TENNANT

97

MM282
Rev. 00 (2–91)

This manual is furnished with each new TENNANT Model 97. It provides necessary operating and preventive maintenance instructions. Read this manual completely and understand the machine before operating or servicing it.

This manual covers all machine variations and standard accessories. The instruction portion of the manual consists of the Specification, Operation, Maintenance, and Appendix sections. The parts portion consists of the Low Dump Model Parts; Multi-Level Dump Model Parts; Accessories; Hydraulic Components; and Engine Parts sections.

All right side and left side references to the machine are determined by facing the direction of forward travel. All hardware considered to be of a common nature or locally available has been omitted from the parts sections. Be aware that this machine may contain metric hardware. Make sure you use equivalent hardware when replacement becomes necessary.

This machine will provide excellent service. However, the best results will be obtained at minimum costs if:

- The machine is operated with reasonable care.
- The machine is maintained regularly – per the maintenance instructions provided.
- The machine is maintained with Tennant Company supplied or equivalent parts.

Parts and supplies may be ordered by phone or mail from any Tennant Company parts and service center, distributor, or from any of the Tennant Company subsidiaries. Before ordering parts or supplies, be sure to have your machine model number and serial number handy. Fill out the data block below for future reference. The telephone numbers, telex numbers, mailing addresses, and locations of those outlets are listed in the Customer Documents section of the manual.

MACHINE DATA

Please fill out at time of installation.

Machine Serial Number – _____

Engine Serial Number – _____

Sales Representative – _____

Customer Number – _____

Date of Installation – _____

Manual Number – MM282

Revision: 00

Published: 2–91

Acknowledgements: Technical information and/or illustrations supplied by Cessna Fluid Power Division; Kubota Ltd.; Eaton Corporation, Hydraulics Division.

ABOUT THIS MANUAL

The machine manual that you received with your TENNANT machine contains valuable information about the operation and maintenance, and numerous sections filled with TENNANT part numbers for the repair of the machine. Please read through this section titled *ABOUT THIS MANUAL* to become familiar with the contents of the machine manual, making the information you are looking for easier to find.

The machine manual consists of several sections of reference information, and the remainder contain part number information for ordering repair parts for the machine. Each section has a shaded bar at the top of the page with the name of that section. Just as this section has the title ABOUT THIS MANUAL on the top of each page. This way you can tell which section you are in at all times.

REFERENCE SECTIONS

The reference information sections of the manual are; General Information, Specifications, Operation, Maintenance, and Appendix.

GENERAL INFORMATION – The General Information section of the manual contains the safety precautions, the location of the safety labels on the machine, and a table of contents of the entire manual. The Safety Precautions are an overview of the safety measures to be observed when operating and maintaining your machine. The location of the safety labels show the mounting location of the safety labels for use in the replacement of the labels. The table of contents in this section is a list of all the table of contents that appear in the front of each section in the manual. This can be used for easy reference to locate information in a particular section of the manual.

SPECIFICATIONS – The Specifications section of the manual contains machine specification information useful in the operation and maintenance of the machine. This section gives you specification information on the engine, electric motors, brake system, hydraulics, fluid capacities, and machine weight to mention a few. The section also has a illustration of the top and side view of the machine with the height and width dimensions displayed.

OPERATION – The Operation section of the manual contains information needed to operate the machine. This section will list the controls and instruments on the machine, overview the machine operation, and tell you how to transport and store the machine.

MAINTENANCE – The Maintenance section contains information on the suggested maintenance procedures and adjustments to keep your machine in top operating condition. The section includes a Maintenance Chart listing the maintenance schedule and the areas of the machine to be addressed. Each subject of maintenance is covered in more detail in such areas as Lubrication, Hydraulics, Engine, and Electrical System.

APPENDIX – The Appendix contains hardware and hydraulic information. Standard hardware torques and identification information is included, plus hydraulic torques if your machine is hydraulically controlled.

PART SECTIONS

The remaining sections of the manual contain part number information for ordering repair parts for your machine. The manual contains part number information on every type of machine model available in the model size of your particular machine. Therefore there will be part number information in your manual you will not need to refer to when wanting to place an order.

The main thing you need to know about your machine is what type of model is it. Is the machine powered by an engine or batteries? If the machine has an engine, is it fueled from gasoline, LPG, or gasoline? If it is a mid-sized or larger sweeper, is it multi-level or low dump? For the scrubbers, is it SRS® or standard. Determining this information about your machine will help guide you through the separate parts sections to find the repair part you need.

The smaller line of sweeper and scrubbers have less complicated part section arrangement, and are easier to find your way through the parts sections. The larger machines can have quite a variety of model types which significantly increases the size to the machine manual. Because of this, on the larger machine we made the first part section, Section 5, a part section which contains parts common to all type of the machine. If the machine has an engine, this section contains parts information on a gasoline powered machine.

The remaining sections contain only parts information which is unique to that particular machine type, such as unique diesel parts on the machine, or unique SRS® parts. Knowing the machine model type you have is important when searching for that part information you need for ordering repair parts. Start in that unique section first when looking for a part, then go to the first parts section, Section 5, if the part can't be found in the unique section.

MACHINE SERIAL NUMBERS

When a design change takes place to a machine, the changes are indicated in the parts sections with machine serial numbers. Know the serial number of your machine which can be found on the machine data plate mounted on the machine. Record this number on the inside front cover of your manual along with your customer number.

Machine number usage is recorded in the *Machine Serial Number* column of the parts lists in the parts sections of the manual. If the machine serial number column lists zeros on the left side of the dash, then this part is used on all machines; such as (000000–).

If the column lists zeros on the left of the dash and a number on the right of the dash, then the part is used on machines up to and including that machine serial number; such as (00000–002345).

For parts that are used on machines beginning at and continuing on from a certain serial number, the column would list a serial number on the left of the dash and have blank spaces on the right side of the dash; such as (002346–). This part would be used on machines starting with that machine serial number and greater.

Finally, parts can be used on machines with serial numbers in a certain block of numbers. In this situation there is a serial number on the left and right side of the dash. The part is then used on a machine with a serial number starting at the number on the left and up to and including the number on the right; such as (002346–008900).

PARTS ASSEMBLIES

A part assembly has parts within the assembly, such as a parking brake consisting of other smaller parts. What parts are contained in a part assembly can be determined by an indentation arrangement in the description column of the parts lists.

Here is an example of a part assembly, in this case we will use the parking brake mentioned previously:

Machine Serial Number	**Description**	**Qty.**
(000000–)	Parking Brake	1
(000000–)	Pin, Roll	1
(000000–)	Link	1
(000000–)	Spring, Compression	1
(000000–)	Pin, Roll	1
(000000–)	Support	1
(000000–)	Lever, Release	1
(000000–)	Rod, Parking Brake	1
(000000–)	Washer, 0.50"	3

In this example, the parts whose descriptions are indented under the parking brake are all parts of the parking brake. When you order the parking brake you will receive all the parts listed under it. You also can order any of the individual parts listed under the parking brake if it is the only part you need.

SUPPLIER COMPONENT BREAKDOWNS

TENNANT purchases certain components of the machine from suppliers. Some of these components are engines, hydraulic pumps and motors, electric motors, and solution pumps.

For those purchased components that are repairable, lists of parts for them appear in the later part of the parts sections. These are the supplier breakdowns. The engine breakdown contains both supplier and TENNANT parts numbers for repair parts. Breakdowns for hydraulic and electrical components have TENNANT part numbers for the parts TENNANT supplies. The serial numbers listed in any of the parts lists in these sections is a serial number the manufacturer uses to identify design changes in their particular component.

ORDERING REPAIR PARTS

Once you have located a part to order, there are several things you need to have to place the order. At the beginning of each parts section is an Ordering Repair Parts page which lists the information you will need to place your order. Review this list before placing the order.

SAFETY PRECAUTIONS

The following symbols are used throughout this manual as indicated in their descriptions:

WARNING: To warn of hazards or unsafe practices which could result in severe personal injury or death.

FOR SAFETY: To identify actions which must be followed for safe operation of equipment.

The following information signals potentially dangerous conditions to the operator or equipment. Read this manual carefully. Know when these conditions can exist. Locate all safety devices on the machine. Then, take necessary steps to train machine operating personnel. Report machine damage or faulty operation immediately. Do not use the machine if it is not in proper operating condition.

FOR SAFETY:

1. **Do Not Operate Machine:**
   - **Unless Trained And Authorized.**
   - **Unless Operation Manual Is Read And Understood.**
   - **In Flammable Or Explosive Areas Unless Modified For Use In Those Areas.**
   - **In Areas With Possible Falling Objects Unless Equipped With Overhead Guard.**

2. **Before Starting Machine:**
   - **Check For Fuel Leaks.**
   - **Keep Sparks And Open Flame Away From Refueling Area.**
   - **Make Sure All Safety Devices Are In Place And Operate Properly.**
   - **Check Brakes And Steering For Proper Operation.**

3. **When Starting Machine:**
   - **Keep Foot On Brake And Directional Pedal In Neutral.**

4. **When Using Machine:**
   - **Use Brakes To Stop Machine.**
   - **Go Slow On Grades And Slippery Surfaces.**
   - **Use Care When Backing Machine.**
   - **Move Machine With Care When Hopper Is Raised.**
   - **Make Sure Adequate Clearance Is Available Before Raising Hopper.**
   - **Do Not Carry Riders On Machine.**
   - **Always Follow Safety And Traffic Rules.**

5. **Before Leaving Or Servicing Machine:**
   - **Stop On Level Surface.**
   - **Set Parking Brake.**
   - **Turn Off Machine And Remove Key.**

6. **When Servicing Machine:**
   - **Avoid Moving Parts. Do Not Wear Loose Jackets, Shirts, Or Sleeves When Working On Machine.**
   - **Block Machine Tires Before Jacking Machine Up.**
   - **Jack Machine Up At Designated Locations Only. Block Machine Up With Jack Stands.**
   - **Use Hoist Or Jack Of Adequate Capacity To Lift Machine.**
   - **Wear Eye And Ear Protection When Using Pressurized Air Or Water.**
   - **Avoid Contact With Battery Acid.**
   - **Avoid Contact With Hot Engine Coolant.**
   - **Keep Flames And Sparks Away From Fuel System Service Area. Keep Area Well Ventilated.**
   - **Use Cardboard To Locate Leaking Hydraulic Fluid Under Pressure.**
   - **Use TENNANT Supplied Or Equivalent Replacement Parts.**
   - **Disconnect Battery Connections Before Working On Machine.**

WARNING: Engine Emits Toxic Gases. Severe Respiratory Damage Or Asphyxiation Can Result. Provide Adequate Ventilation. Consult With Your Regulatory Agency For Exposure Limits. Keep Engine Properly Tuned.

WARNING: Machine Can Emit Excessive Noise. Consult With Your Regulatory Agency For Exposure Limits. Hearing Loss Can Result. Wear Hearing Protection.

WARNING: Lift Arm Pinch Point. Stay Clear Of Hopper Lift Arms When Hopper Is Moving.

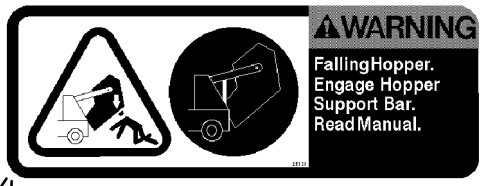
WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

WARNING: Moving Fan Blades. Keep Away.

The following safety labels are mounted on the machine in the locations indicated. If these, or any, labels become damaged or illegible, install a new label in its place.

ENGINE FAN LABEL -- LOCATED ON THE TOP AND SIDE OF THE RADIATOR FAN SHROUD.

FALLING HOPPER LABEL -- LOCATED ON RIGHT AND LEFT SIDE LIFT ARMS. LOW DUMP MODEL ONLY.



HOPPER LIFT ARM LABEL -- LOCATED ON RIGHT AND LEFT SIDE LIFT ARMS.

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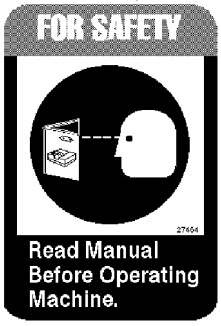
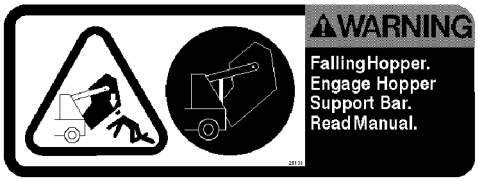
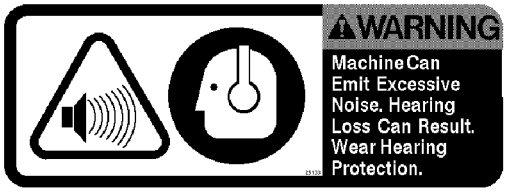


SAFETY LABEL -- LOCATED ON THE DRIVER COMPARTMENT PANEL.

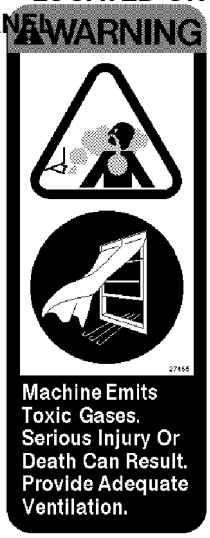


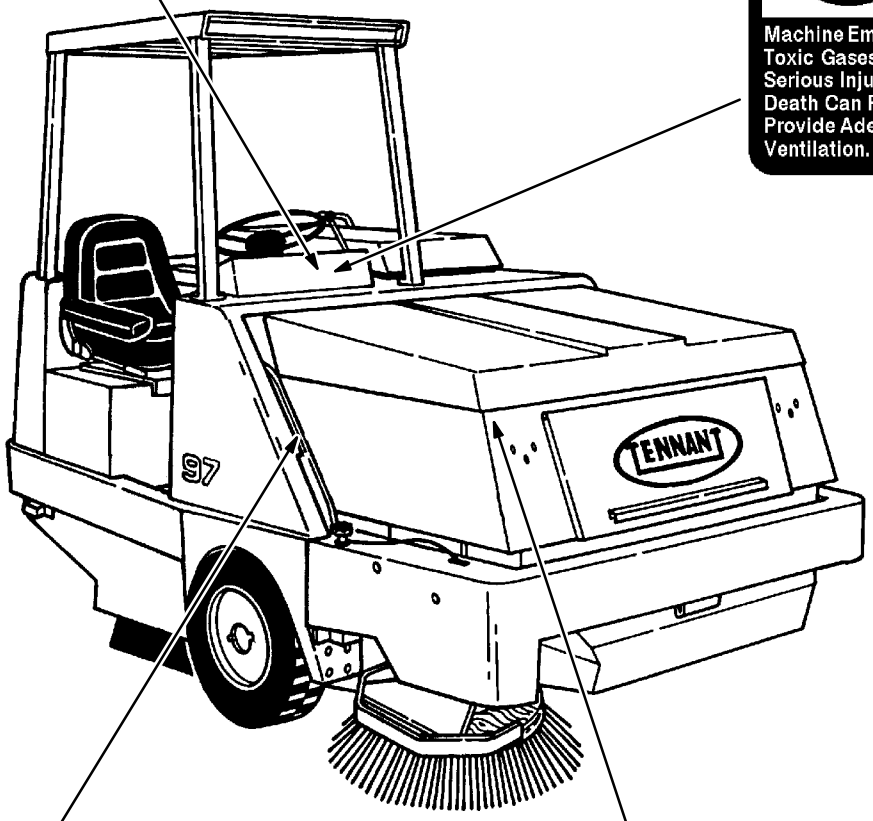
FALLING HOPPER LABEL -- LOCATED ON UNDER-SIDE OF FRONT BUMPER. LOW DUMP MODEL ONLY.

NOISE LABEL – LOCATED ON THE DRIVER COMPARTMENT PANEL.



EMISSIONS LABEL – LOCATED ON THE DRIVER COMPARTMENT PANEL.





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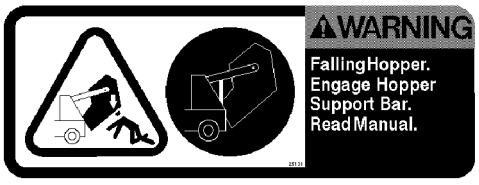
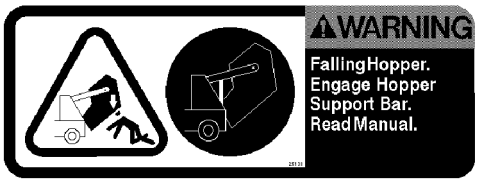


FALLING HOPPER LABEL – LOCATED ON LEFT SIDE LIFT ARM AND ON HOPPER SAFETY SUPPORT BAR, MULTI-LEVEL DUMP MODEL ONLY.



FALLING HOPPER LABEL – LOCATED ON LINTEL/PUMP BAFFLE, MULTI-LEVEL DUMP MODEL ONLY.

CONTENTS

SECTION 1

CONTENTS

MACHINE SPECIFICATIONS

POWER TYPE

Engine Manufacturer/model – Kubota V1902
Engine type – piston
Ignition – diesel
Cycle – 4
Aspiration – natural
Cylinders – 4
Bore – 3.35 in (85 mm)
Stroke – 3.23 in (82 mm)
Displacement – 113.57 cu in (1861 cc)
Net power – 34 hp (25.4 kw) @ 2200 rpm governed
43 hp (32 kw) @ 2800 rpm maximum
Fuels – #2 diesel fuel
Cooling system – water
Electrical system – 12 V nominal, 37 A alternator, low dump, multi-level dump
30 A totally enclosed alternator, severe environment option

POWER TRAIN

Propelling – hydraulic drive motor, rear wheel
Main brush – hydraulic drive motor
Side brush – hydraulic drive motor
Vacuum fan – hydraulic drive motor

STEERING

Type – rear wheel controlled, automotive cam and lever
Power source – manual
Emergency steering – manual

HYDRAULIC SYSTEM

Function – operates propelling, hopper lift, hopper dump, main brush drive, side brush drive, and vacuum fan drive.

Control valve, low dump model, hopper lift, main brush drive, side brush drive, vacuum fan drive – solenoid operated.

Control valve, multi-level dump model, hopper lift, hopper dump, main brush drive, side brush drive, vacuum fan drive – solenoid operated.

Propelling pump – variable displacement piston pump, 22.7 gpm (86 L/min) @ 2400 rpm

Propelling system rated pressure – 4500 psi (31,030 kPa)

Accessories pump – gear pump, 14.3 gpm (54 L/min) @ 2400 rpm.

Accessories system rated pressure – 2000 psi (13,790 kPa)

Hopper door cylinder system rated pressure – 500 psi (3450 kPa).

Propelling motor – internal gear motor, 29.9 cu in (490 cc) displacement per revolution. 4500 psi (31,030 kPa) maximum rated pressure.

Main brush motor – internal gear motor, 4.5 cu in (74 cc) displacement per revolution. 2400 psi (16,550 kPa) maximum rated pressure.

Side brush motor – internal gear motor, 5.9 cu in (97 cc) displacement per revolution. 2500 psi (17,240 kPa) maximum rated pressure.

Vacuum fan motor – external gear motor, 0.26 cu in (4 cc) displacement per revolution. 3000 psi (20,685 kPa) maximum rated pressure

Hopper lift cylinder, low dump model – double action, 3 in (75 mm) bore x 11.8 in (300 mm) stroke, 1.37 in (35 mm) diameter rod, 2500 psi (17,240 kPa) maximum rated pressure.

Hopper lift cylinder, multi-level dump model – double action, 3.5 in (90 mm) bore x 20.7 in (525 mm) stroke, 1.5 in (40 mm) diameter rod, 2500 psi (17,240 kPa) maximum rated pressure.

Hopper dump cylinder, multi-level dump model (2) – double action, 2 in (51 mm) bore x 12 in (305 mm) stroke, 1 in (25 mm) diameter rod, 2500 psi (17,240 kPa) maximum rated pressure.

BRAKING SYSTEM

Service brakes – hydraulic drum brakes (2), one per front wheel, foot brake master cylinder actuated

Parking brakes – utilizes service brakes, cable actuated

SUSPENSION SYSTEM

Front – two 21 x 5 x 12 solid tires
Rear, low dump model – one 6.90/6.00 x 9 pneumatic tire
Rear, multi-level dump model – one 6.90/6.00 x 9 solid tire

SYSTEM FLUID CAPACITIES

Engine cooling system – radiator 7.4 qt (7 L)
Engine cooling system – total system 14.6 qt (13.8 L)

Engine lubricating oil – 8.38 qt (9 L) with filter

Fuel tank – 12.9 gal (50 L)

Hydraulic system – reservoir 5 gal (19 L) total system 7 gal (26 L)

GENERAL MACHINE DIMENSIONS – CAPACITIES

Length – 111.5 in (2830 mm)

Width – 71 in (1805 mm)

Height, without overhead guard – 59 in (1500 mm)
Height, with overhead guard – 81.5 in (2070 mm)
Height, with overhead guard and hazard light – 90.5 in (2300 mm)

Track – front, 60.5 in (1535 mm)
Wheel base – 48.9 in (1240 mm)

Main brush, tubular diameter – 16 in (405 mm) tubular length – 50 in (1270 mm)
Side brush, rotary diameter – 26 in (660 mm)

Sweeping path width, without side brush – 50 in (1270 mm)
Sweeping path width, with side brush – 66 in (1676 mm)
Sweeping path width, with auxiliary side brush option – 84 in (2135 mm)

Hopper capacity – 1800 lb (815 kg) 30 cu ft (0.85 m^3)

Dust filter area – 120 sq ft (11 m^2)

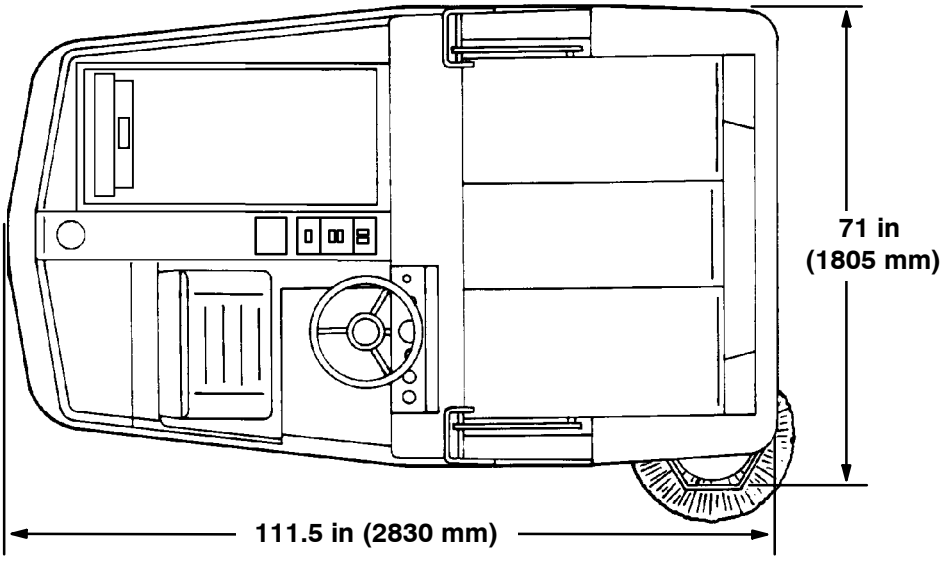
MACHINE WEIGHTS

Net GVWR, low dump model – 6670 lb (3025 kg)
Net GVWR, multi-level dump model – 6950 lb (3155 kg)

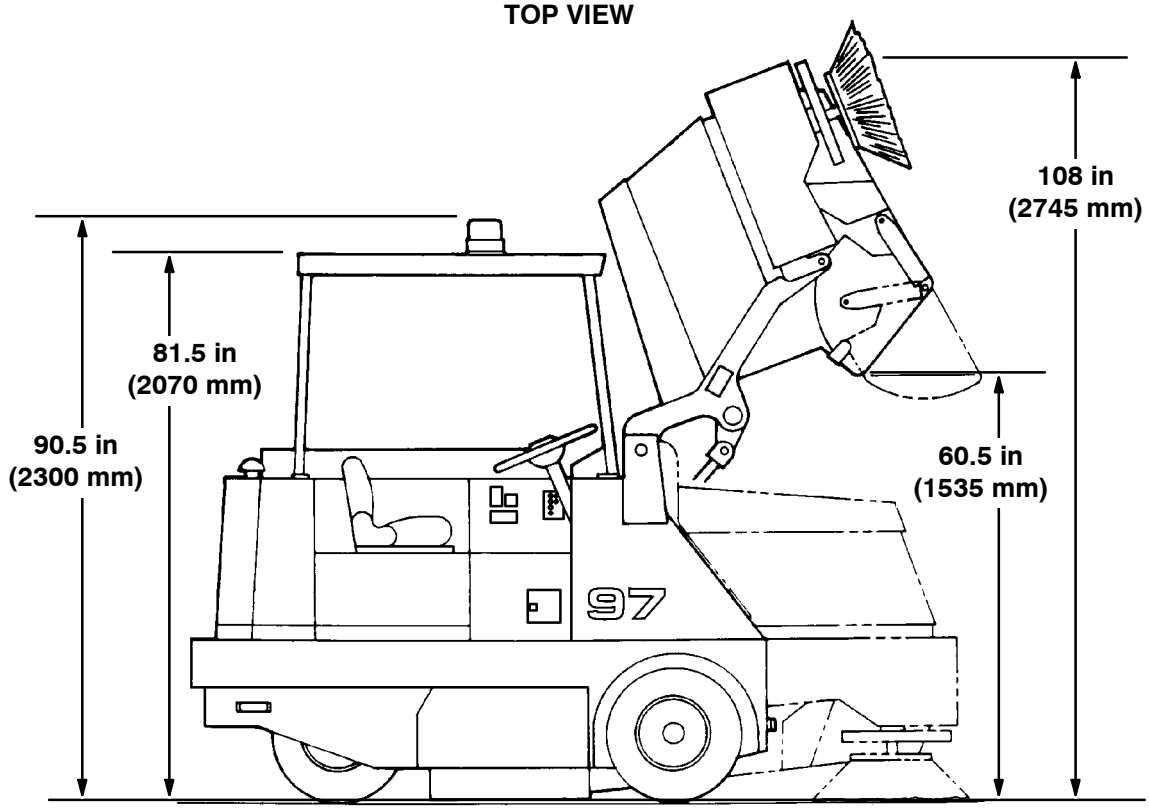
GENERAL MACHINE PERFORMANCE

Maximum forward speed – 10.7 mph (17 km/h)
Maximum reverse speed – 6 mph (10 km/h)
Turning radius, right – 91.5 in (2325 mm)
Turning radius, left – 70.75 in (1795 mm)

MACHINE DIMENSIONS



TOP VIEW



SIDE VIEW

06716

SECTION 2

CONTENTS

PREPARATION FOR OPERATION

AFTER UNCRATING AND BEFORE OPERATING THE MACHINE:

1. Check the machine for shipping damage.

2. Read this manual carefully before operating or servicing the machine.

FOR SAFETY: Do Not Operate The Machine, Unless Operation Manual Is Read And Understood.

3. Check the hydraulic fluid level in the hydraulic fluid reservoir using the dipstick provided. TENNANT hydraulic fluid is recommended. If TENNANT hydraulic fluid is not available, use only new-approved hydraulic fluid. See *HYDRAULICS* in the *MAINTENANCE* section.

4. Check the engine oil level.

5. Check the radiator coolant level.

FOR SAFETY: When Servicing Machine, Avoid Contact With Hot Engine Coolant.

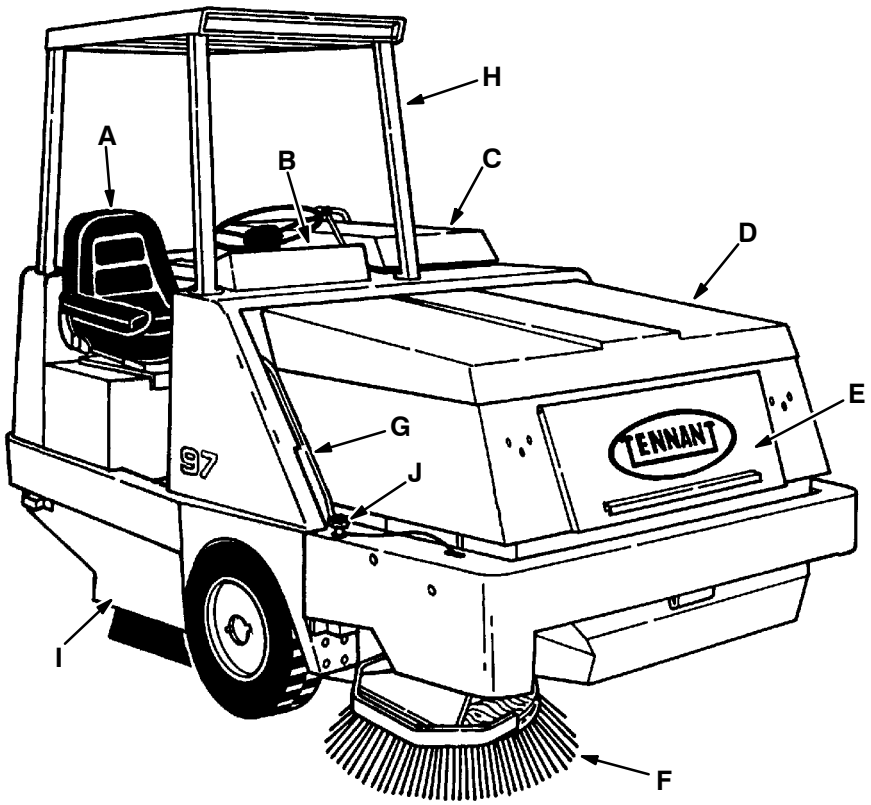
6. Check the brush adjustment, as described in *MAINTENANCE* section.

7. Check the air pressure of the rear tire, low dump model only.

8. Fill the fuel tank per the instructions in this manual.

FOR SAFETY: When Servicing Machine, Keep Flames And Sparks Away From Fuel System Service Area. Keep Area Well Ventilated.

