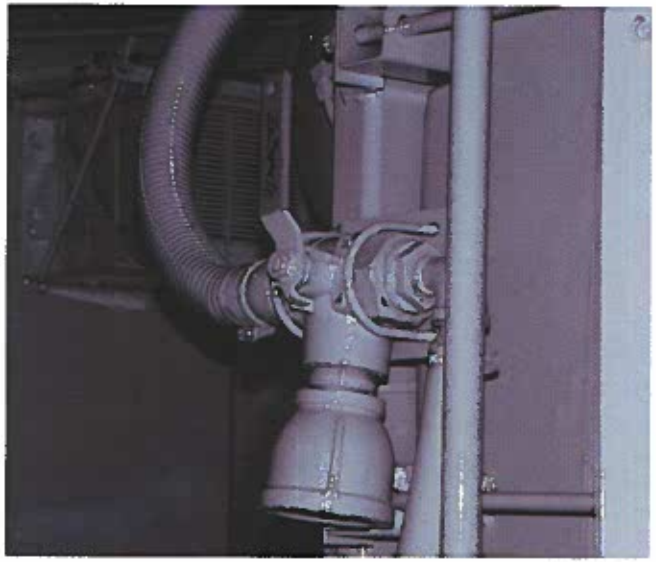


Figure SP-18
Lower Roller Flush Valve

remove heavy material from the conveyor and conveyor deflectors. Turn on the lower roller flush valve (Figure SP-18), located below the washdown hose quick disconnect coupling.

5. Periodically reverse the conveyor (for no more than 30 seconds) to dislodge material between the lower roller and the edge of the scraper bar.

6. Stop conveyor rotation and return the main broom and conveyor to transport mode. Return the lower roller flush valve to its original position.

⚠DANGER

Falling hopper can cause severe injury or death. Safety Support must be in position before anyone goes under hopper.

7. Tilt the hopper using Hopper dump (Figure SP-1, #28) and install the Safety Support bar (Figure SP-1b, 16).

8. With the conveyor running, use a high pressure water hose (connected to a hydrant or other high volume source) to flush the conveyor and belt backing plate. If a high pressure hose is not available, use the sweeper's washdown hose (Figure SP-19).

Figure SP-19
Location Of Washdown Hose

9. Flush out the hopper, all undercarriage parts, side broom(s), and dirt shoes.

10. Use a high pressure hose to dislodge material between the lower roller and the edge of the scraper bar. Flush the lower roller from both sides of the sweeper.

NOTICE

An engine must never be washed or steam cleaned while it is running. Cold water on a hot manifold could crack the manifold.

NOTICE

High pressure hose should not be used to clean a radiator or oil cooler. High pressure water can damage cores.

10. Before washing down the engine compartment, be certain that the engine is cool. Be sure to clean out the engine radiator and oil cooler.

11. After the washdown, take the following steps.

    a. Make any adjustments that are needed.

    b. Visually inspect for damage or unusual signs of wear.

    c. Complete the daily or weekly maintenance.

    d. Secure machine components as required.

WINTER STORAGE

Before preparing the sweeper for winter storage, empty the hopper and thoroughly washdown the sweeper.

If the sweeper must be stored at temperatures below freezing, take the following steps to prevent damage:

1. Remove the plug from the water tank drain.

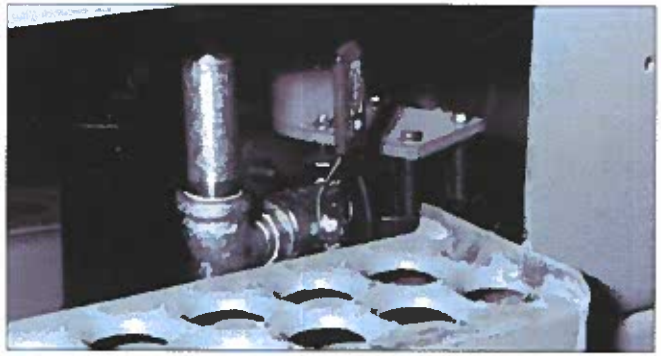


Figure SP-20
Spray Water Shutoff Valve

2. Open the spray water shutoff valve (Figure SP-20) and remove the water filter (Figure SP-21). Empty the filter body and store it in the cab.

