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.

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If you should need to contact the factory regarding operation, maintenance or repair, please feel free to call Elgin at 847/741-5370.
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
General ................................................................. S-1
Eagle Safety Labels ........................................... S-10

Description
Elgin Eagle Sweeper ........................................... D-1
History of Sweeping/Principles of Operation
  Why Sweep? .................................................. D-2
  History of Sweeping ......................................... D-2
  Mechanical/Broom Sweepers............................... D-3
  Eagle ........................................................... D-3
  Water Spray .................................................. D-4
  Brooms ........................................................ D-5
  Conveyor ...................................................... D-5
  Hopper ........................................................ D-7
Air Bag Suspension ........................................... D-7
Controls ......................................................... D-8
General Data .................................................... D-9
Eagle Side View .............................................. D-11
Eagle SE Rear View ........................................ D-12

Operation
Instruments and Controls .................................... O-1
Operating Checklist .......................................... O-6
Starting the Unit ............................................. O-8
Cold Weather Starting ...................................... O-9
Transport ....................................................... O-10
Sweeping .......................................................... O-11
Sweeping Patterns ............................................ O-14
Reversing the Conveyor ..................................... O-17
Dumping the Hopper ......................................... O-18
Stopping the Sweeper ....................................... O-20
At End of Shift ................................................. O-20

Maintenance
Scheduled Maintenance ....................................... M-1
  Daily Service Checklist .................................... M-1
  Periodic Service Checklist ................................ M-2
    After 50 Hours ........................................... M-2
    After 150 Hours ......................................... M-2
    Addl. After 150 Hours for Series F ............... M-3
    After 500 Hours ......................................... M-3
    After 1000 Hours ....................................... M-4
Addl. After 1000 Hours for Series F ..... M-4
Maintenance Drawings.................................M-5
Daily Washdown ........................................ M-7

Service Procedures
Towing .........................................................SP-1
Auxiliary Engine........................................SP-4
Air Pre-Cleaner ...................................... SP-4
Air Cleaner ............................................. SP-5
Inspecting the Filter..............................SP-6
Cleaning the Outer Element .................SP-7
Auxiliary Engine Fluids ....................... SP-7
Fuel System........................................... SP-7
Draining the Fuel Water Separator .... SP-9
Changing Fuel Filter .............................. SP-9
Bleeding the Fuel System ......................SP-10
Hydraulic System .................................. SP-11
Spray Water System.............................. SP-12
Sweeping Patterns ................................. SP-14
Side Broom Adjustment .......................SP-14
Side-to-Side Angle ............................... SP-14
Front-to-Back Angle ....................... SP-15
Down Pressure ................................. SP-16
Main Broom Adjustment ..................SP-17

Dirt Shoe Adjustment .......................... SP-17
Dirt Deflector ....................................... SP-18
Conveyor ............................................. SP-19
Daily Washdown .................................. SP-21
Winter Storage .................................. SP-24
Spring Start-up ................................ SP-27

Troubleshooting

Glossary
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

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.
⚠️ 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.
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

1. Moving Parts. Contact can cause severe injury.
   - Do not attempt repairs or go underneath machine with engine(s) running.
   - Use extreme care when making checks or adjustments that require the engine(s) to be running.

   To avoid possible injury or property damage, read the operator’s manual before using this machine.

   - Position safety bar in raised hopper position before going under hopper shell.
   - Check hydraulic system per maintenance schedule.
   - Refer to maintenance chart for daily and scheduled servicing.

3. Overloading the hopper will result in exceeding the rated G.V.W. and can cause severe injury or property damage.

   Discontinue hopper loading and dump hopper when the full hopper indicator is on.

   Maintenance and repairs must be done by authorized personnel only.

4. Water Filter

5. Overloading the hopper will result in exceeding the rated G.V.W. and can cause severe injury or property damage.

   - To avoid possible injury or property damage, read the sweeper and chassis operator’s manuals before using this machine.

   Refer to maintenance chart for daily and scheduled servicing.

6. Overloading the hopper will result in exceeding the rated G.V.W. and can cause severe injury or property damage.

   - To avoid possible injury or property damage, read the sweeper and chassis operator’s manuals before using this machine.

   Refer to maintenance chart for daily and scheduled servicing.

7. Use #1 or #2 Diesel fuel only.

WARNING

- Moving Parts. Contact can cause severe injury.
- Tilling Hopper. Can cause severe injury.
- Overloading the hopper will result in exceeding the rated G.V.W. and can cause severe injury or property damage.
- Discontinue hopper loading and dump hopper when the full hopper indicator is on.
- Maintenance and repairs must be done by authorized personnel only.

CAUTION

- Position safety support before going underneath raised hopper.

- Verify that blocks are properly mounted and undamaged before operation.

- Overloading the hopper will result in exceeding the rated G.V.W. and can cause severe injury or property damage.

- Discontinue hopper loading and dump hopper when the Overloaded indicator is on.

- To avoid possible injury or property damage, read the sweeper and chassis operator’s manuals before using this machine.

- Refer to maintenance chart for daily and scheduled servicing.

- Overloading the hopper will result in exceeding the rated G.V.W. and can cause severe injury or property damage.

- Discontinue hopper loading and dump hopper when the Overloaded indicator is on.

- Maintenance and repairs must be done by authorized personnel only.

NOTICE

- Use #1 or #2 Diesel fuel only.