OPERATION OF CONTROLS



06461

MACHINE COMPONENTS

A. **Operator Seat**
B. **Instrument Panel**
C. **Engine Cover**
D. **Hopper**
E. **Hopper Access Door**
F. **Side Brush**
G. **Hopper Support Arm**
H. **Overhead Guard**
I. **Main Brush Access Door**
J. **Side Brush Height Adjustment Knob**

INSTRUMENT PANEL SYMBOLS

The symbols are used to identify controls and displays on the machine:

 Slow

 Fast

 Main Brush Off

 Main Brush #1

 Main Brush #2

 Side Brush Off

 Side Brush On

 Filter Shaker

 Vacuum Fan

 Hopper Door Close

 Hopper Door Open

 Hopper Up

 Hopper Hold

 Hopper Down

 Circuit Breaker #1

 Circuit Breaker #2

 Circuit Breaker #3

 Circuit Breaker #4

 Circuit Breaker #5

 Circuit Breaker #6

 Circuit Breaker #7

 Circuit Breaker #8

 Main Brush Free-float

 Main Brush Down

 Main Brush Up

 Filter Clogged

 Operating Lights

 Hazard Light

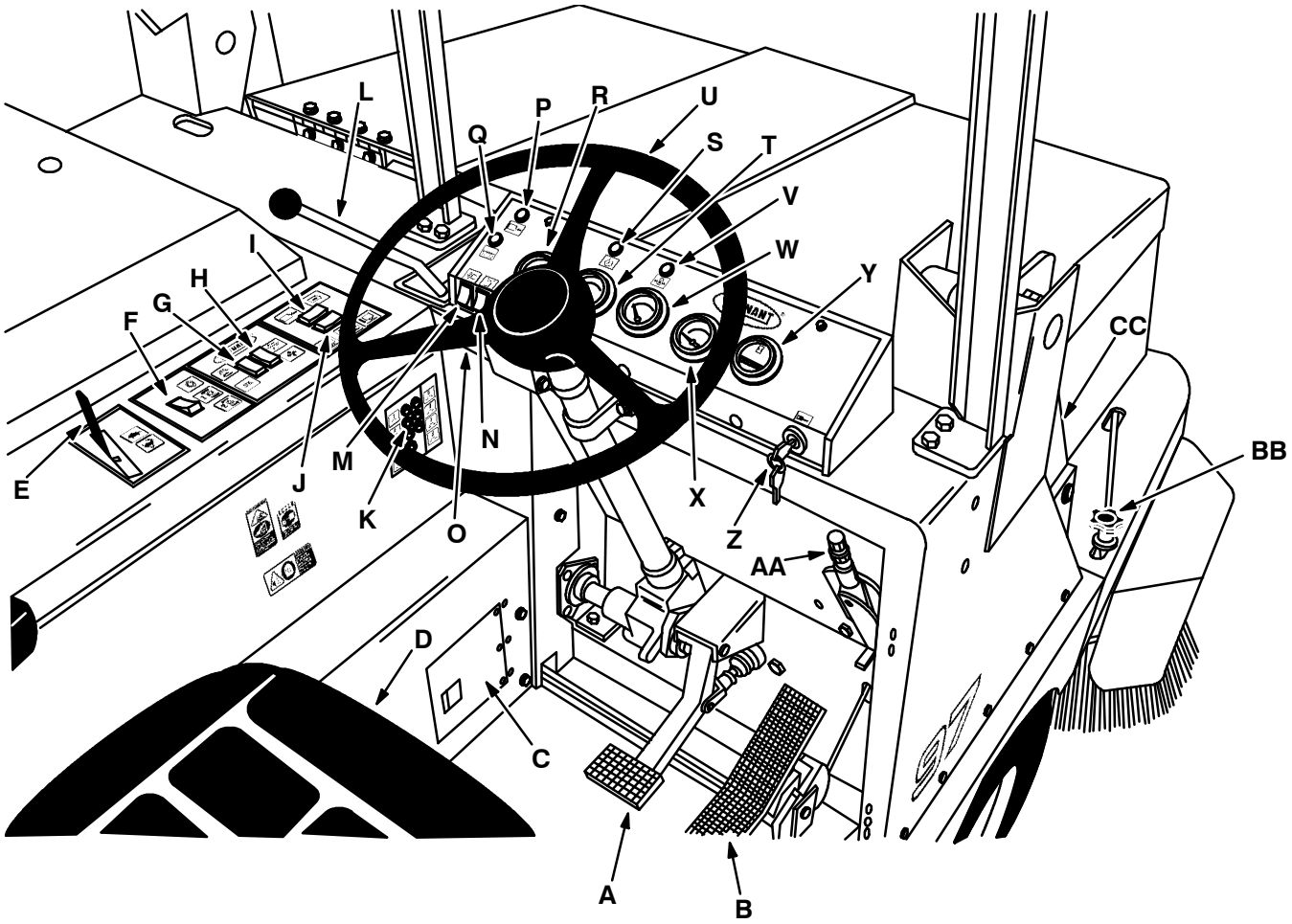
 Engine Water Temperature

 Engine Oil Pressure

 Key Switch

 Diesel Fuel

 Hydraulic Fluid



06559

CONTROLS AND INSTRUMENTS

- **A. Brake Pedal**
- **B. Directional Pedal**
- **C. Main Brush Height Adjustment Knob**
- **D. Operator Seat**
- **E. Throttle Lever**
- **F. Main Brush Switch**
- **G. Side Brush Switch**
- **H. Filter Shaker and Vacuum Fan Switch**
- **I. Hopper Door Switch, Multi-Level Dump**
- **J. Hopper Switch**
- **K. Circuit Breakers**
- **L. Main Brush Position Lever**
- **M. Operating Lights Switch**
- **N. Hazard Light Switch**
- **O. Turn Signal Switch**
- **P. Hopper Door Lamp, Multi-Level Dump**
- **Q. Clogged Dust Filter Lamp**
- **R. Fuel Level Gauge**
- **S. High Engine Coolant Temperature Lamp**
- **T. Engine Coolant Temperature Gauge**
- **U. Steering Wheel**
- **V. Low Engine Oil Pressure Lamp**
- **W. Engine Oil Pressure Gauge**
- **X. Voltage Gauge**
- **Y. Hour Meter**
- **Z. Key Switch**
- **AA. Parking Brake**
- **BB. Side Brush Height Adjustment Knob**
- **CC. Hopper Support Bar**

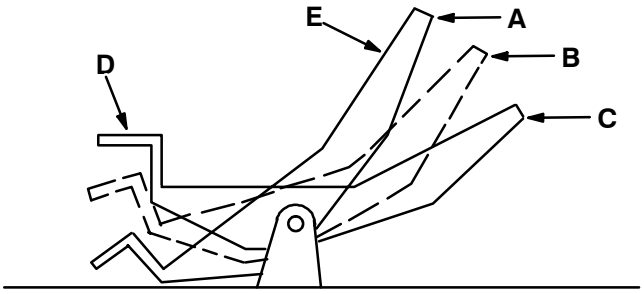
BRAKE PEDAL

The brake pedal operates the mechanical drum brakes on the two front wheels.

To stop the machine, return the directional pedal to neutral; then apply pressure to the brake pedal.

DIRECTIONAL PEDAL

The directional pedal controls the propelling drive. The foot pedal is used to select the direction of travel and the propelling speed of the machine.



DIRECTIONAL PEDAL

- **A. "Reverse" Position**
- **B. "Neutral" Position**
- **C. "Forward" Position**
- **D. "Heel" Portion**
- **E. "Toe" Portion**

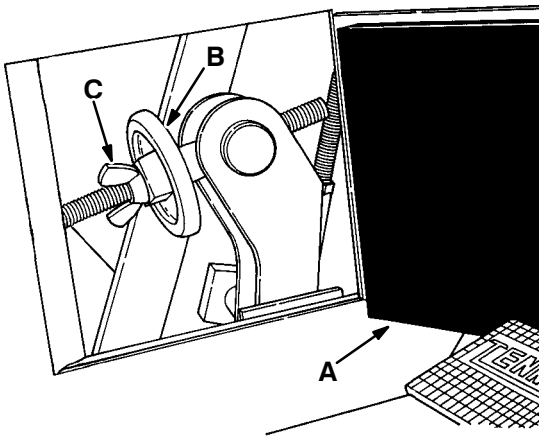
To travel forward, press the "toe" portion of the pedal; press the "heel" portion of the pedal for reverse travel. The propelling speed of the machine is regulated by varying the pressure on the pedal.

If the machine creeps when the pedal is in the neutral position, adjust the pedal as directed in *DIRECTIONAL PEDAL "NEUTRAL" POSITION ADJUSTMENT* in the *MAINTENANCE* section.

MAIN BRUSH HEIGHT ADJUSTMENT KNOB

The main brush height adjustment knob is located behind an access door next to the operator's left foot. The height adjustment knob adjusts the main brush pattern width.

Threading the knob to the right reducing the main brush floor contact, decreasing the brush pattern width. Threading the knob to the left increases main brush floor contact, increasing the brush pattern width.



MAIN BRUSH HEIGHT ADJUSTMENT KNOB

- **A. Access Door**
- **B. Adjustment Knob**
- **C. Wing Nut**

OPERATOR SEAT

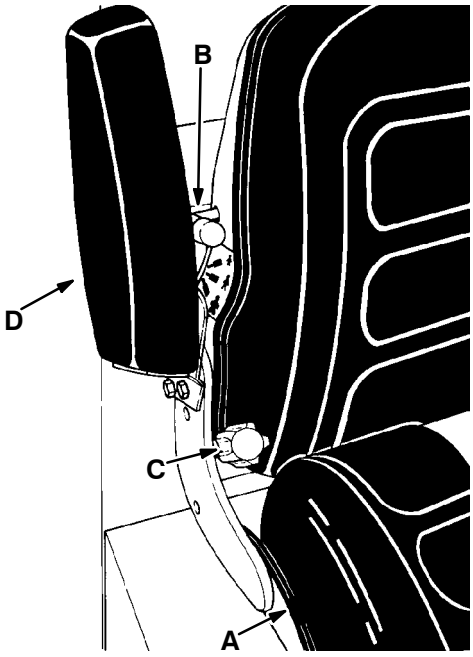
The operator seat is a three-way adjustable seat with armrests. The seat has adjustments to compensate for operator weight, to vary the backrest angle, and to vary the front to rear seat position.

The weight adjustment lever has three positions. One for light operators, one for medium weight operators, and one for heavy operators. Pull the lever up for light operators, position the lever horizontally for medium weight operators, and down for heavy operators.

The backrest angle is adjusted by rotating the knob to the right to decrease the backrest angle, or to the left to increase the backrest angle.

The seat position is adjusted by pulling the seat position lever out, sliding the seat forward or backward to a comfortable position, and releasing the lever.

The right side armrest may be rotated up and back to enter or exit from the operator seat.



01435

OPERATOR SEAT

A. Seat
B. Weight Adjustment Lever
C. Backrest Angle Knob
D. Armrest

THROTTLE LEVER

The throttle lever controls the engine governed speed. To slow the engine to idle speed, push the lever forward into the (Slow) position. To speed the engine to the maximum governed speed, pull the lever back into the (Fast) position. To stop the engine, push the lever all the way forward past the (Slow) position.

MAIN BRUSH SWITCH

The main brush switch controls the main brush speed and rotation.

To start the main brush rotation, place the switch in the middle (Main Brush #1) position for sweeping normal debris. Place the switch in the bottom (Main Brush #2) position for sweeping light litter.

To stop the main brush rotation, place the switch in the top (Main Brush Off) position.

SIDE BRUSH SWITCH

The side brush switch lowers and starts, and raises and stops the side brush.

To lower and start the side brush, press and hold the switch in the bottom (Side Brush On) position until the side brush lowers the desired height. To raise and stop the side brush, press and hold the switch in the top (Side Brush Off) position.

FILTER SHAKER AND VACUUM FAN SWITCH

The filter shaker and vacuum fan switch turns on the filter shaker and vacuum fan.

To turn on the vacuum fan, place the switch in the bottom (Vacuum Fan) position. To turn off the vacuum fan, place the switch in the middle position.

To start the filter shaker, press the top (Filter Shaker) of the switch. The filter shaker will automatically run for 40 seconds.

NOTE: The main brush and vacuum fan will not run while the filter shaker is operating. Once the filter shaker stops, the main brush and vacuum fan can be operated.

HOPPER DOOR SWITCH

The hopper door switch is present on multi-level dump machines. The switch controls the hopper door position.

To open the hopper door into the sweeping and dumping position, press and hold the switch in the (Hopper Door Open) position. To close the hopper door so the hopper may be raised without allowing debris to spill out, press and hold the switch in the (Hopper Door Close) position.

Always sweep with the hopper door open in the sweeping position.

NOTE: The hopper door has to be open to sweep. The hopper door lamp lights if the hopper door is not fully open. The lamp will go out when the hopper door is fully open.

HOPPER SWITCH

The hopper switch controls the hopper position. To raise the hopper, press and hold the switch in the (Hopper Up) position until the hopper reaches the desired height. To stop and hold the hopper at the desired height, release the switch in the (Hopper Hold) position. To lower the hopper, press and hold the switch in the (Hopper Down) position.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

CIRCUIT BREAKERS

Circuit breakers are reusable circuit protection devices designed to stop the flow of current in the event of a circuit overload. Once tripped, circuit breakers must cool before they are reset by pressing the reset button. The circuit breakers are located on the driver compartment panel to the left of the steering wheel.

If the overload which caused the circuit breaker to trip is still present in the circuit, the circuit breaker will continue to stop current flow until the overload is corrected. The chart below shows the various circuit breakers and the electrical components they protect.

PROTECTIVE DEVICE	RATING	CIRCUIT PROTECTED
CB–1	15 A	Filter Shaker, Control Valve
CB–2	15 A	Side Brush Actuator
CB–3	15 A	Instrumentation and Hopper Switches
CB–4	15 A	Operating Lights
CB–5	15 A	Turn Signal
CB–6	15 A	Cab Heater/Defroster, Wiper
CB–7	15 A	Back-Up Alarm
CB–8	15 A	Auxiliary Side Brush

MAIN BRUSH POSITION LEVER

The main brush position lever controls the position of the main brush. There are two operating positions for the main brush, normal and free-float. The normal position is used for most sweeping conditions, and will extend main brush life. The free-float position is used when sweeping extremely uneven areas, and allows the main brush to follow the surface more closely.

To lower the main brush for normal sweeping, pull the lever back and to the right into the (Main Brush Down) position.

To lower the main brush for sweeping extremely uneven surfaces, pull the lever back and to the right into the (Main Brush Free-Float) position.

To raise the main brush, pull the lever all the way back then to the left into the (Main Brush Up) position.

NOTE: Always raise the main brush when the machine is not being operated for a period of time to prevent the main brush from taking a set.

OPERATING LIGHTS SWITCH

The operating lights switch is present on machines with the operating lights option. The switch controls the headlights, taillights, and the side brush spot lamp.

To turn on the lights, place the switch in the top position. To turn off the lights, place the switch in the bottom position.

HAZARD LIGHT SWITCH

The hazard light switch is present on machines with the hazard light option. To turn on the light, place the switch in the top position. To turn off the light, place the switch in the bottom position.

TURN SIGNAL SWITCH

The turn signal switch is present on machines with the operating lights option. The switch controls the turn signal lights. To signal a right turn, push the turn signal switch lever forward. To signal a left turn, pull the signal switch lever back. To turn on the flashers, pull out the knob under the switch lever.

HOPPER DOOR LAMP

The hopper door lamp is present on multi-level dump model machines. The lamp lights when the hopper dump door is not fully open. The dump door should be fully open and door lamp off whenever sweeping up debris. The hopper door should be closed when raising the hopper to dump the debris. Do not sweep with the dump door indicating lamp lit.

NOTE: The hopper door has to be open to sweep. The hopper door lamp lights if the hopper door is not fully open. The lamp will go out when the hopper door is fully open.

CLOGGED DUST FILTER LAMP

The clogged dust filter indicating lamp lights when the dust filters become clogged and excessively restrict vacuum air flow. Lower the hopper, and press the filter shaker and vacuum fan switch in the (Filter Shaker) position to shake the dust filter. Shake the dust filters when necessary to remove the air restriction. It may be necessary to clean or replace the dust filters to remove the air restriction. Do not continue to sweep with the clogged dust filter lamp lighted as dust pickup will be reduced.

FUEL LEVEL GAUGE

The fuel level gauge indicates how much fuel is left in the fuel tank.

HIGH ENGINE COOLANT TEMPERATURE LAMP

The high engine coolant temperature lamp is present on machines with the severe environment option. The lamp lights when the engine coolant temperature exceeds 225° F (107° C).

ENGINE COOLANT TEMPERATURE GAUGE

The engine coolant temperature gauge registers the engine coolant temperature. Normal engine coolant temperatures range up to 200° F (93° C). Temperatures above this level indicate an over-heating engine. This condition may be the result of a low coolant level, a clogged radiator, a loose fan belt, a defective thermostat, or other engine malfunctions. Engine overheating will always cause a coolant loss. If coolant loss does not occur, check for malfunction of the temperature sending unit.

STEERING WHEEL

The automotive-type steering wheel operates the rear wheel. The machine is very responsive to the movement of the steering wheel. Use care until you become more experienced in guiding the machine.

LOW ENGINE OIL PRESSURE LAMP

The low engine oil pressure lamp is present on machines with the severe environment option. The lamp lights when the engine oil pressure drops below 7 psi (50 kPa).

ENGINE OIL PRESSURE GAUGE

This gauge registers the engine oil pressure. Normal engine oil pressure ranges from 7 psi (50 kPa) at idle, to 30 to 40 psi (205 to 275 kPa) at full engine throttle. The oil pressure may read as high as 60 psi (415 kPa) during cold engine start-up. If the gauge registers an oil pressure reading below 7 psi (50 kPa), stop the engine immediately and determine the cause. Failure to stop the engine will result in severe engine damage.

VOLTAGE GAUGE

The voltage gauge indicates the present voltage potential of the battery. Normal battery voltage is 10 to 14 volts. If the battery voltage exceeds 14 volts, it may be overcharging. If the battery voltage falls below 10 volts, it may not be accepting or getting a charge from the alternator. Overcharging and undercharging are indications that one or more electrical components is in need of repair.

HOUR METER

The hour meter records the number of hours the machine has been operated. This information is useful in determining when to service the machine.

KEY-OPERATED IGNITION SWITCH

The key-operated ignition switch starts the engine.

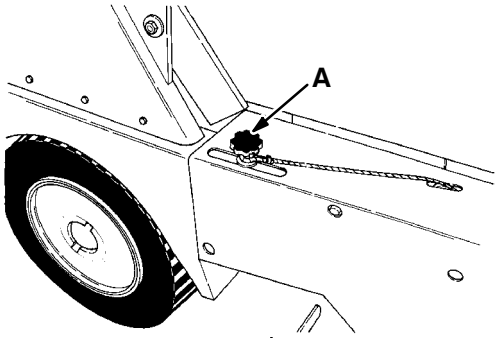
To start the pre-heat, turn the key all the way to the left and hold the key there for 15 to 60 seconds, depending on weather conditions. To start the engine, turn the key fully to the right. Release the key as soon as the engine starts. To turn the engine off, turn the key to the left.

PARKING BRAKE

The parking brake operates the two front wheel brakes. Pulling the brake handle up sets the parking brake. Pushing the brake handle down releases the parking brake. Always set the parking brake before leaving the machine unattended and before working on the machine.

SIDE BRUSH HEIGHT ADJUSTMENT KNOB

The side brush height adjustment knob is located just above the side brush on the front bumper. Loosening the knob and sliding it forward lowers the side brush, increasing the brush contact with the floor. Sliding the knob backward raises the side brush, decreasing the brush contact with the floor. Tighten the knob after setting the side brush height. The side brush should be raised before making an adjustment.



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SIDE BRUSH HEIGHT ADJUSTMENT KNOB

A. Adjustment Knob
B. Side Bumper

HOPPER SUPPORT BAR

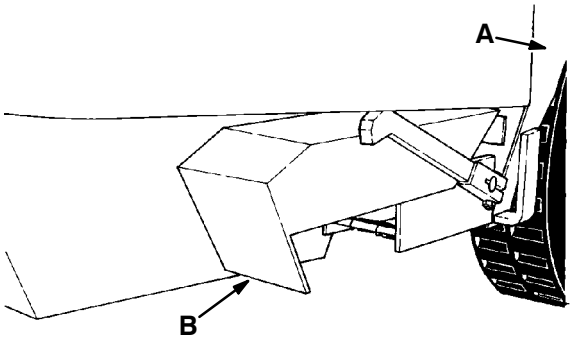
The hopper support bar is present on the operator's side of the hopper to hold the hopper in a raised position for a length of time to allow work to be done under the hopper. Do not rely on the machine hydraulic system to keep the hopper raised.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

STABILIZER LEG

The machine stabilizer leg is present on a multi-level dump model machine.

The stabilizer leg is a safety device which, when the machine is being multi-level dumped, projects forward to act as an anti-tipping device. Check the stabilizer leg to be sure it is projecting forward when the machine is being multi-level dumped and is fully retracted when the hopper is lowered position.



01440

RETRACTED STABILIZER LEG

A. Machine Frame
B. Stabilizer Leg

MACHINE OPERATION

NORMAL SWEEPING OPERATION

A normal sweeping operation consists of seven typical operations: pre-start checklist, starting machine, sweeping, dumping hopper, post operation checklist – engine operating, stopping machine, and post operation checklist – engine stopped.

The *PRE-START CHECKLIST* lists things to check before starting the machine.

TO START MACHINE lists the steps required to start the machine.

TO SWEEP lists things to keep in mind before and during the sweeping operation.

TO DUMP LOW DUMP HOPPER lists the steps required to dump the low dump hopper.

TO DUMP MULTI-LEVEL DUMP HOPPER lists the steps required to dump the multi-level dump hopper.

POST OPERATION CHECKLIST – ENGINE OPERATING lists things to check before stopping the machine engine.

TO STOP MACHINE lists the steps required to stop the machine.

POST OPERATION CHECKLIST – ENGINE STOPPED lists things to check after stopping the machine engine.

PRE-START CHECKLIST

Check under the machine for leak spots.

Check the engine lubricating oil level.

Check the radiator coolant level.

Remove and clean the radiator screen.

Drain the water trap.

Check the fuel level.

Check the brakes and controls for proper operation.

Check the service records to determine service requirements.

TO START MACHINE

NOTE: Before starting machine, perform the pre-start checks.

FOR SAFETY: Before Starting Machine, Make Sure All Safety Devices Are In Place And Operate Properly.

1. The machine operator must be in the operator's seat with the directional pedal in the "neutral" position, and with a foot on the brake pedal or with the parking brake set.

2. If the engine is cold: Turn the switch key fully to the left, to start the diesel pre-heat, and hold the key there for 30 seconds.

3. Move the throttle lever to the (Slow) position.

4. Turn the ignition switch key to the right until the engine starts. Do not operate the starter for more than a few seconds at a time, or after the engine has started.

NOTE: Do not operate the starter motor for more than 10 seconds at a time or after the engine has started. Allow the starter to cool between starting attempts. The starter motor may be damaged if it is operated incorrectly.

5. Allow the engine and hydraulic system to warm up three to five minutes.

6. Release the machine parking brake.

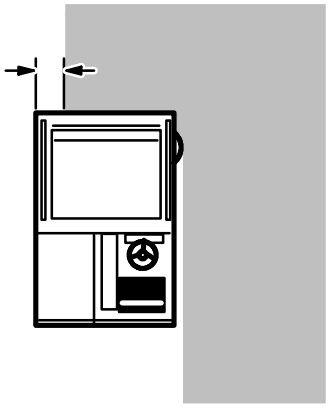
7. Move the throttle lever to the (Fast) position, and drive the machine to the area to be swept.

TO SWEEP

Plan the sweeping in advance. Try to arrange long runs with minimum stopping and starting. Sweep debris from very narrow aisles into main aisles ahead of time. Do an entire floor or section at one time.

Pick up oversize debris before sweeping. Flatten or remove bulky cartons from aisles. Pick up pieces of wire, twine, string, etc., which could become entangled in brush or brush plugs.

Avoid turning the steering wheel too sharply when the machine is in motion. The machine is very responsive to the movement of the steering wheel. Avoid sudden turns, except in emergencies. Overlap brush paths.



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OVERLAPPING PATHS

Sweep as straight a path as possible. Avoid bumping into posts or scraping the sides of the sweeper.

Stop the vacuum fan when sweeping in wet conditions to avoid soaking the hopper dust filters.

1. Multi-Level Dump Machine: Press and hold the hopper door switch in the (Hopper Door Open) position to open the hopper door and until the hopper door lamp goes out.

NOTE: The hopper door has to be open to sweep. The hopper door lamp lights if the hopper door is not fully open. The lamp will go out when the hopper door is fully open.

2. Place the main brush switch in the (Main Brush #1) or the (Main Brush #2) position depending on the debris to be picked up.

3. Move the main brush position lever back and to the right into the (Main Brush Down) position.

4. Place the side brush switch in the (Side Brush On) position to lower and start the side brush.

5. Place the filter shaker and vacuum fan switch in the (Vacuum Fan) position to start the vacuum.

6. Sweep as required.

TO DUMP LOW DUMP HOPPER

1. Pull the main brush position lever all the way back and to the left into the (Main Brush Up) position.

2. Place the main brush switch in the (Main Brush Off) position to turn off the main brush.

3. Place the side brush switch in the (Side Brush Off) position to raise and stop the side brush.

4. Press the filter shaker and vacuum fan switch in the (Filter Shaker) position to shake the dust filters.

5. Slowly drive the machine to the dump site or dumpster.

6. Press and hold the hopper switch in the (Hopper Up) position to raise the hopper.

7. Release the hopper switch in the (Hopper Hold) position to stop and hold the hopper at that height.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

8. Slowly back the machine away from the dump site or dumpster.

9. Press and hold the hopper switch in the (Hopper Down) position to lower the hopper.

10. Place the main brush switch in the (Main Brush #1) or the (Main Brush #2) position depending on the debris to be picked up.

11. Move the main brush position lever back and to the right into the (Main Brush Down) position.

12. Place the side brush switch in the (Side Brush On) position to lower and start the side brush.

13. Place the filter shaker and vacuum fan switch in the (Vacuum Fan) position to start the vacuum.

14. Continue sweeping.

TO DUMP MULTI-LEVEL DUMP HOPPER

1. Pull the main brush position lever all the way back and to the left into the (Main Brush Up) position.

2. Place the main brush switch in the (Main Brush Off) position to turn off the main brush.

3. Place the side brush switch in the (Side Brush Off) position to raise and stop the side brush.

4. Press and hold the hopper door switch in the (Hopper Door Close) position to close the hopper door and until the hopper door lamp lights.

5. Press the filter shaker and vacuum fan switch in the (Filter Shaker) position to shake the dust filters.

6. Slowly drive the machine up to the dump site or dumpster.

7. Press and hold the hopper switch in the (Hopper Up) position to raise the hopper.

FOR SAFETY: When Using Machine, Make Sure Adequate Clearance Is Available Before Raising Hopper.

8. Release the hopper switch in the (Hopper Hold) position to stop and hold the hopper at that height.

9. Drive the machine forward until the hopper is over the dumpster or dump site.

FOR SAFETY: When Using Machine, Move Machine With Care When Hopper Is Raised.

NOTE: Lowering the hopper into the dumpster may help to control flying dust.

10. Press and hold the hopper door switch in the (Hopper Door Open) position to open the hopper door and until the hopper door lamp goes out.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

11. When the hopper is empty, press and hold the hopper door switch in the (Hopper Door Close) position to close the hopper door and until the hopper door lamp lights.

12. Slowly back the machine away from the dump site or dumpster.

13. Press and hold the hopper switch in the (Hopper Down) position to lower the hopper.

14. Press and hold the hopper door switch in the (Hopper Door Open) position to open the hopper door and until the hopper door lamp goes out.

NOTE: The hopper door has to be open to sweep. The hopper door lamp lights if the hopper door is not fully open. The lamp will go out when the hopper door is fully open.

15. Place the main brush switch in the (Main Brush #1) or the (Main Brush #2) position depending on the debris to be picked up.

16. Move the main brush position lever back and to the right into the (Main Brush Down) position

17. Place the side brush switch in the (Side Brush On) position to lower and start the side brush.

18. Place the filter shaker and vacuum fan switch in the (Vacuum Fan) position to start the vacuum.

19. Continue sweeping.

POST OPERATION CHECKLIST – ENGINE OPERATING

Check brush patterns for width and evenness.

TO STOP MACHINE

1. Return the directional pedal to the “neutral” position. Apply the brake.
2. Pull the main brush position lever all the way back and to the left into the (Main Brush Up) position.
3. Place the main brush switch in the (Main Brush Off) position to turn off the main brush.
4. Place the side brush switch in the (Side Brush Off) position to raise and stop the side brush.
5. Place the filter shaker and vacuum fan switch in the middle position to turn off the vacuum.
6. Turn the operating and/or hazard lights off if used.
7. Set the machine parking brake.
8. Move the throttle lever to the (Slow) position and push the lever all the way forward until the engine stops.
9. Turn the ignition switch key to the left. Remove the key from the key-operated ignition switch.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

POST OPERATION CHECKLIST – ENGINE STOPPED

Check skirts for damage, wear, and adjustment.

Check for wire or string tangled on brushes.

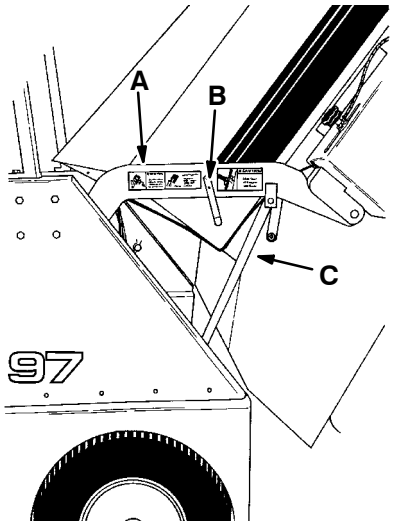
Check for leaks.

TO ENGAGE LOW DUMP MODEL HOPPER SUPPORT BAR

1. Set the machine parking brake and start the engine.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface And Set Parking Brake.

2. Move the throttle lever to (Fast).
3. Raise the hopper to the fully raised position.
4. Remove the hopper support bar from its storage clip.



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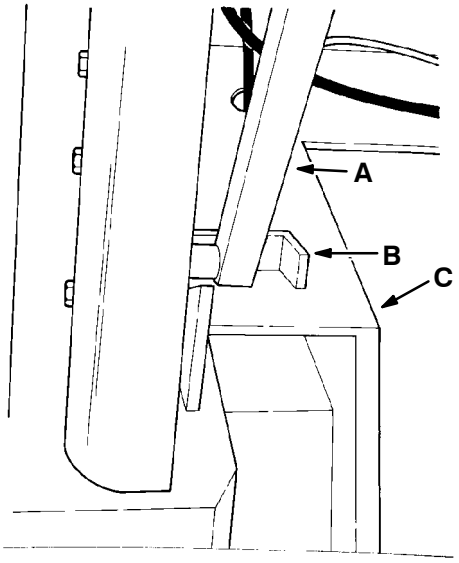
ENGAGED HOPPER SUPPORT BAR

A. Lift Arm
B. Storage Clip
C. Support Bar

5. Position the end of the support bar on the support bar stop on the machine frame.



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SUPPORT BAR STOP

A. Support Bar Hopper
B. Bar Stop
C. Machine Frame

6. Slowly lower the hopper so the support bar rests securely against the support bar stop.

7. Stop the engine.

8. Check the support bar to make sure it is securely engaged.

TO DISENGAGE LOW DUMP MODEL HOPPER SUPPORT BAR

1. Start the engine.

2. Move the throttle lever to (Fast).

3. Raise the hopper to the fully raised position.

4. Raise the support bar into its storage position. Make sure the storage clip is holding the support bar in place.

5. Lower the hopper.

6. Stop the engine.

TO ENGAGE MULTI-LEVEL DUMP MODEL HOPPER SUPPORT BAR

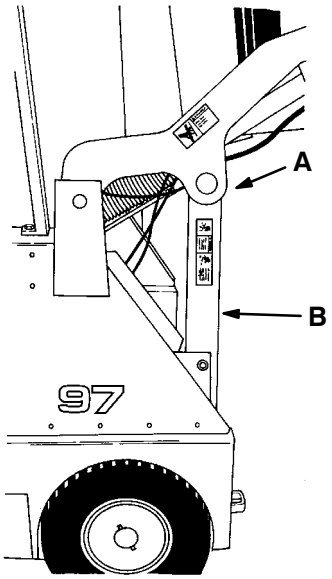
1. Set the machine parking brake and start the engine.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface And Set Parking Brake.