3. Make sure that the cooling system of the engine has antifreeze concentrations adequate to prevent freezing.

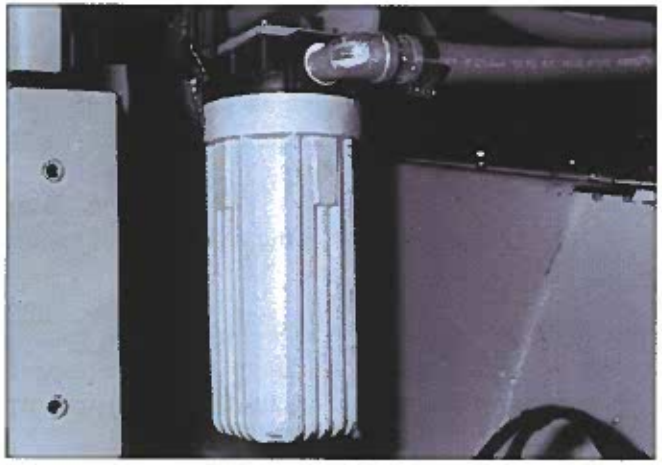


Figure SP-21
Water Filter

4. Drain the fuel water separator.

5. Open the drain on the lower section of the spray water pump (Figure SP-22).

6. If water is being used instead of solvent in the windshield washer, drain the washer solvent bottle, which is under the left-hand operator's seat.

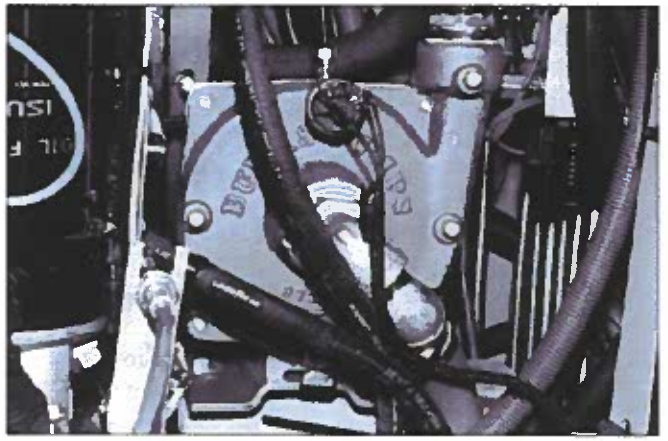


Figure SP-22
Water Pump

Follow all recommendations of the engine manufacturer for cold weather storage.

In addition, whenever the engine is to be stored for several months or more, follow the engine manufacturer's recommendations to minimize corrosion and deterioration.

The following steps may need to be taken for long-term storage.

1. Change engine oil and replace oil filter. Used oil will not give adequate protection.

2. Inspect and, if necessary, replace the air filter.

3. Drain and flush the cooling system, if the engine will be stored for a year or more.

4. Make the following additions of inhibitor. Seal each opening immediately after adding inhibitor to prevent inhibitor from changing to gas.

   a. Drain fuel tank and add 1 oz. (30 ml) of inhibitor per 4 gal. (15L) of tank capacity.

   b. Add 1 oz. (30 ml) of inhibitor to crankcase for each quart (0.95 L) of crankcase oil.

   c. Disconnect air intake piping from the manifold. Pour 3 oz. (90 ml) of inhibitor into intake system and reconnect the piping.

5. After all inhibitor additions are completed, crank the engine several revolutions with the starter (do not allow the engine to start).

6. Loosen fan and alternator belts to relieve tension. Remove belts if desired.

⚠CAUTION

Gas given off by batteries is explosive. Keep sparks and flames away from battery. Always use a voltmeter or hydrometer to check battery charge. Always remove grounded (-) battery clamp first and replace it last.

7. Remove and clean battery. Store in a cool, dry place and keep fully charged.

8. Clean the exterior of the equipment and touch-up any scratched or chipped painted surfaces.

9. Seal all openings on engine with plastic bags and tape.

10. Coat all exposed metal surfaces with grease or corrosion inhibitor.

SPRING START-UP

Follow all directions of the engine manufacturer for start-up of equipment.

1. Remove all protective coverings, including those on engine and electrical systems.

2. Install fan and alternator belts, if they were removed. Inspect belts and replace them if they show cracks, stretching or fraying. Adjust belts to their proper tension.

⚠CAUTION

Gas given off by batteries is explosive. Keep sparks and flames away from battery. Always use a voltmeter or hydrometer to check battery charge. Always remove grounded (-) battery clamp first and replace it last.

3. Remove battery from storage. Install fully-charged battery and connect cables.

4. Install the plug in the water tank drain.

5. Close the spray water shutoff valve (Figure SP-20) and replace the water filter (Figure SP-21).

6. Install the drain plug in the lower section of the spray water pump (Figure SP-22).

7. If the windshield washer bottle was emptied, fill it with water or solvent solution.

8. Follow all instructions in the Start-up Checklist at the beginning of the Operation section of this manual.

TROUBLESHOOTING

More complete troubleshooting and service procedures may be found in the Service Manual for the Eagle. The troubleshooting listed below is meant as a general guide only.

Conveyor jammed
Reverse the conveyor for no more than 30 seconds at a time to dislodge large objects from the conveyor.