- Verify that blocks are properly mounted and undamaged before operation.

S-11
EAGLE SAFETY LABELS - PART TWO OF THREE
SAFETY

No Step
Pressurized hydraulic reservoir. Can cause personal injury
Vent hydraulic reservoir before opening...

CAUTION

Safety decals – Left side of Eagle

WARNING

Moving Parts. Contact can cause severe injury.
Do not attempt repairs or go underneath machine with engine(s) running.
Use extreme caution when making checks or adjustments that require the engine(s) to be running.

To avoid possible injury or property damage, read the operator's manual before using this machine.

Tilting Hopper. Can cause severe injury.
Position safety bar in raised hopper position before going under hopper shell.
Check hydraulic system per maintenance schedule.

Refer to maintenance chart for daily and scheduled servicing.

Overloading the hopper will result in exceeding the rated G.V.W. and can cause severe injury or property damage.
Discontinue hopper loading and dump hopper when the full hopper indicator is on.
Maintenance and repairs must be done by authorized personnel only.

Rotating Broom. Can cause personal injury.
Do not step on side broom while rotating or at rest.

WARNING

Overloading the hopper will result in exceeding the rated G.V.W. and can cause severe injury or property damage.
Discontinue hopper loading and dump hopper when the full hopper indicator is on.
Maintenance and repairs must be done by authorized personnel only.

Series F Only
Safety Support
Position safety support before going under raised hopper.

F-1
F-2

CAUTION

Pressurized hydraulic reservoir. Can cause personal injury
Vent hydraulic reservoir before opening drain.

To avoid possible injury or property damage, read the operator's manual before using this machine.

Water Drain

Hydraulic Oil Drain

Aux. Engine Oil Drain

WARNING

Rotating Broom. Contact or use of broom without shroud Can cause personal injury or property damage.

Turn broom and auxiliary engine off before opening cover to inspect or service. Keep broom shroud closed and secured unless servicing.

F-1
F-2

Series F Only

WARNING

Falling Hopper.
Can cause Severe injury or death
Position safety support before going under raised hopper.
SAFETY

1. NOTICE
   Change hydraulic oil and flush tank every six months.

2. Hydraulic Oil
   - Full
   - Add Oil
   See Operator’s Manual for ELGIN recommended Hydraulic Oil and level checking procedure.

3. WARNING
   Rotating Broom. Contact or use of broom without shroud can cause personal injury or property damage.
   Turn broom and auxiliary engine off before opening cover to inspect or service. Keep broom shroud closed and secured unless servicing.

4. NOTICE
   Use #1 or #2 Diesel fuel only.

5. Maintenance Chart

6. Anti-Freeze
   Ethylene Glycol Base
   Date ________ Protect To ________

7. WARNING

8. WARNING
   Rotating Broom. Contact or use of broom without shroud can cause personal injury or property damage.
   Turn broom and auxiliary engine off before opening cover to inspect or service. Keep broom cover closed and secured unless servicing.

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.
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 others.

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](image)

*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.

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 yd³ (3.2 m³)
Material volume.......................3 yd³ (2.3 m³)
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 yd³ (4.2 m³)
Material volume.......................4.5 yd³ (3.4 m³)
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

- Auxiliary engine compartment
- Conveyor
- Hopper
- Beacon light
- Main broom
- Dirt shoe
- Side broom
- Centerboard
- Side broom light
Figure D-9
Eagle F Rear View
OPERATION

Before operating the Elgin Eagle, be certain that you have read and understand all safety and operation information. If you have any questions, 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.


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 REGULA-
   TOR - Regulates the downward pressure on
   the main broom. Lift locking knob and turn to
   adjust. Push down on locking knob 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 rear-
    ward raises conveyor and dirt shoes to trans-
    port 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 release 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.
4. 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).


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.

<table>
<thead>
<tr>
<th>Sweeping Conditions</th>
<th>Engine RPM</th>
<th>MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>2000</td>
<td>8 (15 km/h)</td>
</tr>
<tr>
<td>Medium</td>
<td>2250</td>
<td>5 - 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 - 15 km/h</td>
</tr>
<tr>
<td>Heavy</td>
<td>2500</td>
<td>1 - 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 - 8 km/h</td>
</tr>
</tbody>
</table>

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.


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.
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.

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
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 alignment 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.

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.


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.
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
7  Wash Down Machine - Flush Out Lower Conveyor Roller
8  Check Windshield Washer Fluid Level
9  Grease Lower Conveyor Roller Bearings (2)
10  Grease Upper Conveyor Roller Bearings (2)
11  Grease Dirt Shoe Pivot (2)
12  Check Side Broom Contact Pattern
13  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

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 T68 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.
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.
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.
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.

⚠️ CAUTION

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

Air Pre-Cleaner

The dust level in the air pre-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 dish-washer 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.

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.
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.

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.

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.
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.
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.

![Hydraulic Oil Reservoir](Figure SP-8)
⚠️ 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.
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.

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-10
Top Of Spray Water Tank

SP-13
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.

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 down pressure, 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.

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 roller 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
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.

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*Figure SP-15*

Hopper Support Bar In Place
(Start F-1000)
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.
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
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-15, 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).

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.

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.
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 System

- Battery
- Alternator
- Ignition Switch
- Relay
- Relay
- Circuit Breaker
- Control Switch
- Component (Load)
- Chassis Ground
- Starter Motor
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.