2. Move the throttle lever to (Fast).

3. Raise the hopper to the fully raised position.

4. Position the hopper support bar under the hopper lift arm cam.



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ENGAGED HOPPER BAR

A. Lift Arm
B. Hopper Support Bar

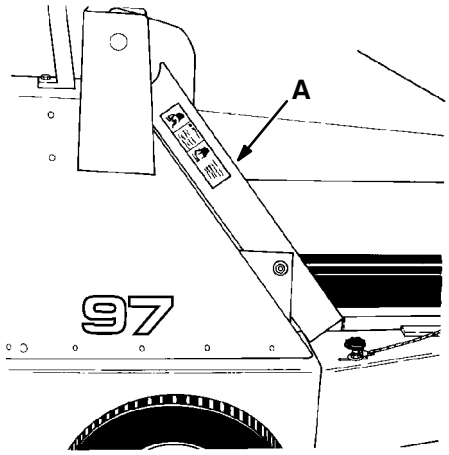
5. Slowly lower the hopper so the lift arm cam seats itself on top of the hopper support bar.

6. Stop the engine.

7. Check the hopper support bar to make sure it is securely engaged.

TO DISENGAGE MULTI-LEVEL DUMP MODEL HOPPER SUPPORT BAR

1. Start the engine.
2. Move the throttle lever to (Fast).
3. Raise the hopper to the fully raised position.
4. Lower the hopper support bar to its storage location.



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DISENGAGED HOPPER SUPPORT BAR

A. Hopper Support Bar

5. Lower the hopper.
6. Stop the engine.

OPERATION ON GRADES

Drive the machine slowly on grades. Use the service brakes to control machine speed.

FOR SAFETY: When Using Machine, Go Slow On Grades And Slippery Surfaces.

The maximum rated ramp climb and descent angle is 15° with an empty hopper, and 13° with a full hopper.

OPTION OPERATION

VACUUM WAND OPTION

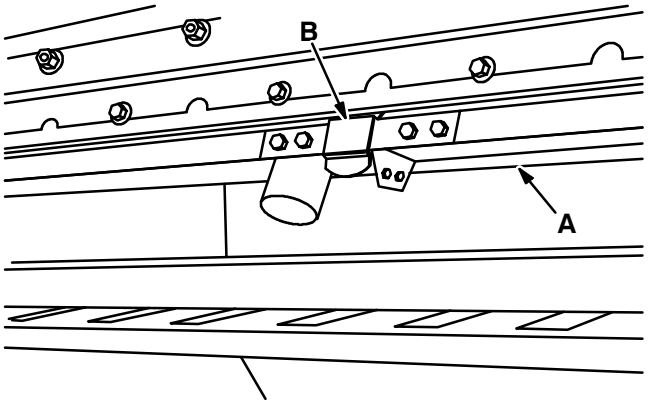
The vacuum wand option gives the machine the added flexibility of picking up debris not accessible by the machine. A 120 in (3050 mm) hose utilizes the machine vacuum system.

TO OPERATE VACUUM WAND

1. Stop the machine close to the area to be cleaned.
2. Raise the main brush and side brush.
3. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine.

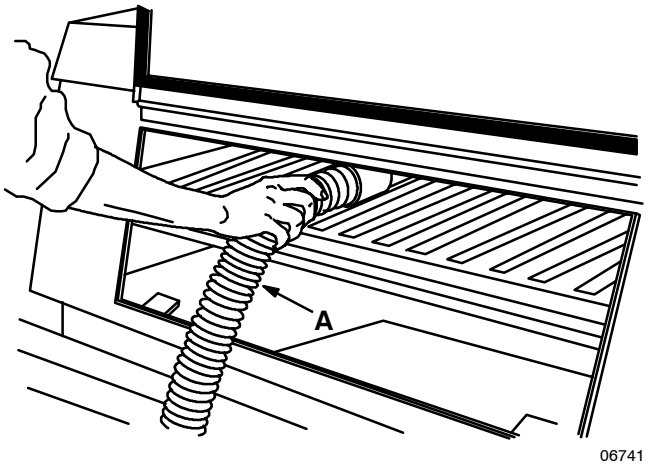
4. Open the hopper access door.
5. Release the vacuum wand door from its retaining clip and rotate the door back into place.



VACUUM WAND DOOR

A. Vacuum Wand Door
B. Retaining Clip

6. Push the loose end of the wand hose onto the vacuum wand.
7. Push the wand hose onto the hose connection on the vacuum wand door.



CONNECTING WAND HOSE

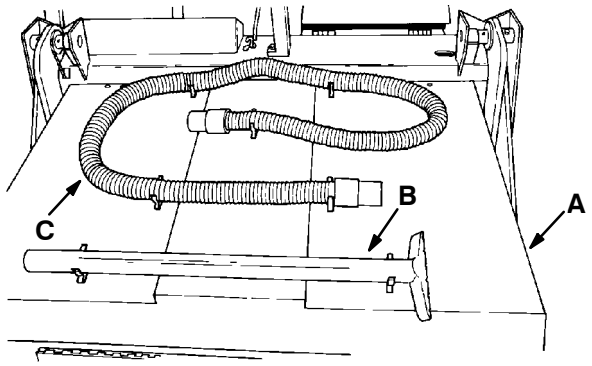
A. Wand Hose

8. Start the engine.
9. Move the throttle lever to the (Fast) position.
12. Place the filter shaker and vacuum fan switch in the (Vacuum Fan) position to start the vacuum fan.
13. Vacuum the area as required.
14. When finished, place the filter shaker and vacuum fan switch in the middle position to stop the vacuum fan.
10. Stop the engine.
11. Pull the wand hose off the hose connection on the vacuum wand door.
12. Disconnect the wand hose from the vacuum wand.

13. Rotate the vacuum wand door forward until it catches in the retaining clip.

14. Close the hopper access door.

15. Return the vacuum wand and wand hose to their storage clips.



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VACUUM WAND STORAGE LOCATIONS

A. Hopper Cover
B. Vacuum Wand
C. Wand Hose

HOPPER DOLLY OPTION

The hopper dolly option makes the job of removing the debris hopper easy. The machine must be equipped with the snow blade hydraulic kit to allow the hydraulic connections to be disconnected in a timely manner.

TO REMOVE HOPPER WITH DOLLY

1. Set the parking brake. Start the engine and raise the hopper.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface And Set Parking Brake.

2. Engage the hopper support bar. Lower the hopper onto the support bar. Stop the engine.

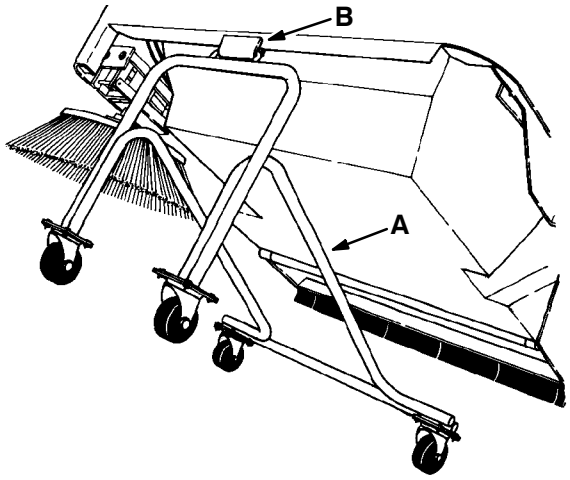
WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

3. Check the hopper support bar to make sure it is securely engaged.

4. Disconnect and plug all hoses and disconnect all wires between the hopper and the machine.

5. Start the engine, raise the hopper, place the hopper support bar in its storage location, and lower the hopper one-half of the way down.

6. Hook the hopper dolly on the hopper hook and lower the hopper. Stop the engine.



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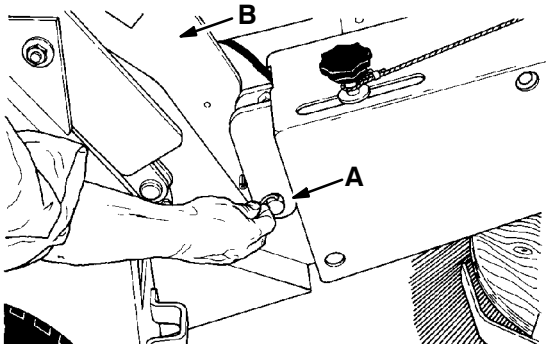
HOPPER DOLLY HOOKED ON HOPPER

A. Hopper Dolly
B. Hopper Hook

7. Remove the two hopper lift arm release pins.



01447

LIFT ARM RELEASE PINS

A. Release Pin
B. Lift Arm

8. Push the lift arms down to release the hopper from the lift arms.

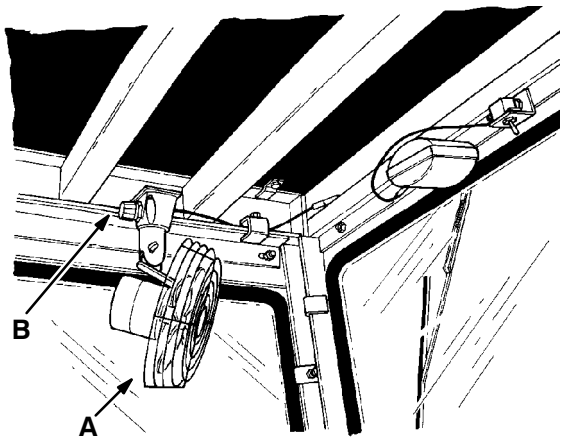
9. Roll the hopper and dolly away from the machine.

TO REINSTALL HOPPER WITH DOLLY

1. Position the hopper and dolly in the machine.
2. Raise the lift arms slightly to hook the lift arms onto the hopper brackets.
3. Install the two hopper lift arm release pins.
4. Raise the hopper, remove the hopper dolly, engage the hopper support bar, and lower the hopper onto the support bar.
5. Reconnect the hoses and wires between the hopper and the machine.
6. Raise the hopper, place the hopper support bar in its storage location, and lower the hopper.

HEATER/DEFROSTER OPTION

The heater/defroster option includes a fan powered heater and a defroster fan. A switch on the defroster fan base controls the defroster fan.

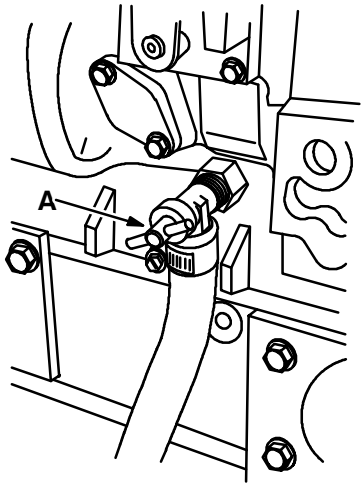


01448

DEFROSTER FAN

A. Fan
B. Switch

A switch on the front of the seat support controls the heater fan. A valve on the engine controls the hot coolant flow to the heater core. Turning the valve handle to the right closes the valve and stops the hot coolant flow. Turning the valve handle to the left opens the valve and allows hot coolant to flow to the heater core.

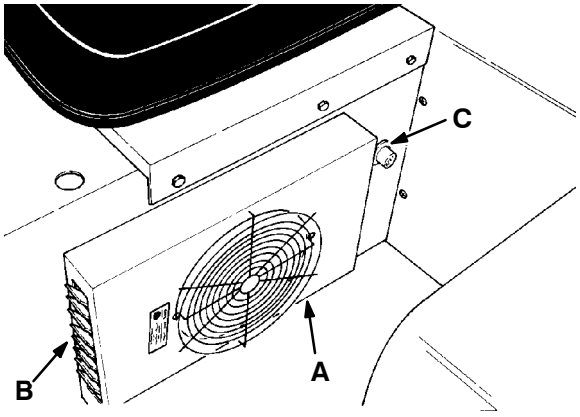


06742

HEATER VALVE

A. Valve

The air deflectors on the sides of the heater are repositionable to allow the air flow to be directed as desired.



01450

HEATER

A. Heater
B. Air Deflector
C. Heater Fan Switch

SNOW BLADE OPTION

The snow blade option gives the machine the added flexibility to remove snow from walks and driveways.

TO INSTALL SNOW BLADE

1. Set the parking brake; start the engine, and raise the hopper.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface And Set Parking Brake.

2. Engage the hopper support bar. Lower the hopper onto the support bar. Stop the engine.

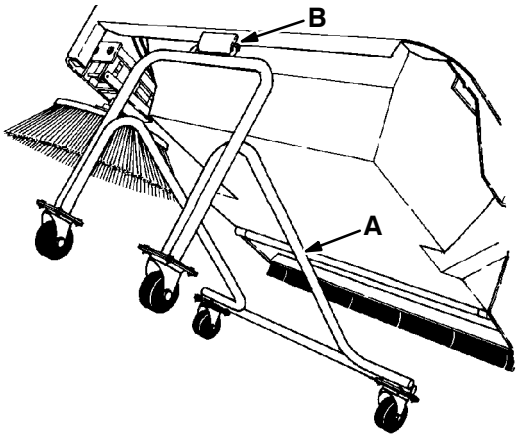
WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

3. Check the hopper support bar to make sure it is securely engaged.

4. Disconnect the hydraulic quick-disconnect fittings, large vacuum hose, and the wire connections. Label and remove the two small vacuum hoses going to the pressure switch.

5. Start the engine, raise the hopper, place the hopper support bar in its storage location, and lower the hopper one half of the way down.

6. Hook the hopper dolly on the hopper hook and lower the hopper. Stop the engine.

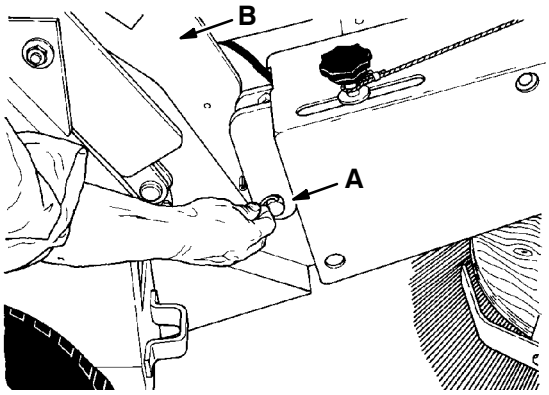


01446

HOPPER DOLLY HOOKED ON HOPPER

A. Hopper Dolly
B. Hopper Hook

7. Remove the two hopper lift arm release pins.



01447

LIFT ARM RELEASE PINS

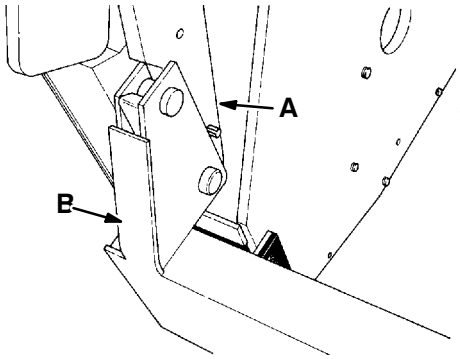
A. Release Pin
B. Lift Arm

8. Push the lift arms down to release the hopper from the lift arms.

9. Roll the hopper and dolly away from the machine.

10. Position the snow blade assembly so the upper cross bar pins engage the lift arm hooks.

11. Install clevis pins through the cross bar and the lift arms.



01451

LIFT ARM AND CROSS BAR

A. Lift Arm
B. Cross Bar

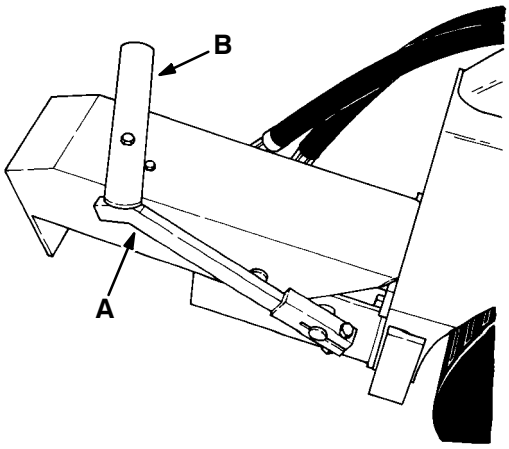
12. Loop the snow blade limiting chain over the lift arm tube and close the loop with the connecting link.

NOTE: Do not lift the snow blade without the limiting chain installed.

13. Install tire chains on the rear tire.

14. Position the stabilizer leg stop arm over the spring loaded stop lever to keep the leg raised

on the multi-level dump model.

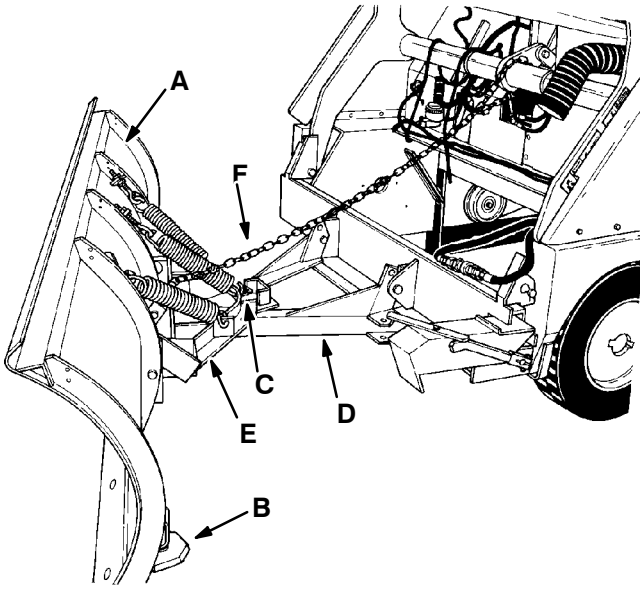


01453

STABILIZER LEG STOP ARM

A. Stop Lever
B. Stop Arm

15. Remove the sector pin from the A-frame, adjust the snow blade to the desired angle and replace the clevis pin.



01454

SNOW BLADE INSTALLATION

A. Snow Blade
B. Runner Spindle
C. Sector Pin
D. A-Frame
E. Quadrant
F. Limiting Chain

TO OPERATE SNOW BLADE

Operate the machine as normally done using the hopper switch to raise and lower the snow blade.

Begin plowing early when snow reaches 1 to 4 in (25 to 100 mm). Do not allow snow to accumulate. Heavy, wet snow can create hazards at even a 1 in (25 mm) accumulation. In heavier amounts, snow can be extremely difficult to handle. Do not allow snow to become packed and frozen. Crusted snow can hinder traction in future plowing. Choose the proper plowing speed. The heavier the snow, the slower the speed.

The plow blade should be set at the best angle for rolling the snow sideways and in the desired direction. Snow of any considerable depth cannot be pushed straight ahead for more than a short distance.

For best operation, the bottom edge of the snow blade should be slightly above the ground. If adjustments are needed, they can be made by adding flat washers to the runner spindles. Place additional washers under the runner bracket to raise the blade. Remove washers to lower the blade.

To change the angle of the blade, raise the blade as far as the limiting chain will permit. Pull out the sector pin and the blade can be moved to the desired position. Then replace the sector pin. The sector pin is designed to be a shear pin. If the plow strikes a solid, immovable object, the pin will shear, allowing the blade to swing away from the object before the equipment is damaged. The blade assembly is mounted on the hydraulic lift arms of the machine which are free to float upward if necessary.

Under some conditions, snow can be pushed to unused areas and stacked to a considerable height. To do this, place the blade in a straight-on position. Push the snow forward by raising the plow as you move into the pile.

Stack snow only with the blade in a straight-on position. Do not create a vertical wall, but slope the piles so that later snow may be pushed up the slope.

Clearing large open areas can be done best by using a combination of snow removal equipment, such as a snow blade and snow blower or loader of some type. The snow can be plowed into windrows or piles and then blown into or loaded onto trucks and carried away. However, if only a blade is available, the area can be cleared by using the proper technique and common sense.

As a guide to help determine how much snow the plow can handle, remember that with a 6 in (152 mm) snowfall, the plow can easily move that amount of snow in two passes. With more snow, it will handle less; with less snow, more.

A suggested method of plowing is as follows:

Make the first pass one blade width in from the outside edge.

Make the second pass around the outside edge, moving the snow to the edge of the area, then keep moving in. Double the blade width from edge of the snow covered area and move this amount to the outside edge.

TO REMOVE SNOW BLADE

1. Stop the engine and set the parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine.

2. Position the stabilizer leg stop arm so the stabilizer leg is free to lower on the multi-level dump model.
3. Remove the tire chains.
4. Remove the limiting chain from the lift arm tube.
5. Remove the cross bar clevis pins and disconnect the cross bar from the lift arms.
6. Start the engine, then release the parking brake.
7. Back the machine away from the snow blade, then set the parking brake.
8. Position the hopper and dolly in the machine.
9. Raise the lift arms slightly to hook the lift arms onto the hopper brackets.
10. Install the two hopper lift arm release pins.
11. Raise the hopper, remove the hopper dolly, engage the hopper support bar, and lower the hopper onto the support bar.
12. Reconnect the hoses and wires between the hopper and the machine.
13. Raise the hopper, place the hopper support bar in its storage location, and lower the hopper.

MACHINE TROUBLESHOOTING

Problem	Cause	Remedy
Excessive dusting	Dust skirts and seals worn, damaged, not adjusted properly	Replace or adjust skirts or seals
	Dust filter clogged	Shake and/or clean or replace filter
	Vacuum wand door closed	Open vacuum wand door
	Vacuum hose damaged	Replace vacuum hose
	Vacuum fan failure	See *HYDRAULIC SYSTEM TROUBLESHOOTING*: Main brush turns in I and II speed, but no vacuum fan
Poor sweeping performance	Brush bristles worn	Replace brushes
	Brushes not adjusted properly	Adjust brushes
	Debris caught in brush drive mechanism	Free mechanism of debris
	Main brush drive failure	See *HYDRAULIC SYSTEM TROUBLESHOOTING:* Main brush turns slowly or not at all
	Side brush drive failure	See *HYDRAULIC SYSTEM TROUBLESHOOTING*: Side brush turns slowly or not at all
	Hopper not adjusted properly	Adjust hopper floor clearance
	Hopper full	Empty hopper
	Hopper floor skirts worn, damaged	Replace skirts

NOTE: For more specific electro-hydraulic system troubleshooting information, see HYDRAULIC SYSTEM TROUBLESHOOTING *in the* MAINTENANCE *section.*

TRANSPORTING MACHINE

PUSHING OR TOWING MACHINE

The machine may be pushed from the front or the rear, using the bumpers provided, only after placing the rear wheel on a dolly.

The machine may be towed only from the rear. Do not pull on the front bumper.

MACHINE JACKING INSTRUCTIONS

1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

2. Empty the debris hopper before attempting to jack the machine up.

3. Block the tires which are not being jacked up to secure the machine's position.

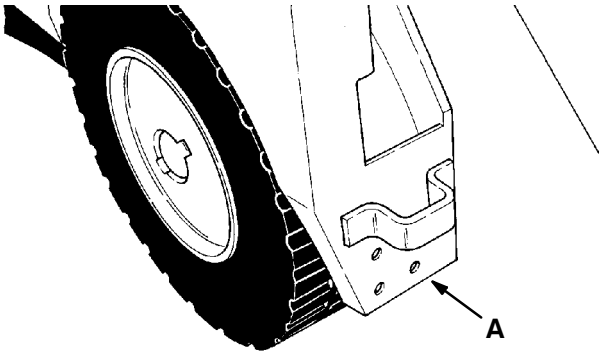
FOR SAFETY: When Servicing Machine, Block Machine Tires Before Jacking Machine Up.

4. Use a scissors or hydraulic-type jack of adequate capacity to raise the machine. Jack up the machine only at the designated locations.

FOR SAFETY: When Servicing Machine, Use Hoist Or Jack Of Adequate Capacity To Lift Machine.

FOR SAFETY: When Servicing Machine, Jack Machine Up At Designated Locations Only. Block Machine Up With Jack Stands.

The front jacking locations are the bottom edge of the machine frame next to the front machine tires.

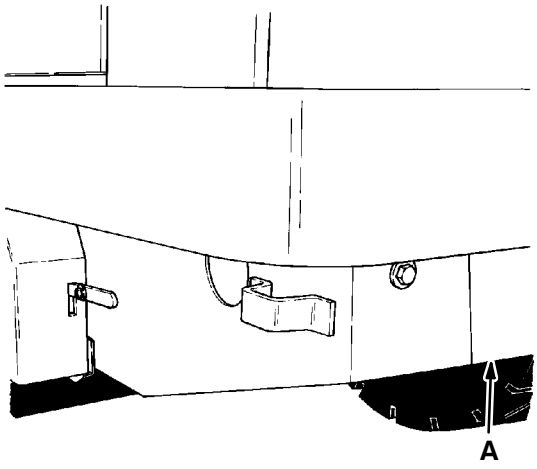


01455

FRONT JACKING LOCATION (RIGHT SIDE SHOWN)

A. Jacking Location

The rear jacking location is the bottom of the rear edge of the machine frame.



01456

REAR JACKING LOCATION

A. Jacking Location

5. Block machine up with jack stands or similar devices to make sure machine is secure.

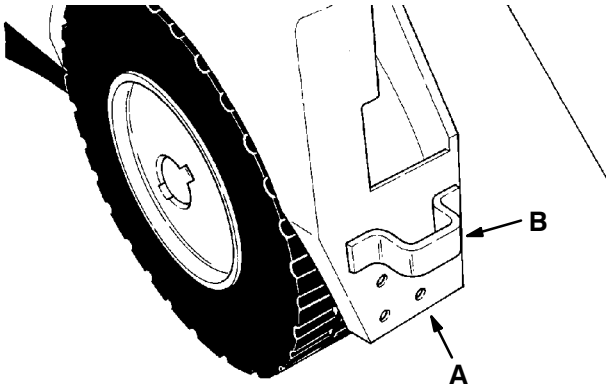
FOR SAFETY: When Servicing Machine, Jack Machine Up At Designated Locations Only. Block Machine Up With Jack Stands.

6. Lower the machine onto the jack stands.
7. Check to make sure the machine is secure.
8. Service the machine as required.
9. When finished servicing the machine, raise the machine up off the jack stands.
10. Remove the jack stands from under the machine.
11. Lower the machine.
12. Remove the blocks from the tires.

MACHINE TIE-DOWN INSTRUCTIONS

The machine may be tied down at each of the four corners of the machine at the locations specified.

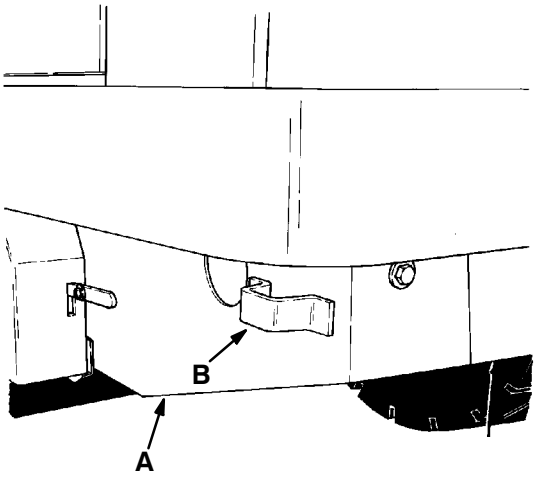
To tie the machine down, use the tie down lug provided.



01455

FRONT TIE-DOWN LUG (RIGHT SIDE SHOWN)

A. Machine Frame
B. Tie-Down Lug



01456

REAR TIE-DOWN LUG (LEFT SIDE SHOWN)

A. Machine Frame
B. Tie-Down Lug

When transporting the machine on a trailer or in a truck, be sure to set the machine parking brake and block the machine tires to prevent the machine from rolling.

MACHINE STORAGE

STORING MACHINE

When storing the machine for extended periods of time, the following procedures must be followed to lessen the chance of rust, sludge, and other undesirable deposits from forming.

1. Empty the debris hopper.
2. Change engine oil.
3. Raise the main and side brushes.
4. Park the machine in a cool and dry area.
5. Stop the engine.
6. Fill the hydraulic reservoir with hydraulic fluid to the full mark on the dipstick to prevent excessive condensation from forming in the reservoir.
7. Drain the coolant from the radiator and engine block.
8. Close the engine cooling system drain cocks.

SECTION 3

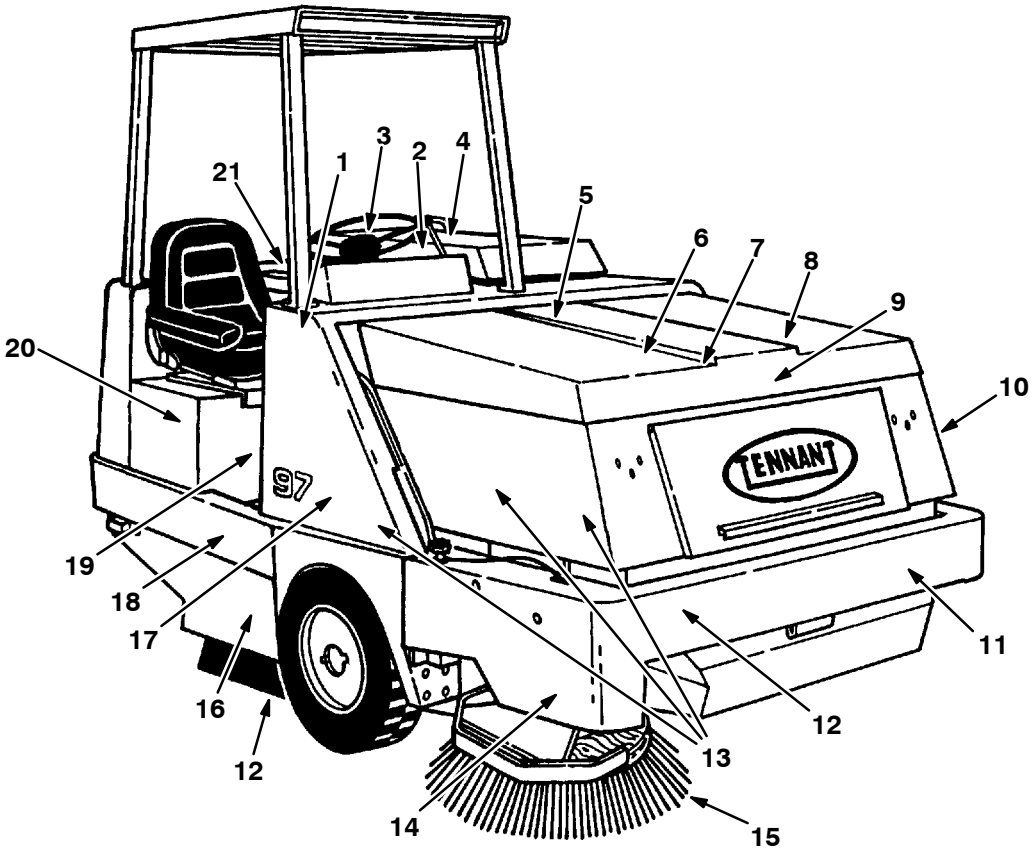
CONTENTS

RECOMMENDED FIRST 50-HOUR MACHINE INSPECTION

After the first 50 hours of operation, the following procedures are recommended:

1. Check the brush pattern for correct brush adjustment.
2. Change the hydraulic fluid filter.
3. Change the engine oil after the first 35 hours of operation.
4. Check the torque of the engine cylinder head cap screws.
5. Perform all 50-hour interval lubrication and maintenance procedures listed in the *MAINTENANCE CHART*.