Conveyor will not raise
Machine not on level ground.
Check parking brake is set.
Check 40 psi pressure switch above rear air bags.
Check 70 psi pressure switch on air manifold.

Backup alarm does not sound
Check continuity in switch. Spool will stick if debris gets into it.

Broom(s) wearing too quickly
Decrease down pressure.

Broom(s) rotating too slowly
Decrease down pressure.

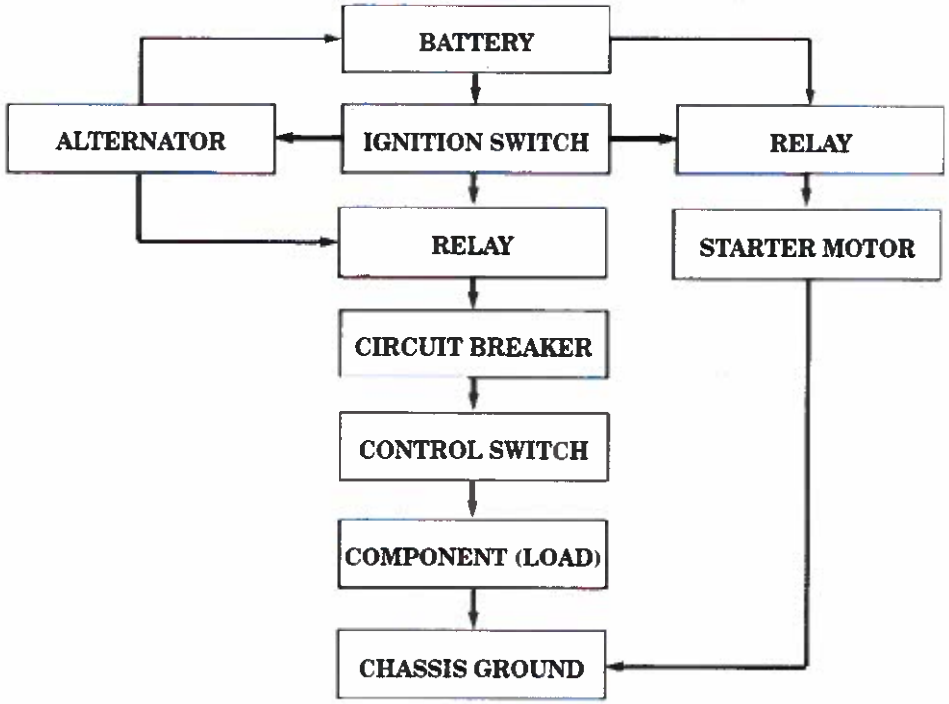
Debris thrown back into gutter
Broom angle set too flat, adjust angle.

Excessive dust
Not enough water. Check spray nozzles for clogs; check water supply level.

Main or side broom(s) will not rise
Check air pressure in sweep system first.
Spool in solenoid valve may be stuck or there may be an open electric circuit.

Main or side broom(s) will not lower
Check air pressure in sweep system first.
Spool in solenoid valve may be stuck or there may be an open electric circuit.

TROUBLESHOOTING - Electrical Sytem



GLOSSARY

Air bag suspension - System used to provide stability of the rear axle. Can be adjusted for maximum sweeping and dumping performance.

Broom pattern - Marks made on the pavement by the brooms when rotating the brooms with the sweeper staying in one place. The broom pattern is used to determine that the brooms are making proper contact with the street.

Conveyor - Device that carries debris swept up by the main broom to the hopper. The Eagle patented No-Jam® conveyor has molded-in, full width cleats to move large debris without jamming.

Dirt deflector - Rubber piece mounted under the chassis to keep debris within the sweeping path. The Eagle is equipped with a centerboard dirt deflector, running between the side broom and main broom.

Dirt shoes - Devices located on the outsides of the main broom, used to keep debris between the main broom and conveyor.

Down pressure - The amount of downward pressure of a broom. The greater the down pressure, the greater the digging power, but the more quickly the brooms will wear.

Hopper - An on-board tank for holding debris that has been swept up.

Hopper door - A large door that opens when the hopper is dumped to allow debris to be emptied from the hopper. Hopper door must be open prior to tilting the hopper.

Main broom - A long cylindrical broom running under the sweeper, used to direct debris onto the conveyor.

Mast - The lifting mechanism on the Eagle F that raises and lowers the hopper for dumping using a chain and rail mechanism.

Side broom - Horizontally rotating broom used to direct debris from the gutter to the main broom.

Spray water - Water sprayed on debris being picked up by the sweeper. This water reduces the amount of dust.

Sweep path - The width of the sweeping area produced by the brooms during sweeping.

Taper - The difference in size of the broom pattern from one end of the main broom to the other end. There should be no taper if the main broom is properly adjusted.

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