MAINTENANCE CHART



06461

Interval	Key	Description	Procedure	Material/ Lubricant	No. of Service Points
Daily	2	Air filter restriction indicator	Check the restriction indicator	–	1
	5	Engine	Check oil level	EO	1
	3	Radiator	Check coolant level	WG	1
			Clean screen	–	1
	12	Brush and hopper lip skirts	Check for damage wear, and adjustment	–	9(11)
	15	Side brush	Check for damage, wear, and adjustment	–	1
	16	Main brush	Check for damage, wear, and adjustment	–	1
	20	Fuel water trap	Drain water	–	1
50 Hours	4	Engine fan belt	Check tension	–	1
	10	Hopper	Check floor clearance	–	1
	16	Main brush	Rotate end-for-end and check adjustment	–	1
	18	Rear tire, low dump model	Check tire pressure	–	1
	21	Hydraulic fluid cooler	Clean cooling fins	–	1

Interval	Key	Description	Procedure	Material/ Lubricant	No. of Service Points
100 Hours	1	Parking brake	Check adjustment	–	1
	7	Hydraulic fluid reservoir	Check fluid level	HYDO	1
	8	Hopper dust filter	Inspect, clean, or replace	–	2
	13	Dust seals	Check for damage or wear	–	5(6)
	5	Engine crankcase	Change oil and filter	EO	1
200 Hours	5	Engine	Steam clean exterior	–	1
	9	Hopper cover latch	Lubricate	DL	1
	11	Stabilizer leg pivot pin	Lubricate	SPL	1
	14	Side brush pivot pins	Lubricate	SPL	5
	19	Rear wheel support pivot	Lubricate	SPL	1
400 Hours	20	Fuel filter	Replace	–	2
	20	Fuel water trap	Clean	–	1
	7	Hydraulic fluid reservoir	Change hydraulic fluid	HYDO	1
	6	Hydraulic fluid filter	Change filter element	–	1
	17	Brake master cylinder	Check fluid level	BF	1
800 Hours	7	Hydraulic reservoir breather	Replace	–	1
	7	Hydraulic reservoir strainer	Replace	–	1
	3	Cooling system	Flush	WG	1
2000 Hours	23	Front wheel bearings	Repack	SPL	2

BF – Brake fluid
EO – Engine oil
HYDO – TENNANT or approved hydraulic fluid
SPL – Special lubricant, Lubriplate EMB grease (TENNANT part no. 01433–1)
WG – Water and permanent-type ethylene glycol anti-freeze, one-to-one ratio
DL – Dry lubricant

NOTE: More frequent intervals may be required in extremely dusty conditions.

LUBRICATION

ENGINE

Check the engine oil level daily.

Diesel powered engines should be lubricated with SAE–CC/CD rated engine oil. Change the engine oil and oil filter after every 100 hours of operation.

The following oil grades are recommended for engines operating in the ambient temperatures listed.

SINGLE AND MULTI–VISCOSITY OILS

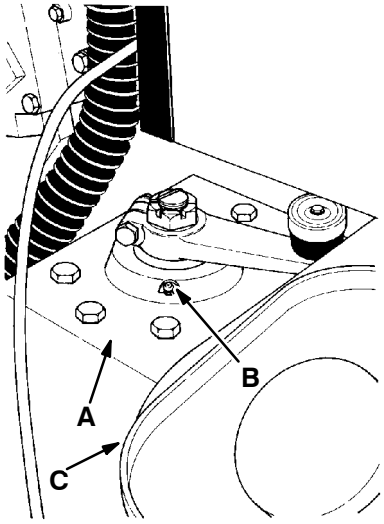
Below 32°F (Below 0°C)	32° to 77° F (0° to 25° C)	Above 77° F (Above 25° C)
10W	20	30
10W 30		

The engine oil capacity is 8.38 qt (9 L) including the oil filter.

REAR WHEEL SUPPORT PIVOT

There is a grease fitting which is used to lubricate the rear wheel support pivot bearing.

Access to the grease fitting is through the left rear access door. Apply Lubriplate EMB grease (TENNANT part no. 01433–1) grease after every 200 hours of operation.



01452

REAR WHEEL SUPPORT PIVOT

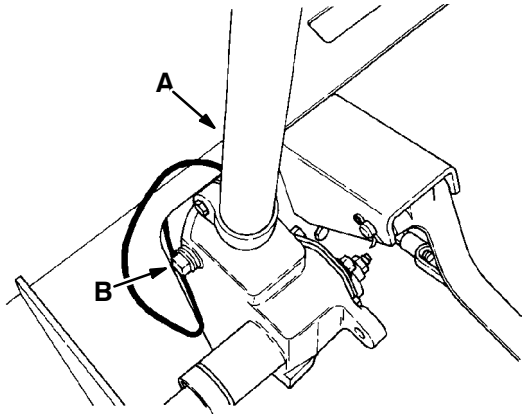
A. Wheel Support
B. Grease Fitting
C. Fuel Tank

STEERING GEAR

The steering gear has been lubricated at the factory and should not require any additional lubricant unless a massive leak occurs.

A square head plug located on the left side of the steering gearbox is provided to fill the steering gear with grease if necessary.

The proper lubricant is grade 1 calcium soap base EP grease.



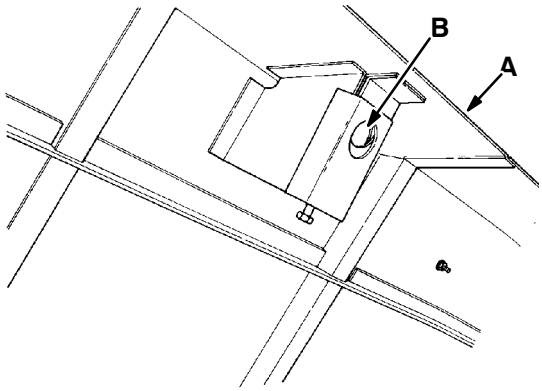
01457

STEERING GEAR LUBRICATION PLUG

A. Steering Gearbox
B. Fill Plug

HOPPER COVER LATCH

The hopper cover latch is located under the hopper cover. Lubricate the latch with a dry lubricant after every 200 hours of operation.



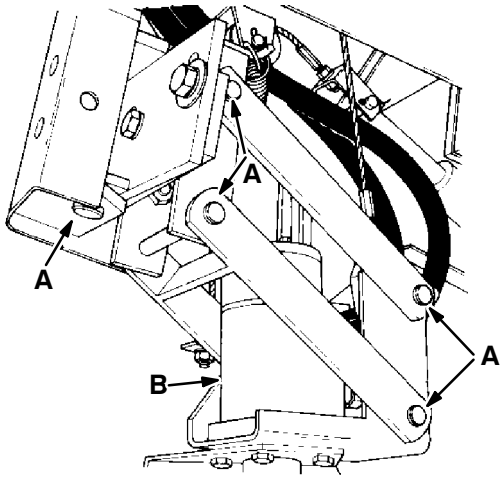
01458

HOPPER COVER LATCH

A. Hopper Cover
B. Hopper Cover Latch

SIDE BRUSH PIVOT PINS

The five side brush pivot pins should be lubricated with Lubriplate EMB grease (TENNANT part no. 01433–1) grease after every 200 hours of operation.



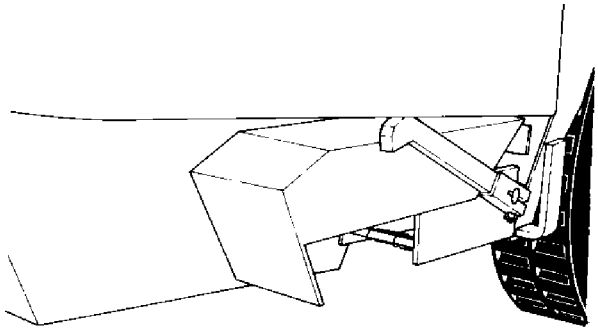
01459

SIDE BRUSH PIVOT PINS

A. Pivot Pin
B. Side Brush Motor

STABILIZER LEG PIVOT PIN

The stabilizer leg pivot pin should be lubricated with Lubriplate EMB grease (TENNANT part no. 01433–1) grease after every 200 hours of operation.



01440

STABILIZER LEG

FRONT WHEEL BEARINGS

The front wheel bearings should be repacked with a good quality wheel bearing grease after every 2000 hours of operation.

The front wheel bearings should be repacked with Lubriplate EMB grease (TENNANT part no. 01433–1) grease after every 2000 hours of operation.

HYDRAULICS

HYDRAULIC FLUID

Hydraulic fluid drives most of the moving components of the machine. The quality and condition of the hydraulic fluid play a very important role in how well the machine operates. TENNANT has developed its own hydraulic fluid to meet the special needs of its machines.

TENNANT Hydraulic Fluid is a specially compounded oil with the following features not found in many hydraulic fluids:

1. Flat viscosity curve.
2. Additives to prevent corrosion.
3. Additives to prevent oxidation.
4. Rust inhibitors.
5. Foam suppressors.

These features restrict foaming of the hydraulic fluid and provide a high standard of lubrication to the components.

TENNANT HYDRAULIC FLUID VISCOSITY SPECIFICATIONS

	TENNANT Hyd. Fluid No. 32397 (HP1040)	TENNANT Hyd. Fluid No. 32398 (HP2060)
SUS @ 100° F (38° C)	404 – 445	940 – 1010
SUS @ 210° F (99° C)	78 – 84	122 – 130

TENNANT Hydraulic Fluids have a very flat viscosity curve (synonymous with “high viscosity index”). The flat viscosity curve means that the thickness of the fluid is very constant over wide temperature ranges.

Hydraulic fluid with the viscosity rating of 10W40 should be used in machines that are operated in areas which have ambient temperatures up to 90° F (32° C). Use the 20W60 rated hydraulic fluid in areas which have ambient temperatures above 90° F (32° C).

ATTENTION! If a locally-available hydraulic fluid is preferred, or if products of only one oil company are used, the hydraulic fluid used must match closely the viscosity specifications given in the chart for TENNANT Hydraulic Fluid, as well as the other features described. Do not substitute automatic transmission fluid for hydraulic fluid.

ATTENTION! Hydraulic components depend on system hydraulic fluid for internal lubrication. If dirt or other contaminants are allowed to enter the hydraulic system, malfunctions, accelerated wear, and damage will result.

HYDRAULIC FLUID RESERVOIR

Hydraulic fluid is stored in the hydraulic fluid reservoir. The reservoir holds up to 5 gal (19 L) of hydraulic fluid. The reservoir is located in front of the engine.

The reservoir is equipped with a breather-filler cap and fluid level dipstick. See *HYDRAULIC FLUID RESERVOIR BREATHER* for breather service information.

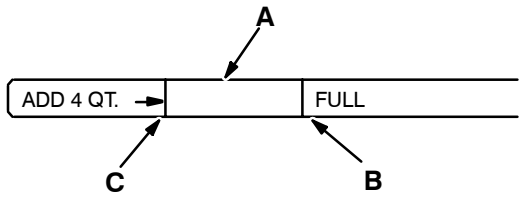
06743

HYDRAULIC FLUID RESERVOIR

A. Hydraulic Reservoir Breather-Filler Cap
B. Hydraulic Fluid Reservoir

The hydraulic fluid level dipstick is built into the breather-filler cap. The end of the dipstick is marked with “FULL” and “ADD” levels. This indicates the level of hydraulic fluid in the reservoir.

Check the hydraulic fluid level after every 100 hours of operation. The level should be above the “ADD” mark on the dipstick, but not above the “FULL” mark when the hydraulic fluid is warm.



HYDRAULIC FLUID LEVEL DIPSTICK

A. Dipstick
B. “FULL” Mark
C. “ADD” Mark

Do not overfill the hydraulic fluid reservoir. The hydraulic fluid expands as it heats up to its normal operating temperature. Always allow for this expansion when filling the hydraulic fluid reservoir.

ATTENTION! Do not overfill the hydraulic fluid reservoir or operate the machine with a low level of hydraulic fluid in the reservoir. Either one may cause damage to the machine hydraulic system.

Change the hydraulic fluid after every 400 hours of operation.

TO DRAIN THE HYDRAULIC FLUID RESERVOIR

1. Set the machine parking brake and start the engine.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface And Set Parking Brake.

2. Raise the debris hopper to the fully raised position.

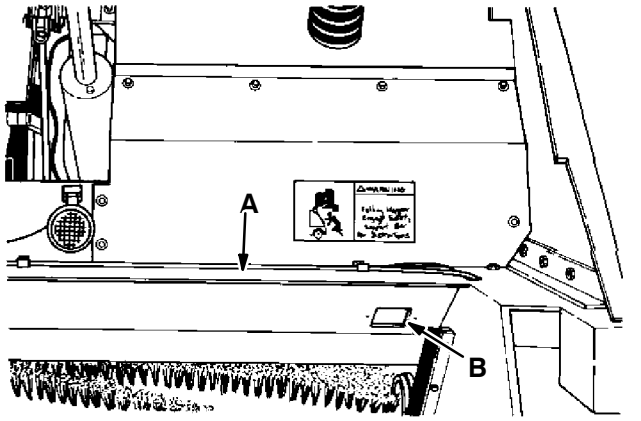
3. Position the hopper support bar under the lift arm.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

4. Lower the hopper so the lift arm rests itself on top of the hopper support bar.

5. Stop the engine.

6. Loosen the breather-filler cap. Remove the reservoir drain plug located on the bottom left side of the reservoir to drain the hydraulic fluid. Discard the used hydraulic fluid.



HYDRAULIC FLUID RESERVOIR DRAIN ACCESS CUT-OUT

A. Machine Frame
B. Drain Access Cut-Out

NOTE: Always change the hydraulic fluid filter when draining the hydraulic fluid reservoir.

7. Reinstall the reservoir drain plug.

TO FILL THE HYDRAULIC FLUID RESERVOIR

1. Open the left access door.

2. Remove the reservoir breather-filler cap.

3. Pour 5 gal (19 L) of new, approved hydraulic fluid through a 200 mesh screened funnel and into the reservoir filler neck.

ATTENTION! Use only new, approved hydraulic fluid to fill the hydraulic fluid reservoir.

4. Check the hydraulic fluid level in the reservoir with the breather-filler cap dipstick.

5. Add hydraulic fluid until the level in the reservoir is between the “ADD” and “FULL” range. Do not overfill the reservoir.

NOTE: Do not overfill the hydraulic fluid reservoir. The hydraulic fluid expands as it heats up to its normal operating temperature. Always allow for this expansion when filling the hydraulic fluid reservoir.

6. Replace the breather-filler cap.

7. Close the access door.

HYDRAULIC FLUID RESERVOIR BREATHER

The hydraulic fluid reservoir is equipped with a breather. The breather relieves excess atmospheric pressure or vacuum in the reservoir. The breather is mounted on the hydraulic fluid reservoir. The breather should be replaced after every 800 hours of operation.

HYDRAULIC FLUID FILTER

The machine hydraulic system is kept clean to a level of 10 microns by a hydraulic fluid filter. The hydraulic fluid filter is located in the left front of the engine compartment of the machine.

Replace the hydraulic fluid filter element after the first 50 hours of operation and then after every 400 hours of operation.

TO REPLACE THE HYDRAULIC FLUID FILTER ELEMENT

1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine.

2. Open the side engine access door.

06743

HYDRAULIC FLUID FILTER

A. Hydraulic Fluid Reservoir
B. Hydraulic Fluid Filter Element

3. Unthread, remove, and discard the hydraulic fluid filter element.

NOTE: Discard all hydraulic fluid drained from the system. Drained hydraulic fluid may contain foreign material harmful to the hydraulic system.

4. Apply a thin coat of hydraulic fluid to the seal of the new hydraulic fluid filter element.

5. Thread the new hydraulic fluid filter on the filter head.

6. Operate the machine and check for leaks. Correct any leaks found.

7. Check the hydraulic fluid reservoir level and fill as required.

8. Close the side engine access door.

HYDRAULIC PUMPS

The machine propelling pump is a variable displacement hydraulic piston pump. It is driven by the engine via a flywheel coupling assembly.

The machine accessories pump is a hydraulic gear pump. It is tandem mounted to the hydraulic piston pump.

After repairing or replacing a hydraulic pump, or when system contamination is likely, change the hydraulic fluid in the reservoir and the hydraulic fluid filter. Then the proper start and break-in procedure must be followed to prevent possible damage to the pump. *TO START AND BREAK-IN HYDRAULIC PUMP* outlines the procedure.

TO START AND BREAK-IN HYDRAULIC PUMP

1. Set the machine parking brake and block the front tires of the machine.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface And Set Parking Brake.

FOR SAFETY: When Servicing Machine, Block Machine Tires Before Jacking Machine Up.

2. Jack up the rear of the machine at the designated locations.

FOR SAFETY: When Servicing Machine, Jack Machine Up At Designated Locations Only. Block Machine Up With Jack Stands.

3. Block up the machine with jack stands.

4. Fill the hydraulic fluid reservoir with 5 gal (19 L) of new-approved hydraulic fluid.

5. Fill the pump case drain with hydraulic fluid. Connect an air pressurizing device to the hydraulic reservoir fill neck and pressurize the reservoir to 5 psi (35 kPa).

6. Loosen the hydraulic fittings at the propelling pump case drain and inlet and the accessory pump inlet to bleed air from the hydraulic hoses.

7. As soon as hydraulic fluid appears at the fittings, retighten the fittings.

8. Operate the engine starter motor for 15 seconds.

9. Start the engine and operate it at a low idle for 30 seconds.

10. Move the directional pedal into the “forward” and “reverse” positions and observe the rear tire for the proper directional rotation.

11. Speed the engine to a fast idle.

12. Press the directional control pedal one-half of its travel in the “forward” direction for three minutes also doing the following: Operate the main brush and side brush; raise and lower the hopper three times; dump and return the hopper to the operating position three times.

13. Check the directional control pedal “neutral” position adjustment.

14. Stop the engine.

15. Raise the rear of the machine, remove the jack stands, and lower the machine.

16. Fill the hydraulic fluid reservoir with new, approved hydraulic fluid.

17. Check the hose routings to be sure the hoses do not contact any moving, hot, or sharp surfaces.

18. Replace the hydraulic fluid filter after the first 50 hours of operation.

DIRECTIONAL CONTROL PEDAL “NEUTRAL” POSITION ADJUSTMENT

After replacing the hydraulic pump or pump linkages, the pump control linkages must be adjusted.

1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine.

2. Jack up the rear of the machine at the designated locations.

FOR SAFETY: When Servicing Machine, Jack Machine Up At Designated Locations Only. Block Machine Up With Jack Stands.

3. Block up the machine with jack stands.

4. Loosen the rod end nut connecting the directional control pedal to the control linkage.

5. Position the middle of the directional control pedal 34° off the floor plate.

6. Tighten the rod end nut connecting the directional control pedal to the control linkage.

7. Start the engine.

8. Loosen the pump centering springs mounting bracket bolts. Center the pump arm around the plate springs. Tighten the bolts.

9. Move the directional control pedal into the “forward” position and release it. The rear wheel should stop rotating as soon as the pedal is released. Adjust the spring mounting bracket position to the rear wheel stops when the pedal is released.

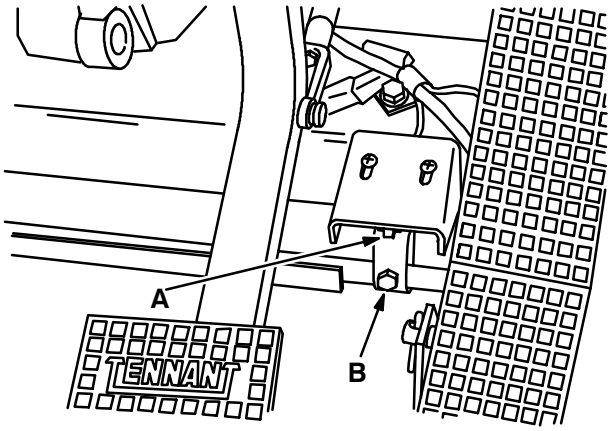
10. Move the directional control pedal into the “reverse” position and release it. The rear wheel should stop rotating as soon as the pedal is released. Adjust the spring mounting bracket position so the rear wheel stops when the pedal is released. Recheck the “forward” position adjustment as in step 9.

11. Stop the engine.

12. Raise the rear of the machine, remove the jack stands, and lower the machine.

13. Adjust the extended shock absorber rod ball joints so the machine does not travel above 6 mph (9.7 km/h) in reverse.

14. Severe Environment Option: Adjust the neutral start switch so that the switch is actuated by the control rod link only when the directional control pedal is in the “neutral” position.



06744

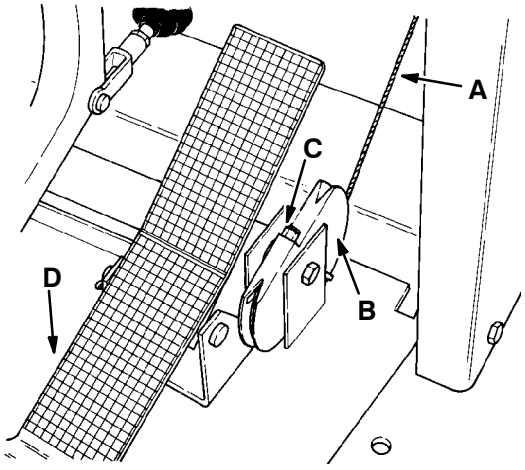
NEUTRAL START SWITCH

A. Switch
B. Link

SPEED LIMITER

The machine speed limiter is present on the multi-level dump model. The limiter restricts the maximum speed the machine can travel when the hopper is raised. The speed limiter should be adjusted whenever the pump control linkage is adjusted. The machine should not travel more than 2 mph (3.2 km/h) with the hopper raised.

The speed limiter is adjusted by tightening or loosening the speed limiter cable. One threaded end of the cable is located on the right lift arm. The other end of the cable, which is also threaded, is located on a flat sided sheave next to the directional control pedal. Tighten the cable to reduce the machine speed when the hopper is raised. Loosen the cable to increase the machine speed when the hopper is raised.



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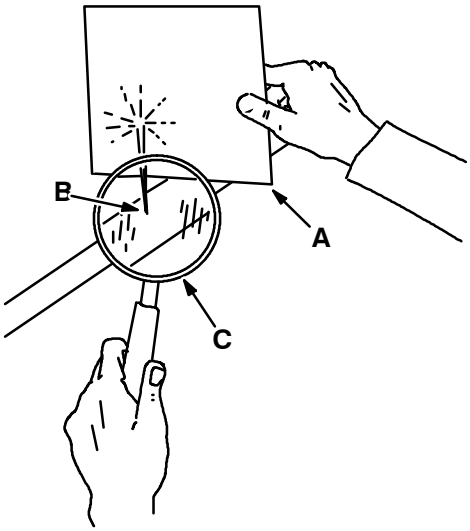
SPEED LIMITER CABLE

A. Speed Limiter Cable
B. Flat Sided Sheave
C. Cable Adjusting Nut
D. Directional Control Pedal

HYDRAULIC FLUID LEAKS

Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.



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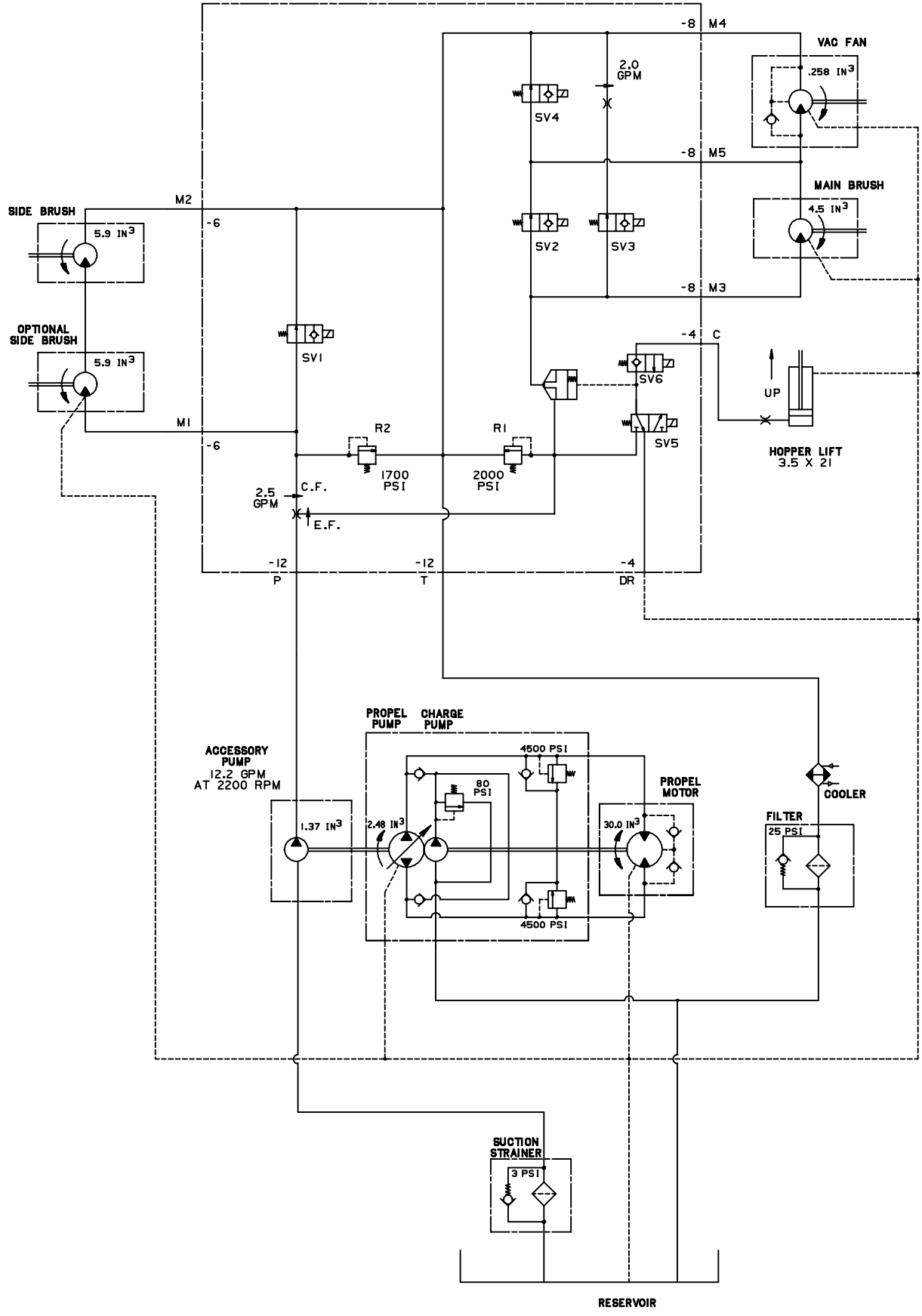
HYDRAULIC PINHOLE LEAK

A. Cardboard
B. Pinhole Leak
C. Magnifying Glass

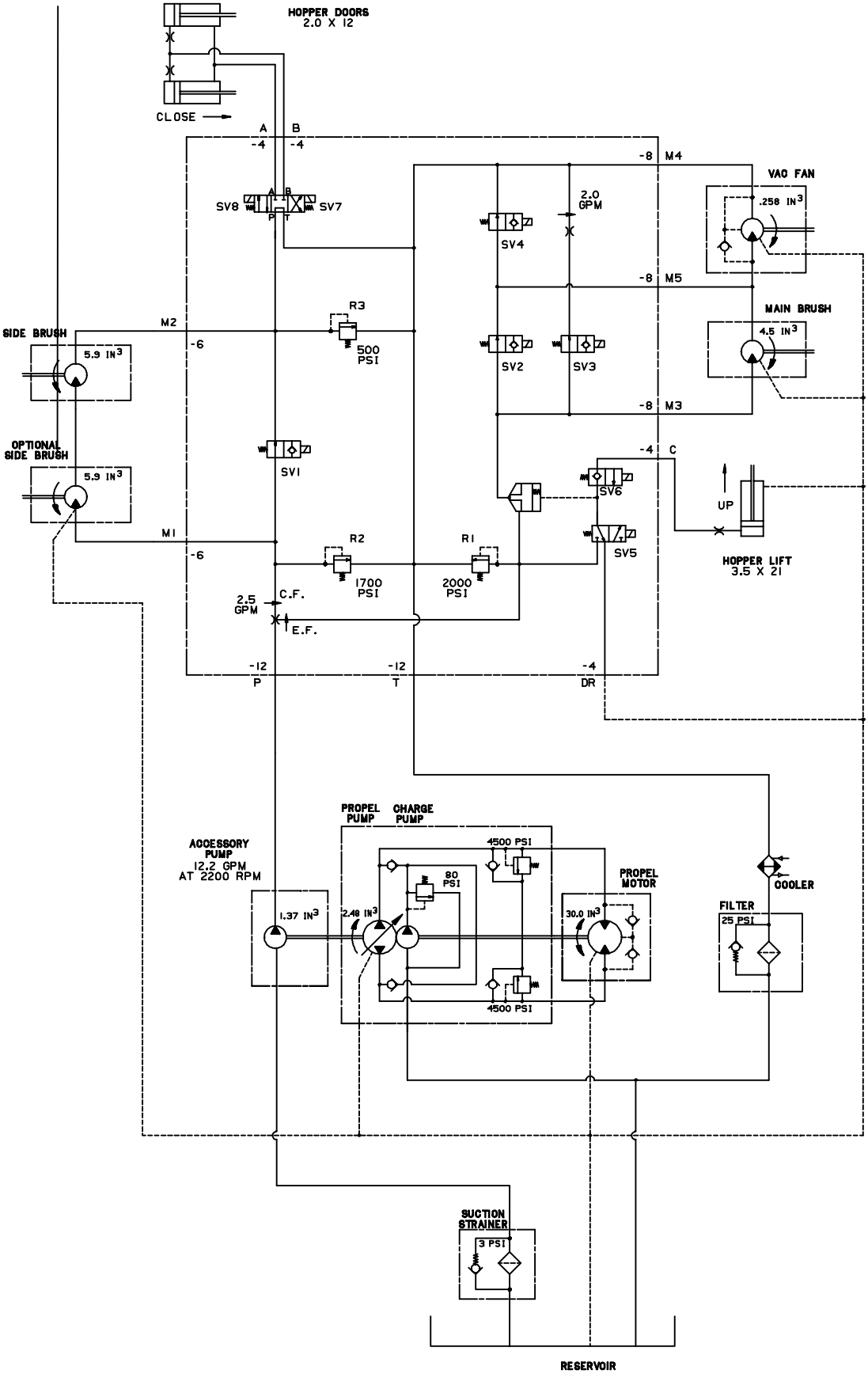
If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

FOR SAFETY: When Servicing Machine, Use Cardboard To Locate Leaking Hydraulic Fluid Under Pressure.



06527

HYDRAULIC SCHEMATIC – LOW DUMP MODEL



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HYDRAULIC SCHEMATIC -- MULTI-LEVEL DUMP

HYDRAULIC SYSTEM TROUBLESHOOTING

Problem	Cause	Remedy
Machine travels slowly or not at all	Parking brake set	Release parking brake
	Directional control linkage broken or not adjusted properly	Replace and/or adjust linkage
	Relief valve stuck open (leaking)	Clean or replace relief valve – one forward, one reverse
	Hydraulic motor failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
	Hydraulic piston pump failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
	Hydraulic fluid level low	Fill hydraulic fluid reservoir
Main brush turns slowly or not at all	Bad electrical connections	Remake connections
	Bad rocker switch S4	Replace switch
	Bad hopper switch S1	Replace switch
	Bad relay M3	Replace relay
	Bad thermal sentry switch	Replace switch
	Bad coil SV2	Replace coil
	Cartridge stuck open at SV2	Clean or replace cartridge
	Bad logic board	Replace board
	F1 Priority valve stuck	Clean or replace valve
	Relief valve stuck open R1	Clean or replace valve
	Logic valve stuck closed	Clean or replace valve
	Hydraulic fluid level low	Fill hydraulic fluid reservoir
	Hydraulic brush motor failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
	Hydraulic gear pump failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
Main brush turns in I and II speed, but no vacuum fan	Bad electrical connections	Remake connections
	Bad rocker switch S3	Replace switch
	Bad coil SV4	Replace coil
	Cartridge stuck open at SV4	Clean or replace cartridge
	Hydraulic fan motor failure	Replace motor
	Bad logic board	Replace board
No II speed on main brush and vacuum fan	Bad electrical connections	Remake connections
	Bad rocker switch S4	Replace switch
	Bad coil SV3	Replace coil
	Cartridge stuck open at SV3	Clean or replace cartridge
	Bad logic board	Replace board
No low speed	F2 flow divider plugged	Clean or replace
With II speed vacuum fan, main brush continues to run	Bad rocker switch S4	Replace switch
	Bad coil SV2	Replace coil
	Bad logic board	Replace board

Problem	Cause	Remedy
Hopper will not lift	Bad rocker switch S11	Replace switch
	Bad coil SV5	Replace coil
	Cartridge stuck open at SV5	Clean or replace cartridge
	Logic valve stuck open	Clean or replace valve
	Cartridge stuck open at SV6	Clean or replace cartridge
	Hydraulic orifice at lift cylinder plugged	Replace orifice
	Lift cylinder failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
	Hydraulic gear pump failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
	Hopper overloaded	Empty hopper
	Lift arms binding	Replace and/or adjust lift arm linkage
Hopper lifts but main brush and vacuum fan do not shut off	Bad hopper switch S1	Replace switch
Hopper will not lower	Bad rocker switch S11	Replace switch
	Bad coil SV6	Replace coil
	Cartridge stuck open at SV6	Clean or replace cartridge
	Cartridge stuck open at SV5	Clean or replace cartridge
	Lift cylinder failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
	Hydraulic gear pump failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
	Lift arms binding	Replace and/or adjust lift arm linkage
Hopper door will not open	Bad rocker switch S12	Replace switch
	Bad coil SVA	Replace coil
	Cartridge stuck open at SVA	Clean or replace cartridge
	Relief stuck open R2	Clean or replace valve
	Relief stuck open R3	Clean or replace valve
	Roll out cylinder failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
	Hydraulic gear pump failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
Hopper door will not close	Bad rocker switch S12	Replace switch
	Bad coil SVB	Replace coil
	Cartridge stuck open at SVB	Clean or replace cartridge
	Roll out cylinder failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
	Hydraulic gear pump failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*

Problem	Cause	Remedy
Side brush turns slowly or not at all	Bad electrical connections	Remake connections
	Bad rocker switch S5	Replace switch
	Bad coil SV1	Replace coil
	Cartridge stuck open at SV1	Clean or replace cartridge
	Relief stuck open R2	Clean or replace valve
	Bad logic board	Replace board
	Priority valve stuck	Clean or replace valve
	Hydraulic brush motor failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
	Hydraulic fluid level low	Fill hydraulic fluid reservoir
	Hydraulic gear pump failure	See *HYDRAULIC COMPONENTS TROUBLESHOOTING*
Side brush will not lift or lower	Bad electrical connections	Remake connections
	Bad rocker switch S5	Replace switch
	Bad side brush actuator	Replace actuator

HYDRAULIC COMPONENTS TROUBLESHOOTING

Problem	Cause	Remedy
Hydraulic cylinder failure	Piston seals leaking	Install seal kit
	Barrel worn or rod bent	Replace cylinder
Hydraulic motor failure	Motor leaking	Install seal kit
	Drive link failure	Replace drive link
	Gerotor worn	Replace gerotor set
	Output shaft failure	Replace output shaft and bearings
Hydraulic gear pump failure	Pump leaking	Install seal kit
	Gear set failure	Replace gear set
	Shaft failure	Replace gear set
	Flow divider failure	Replace back plate assembly
	Engine-to-pump coupling failure	Replace coupling
	Pump leaking	Install seal kit
	Relief valve stuck	Clean or replace relief valve
Hydraulic piston pump failure	Integral charge pump failure	Replace charge pump
	Rotating group worn	Replace rotating group
	Shaft failure	Replace shaft
	Backplate worn	Replace backplate
	Engine-to-pump coupling failure	Replace coupling

ENGINE

LUBRICATION

Check the engine oil level daily.

Diesel powered engines should be lubricated with SAE–CC/CD rated engine oil. Change the engine oil and oil filter after every 100 hours of operation.

The following oil grades are recommended for engines operating in the ambient temperatures listed.

SINGLE AND MULTI–VISCOSITY OILS

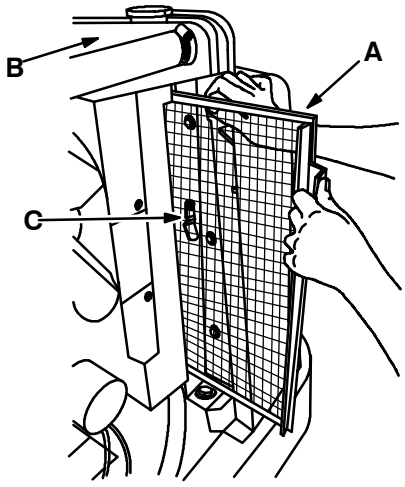
Below 32°F (Below 0°C)	32° to 77° F (0° to 25° C)	Above 77° F (Above 25° C)
10W 10W 30	20	30

The engine oil capacity is 8.38 qt (9 L) including the oil filter.

COOLING SYSTEM

Maintaining cooling system efficiency is important. Engine temperatures must be brought up to and maintained within the satisfactory range for efficient operation. However, the engine must be kept from overheating in order to prevent damage to the valves, pistons, and bearings.

Remove and clean the radiator screen daily. The radiator screen can be removed by opening the side engine door, rotating up the top engine door latch, moving the screen retainer clip, and pulling out the radiator screen.



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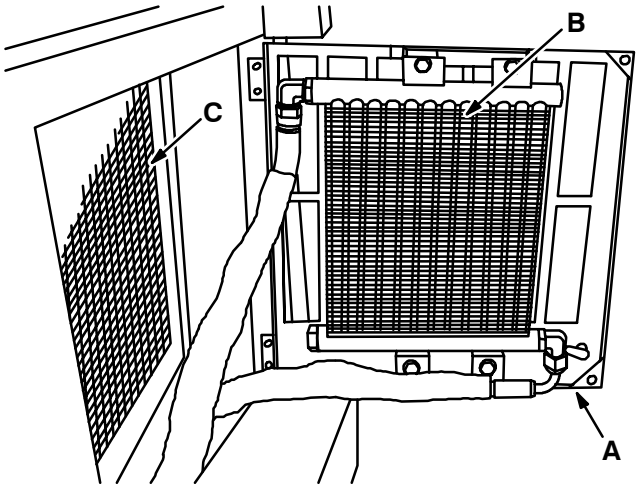
REMOVING RADIATOR SCREEN

A. Radiator Screen
B. Radiator
C. Screen Retainer Clip

Check the coolant level in the radiator every daily. Use soft, clean water mixed with permanent-type, ethylene glycol antifreeze in a one-to-one ratio. Deposits of sludge, scale, and rust prevent normal heat transfer. Flush the radiator and the cooling system after every 800 hours of operation using a dependable cleaning compound. Follow the mixing procedure recommended by the compound manufacturer. This is important because of the difference in concentration and composition of the cleaning compounds. After cleaning, flush the system with clean water.

Whenever a cooling system is badly rust-clogged as indicated by overflow loss or abnormally high operating temperatures, corrective cleaning by reverse flow flushing will most effectively remove the heavy deposits of sludge, rust, and scale. The reverse flow flushing should be performed immediately after draining the cleaning solution. Flush the radiator first, then the engine, to allow the engine to cool as much as possible.
Engine overheating may also be caused by dirty radiator fins. The exterior fins of the radiator and hydraulic cooler can be cleaned with an air hose. Check them for clogging after every 100 hours of operation. Blow out all dust, dirt, etc., between the fins, if necessary. This should be done only after the radiator and cooler have cooled off to avoid cracking caused by uneven cooling. Swing open the left rear door of the machine to gain access to the hydraulic cooler and the radiator.



06746

HYDRAULIC COOLER

A. Left Rear Door
B. Hydraulic Cooler
C. Radiator

The engine is equipped with a 180° F (82° C) thermostat. Normal engine temperature is 200° F (93° C). Temperatures up to 220° F (104° C) are allowable. Temperatures over 200° F (93° C) indicate a problem exists.

A pressure cap is used on the radiator to prevent overflow loss of water during normal operation. The spring-loaded valve in the cap closes the outlet to the overflow pipe of the radiator and thus seals the system. Pressure developing within the system raises the boiling point of the coolant and allows higher temperatures without overflow loss from boiling. The pressure valve opens at 15 psi (100 kPa), allowing steam and water to pass out the overflow pipe.

FOR SAFETY: When Servicing Machine, Avoid Contact With Hot Engine Coolant.

ATTENTION! Never pour cold water or cold antifreeze into the radiator of an overheated engine. Allow the engine to cool and avoid the danger of cracking the cylinder head or block. Keep the engine running while adding water.

AIR INTAKE SYSTEM

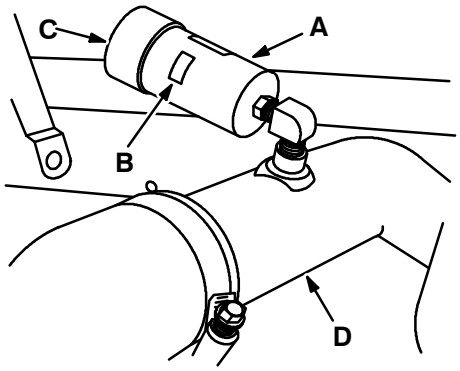
The importance of maintaining an air filter in proper condition cannot be overemphasized. Dirt induced through improperly installed, improperly serviced, or inadequate air filter elements wears out more engines than long hours of operation. Even a small amount of dirt will wear out a set of piston rings in just a few hours. Operating with a clogged air filter element also causes the fuel mixture to be leaner, which can lead to formation of harmful sludge deposits in the engine. Always cover the air intake when the air filter is removed for servicing. Do not neglect servicing the air filter. Use only approved replacement parts. Keep all other air intake components secure and in good condition to prevent entrance of unfiltered air.

Over-maintenance can cause more damage than good. Removing the air filter element more often than is needed allows contaminants to enter the engine unnecessarily. Clean or replace the air filter element only when the restriction indicator indicates excessive restriction in the system.

AIR FILTER SERVICE INDICATOR

The air filter service indicator signals when to clean or replace the air filter element. Check the service indicator daily. The red line will move on the scale as the air filter element fills with dirt. Do not clean or replace the air filter element until the red line reaches 20 in H_2O (5 kPa) and the “SERVICE WHEN RED” window is filled with red. The service indicator red line may return to a lower reading on the scale when the engine is shut off. The red line will return to a correct reading when the engine is started.

Clean or replace the filter element when the service indicator reads 20 in H_2O (5 kPa). After cleaning or replacing the air filter element, reset the service indicator by pushing the reset button on the end of the indicator.



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AIR CLEANER SERVICE INDICATOR

A. Service Indicator
B. Red Indicator Window
C. Indicator Reset
D. Air Intake Tube

AIR FILTER

The engine air filter element is a dry cartridge-type filter. The air filter element must be cleaned and inspected or replaced whenever the red indicator of the air filter service indicator is visible. The filter must be replaced after it has been damaged or cleaned three times.

Severe Environment Option: The air filter element should not be cleaned, but replaced when the red indicator of the air filter service indicator locks in the visible position.

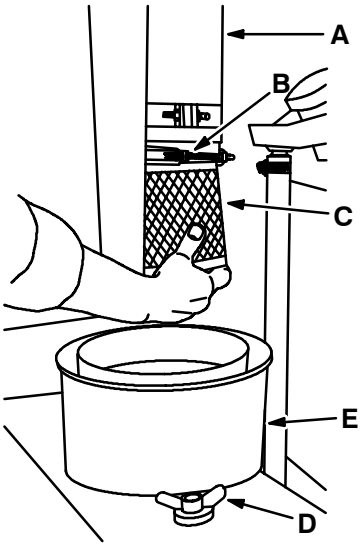
Service the air filter element only when the service indicator indicates excessive restriction in the system. Do not remove air filter element unless it is restricting air flow.

TO REPLACE AIR FILTER ELEMENT

1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

2. Open the right rear access door.
3. Unscrew the clamp ring on the filter.
4. Remove the end cup.
5. Remove the wing nut.
6. Gently pull the element out of the filter housing.



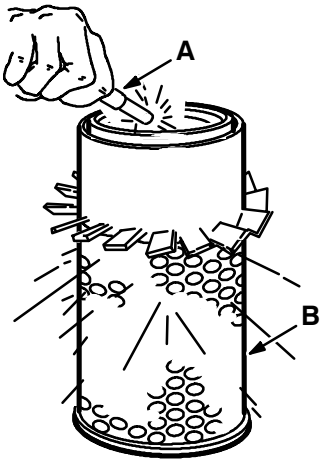
06748

REPLACING AIR FILTER ELEMENT

A. Filter Housing
B. Clamp Ring
C. Filter Element
D. Wing Nut
E. End Cap

7. Carefully clean out the end cup and interior of the air cleaner housing with a damp cloth. Clean the element housing sealing surfaces.
8. Using an air hose, direct dry, clean air, maximum 30 psi (205 kPa), up and down pleats on the inside of the filter. Do not rap, tap, or pound dust out of the element. Remember, elements may only be safely cleaned three times before they must be replaced.

FOR SAFETY: When Servicing Machine, Wear Eye And Ear Protection When Using Pressurized Air Or Water.



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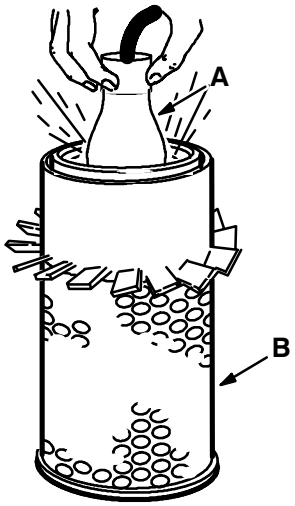
CLEANING AIR FILTER ELEMENT

A. Air Hose
B. Filter Element

9. After cleaning the air filter element, inspect it for damage by placing a bright light inside. The slightest rupture requires replacement of the filter. Clean and inspect the seals on the end of the element. They should be unbroken and flexible.



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INSPECTING AIR FILTER ELEMENT

A. Bright Light
B. Filter Element

10. Install the new or cleaned filter element so that the fins on the element are at the intake end of the air cleaner. Use care so that the fins are not damaged. Make sure the element is seating evenly. Tighten the element wing nut.

11. Install the end cap and tighten the clamp ring to hold it in place. Check all intake hose connections for leaks or abrasion.

12. Close the rear access door.

13. Open the engine cover and reset the service indicator.

FUEL SYSTEM

The diesel fuel system is made up of five basic components which are: fuel tank, fuel water trap filter, fuel pump, injection pump, and injectors.

Fuel flows from the fuel tank through the fuel water trap filter. The water trap filter separates water and impurities from the fuel. From the fuel water trap filter, fuel is drawn through the electric fuel pump and pumped to the injection pump. The injection pump pressurizes and sends fuel to the injectors. The injectors atomize and inject proper amounts of fuel into the combustion chamber at the proper times. Excess fuel is returned to the fuel tank through an overflow pipe.

FUEL WATER TRAP FILTER

The fuel water trap filter separates water and impurities from the fuel. It is located next to the fuel tank. The bottom portion of the unit is the water trap, the middle portion is the filter element.

Drain the water trap of water daily. To drain the water trap, loosen the drain knob on the bottom of the unit. First water, then diesel fuel will drain. Tighten the drain knob with diesel fuel appears.

Replace the fuel filter element and clean the water trap after every 400 hours of operation.

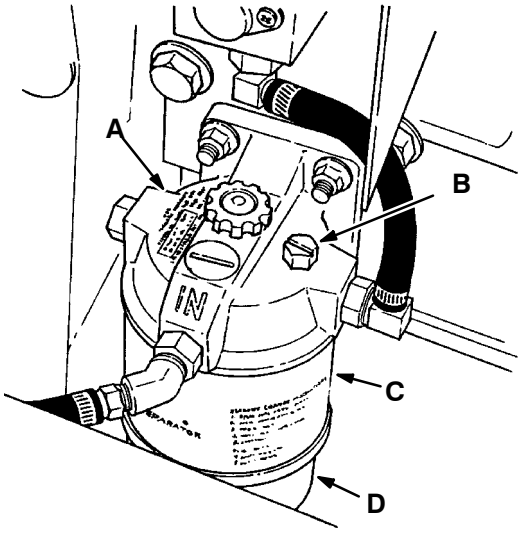
TO REPLACE THE FUEL FILTER ELEMENT

1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface And Set Parking Brake.

2. Open the right rear access door.

3. Loosen the unit vent plug and open the water trap drain to drain diesel fuel.



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FUEL WATER TRAP FILTER

A. Filter Head
B. Vent Plug
C. Filter Element
D. Water Trap Bowl

4. Remove the filter element and the water trap from the filter head.

5. Remove the water trap bowl from the filter element.

6. Clean the water trap bowl.

7. Lubricate the o-ring and spin the water trap bowl onto the new filter element.

8. Lubricate the o-ring and spin the filter element and water trap onto the filter head.

9. Prime the fuel system as described in *PRIMING THE FUEL SYSTEM.*

10. Close the right-hand rear door.

FUEL INJECTION PUMP

The fuel injection pump controls the engine speed.

The maximum speed screw is set and sealed by the manufacturer and must not be altered in any way unless factory authority is first obtained. Any adjustments should be carried out by experienced fuel pump technicians. The unauthorized removal of any seals on the pump may void the warranty.

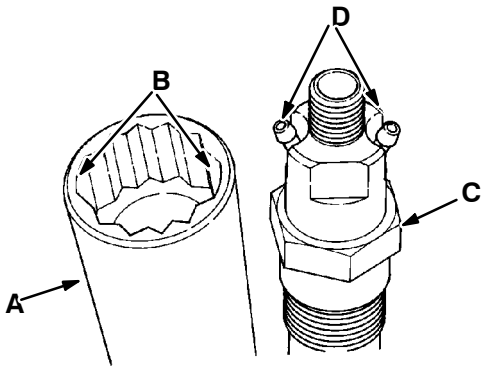
ATTENTION! Unless proper test equipment and trained technicians are available, adjustment or maintenance of the fuel injection pump should not be attempted.

FUEL INJECTORS

When replacing injectors in the cylinder head, it is essential that a new, correct-type heat shield washer be fitted between the nozzle cap and the cylinder head.

Care should be used when replacing the fuel injectors to prevent loosening the injector leak-off nipples.

Be sure to cut a relief in the inside of your socket for clearance. This will prevent an interference between the socket and the leak-off nipple.



01477

SOCKET RELIEF CLEARANCE

A. Socket
B. Relief
C. Injector
D. Leak-Off Nipple

Tighten injectors evenly to 52 ft lb (70 Nm).

Injectors should be taken out only if engine is malfunctioning as outlined below:

A. Misfiring
B. Knocking in one (or more) cylinders
C. Engine overheating
D. Loss of power
E. Smoky exhaust (black or white)
F. Increased fuel consumption

The faulty injector or injectors may be located by loosening the line fitting nut on each, in turn, with the engine running at a fast idle. This allows the fuel to escape and not enter the cylinder. The injector least affecting the engine performance should be removed from the cylinder head and reconditioned or replaced.

WARNING: Diesel atomizer spray can penetrate skin. Severe personal injury or death can result. Keep away from atomizers when engine is in operation.

NOTE: No attempt should be made to adjust the injection pressure without a proper testing pump and pressure gauge. It is impossible to adjust the setting of the injector with any degree of accuracy without proper equipment.

WARNING: Do not start the engine with loose injector securing nuts; this may result in the injector flying out.

TO PRIME FUEL SYSTEM

Priming the fuel system removes pockets of air in the fuel lines and fuel components. Air in the fuel system will prevent smooth engine operation.

Prime the fuel system after running out of fuel, changing fuel filter elements or repairing a fuel system component.

Before priming and venting, ensure that the outside of the vent screws and surrounding area is thoroughly clean to prevent dirt and foreign matter from entering the system.

NOTE: Electrical equipment such as starters should be shielded during priming to prevent fuel entry.

TO PRIME THE FUEL SYSTEM

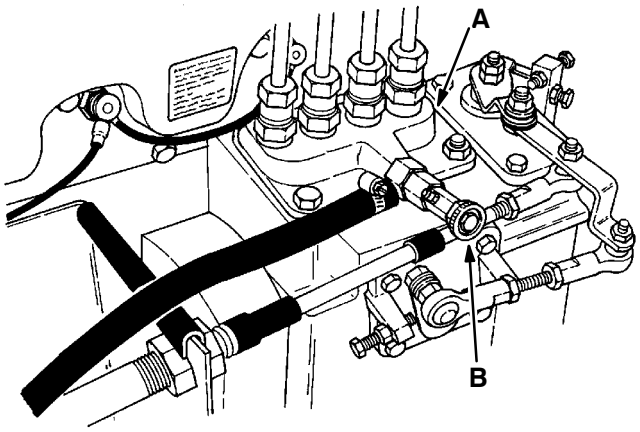
1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface And Set Parking Brake.

2. Fill the fuel tank.

3. Open the side and top engine doors.

4. Open the air vent on top of the fuel injection pump.



06749

INJECTION PUMP VENTS

A. Injection Pump
B. Air Vent

5. Start the engine and operate it for one minute, then stop the engine; or operate the starter motor in ten-second intervals until a steady stream of fuel flows from the vent.

6. Close the air vent

7. Close the engine doors.

DIESEL FUEL TROUBLESHOOTING

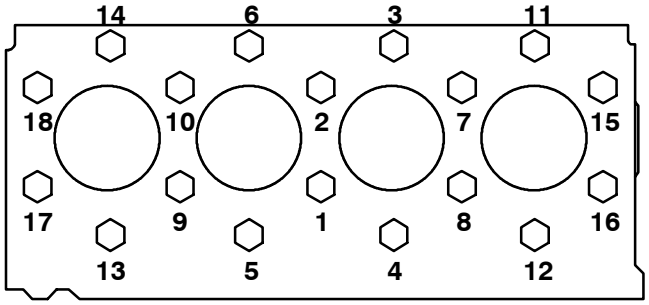
Problem	Cause	Remedy
Engine will not start	Out of fuel	Fill fuel tank
	Filter plugged	Clean filter
	Air in fuel	Bleed fuel lines
	Water in fuel	Drain water trap
	Fuel too thick	Change fuel grade
	Battery discharged	Charge or replace battery
	Clogged fuel nozzle	Clean or replace nozzle
	Valve clearance wrong	Adjust valves
	Leaking valves	Grind valves
	Low compression	Repair engine
Engine runs unevenly or lacks power	Dirty air filter	Clean or replace filter
	Plugged fuel filter	Clean filter
	Water in fuel	Drain water trap
	Fuel too thick	Change fuel grade
	Clogged fuel nozzle	Clean or replace nozzle
	Low compression	Repair engine
	Engine overheating	Check radiator
		Check lubricating system
	Valve clearance wrong	Adjust valves
	Injection pump worn	Repair or replace pump
Engine stops suddenly	Fuel leak	Check fuel system
	Out of fuel	Fill fuel tank
	Fuel nozzle bad	Replace nozzle
	Engine overheating	Check radiator
		Check lubricating system
Exhaust color bad	Fuel governor failure	Repair or replace
	Bad fuel	Change fuel grade
	Fuel nozzle bad	Replace nozzle
	Low compression	Repair engine
	Valve clearance wrong	Adjust valves
	Injection pump worn	Repair or replace pump

CYLINDER HEAD

CYLINDER HEAD

The cylinder head must be properly torqued after servicing to ensure proper operation. A three-stage torque procedure should be used. Snug down the cylinder head bolts and nuts in the proper sequence; first to one-third, then two-thirds, and then to the full torque specification of 58 to 68 ft lb (79 to 83 Nm). Retighten the bolts and nuts after operating the engine for 30 minutes.

NOTE: Power wrench torque limit must be held at least 10 ft lb (15 Nm) below torque specification. Hand tighten to specification.



CYLINDER HEAD BOLT TIGHTENING SEQUENCE

VALVE CLEARANCE

The valve clearance must be properly adjusted after servicing or retorquing the cylinder head bolts to ensure proper operation. Measure the clearance with a feeler gauge after aligning each cylinder with the top dead center of compression.

Adjust them with the engine cool to 0.0071 to 0.0087 in (0.18 to 0.22 mm) in the firing order of 1–3–4–2.

ELECTRICAL SYSTEM

BATTERY

The battery is rated at 12 V, 625 ccA. It is located under the operator seat. When removing battery cables, remove the negative (–) cable before the positive (+) cable.

Do not allow the battery to remain in discharged condition for any length of time.

Do not operate the machine if the battery is in poor condition or with only 25% of the charge left.

Clean the top surface and the terminals of the battery periodically. Use a strong solution of baking soda and water. Brush the solution sparingly over the battery top, terminals, and cable clamps. Do not allow any baking soda solution to enter the battery. Use a wire brush to clean the terminal posts and the cable connectors. After cleaning, apply a coating of clear petroleum jelly to the terminals and the cable connectors. Keep the top of the battery clean and dry.

Keep all metallic objects off the top of the battery, as they may cause a short circuit. Replace worn or damaged wires.

The electrolyte level must always be above the battery plates. Add distilled water to maintain solution at the correct level above the plates, but do not overfill. Never add acid to batteries, only water. Keep vent plugs firmly in place at all times, except when adding water or taking hydrometer readings.

FOR SAFETY: When Servicing Machine, Avoid Contact With Battery Acid.

If when checking battery specific gravity, one or more battery cells tests lower than the other battery cells, (0.050 or more) the cell is damaged, shorted, or is about to fail.

NOTE: Do not take readings immediately after adding water––if the water and acid are not thoroughly mixed, the readings may not be accurate. Check the hydrometer readings against this chart:

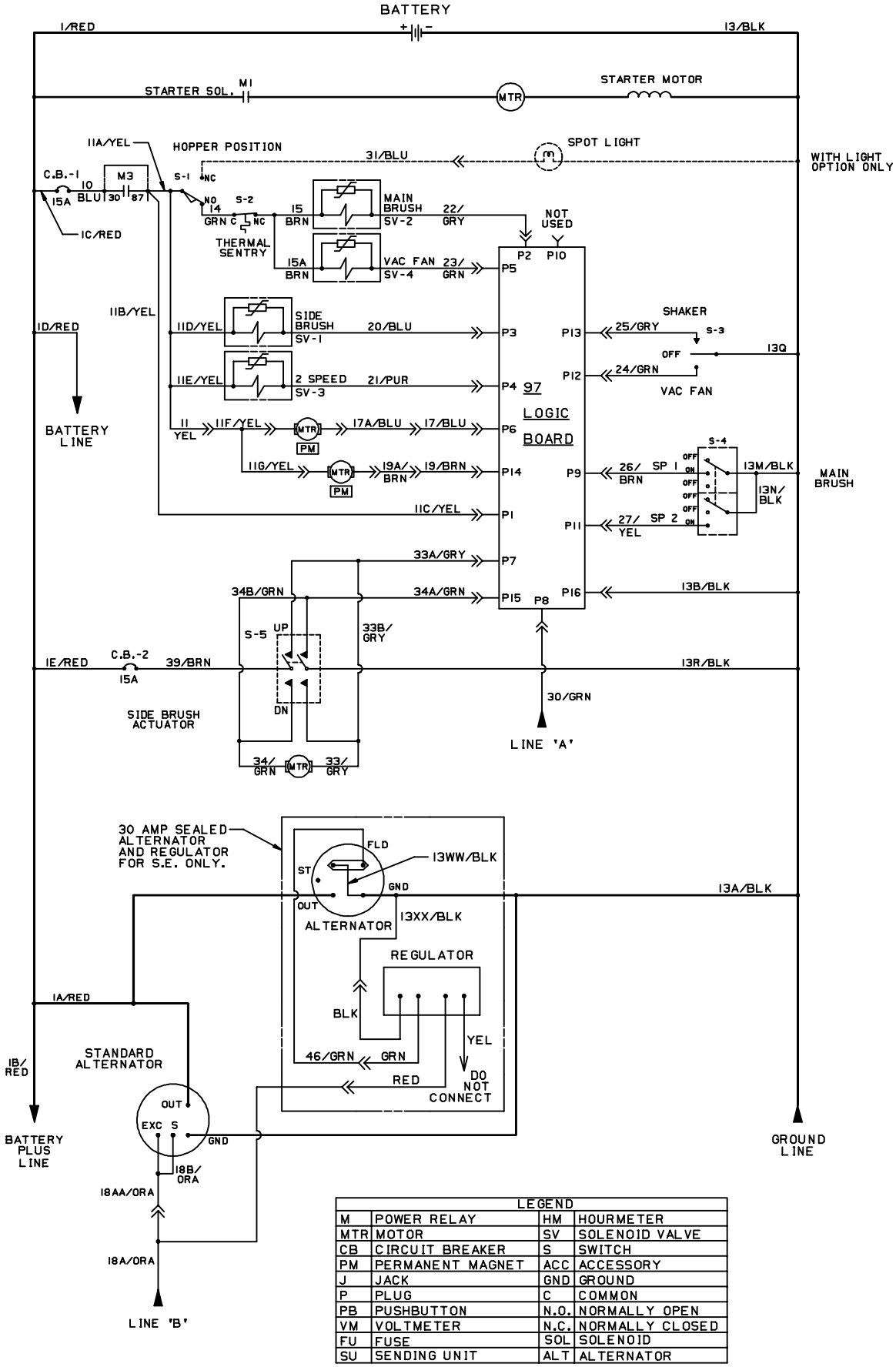
SPECIFIC GRAVITY AT 80° F (27° C)	BATTERY CONDITION
1.265	100% charged
1.225	75% charged
1.190	50% charged
1.155	25% charged
1.120	Discharged

NOTE: If the readings are taken when the battery electrolyte is any temperature other than 80° F (27° C), the reading must be temperature corrected.

To determine the corrected specific gravity reading when the temperature of the battery electrolyte is other than 80° F (27° C):

Add to the specific gravity reading 0.004, 4 points, for each 10° F (6° C) above 80° F (27° C).

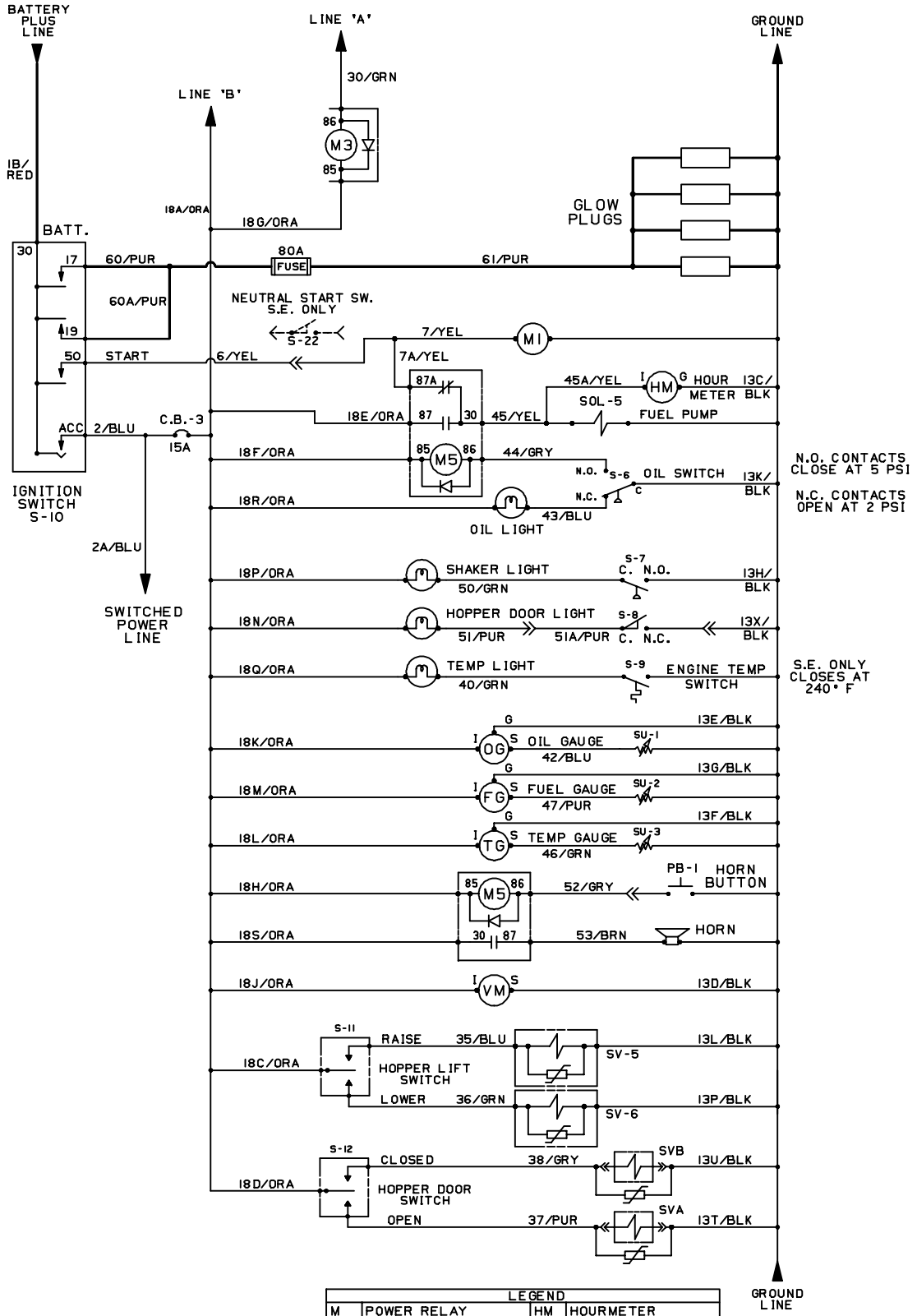
Subtract from the specific gravity reading 0.004, 4 points for each 10° F (6° C) below 80° F (27° C).



LEGEND			
M	POWER RELAY	HM	HOURMETER
MTR	MOTOR	SV	SOLENOID VALVE
CB	CIRCUIT BREAKER	S	SWITCH
PM	PERMANENT MAGNET	ACC	ACCESSORY
J	JACK	GND	GROUND
P	PLUG	C	COMMON
PB	PUSHBUTTON	N.O.	NORMALLY OPEN
VM	VOLTMETER	N.C.	NORMALLY CLOSED
FU	FUSE	SOL	SOLENOID
SU	SENDING UNIT	ALT	ALTERNATOR

06525

ELECTRICAL SCHEMATIC



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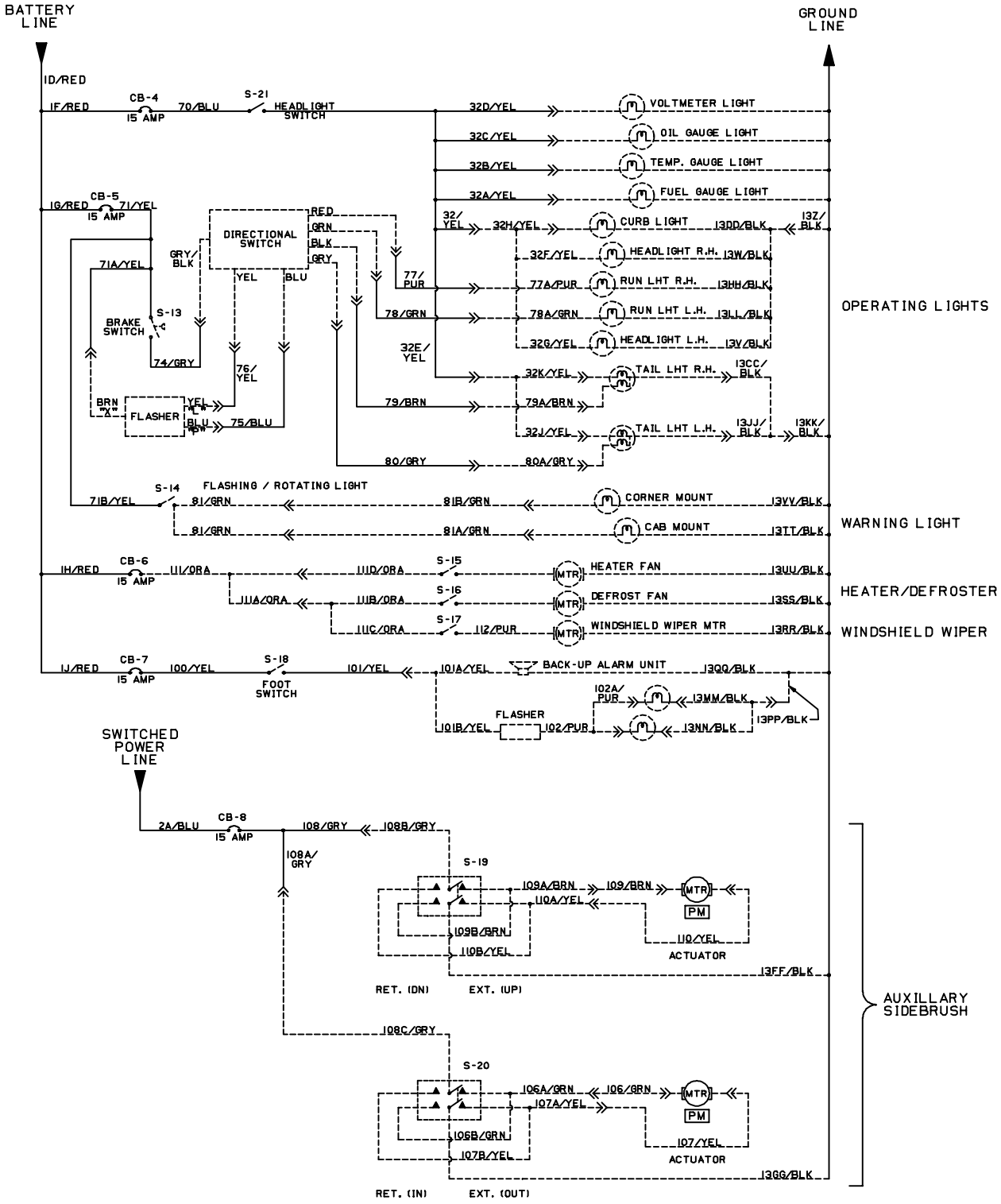
06525

ELECTRICAL SCHEMATIC



LEGEND			
M	POWER RELAY	HM	HOURMETER
MTR	MOTOR	SV	SOLENOID VALVE
CB	CIRCUIT BREAKER	S	SWITCH
PM	PERMANENT MAGNET	ACC	ACCESSORY
J	JACK	GND	GROUND
P	PLUG	C	COMMON
PB	PUSHBUTTON	N.O.	NORMALLY OPEN
VM	VOLTMETER	N.C.	NORMALLY CLOSED
FU	FUSE	SOL	SOLENOID
SU	SENDING UNIT	ALT	ALTERNATOR

06525

ELECTRICAL SCHEMATIC

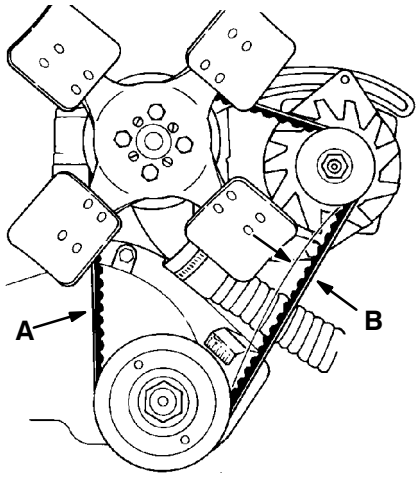
BELTS AND CHAINS

ENGINE FAN BELT

To tighten the fan belt, loosen the alternator adjusting bolts and pull out on the alternator by hand until the belt is just snug. Under no circumstances should a pry bar be used on the alternator to obtain fan belt tension, as damage to the bearings will result. Then tighten the alternator adjusting bolts.

Check the fan belt tension after every 50 hours of operation.

Proper belt tension is obtained when the belt deflects 0.28 in (7 mm) from a force of a finger applied at the midpoint of the longest span.



00577

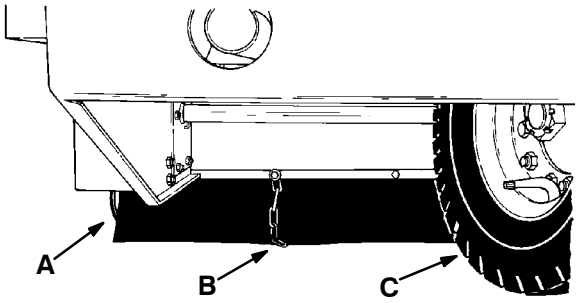
ENGINE FAN BELT

A. Fan Belt
B. Belt Deflection

STATIC DRAG CHAIN

A static drag chain is provided to prevent the buildup of static electricity in the machine. The chain is attached to the machine by a rear brush skirt retaining bolt.

Check the chain for wear. Make sure that it is making contact with the floor at all times.



01479

STATIC DRAG CHAIN

A. Rear Dust Skirt
B. Static Drag Chain
C. Rear Tire

DEBRIS HOPPER

HOPPER DUST FILTERS

There are two dust filter panels located inside of the hopper. The dust filters filter the air which is drawn up from the main brush compartment through the hopper. The dust filters are equipped with shaker motors to remove the accumulated loose dust particles. The dust filter shaker motors are operated by the filter shaker and vacuum fan switch. Shake the dust filters before dumping the hopper and at the end of every work shift. Inspect and clean or replace the dust filters after every 100 hours of operation.

To clean the dust filters use one of the following methods:

- TAPPING – Tap the filter gently on a flat surface with the dirty side down. Do not damage the edges of the filter element or the filter will not seat properly in the filter frame.
- AIR – Blow compressed air, 100 psi (690 kPa) maximum, through the dust filter opposite the direction of the arrows. This may be done with the dust filters in the hopper.
- WATER – Soak the dust filter in a water and mild detergent solution. Rinse the dust filter until it is clean. The maximum water pressure allowable is 40 psi (275 kPa). Air dry the wet dust filter; do not use compressed air.

NOTE: Be sure the dust filters are dry before reinstalling them in the machine.

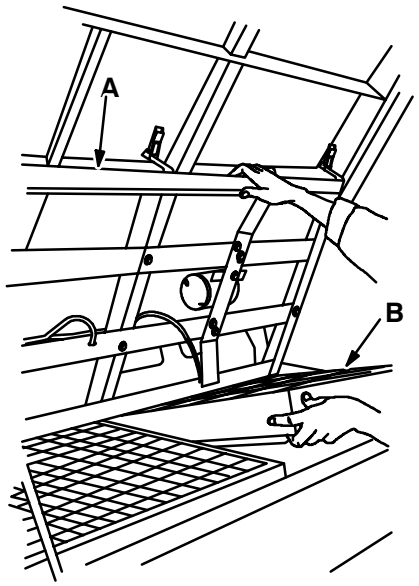
TO REMOVE HOPPER DUST FILTER PANELS

1. Lower the hopper to the sweeping position.
2. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Release the latches on both sides of the hopper cover.
4. Push in the hopper cover latch release button and lift the hopper cover.
5. Unclip the hopper cover prop arm from its storage location and position it in the hopper cover.
6. Lower the hopper cover onto the prop arm.
7. Unlatch the filter shaker frame and lift up the front of the frame. The filter panels can be removed without removing the filter shaker frame. When doing this, be careful not to bunch the panel seals when removing or installing the filter panels.

   If the filter shaker frame is removed to remove the filter panels, unplug the two shaker motors from the machine wire harness before removing the shaker frame.



06750

REMOVING FILTER PANELS

A. Filter Shaker Frame
B. Dust Filter Panel

8. Remove the dust filter panels.
9. Clean or discard the dust filter panels as required.

TO INSTALL HOPPER DUST FILTERS

1. Place the cleaned or new dust filter panels in the hopper dust filter frames with the arrows pointing up. Be careful not to bunch the panel seals when installing the filter panels.

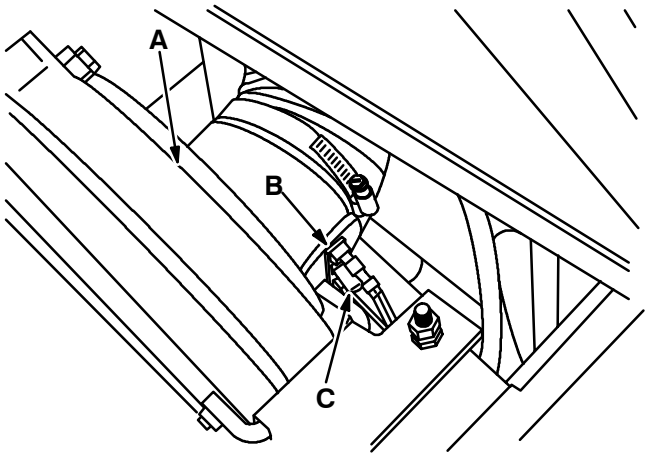
2. Place the filter shaker frame over the dust filter panels. Plug in the shaker motors if the filter shaker frame was removed.

3. Close the filter shaker frame over the dust filter panels and latch the frame in place.

4. Push the hopper cover open, lower and store the prop arm in its retaining clip, and close and latch the hopper cover.

THERMO-SENTRY™

The Thermo-Sentry™ is a thermostat that senses the temperature of the air drawn into the vacuum fan from the hopper. The thermostat controls the solenoid valve that directs hydraulic fluid to the vacuum fan motor. In the event of a fire in the hopper, the high air temperature would trip the thermostat stopping the electric current to the solenoid valve – stopping hydraulic fluid flow to the vacuum fan motor and air flow to the fire. After the thermostat has tripped, it must be manually reset by pushing the reset button in.



THERMO-SENTRY™

A. Vacuum Fan
B. Thermo-Sentry™
C. Reset Button

DEBRIS HOPPER

The low dump model debris hopper has three adjustments. They are: front bumper alignment, hopper centering adjustment, and hopper floor clearance adjustment.

The multi-level dump model debris hopper has six adjustments. They are: front bumper alignment, hopper centering adjustment, dump height adjustment, dump door and switch adjustment, dump door stop bolts adjustment, and hopper floor clearance adjustment.

All of the adjustments have been made at the factory. Only the hopper floor clearance adjustment should be checked after every
50 hours of operation. In the event that the hopper, the hopper lift arms, or other integral hopper components are repaired or replaced, the hopper must be readjusted for best performance.

The hopper adjustments must be made in the order specified. After making these adjustments, check the side brush adjustments too.

TO ADJUST HOPPER

A. FRONT BUMPER ALIGNMENT – LOW DUMP, MULTI-LEVEL DUMP MODELS

1. Empty the debris hopper.

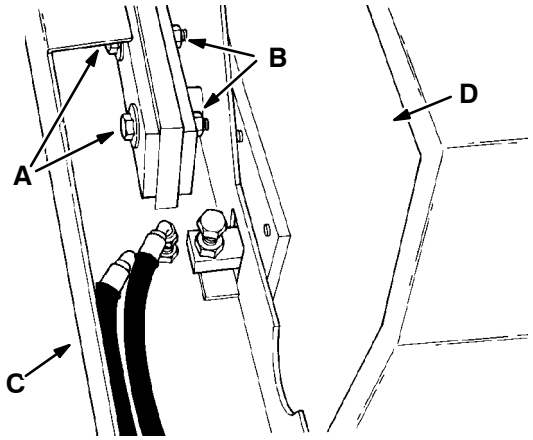
2. Place the hopper in the sweeping position.

3. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

4. Position a 24 in (610 mm) long straight edge with one-half of the straight edge on the top of the front bumper, and one-half on the machine side bumper. The bumpers should be level within 0.09 in (2 mm).

To adjust the front bumper, loosen the alignment bolt jam nuts on the side which is most out of alignment. Rotate the alignment bolts until the bumper is level and tighten the jam nuts. Repeat the procedure on the other side if necessary.



01485

FRONT BUMPER ALIGNMENT BOLT

A. Alignment Bolt
B. Jam Nut
C. Front Bumper
D. Hopper

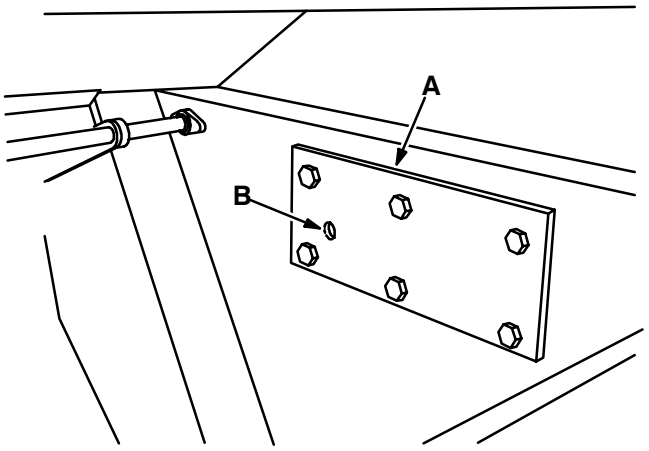
B. HOPPER CENTERING ADJUSTMENT – LOW DUMP, MULTI-LEVEL DUMP MODELS

Measure the distance between the right and left side of the hopper and the main frame. The distance measured should be equal within 0.2 in (5 mm).

To adjust the hopper position, raise the hopper and engage the hopper support bar.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

Open the hopper access door. Turn the set screw inside the hopper adjuster plate recess to the left on the side with less space between the hopper and the frame. Turn the set screw on the other side to the right to reduce the space between the hopper and the frame. Close the hopper access door.



06752

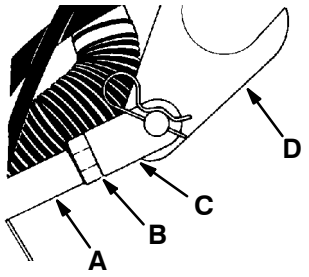
HOPPER ADJUSTER PLATE

A. Hopper Adjuster Plate
B. Set Screw

C. DUMP HEIGHT ADJUSTMENT – MULTI-LEVEL DUMP MODEL

Close the hopper door. Measure the distance between the floor and the lowest point on the hopper. It should be 60.5 in (1535 mm).

To adjust the dump height, loosen the lift cylinder clevis jam nut and turn it as far as it will go back towards the cylinder. Continue to rotate the nut to rotate the cylinder rod to adjust the dump height. Loosen the jam nut and retighten it against the cylinder clevis.



01508

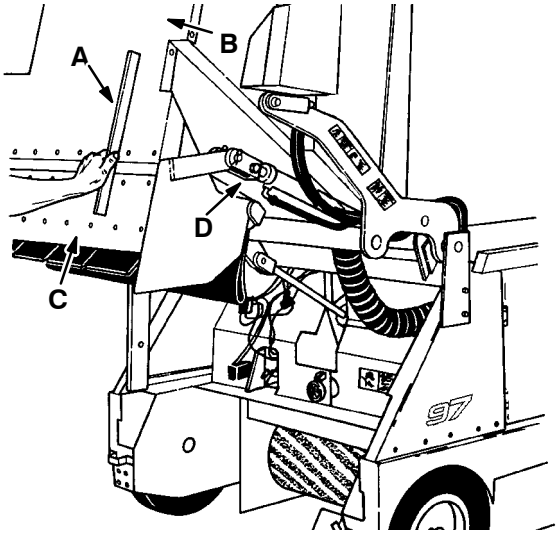
LIFT CYLINDER CLEVIS

A. Lift Cylinder Rod
B. Jam Nut
C. Clevis
D. Lift Arm

NOTE: Be sure to keep the clevis thread fully engaged to prevent clevis separation.

D. HOPPER DOOR AND SWITCH ADJUSTMENT – MULTI-LEVEL DUMP MODEL

Open the hopper door. Position a straight edge on the bottom of the hopper and the hopper door. The hopper door should be flat with respect to the bottom of the hopper.



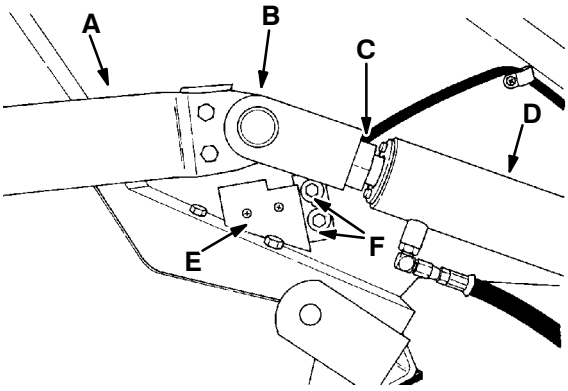
06796

CHECKING DUMP DOOR

A. Straight Edge
B. Hopper Bottom
C. Hopper Door
D. Door Cylinder

To adjust the hopper door, loosen the door cylinder clevis jam nuts and turn them as far as they will go back towards the cylinder. Rotate the cylinder rod in the clevis end to adjust the hopper door open position. Tighten the jam nuts when the hopper door base is flat with respect to the hopper bottom.

NOTE: Be sure to keep the clevis thread fully engaged.



01505

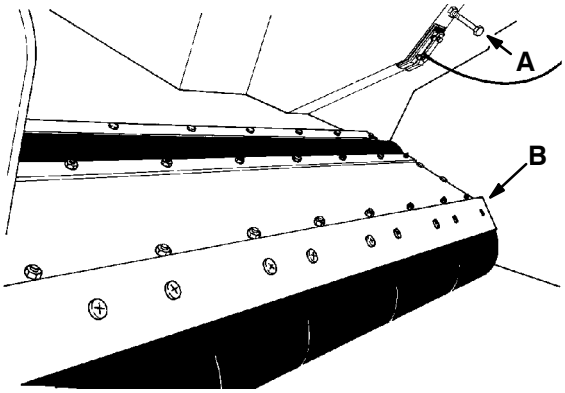
DOOR CYLINDER AND SWITCH

A. Hopper Door Arm
B. Clevis
C. Jam Nut
D. Door Cylinder
E. Switch Bracket
F. Adjustment Slot

Adjust the hopper door switch by loosening the bolts, sliding the switch and bracket up or down, and tightening the bolts so that the switch contacts close when the hopper door is fully open.

E. HOPPER DOOR STOP BOLTS ADJUSTMENT – MULTI-LEVEL DUMP MODEL

Adjust the two hopper door stop bolts so they are 3.1 in (80 mm) long. This will stop the door in the correct “closed” position.



01487

HOPPER DOOR STOP BOLT

A. Stop Bolt
B. Hopper Door

F. HOPPER FLOOR CLEARANCE ADJUSTMENT – LOW DUMP, MULTI-LEVEL DUMP MODELS

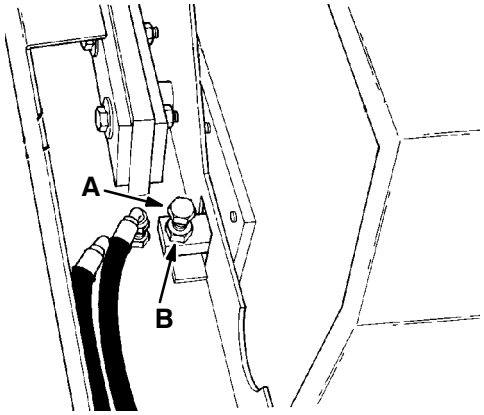
The hopper floor clearance should be checked after every 50 hours of operation. Proper floor clearance must be maintained to prevent the hopper from trailing debris.

TO CHECK AND ADJUST HOPPER FLOOR CLEARANCE

1. Lower the hopper into the sweeping position, stop the engine, and set the parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

2. Slide a 1.5 in (40 mm) thick block under each side of the rear of the hopper. This is the amount of floor clearance needed by the hopper. If the hopper needs adjustment, continue.
3. Loosen the floor clearance bolt jam nut on each side of the hopper.



01485

FLOOR CLEARANCE ADJUSTMENT BOLT

A. Floor Clearance Bolt
B. Jam Nut

4. Thread the floor clearance bolts in to increase the floor clearance or thread the clearance bolts out to decrease floor clearance.
5. Tighten the jam nuts.

G. OTHER ADJUSTMENTS

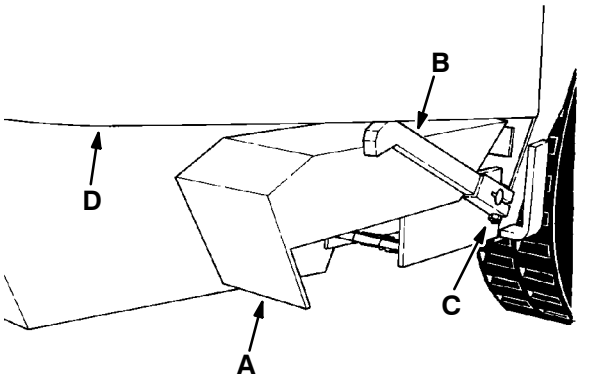
After replacing an integral hopper component and making the previous adjustments, also readjust the side brush, the hopper dust dump door, and the hinged top hopper seal on the multi-level dump model.

STABILIZER LEG

The machine stabilizer leg is a safety device which, when the machine is being multi-level dumped, projects downward to act as an anti-tipping device. Check the stabilizer leg daily to be sure it is down when the machine is being multi-level dumped and is fully retracted when the hopper is in the sweeping position. Check for proper operation daily. Lubricate the leg pivot pin after every 200 hours of operation.

TO ADJUST STABILIZER LEG

1. Lower the hopper into the sweeping position.
2. Stop the engine and set the machine parking brake.
3. Check to see if the front bumper is not resting on the stabilizer leg assembly. If it is, loosen the leg assembly mounting bolts, slide the assembly down, and retighten the bolts.
4. Loosen the activating arm pinch bolt.
5. Hold the stabilizer leg fully raised.



STABILIZER LEG

A. Stabilizer Leg
B. Arm
C. Pinch Bolt
D. Bumper

6. Position the arm so it contacts the bottom of the front bumper and tighten the pinch bolt.
7. Start the engine and raise the hopper. Check to make sure the stabilizer leg is lowered.
8. Lower the hopper and check to make sure the leg is fully retracted and raised.

BRUSHES

MAIN BRUSH

The main brush should be inspected daily for wear or damage. Remove any string or wire found tangled on the main brush, main brush drive hub, or main brush idler hub.

Rotate the main brush end-for-end after every 50 hours of operation for maximum main brush life.

The main brush should be replaced when the remaining bristle measures 1.25 in (30 mm) in length.

The main brush pattern should be checked daily. The pattern should be 2 to 2.5 in (50 to 65 mm) wide with the main brush in the (Main Brush Free-Float) position. Main brush pattern adjustments are made by turning the main brush height adjustment knob behind the access door next to the operator's left foot.

TO REMOVE MAIN BRUSH

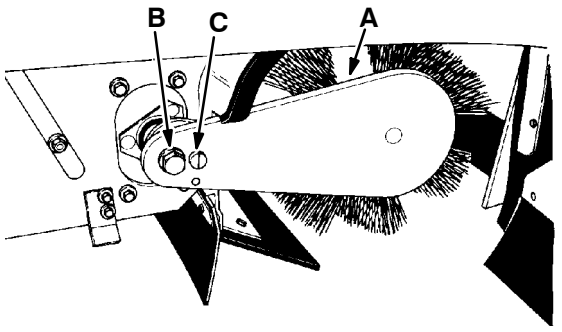
1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

2. Place the main brush position lever in the top (Main Brush Free-Float) position.

3. Open the right side brush access door.

4. Remove the brush idler arm retaining bolt from the arm hub.



01486

MAIN BRUSH IDLER ARM

A. Brush Idler Arm
B. Arm Retaining Bolt
C. Plastic Screw

5. Pull the brush idler arm off the arm hub.

NOTE: If the brush idler arm does not come off easily, remove the plastic screw which is located next to the hole where the brush idler arm retaining bolt was mounted. Thread the brush idler arm retaining bolt into the threaded hole where the plastic screw was mounted. Tighten the retaining bolt until it forces the brush idler arm loose. Remove the brush idler arm retaining bolt and replace it with the plastic screw.

6. Grasp the main brush; pull it off the brush drive plug and out of the main brush compartment.

TO INSTALL MAIN BRUSH

1. Place the main brush on the floor next to the access door.

2. Align the main brush tube spline with the spline drive on the main brush drive plug.

3. Slide the main brush into the brush compartment and onto the drive plug.

4. Align the main brush idler plug spline with the main brush tube spline.

5. Slide the main brush idler plug into the main brush tube.

6. Slide the brush idler arm onto the arm hub.

7. Thread the brush idler arm retaining bolt through the idler arm and into the arm hub.

8. Tighten the brush idler arm retaining bolt.

9. Close the right side brush access door.

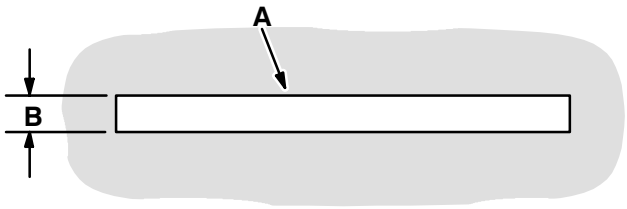
10. Check and adjust the main brush pattern as described in *TO CHECK AND ADJUST MAIN BRUSH PATTERN*.

TO CHECK AND ADJUST MAIN BRUSH PATTERN

1. Apply chalk, or some other material that will not blow away easily, to a smooth, level floor.
2. With the side brush and main brush raised, position the main brush over the chalked area.
3. Start the main brush rotating, while keeping a foot on the brakes to keep the machine from moving.
4. Lower the main brush to the floor for 15 to 20 seconds.

NOTE: If no chalk or other material is available, allow the brushes to spin for two minutes.

5. Raise the main brush.
6. Drive the machine off the test area.
7. Observe the width of the brush pattern. The proper brush pattern width is 2 to 2.5 in (51 to 54 mm).



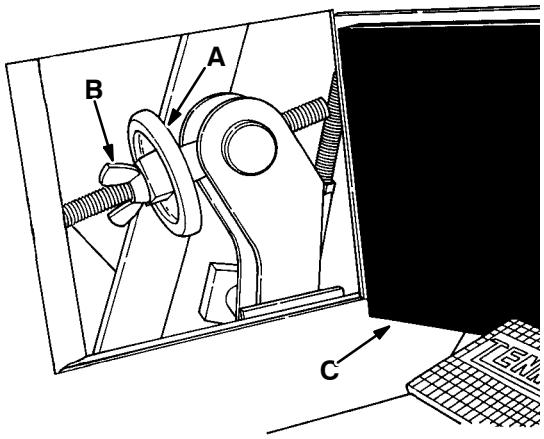
00582

NORMAL MAIN BRUSH PATTERN

A. Main Brush Pattern
B. 2 to 2.5 in (51 to 54 mm)

To increase the main brush pattern width, loosen the locking wing nut and turn the main brush height adjustment knob to the left from the top. To decrease the main brush pattern width, loosen the locking wing nut and turn the adjustment knob to the right from the top.

Tighten the locking wing nut and recheck the main brush pattern. Repeat the procedure until the main brush pattern is within the specified range.

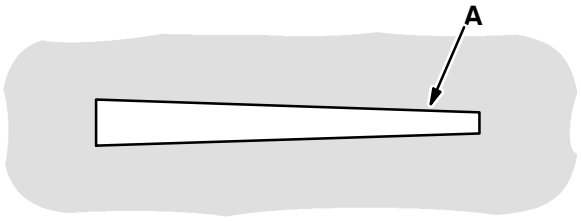


06797

MAIN BRUSH HEIGHT ADJUSTMENT KNOB

A. Main Brush Height Adjustment Knob
B. Wing Nut
C. Access Door

If the main brush pattern is tapered, loosen the left main brush cross shaft bearing mounting brackets and bearing flanges. Pivot the bearing mounting bracket to level the cross shaft. Tighten the bearing mounting bracket and the bearing flanges. Check the main brush pattern and readjust as necessary. Then adjust the width of the main brush pattern.



00601

TAPERED MAIN BRUSH PATTERN

A. Main Brush Pattern

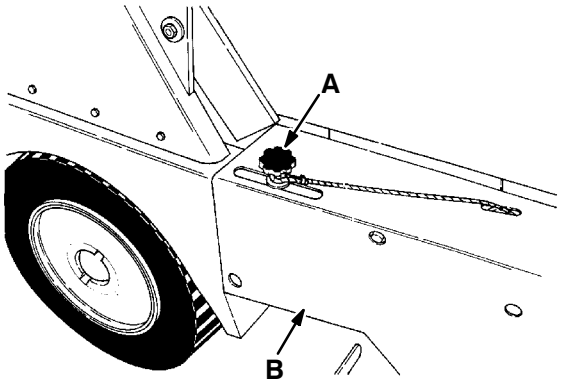
SIDE BRUSH

The side brush should be inspected daily for wear or damage. Remove any string or wire found tangled on the side brush or side brush drive hub.

The side brush should be replaced when the remaining brush bristle measures 2.5 in (65 mm) in length.

The side brush has four adjustments. The only adjustment which requires regular attention compensates for side brush wear. It is controlled by the side brush height adjustment knob and cable.

To adjust the lowered height, lower the side brush. Loosen the side brush knob. Slide it forward to lower the side brush, or slide it backward to raise the side brush. Tighten the knob after the desired height is reached.



06717

SIDE BRUSH HEIGHT ADJUSTMENT KNOB

A. Adjustment Knob
B. Side Brush Bumper

The other three adjustments are the maximum raised height adjustment, the side brush height angle adjustment, and the side brush bumper clearance adjustment. These adjustments should be done after replacing any major component of the side brush lift mechanism and after readjusting the hopper.

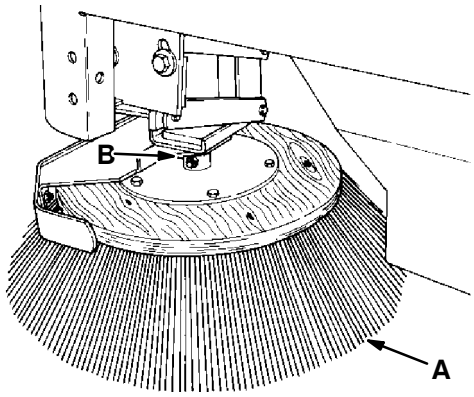
TO REMOVE SIDE BRUSH

1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

2. Raise the side brush.

3. Remove the side brush retaining bolt from the end of the side brush motor drive shaft.



01460

SIDE BRUSH

A. Side Brush
B. Drive Shaft

4. Slide the side brush off the side brush drive shaft. Keep track of the drive shaft key when removing the brush.

TO INSTALL SIDE BRUSH

1. Slide the side brush onto the side brush drive shaft. Insert the drive shaft key if necessary.

2. Insert the retaining bolt in the end of the side brush drive shaft and tighten the retaining bolt.

3. Adjust the side brush height as described in *TO ADJUST SIDE BRUSH MAXIMUM RAISED HEIGHT*.

TO ADJUST SIDE BRUSH MAXIMUM RAISED HEIGHT

1. Empty the hopper.

2. Park the machine on a level surface and set the parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface And Set Parking Brake.

3. Raise the hopper, engage the hopper support bar, and lower the hopper onto the support bar.

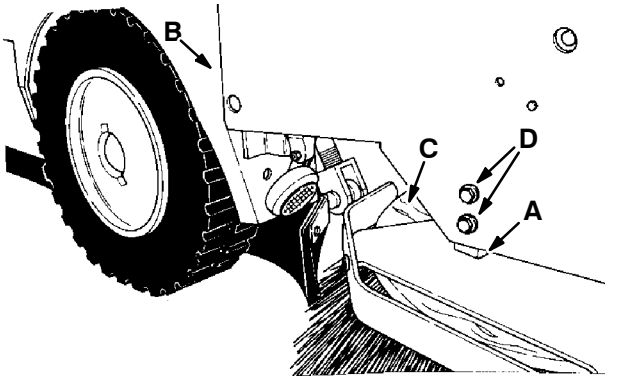
WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

4. Lower the side brush.

5. Stop the engine.

6. Loosen the side brush stop bolts.

7. Position the side brush stop down so the bottom of the side brush is 1 in (25 mm) from the floor when it is in the raised position. Tighten the stop bolts.



01498

SIDE BRUSH STOP

A. Stop
B. Bumper
C. Side Brush Back
D. Stop Bolt

8. Check the side brush raised height.

9. Start the engine, raise the hopper, disengage the hopper support bar, and lower the hopper.

10. Stop the engine.

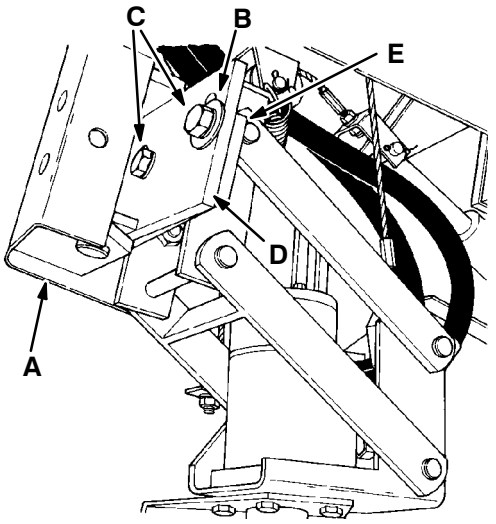
TO ADJUST SIDE BRUSH HEIGHT ANGLE

1. Raise the side brush.

2. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Loosen the two side brush angle adjustment bolts.



01459

SIDE BRUSH ANGLE ADJUSTMENT

A. Side Brush Bumper
B. Adjustment Slot
C. Angle Adjustment Bolt
D. Side Edge of Side Brush Pivot
E. Side Edge of Side Brush Suspension Bracket

4. Line up the side edges of the side brush pivot and the side brush suspension bracket to set the side brush angle at 5°.

NOTE: The side brush normally operates at a 5° angle. The angle may be changed to a different angle if the application requires.

5. Tighten the two side brush angle adjustment bolts.

TO ADJUST SIDE BRUSH BUMPER CLEARANCE

1. Empty the hopper.

2. Park the machine on a level surface and set the parking brake.

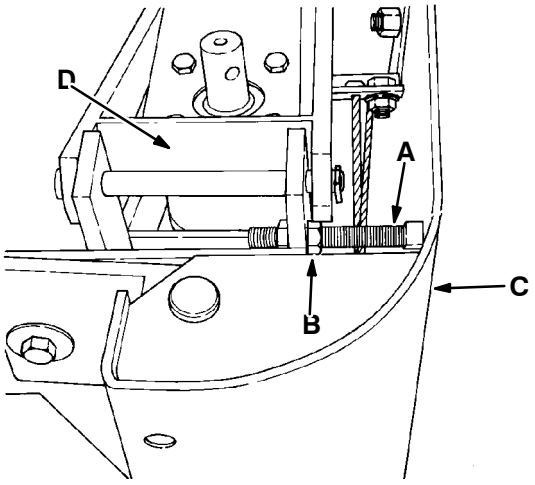
FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Raise the hopper, engage the hopper support bar, and lower the hopper onto the support bar.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

4. Stop the engine.

5. Loosen the bumper clearance bolt jam nut and adjust the bolt so there is 2.45 in (60 mm) clearance between the bumper and the side brush assembly. Tighten the jam nut.



01507

SIDE BRUSH BUMPER CLEARANCE BOLT

A. Clearance Bolt
B. Jam Nut
C. Bumper
D. Side Brush Assembly

6. Start the engine, raise the hopper, disengage the hopper support bar, and lower the hopper.

7. Stop the engine.

SKIRTS AND SEALS

HOPPER LIP SKIRTS

The hopper lip skirts are located on the bottom rear of the hopper. Their purpose is to float over debris and help deflect that debris into the hopper. The hopper lip skirts are made up of five bottom lip segments.

The hopper lip skirts should be inspected for wear or damage daily.

TO REPLACE HOPPER LIP

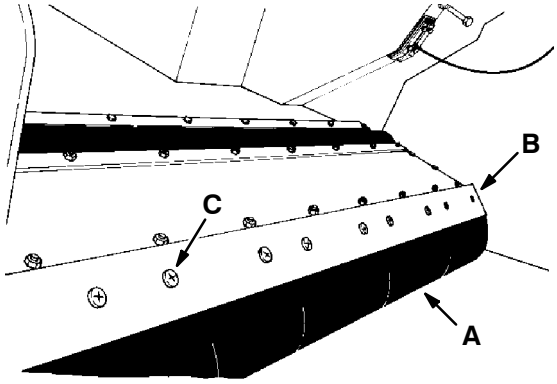
1. Empty the debris hopper.
2. Park the machine on a level surface and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Raise the hopper, engage the hopper support bar, and lower the hopper onto the hopper support bar.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

4. Stop the engine.
5. Remove the hopper lip retaining strip retaining bolts.
6. Remove the hopper lip retaining strip and worn or damaged hopper lip segments.



01487

HOPPER LIP SKIRT

A. Hopper Lip Skirts
B. Retaining Strip
C. Retaining Bolts

7. Thread the retaining strip mounting bolts through the retaining strip, the hopper lip segments, and into the hopper.
8. Tighten the mounting bolts.
9. Start the engine. Raise the hopper, lower the hopper support bar, and lower the hopper.
10. Stop the engine.

HOPPER SIDE SEALS

There are two seals, located on the machine frame, that serve as hopper seals. They are the left and right hopper side seals. The seals should be inspected for wear or damage after every 100 hours of operation.

TO REPLACE HOPPER SIDE SEALS

1. Empty the debris hopper.
2. Park the machine on a level surface and set the machine parking brake.

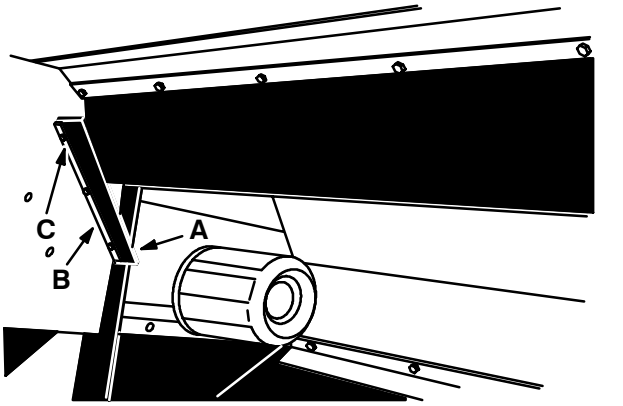
FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Raise the hopper, engage the hopper support bar, and lower the hopper onto the hopper support bar.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

4. Stop the engine.

5. Remove the hopper side seal retaining strip retaining bolts.



06798

HOPPER SIDE SEALS

A. Hopper Side Seal
B. Seal Retaining Strip
C. Retaining Bolt

6. Remove the hopper side seal retaining strip and hopper side seal.

7. Thread the retaining strip mounting bolts through the retaining strip, the hopper side seal, and into the machine frame.

8. Tighten the mounting bolts.

9. Start the engine. Raise the hopper, lower the hopper support bar, and lower the hopper.

10. Stop the engine.

BRUSH DOOR SKIRTS

The brush door skirts are located on the bottom of each of the two brush compartment doors. These skirts seal the brush compartment. The seals should be inspected for wear or damage daily.

TO REPLACE AND ADJUST BRUSH DOOR SKIRTS

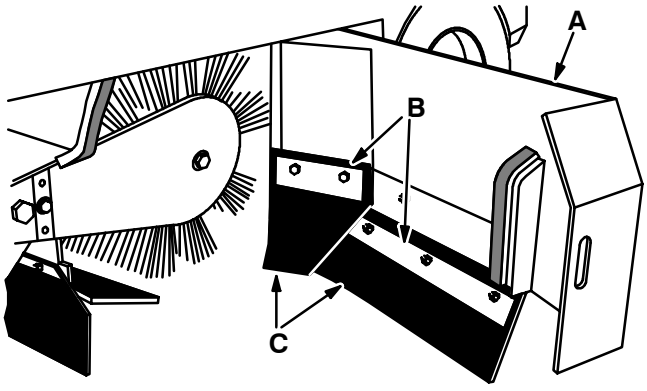
1. Park the machine on a smooth, level surface.

2. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Open the brush door.

4. Remove the brush door skirt retaining bolts.



06753

BRUSH DOOR SKIRT

A. Brush Door
B. Skirt Retaining Strip
C. Brush Door Skirt

5. Remove the skirt retaining strip and the door skirt.

6. Position the new door skirt and skirt retaining strip on the brush door.

7. Thread the skirt retaining bolts through the brush door, the door skirt, and into the skirt retaining strip.

NOTE: The brush door skirts have slotted holes to allow for a ground clearance adjustment. The door must be closed for proper adjustment.

8. Slide the brush door skirt up or down so that the skirt clears the floor up to a maximum clearance of 0.12 in (3 mm).

9. Tighten the skirt retaining bolts.

10. Close the brush door.

REAR SKIRTS

The rear skirts are located on the bottom rear of the brush compartment. These skirts seal the brush compartment. The seals should be inspected for wear or damage daily.

TO REPLACE AND ADJUST REAR SKIRTS

1. Park the machine on a smooth, level surface.

2. Stop the engine and set the machine parking brake.

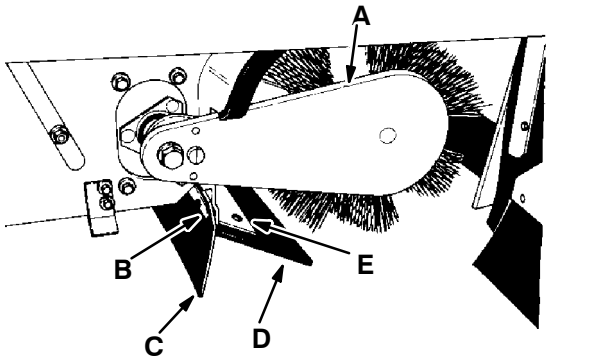
FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Open the two brush compartment doors.

4. Remove the main brush as described in *TO REMOVE MAIN BRUSH*.

5. Remove the front skirt mounting bracket retaining bolts.

6. Remove the skirt mounting bracket, the rear floor skirt, and the brush contact skirt.



01486

REAR SKIRTS

A. Brush Idler Arm
B. Skirt Retaining Strip
C. Rear Floor Skirt
D. Brush Contact Skirt
E. Skirt Mounting Bracket

7. Remove the brush contact skirt from the skirt mounting bracket.

8. Mount a new brush contact skirt to the skirt mounting bracket.

9. Position a new floor skirt, floor skirt retaining strip, and the brush contact skirt and mounting bracket on the machine.

10. Thread the skirt mounting bracket retaining bolts through the skirts mounting bracket, the floor contact skirt, the floor contact retaining strip and into the nuts.

11. Slide the rear floor skirt up or down so that the skirt clears the floor up to a maximum clearance of 0.12 in (3 mm).

12. Tighten the retaining bolts.

13. Install the brush as described in *TO INSTALL MAIN BRUSH*.

HOPPER DUST DUMP DOOR SEAL

The hopper dust dump door seal seals the rear opening of the filter cavity. The door opens when the hopper is dumped to allow dust shaken out of the dust filters to exit the filter cavity. The door is made up of a seal and an actuating lever assembly. Check the seal for wear, damage, and adjustment after every 100 hours of operation.

TO REPLACE DUST DUMP DOOR SEAL

1. Empty the hopper.

2. Park the machine on a level surface and set the machine parking brake.

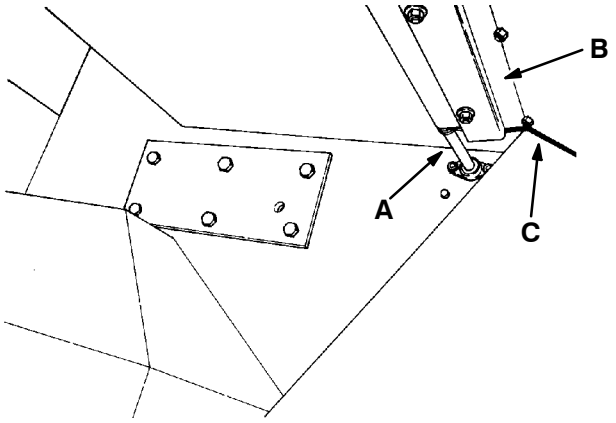
FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Raise the hopper, engage the hopper support support bar, and lower the hopper onto the support bar.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

4. Stop the engine.

5. Unbolt the seal and seal backing plate from the cross shaft.



01506

HOPPER DUST DUMP DOOR SEAL

A. Cross Shaft
B. Seal Backing Plate
C. Seal

6. Remove the seal from the seal backing plate.

7. Install a new seal on the backing plate.

8. Bolt the seal and backing plate to the cross shaft.

9. Check the seal adjustment as described in *TO CHECK AND ADJUST HOPPER DUST DUMP DOOR SEAL*.

TO CHECK AND ADJUST HOPPER DUST DUMP DOOR SEAL

1. Empty the hopper.

2. Park the machine on a level surface and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Raise the hopper, engage the hopper support bar, and lower the hopper onto the support bar.

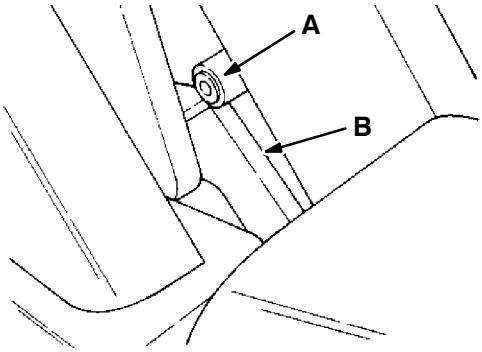
WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

4. Stop the engine.

5. Check the seal for wear or damage, replace if necessary.

6. Start the engine, raise the hopper, and disengage the hopper support bar.

7. Have an assistant watch the dust dump door cam follower as the hopper lowers. The cam should contact the upper corner and ride on top of the main frame and close the dust dump door.



01509

CAM FOLLOWER

A. Cam Follower
B. Main Frame

To adjust the cam position, loosen the cam arm stop bolt, adjust the position and retighten. Use care when making adjustments. If the cam strikes the main frame at too low an angle, it may be damaged. If the cam strikes the main frame at too high an angle, the dust dump door will not close fully.

TOP HOPPER SEAL – LOW DUMP MODEL

The low dump model top hopper seal is located on the top edge of the main brush opening. It seals the top rear edge of the hopper. The seal should be inspected for wear or damage after every 100 hours of operation.

TO REPLACE TOP HOPPER SEAL

1. Empty the machine debris hopper.

2. Park the machine on a level surface and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

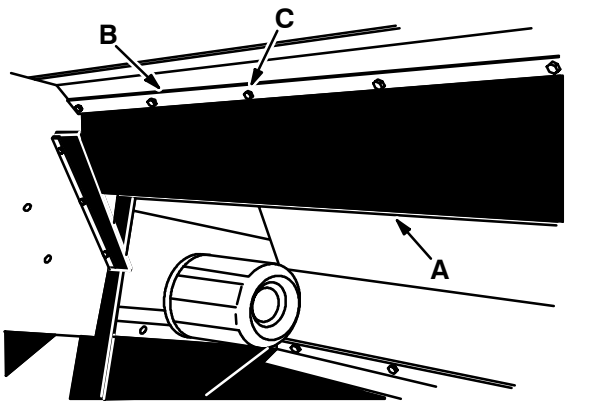
3. Raise the hopper, engage the hopper support bar, and lower the hopper onto the hopper support bar.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

4. Stop the engine.

5. Remove the hopper top seal retaining strip retaining bolts.

6. Remove the hopper top seal retaining strip and hopper top seal.



06798

TOP HOPPER SEAL

A. Top Hopper Seal
B. Seal Retaining Strip
C. Retaining Bolt

7. Thread the retaining strip mounting bolts through the retaining strip, the hopper top seal, and into the machine frame.

8. Tighten the mounting bolts.

9. Start the engine. Raise the hopper, lower the hopper support bar, and lower the hopper.

10. Stop the engine.

HINGED TOP HOPPER SEAL -- MULTI-LEVEL DUMP MODEL

The hinged top hopper seal is located on the top of the rear hopper opening. It keeps debris in the hopper while the hopper is being raised before the hopper door is opened. The seal should be inspected for wear or damage after every 100 hours of operation.

TO REPLACE AND ADJUST HINGED TOP HOPPER SEAL

1. Empty the hopper.

2. Park the machine on a level surface and set the parking brake.

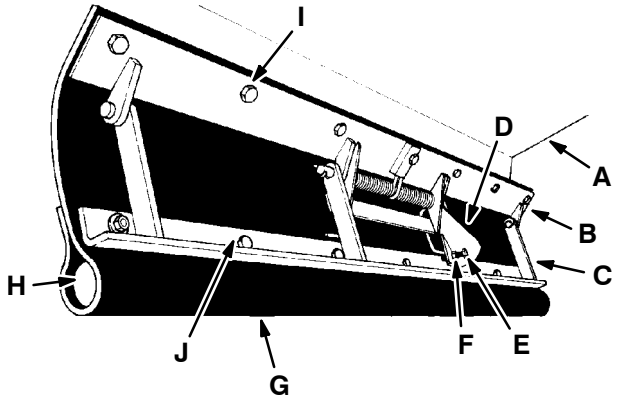
FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Raise the hopper, engage the hopper support bar, and lower the hopper onto the hopper support bar.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

4. Stop the engine.

5. Remove the stationary hinge bracket mounting bolts to remove the hinged top seal assembly.



01490

HINGED TOP HOPPER SEAL

A. Hopper
B. Stationary Hinge Bracket
C. Movable Hinge Bracket
D. Shell Cam
E. Adjustment Bolt
F. Jam Nut
G. Top Hopper Seal
H. Sponge Core
I. Stationary Hinge Bracket Mounting Bolt
J. Movable Hinge Bracket Mounting Bolt

6. Remove the movable hinge bracket bolts to remove the top seal.

7. Mount the new top seal with the sponge core on the movable hinge bracket.

8. Mount the new top seal and stationary hinge bracket to the hopper.

9. Start the engine, raise the hopper, disengage the hopper support bar, and lower the hopper.

10. Open the right brush door.

11. Remove the main brush as described in *TO REMOVE MAIN BRUSH*.

12. Looking through the right brush door opening, check to make sure approximately three-fourths of the top seal is making contact with the machine frame. If three-fourths of the seal is not making contact, raise the hopper, engage the hopper support bar, loosen the shell cam jam nut, and turn the adjustment bolt to the left to increase the amount of contact or to the right to decrease the amount of contact.

NOTE: If too much of the top hopper seal contacts the machine frame, the hopper may not be able to seat in the sweeping position, causing poor debris pickup.

Tighten the jam nut, raise the hopper, disengage the hopper support bar, lower the hopper and recheck the seal contact. Repeat the procedure as necessary.

HOPPER DOOR HINGE SEAL -- MULTI-LEVEL DUMP MODEL

The multi-level dump hopper door hinge seal seals the area between the hopper door and the hopper. Check the seal for wear or damage after every 100 hours of operation.

TO REPLACE HOPPER DOOR HINGE SEAL

1. Empty the hopper.

2. Park the machine on a level surface and set the parking brake.

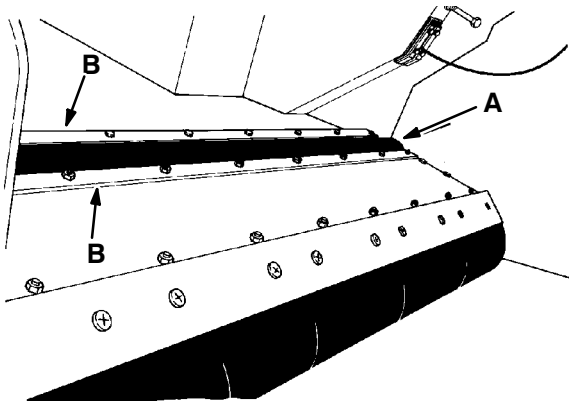
FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

3. Raise the hopper, engage the hopper support bar, and lower the hopper onto the hopper support bar.

WARNING: Falling Hopper. Engage Hopper Support Bar Before Working Under Hopper.

4. Stop the engine.

5. Remove the two seal retainers and the old hinge seal.



01487

HOPPER DOOR HINGE SEAL

A. Hinge Seal
B. Seal Retainer

6. Position the new seal between the hopper door and the hopper.

7. Secure the seal with the seal retainers and hardware.

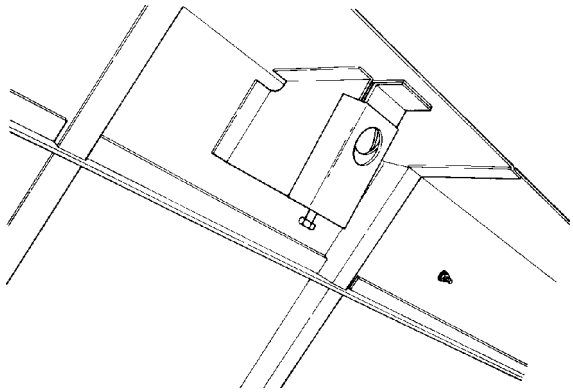
8. Start the engine, raise the hopper, disengage the hopper support bar, and lower the hopper.

9. Stop the engine.

LATCHES

HOPPER COVER LATCH

The hopper cover latch should be lubricated with a dry lubricant after every 200 hours of operation. If the hopper cover does not close easily, or if the latch components are replaced, adjust the latch as described.



01458

HOPPER COVER LATCH

TO ADJUST HOPPER COVER LATCH

1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

2. Push in the hopper cover latch release button and lift the hopper cover.

3. Unclip the hopper cover prop arm from its storage and position it in the hopper cover.

4. Lower the hopper cover onto the prop arm.

NOTE: All hopper cover seals must be in place before adjusting the latch.

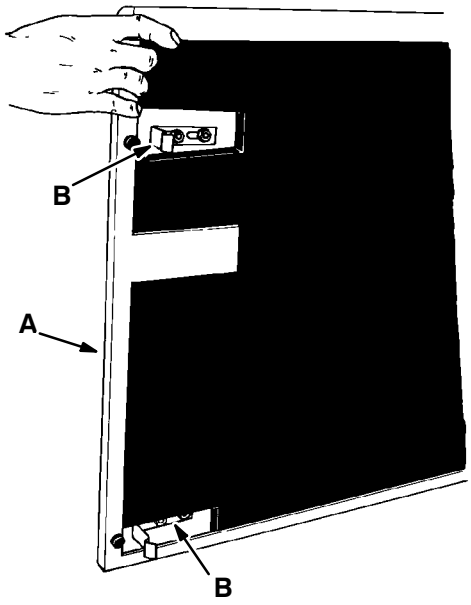
5. Loosen the latch stud jam nut.

6. Thread the stud out of the hopper if the latch does not latch. Thread the stud into the hopper if the latch catches but is loose.

7. Tighten the jam nut and check the latch tightness. Readjust if necessary.

SIDE DOOR LATCHES

The side door latches need no regular maintenance. They should be adjusted whenever the door does not latch properly. Loosen the latch nuts, slide the latch in or out to adjust, and tighten the latch nuts.



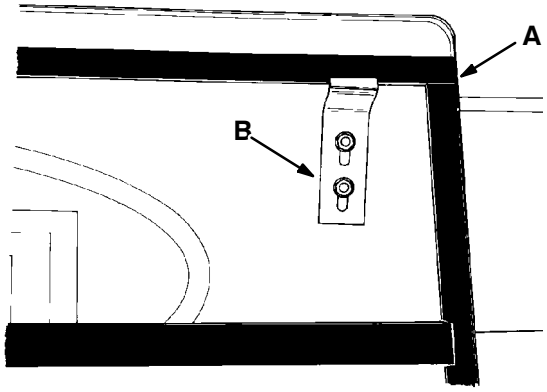
01492

SIDE DOOR LATCHES

A. Side Door
B. Latch

HOPPER INSPECTION DOOR LATCH

The hopper inspection door latches need no regular maintenance. They should be adjusted whenever the door does not latch properly. Loosen the latch nuts, slide the latch up or down to adjust, and tighten the latch nuts.



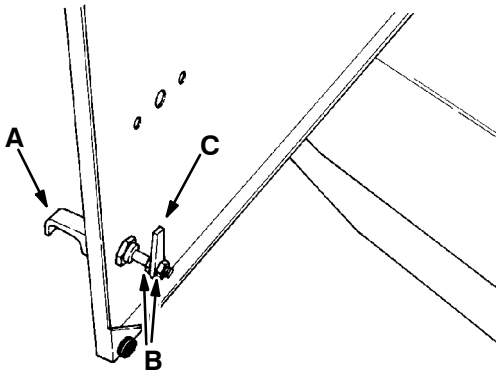
01493

HOPPER INSPECTION DOOR LATCH

A. Hopper Inspection Door
B. Latch

REAR ACCESS DOOR LATCH

The rear access door latch needs no regular maintenance. It should be adjusted whenever the door does not latch properly. Loosen the latch nuts, thread them in or out to move the latch tongue, and tighten the latch nuts.



01494

REAR ACCESS DOOR LATCH

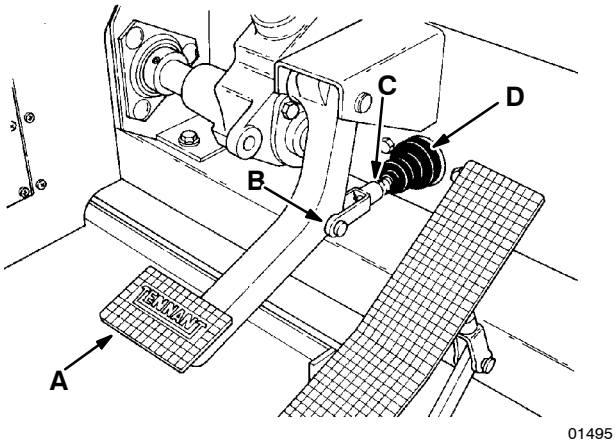
A. Latch
B. Nuts
C. Latch Tongue

BRAKES AND TIRES

SERVICE BRAKES

The service brakes are hydraulically activated by a master brake cylinder. Check the master brake cylinder fluid level after every 400 hours of operation and add brake fluid as needed. The master brake cylinder is located at the front of the machine, behind the hopper.

If necessary, adjust the brake clevis on the master cylinder push rod so that the brake pedal is in a horizontal position when the cylinder push rod starts to engage the cylinder piston.



BRAKE PEDAL

A. Brake Pedal
B. Brake Clevis
C. Master Cylinder Push Rod
D. Push Rod Boot

Brakes require bleeding whenever air enters the system, lowering the effective braking pressure. Air can enter when the master cylinder or wheel cylinders are serviced or if the fluid in the reservoir runs dry. Air can also enter through a leaky brake line or hose. Find the leaking line and replace it before bleeding the system.

Whenever handling brake fluid, do not get any on the brake pads, brake drums, or body paint. Brake pads will be permanently damaged, requiring replacement. Body paint can be damaged also unless you wipe the area with a clean cloth and wash it with soapy solution immediately.

1. Make sure that the brake fluid reservoir is full and that the vent in the cap is open.

2. Connect a plastic or rubber tube to the bleeder valve on the left front wheel. Suspend the other end of the tube in a jar or bottle filled with a few inches of brake fluid. During the remaining steps, keep this end submerged at all times and never let the level in the brake fluid reservoir drop below one half full.

3. Open the bleeder valve on the left front wheel about one turn. Have an assistant press the brake pedal slowly to the floor. As soon as the pedal is all the way down, close the bleeder valve and let the pedal up. Repeat this step as many times as necessary, until fluid, free of air bubbles, exits from the tube.

4. Bleed the right front wheel in the same manner as described in the steps above. Keep checking the brake fluid reservoir to be sure it doesn't run out of fluid.

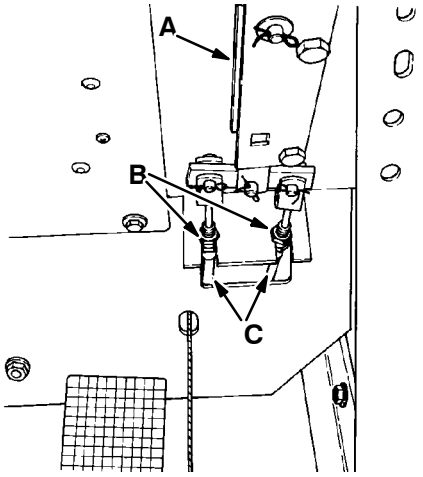
5. When all wheels are bled, discard the brake fluid in the jar or bottle; never reuse such fluid.

6. Top up the brake fluid reservoir with clean fluid.

PARKING BRAKES

The parking brakes are mechanically activated by the parking brake lever and two cables.

The parking brakes should be adjusted whenever the machine rolls after engaging the parking brake, or when it becomes very easy to engage the parking brake, and after every 50 hours of operation. The parking brake may be routinely tightened by turning the knurled knob on the end of the parking brake clockwise. If the knob adjustment is inadequate, fully loosen the knob, loosen the brake cable mounting nuts, thread the lower nuts closer to the end of the cable, and retighten the top nuts. Be sure to thread the nuts out the same number of turns. Adjust the parking brake enough to make the parking brake slightly resist being engaged.



01496

PARKING BRAKE

A. Parking Brake
B. Cable Nut
C. Brake Cable

TIRES

The front machine tires are solid and require no regular maintenance.

The standard rear machine tire on the low dump model is pneumatic. The proper tire pressure is 50 to 55 psi (345 to 380 kPa). Observe the tire daily to see if it appears to be low. Check the tire air pressure after every 50 hours of operation.

An optional Super Rib pneumatic tire is available. The proper tire air pressure is 50 to 55 psi (345 to 380 kPa). Check the tire air pressure after every 50 hours of operation.

An optional foam-filled or a solid rear tire is also available. No regular maintenance is required on either of these tires.

The rear machine tire on multi-level dump model is solid and requires no regular maintenance.

OPTIONS

AIR FILTER OPTION

An air filter option is available on low dump and multi-level dump models.

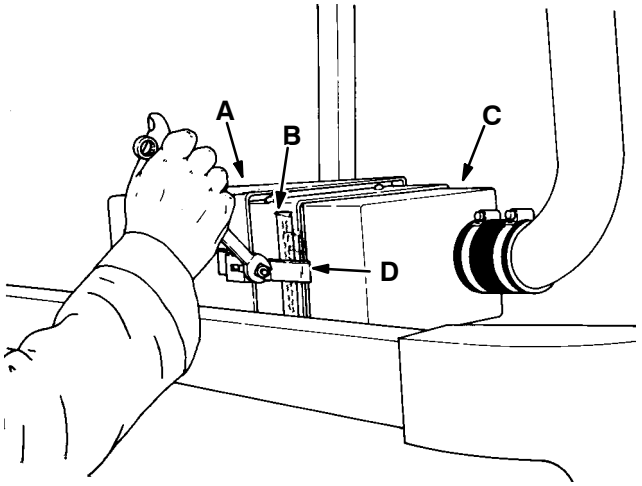
The filter option is a heavy duty dry cartridge-type filter. The air filter element must be replaced whenever the air filter service indicator reads 20 in H_2O (5 kPa) and the “SERVICE WHEN RED” window is filled with red.

TO REPLACE AIR FILTER ELEMENT

1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

2. Loosen the air filter clamp nuts.



01468

DISASSEMBLING AIR FILTER

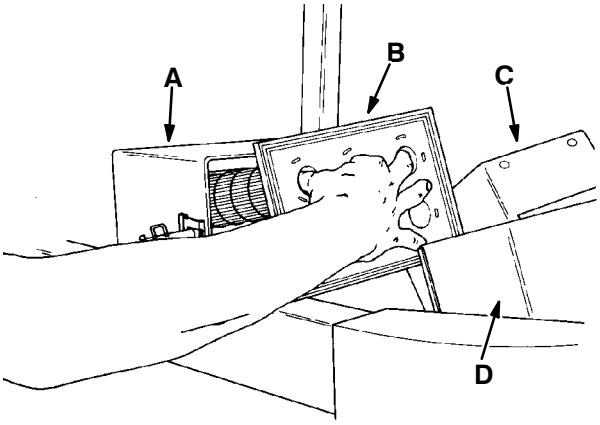
A. Air Filter Housing
B. Pre-Cleaner
C. Pre-Cleaner Cover
D. Air Filter Clamp

3. Remove the two air filter clamps and swing the pre-cleaner cover out of the way.

4. Remove the pre-cleaner.

5. Slide the air filter element out of the filter housing.

6. Slide a new filter element into the filter housing, rounded end first.



01469

INSTALLING AIR FILTER ELEMENT

A. Filter Housing
B. Air Filter Element
C. Pre-cleaner
D. Pre-Cleaner Cover

7. Position the pre-cleaner on the filter housing.

8. Position the pre-cleaner cover on the pre-cleaner with the air filter clamps.

9. Tighten the air filter clamp nuts to 75 in lb (8 Nm).

SEVERE ENVIRONMENT AIR FILTER OPTION

This option is also part of the severe environment option package.

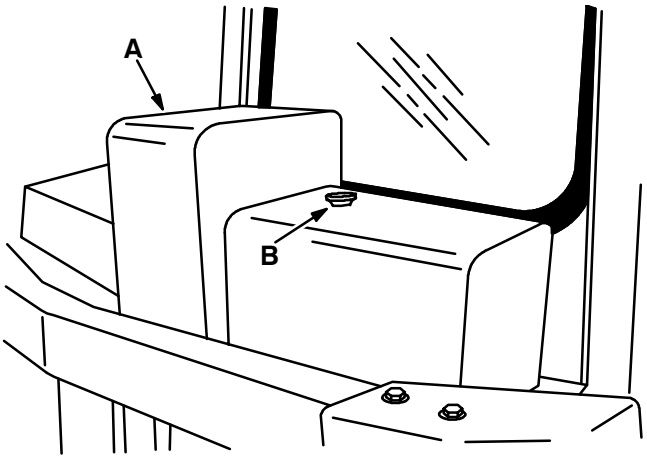
The filter option is a heavy duty filter. The air filter element must be replaced whenever the air filter service indicator reads 20 in H_2O (5 kPa) and the "SERVICE WHEN RED" window is filled with red.

TO REPLACE AIR FILTER ELEMENT

1. Stop the engine and set the machine parking brake.

FOR SAFETY: Before Leaving Or Servicing Machine; Stop On Level Surface, Set Parking Brake, And Turn Off Machine And Remove Key.

2. Loosen the air filter cover knob and pull the cover off the air cleaner.



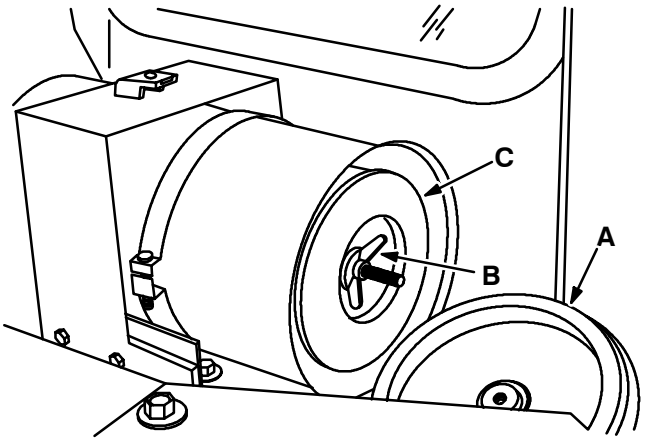
06754

AIR FILTER COVER

A. Air Filter Cover
B. Cover Knob

3. Loosen the wing nut on the end cover and remove the end cover.

4. Loosen and remove the element wing nut. Pull out the air filter element.



06755

AIR FILTER ELEMENT

A. End Cover
B. Element Wing Nut
C. Filter Element

5. Replace the inside secondary filter every third time the main filter element is replaced, or when if the main filter is damaged.

6. Install the air filter element finned end first. Be careful not to damage the fins. Make sure the element is seating evenly. Tighten the element wing nut.

7. Place the end cover back on the end of the air cleaner and tighten the wing nut.

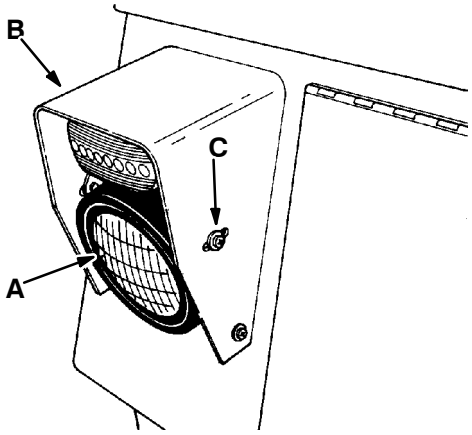
8. Place the air cleaner cover over the air cleaner and tighten the cover knob.

OPERATING LIGHTS OPTION

The operating lights option includes headlights, taillights, turn signal lights, side brush spotlight; and on the multi-level dump model, a dumpster spotlight.

HEADLIGHT

The headlight mounting brackets have an adjustment screw and slot to allow the headlight beam to be directed closer or further away from the front of the machine. Loosen the adjustment screws, reposition the headlight, and retighten the screws to adjust the head light beam.



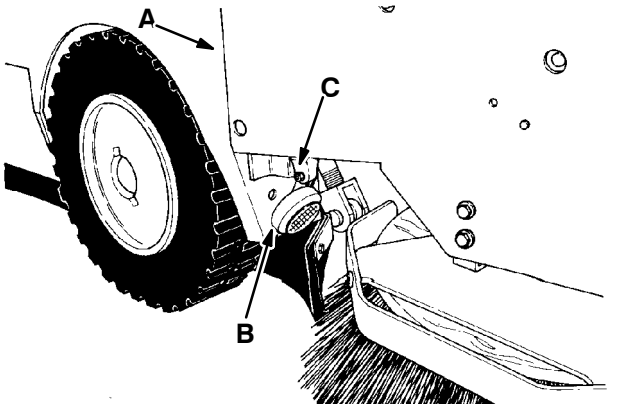
01497

HEADLIGHT

A. Headlight
B. Headlight Mounting Bracket
C. Adjustment Screw and Slot

SIDE BRUSH SPOTLIGHT

The side brush spotlight may be adjusted by loosening the angle adjustment nut or by loosening the mounting bolt. Retighten the bolts after adjusting the spotlight.



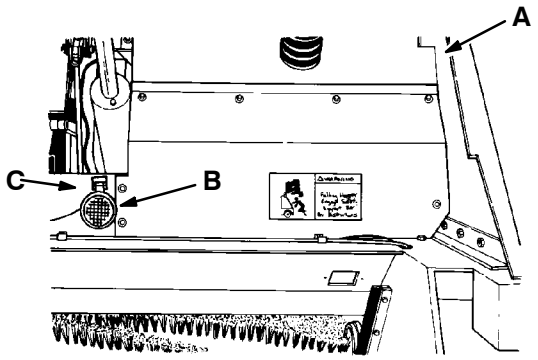
01498

SIDE BRUSH SPOTLIGHT

A. Side Brush Bumper
B. Spotlight
C. Angle Adjustment Nut

DUMPSTER SPOTLIGHT

On multi-level dump model, the dumpster spotlight may be adjusted by loosening the angle adjustment nut. Retighten the nut after adjusting the spotlight.



01462

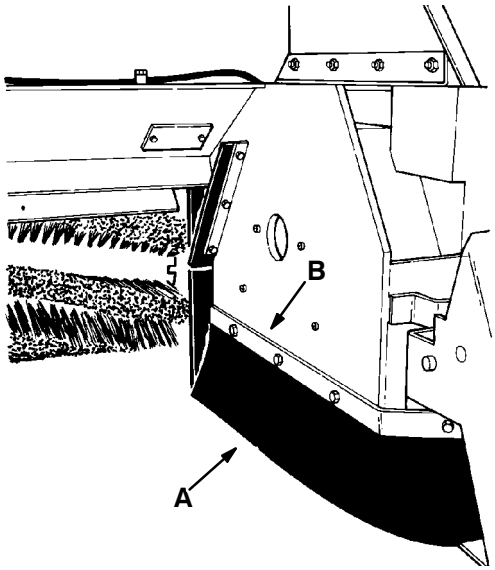
DUMPSTER SPOTLIGHT

A. Lintel
B. Spotlight
C. Adjustment Nut

The dumpster spotlight is turned on and off by the hopper position switch.

DEBRIS DEFLECTOR SKIRTS OPTION

The debris deflector skirts are present on machines with the debris deflector skirts option. The skirts deflect light debris out of the way of the front tires into the path of the main brush. Check the debris deflector skirts for wear or damage daily.



01491

LEFT SIDE DEBRIS DEFLECTOR

A. Debris Deflector Skirt
B. Skirt Retainer

SIDE BRUSH DUST CONTROL OPTION

The side brush dust control option helps control side brush dust in extremely dusty conditions. The option consists of a number of skirts which are positioned along the outside of the hopper and totally enclose the side brush. Check all of the skirts for wear or damage daily.

SECTION 4

CONTENTS

HARDWARE INFORMATION

The following charts state standard plated hardware tightening ranges for normal assembly applications. Decrease the specified torque by 20% when using a thread lubricant. Do not substitute lower grade hardware for higher grade hardware. If higher grade hardware than specified is substituted, tighten only to the specified hardware torque value to avoid damaging the threads of the part being threaded into, as when threading into speed nuts or weldments.

STANDARD BOLT TORQUE CHART

Thread Size	SAE Grade 5 Torque ft lb (Nm)	SAE Grade 8 Torque ft lb (Nm)
0.25 in	7–10 (9–14)	10–13 (14–38)
0.31 in	15–20 (20–27)	20–26 (27–35)
0.38 in	27–35 (37–47)	36–47 (49–64)
0.44 in	43–56 (58–76)	53–76 (72–103)
0.50 in	65–85 (88–115)	89–116 (121–157)
0.62 in	130–170 (176–231)	117–265 (159–359)
0.75 in	215–280 (291–380)	313–407 (424–552)
1.00 in	500–650 (678–881)	757–984 (1026–1334)

NOTE: Decrease torque by 20% when using a thread lubricant.

METRIC BOLT TORQUE CHART

Thread Size	Class 8.8 Torque ft lb (Nm)	Class 10.9 Torque ft lb (Nm)
M4	2 (3)	3 (4)
M5	4 (5)	6 (8)
M6	7 (9)	10 (14)
M8	18 (24)	25 (34)
M10	32 (43)	47 (64)
M12	58 (79)	83 (112)
M14	94 (127)	133 (180)
M16	144 (195)	196 (265)
M20	260 (352)	336 (455)
M24	470 (637)	664 (900)

NOTE: Decrease torque by 20% when using a thread lubricant.

Exceptions to the above chart:

Main brush drive plug nut – 30 ft lb (40 Nm) then tighten to next slot.

Brake unit to hub sockethead screw – 9 to 12 ft lb (12 to 16 Nm) with Locktite 242 blue.

Front wheel nut – 10 to 12 ft lb (14 to 16 Nm) while turning wheel, tighten to spec, then backoff, retighten by hand till snug, then turn to next slot.

Damper solenoid nut – 20 to 23 in lb (2.5 to 3 Nm).

Pitman arm to steering column nut – 160 ft lb (215 Nm).

Propelling motor shaft thin nylon lock nut – 7 to 10 ft lb (9 to 14 Nm).

Propelling motor adapter bolts – 16 to 21 ft lb (21 to 28 Nm) with Locktite 242 blue on threads. Use Locktite 515 sealant on the pilot fillet of the motor and the adapter.

Rear wheel lug nuts – 95 to 110 ft lb (129 to 150 Nm)

BOLT IDENTIFICATION

Identification Grade Marking	Specification and Grade
	SAE – Grade 5
	SAE – Grade 8
	ISO – Grade 8.8
	ISO – Grade 10.9

01395

THREAD SEALANT AND LOCKING COMPOUNDS

Thread sealants and locking compounds may be used on this machine. They include the following:

Locktite 515 sealant – gasket forming material. TENNANT® Part No. 75567,15 oz (440 ml) cartridge.

Locktite 242 blue – medium strength thread locking compound. TENNANT® Part No. 32676, 0.5 ml tube.

Locktite 271 red – high strength thread locking compound. TENNANT® Part No. 19857, 0.5 ml tube.

HYDRAULIC FITTING INFORMATION

HYDRAULIC TAPERED PIPE FITTING (NPT) TORQUE CHART

NOTE: Ratings listed are when using teflon thread seal.

Size	Minimum Torque	Maximum Torque
1/4 NPT	10 ft lb (14 Nm)	30 ft lb (41 Nm)
1/2 NPT	25 ft lb (34 Nm)	50 ft lb (68 Nm)
3/4 NPT	50 ft lb (68 Nm)	100 ft lb (136 Nm)

HYDRAULIC TAPERED SEAT FITTING (JIC) TORQUE CHART

Tube O.D. (in)	Thread Size	Maximum Torque
0.25	0.44–20	9 ft lb (12 Nm)
0.38	0.56–18	20 ft lb (27 Nm)
0.50	0.75–16	30 ft lb (41 Nm)
0.62	0.88–14	40 ft lb (54 Nm)
0.75	1.12–12	70 ft lb (95 Nm)
1.0	1.31–12	90 ft lb (122 Nm)

HYDRAULIC O–RING FITTING TORQUE CHART

Tube O.D.(in)	Thread Size	Minimum Torque	Maximum Torque
0.25	0.44–20	6 ft lb (8 Nm)	9 ft lb (12 Nm)
0.38	0.56–18	13 ft lb (18 Nm)	20 ft lb (27 Nm)
		*10 ft lb (14 Nm)	12 ft lb (16 Nm)
0.50	0.75–16	20 ft lb (27 Nm)	30 ft lb (41 Nm)
		*21 ft lb (28 Nm)	24 ft lb (33 Nm)
0.62	0.88–14	25 ft lb (34 Nm)	40 ft lb (54 Nm)
0.75	1.12–12	45 ft lb (61 Nm)	70 ft lb (95 Nm)
1.0	1.31–12	60 ft lb (81 Nm)	90 ft lb (122 Nm)

NOTE: Do not use sealant on o–ring threads.

*Aluminum bodied components

SECTION 5

CONTENTS

NOTE: SECTION 5, LOW DUMP MODEL PARTS*, lists repair parts for a low dump model machine. This section also contains parts common to all models of the machine.*

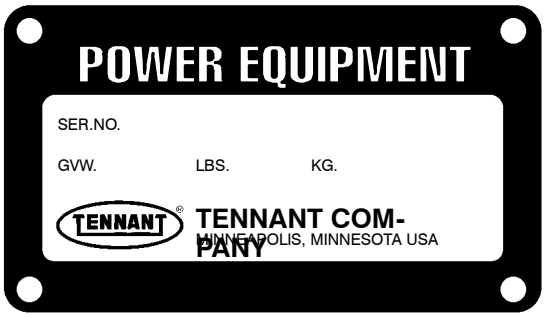
ORDERING REPAIR PARTS

The components used in this machine have been carefully selected for performance and safety. Use only TENNANT specified or equivalent parts.

To receive prompt service in filling of your parts orders, please direct all orders for parts with TENNANT part numbers to the TENNANT, and all orders for parts with vendor part numbers to the local supplier of the respective vendor.

When ordering parts, please furnish all of the following information:

1. Machine model number - shown on the machine data plate.



2. Machine serial number - shown on the machine data plate.
3. Power source - gasoline, LPG, diesel, electric.
4. Company name.
5. Shipping address.
6. Billing address.
7. Name, first and last - of person ordering parts.
8. Telephone number.
9. Purchase order number.
10. Part number, description, and quantity - of each item on the order.
11. Customer ID Number.

Do not order parts by key number or the figure number of the illustrated parts. Indented items indicate parts of assemblies. Standard hardware is furnished only when part of a purchased assembly. Please get hardware from a local hardware supplier.

If the old part cannot be identified, send it to us with the quantity needed specified on the order.

Any claim for loss or damage to a shipment in transit should be filed promptly against the transportation company making the delivery. Shipments will be complete unless the packing list or order acknowledgement indicate items back ordered.

If parts received are suspected to be incorrect or defective, please write, wire, or phone the TENNANT representative from whom you ordered the part. They will give authorization for return and/or handle replacement shipments when required.

SERIAL NUMBER INFORMATION EXPLANATION

Serial number listings are shown to indicate on which machines each part can be used. These listings are explained by the following examples:

(000000–) The part can be used on all machines.

(003342–) The part can be used on all machines beginning with the serial number listed.

(000000–004320) The part can be used on all machines up to and including serial number listed.

(004321–005678) The part can be used on all machines between and including the serial numbers listed.

Where xxxxxx's are listed in place of a serial number, it indicates a change was made but the exact serial number had not been established when the catalog went to press.

SI UNITS OF MEASURE (INTERNATIONAL SYSTEM)

Metric equivalents have been included, where applicable, throughout this parts catalog.

FASTENER STRENGTH IDENTIFICATION

Fasteners required to have high–strength qualities equivalent to SAE Grade 8 are identified throughout this catalog by the description GR 8. Unless identified by this description, all standard fasteners are SAE Grade 5.

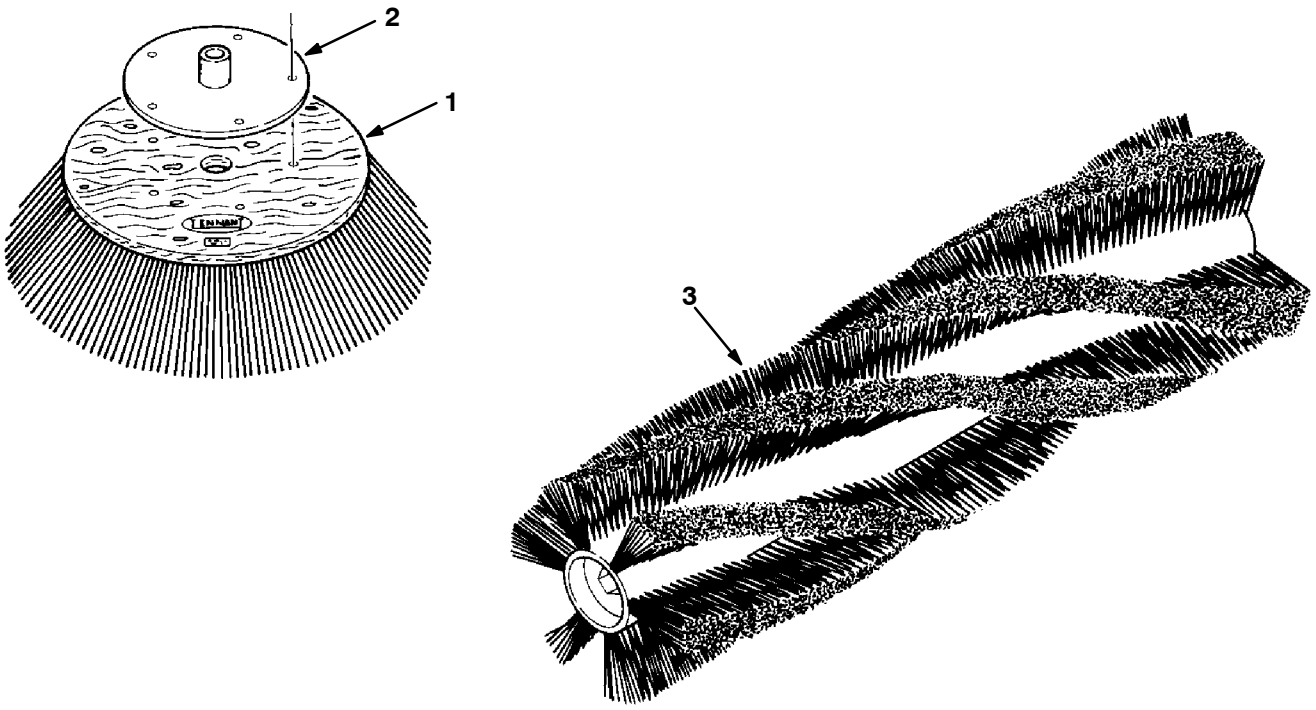
(Specifications and design subject to change without notice.)

06768

Fig. 1 – Recommended General Maintenance Items

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.

NOT AVAILABLE AT TIME OF PUBLICATION



06667

Fig. 2 -- Replacement Brushes

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	36141	(010000–)	Brush–Side Swp–26 D–Assy–Nyl	1
	51021N	(010000–)	Brush–Side Swp–26 D–Nyl	1
2	35776	(010000–)	Plate Wldt, Support,Side Brush	1
	36140	(010000–)	Brush–Side Swp–26 D–Assy–Fltw	1
	51542	(010000–)	Brush–Side Swp–26 D–Fltw	1
	35776	(010000–)	Plate Wldt, Support,Side Brush	1
3	35323	(010000–)	Brush–Sweep Spl–50Lg–24Sr–Nyl	1
3	35324	(010000–)	Brush–Sweep Spl–50Lg– 8Dr–P&W	1
3	35325	(010000–)	Brush–Outsd Spl–50Lg– 8Dr–Poly	1
3	35326	(010000–)	Brush–Sweep Spl–50Lg– 8Dr–Poly	1
3	35327	(010000–)	Brush–Sweep Spl–50Lg– 8Dr–Wire	1
3	35336	(010000–)	Brush–Patrl Spl–50Lg– 4Qr–Nyl	1

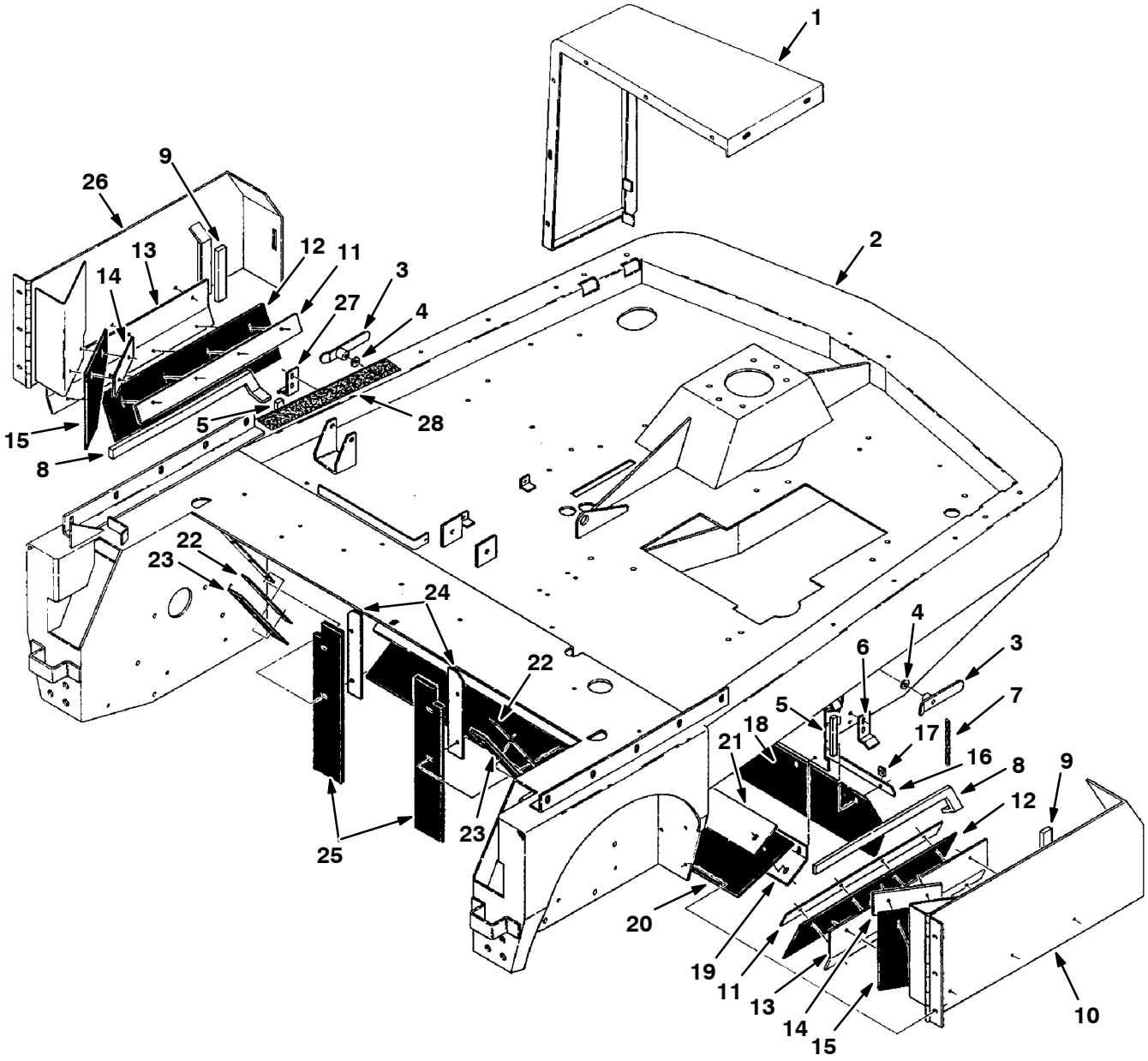


Fig. 3 – Main Frame Group

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Fig. 3 – Main Frame Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	51325	(010000–)	Panel Weldm.,Corner,Rear,R.H	1
2	35213	(010000–)	Frame Wldt, Main, 97 Lo–D	1
3	52290	(010000–)	Handle Weld	2
4	52296	(010000–)	Washer,Nyl,0.405Bx0.812X.060Th	2
5	65079–1	(010000–)	Seal,Foam Rbr, .50 1.00W 4.3L	2
6	51172–1	(010000–)	Clip,S.Br.Door,L.H.	1
7	09342	(010000–)	Chain, Link#2/0, 5Links Plain	1
8	65079	(010000–)	Seal,Foam Rbr, .50 1.00W 32.5L	2
9	60731	(010000–)	Seal, Foam Rubber,.50X1.00X7.5	2
10	35338	(010000–)	Door Wldt, Brush,Lh	1
11	35343	(010000–)	Strip, Retainer, Skirt	2
12	35342	(010000–)	Skirt, Side Door	2
13	35341	(010000–)	Bracket, Side Skirt	2
14	35345	(010000–)	Strip, Retainer, Skirt	2
15	35344	(010000–)	Skirt, Side Door, Front	2
16	62111	(010000–)	Strip,.12T .8W51.5L 7/.38H8.0C	1
17	02485	(010000–)	Nut Speed,Retainer 5/16–18 Unc	7
18	36243	(010000–)	Skirt, Rear	1
19	62152	(010000–)	Bracket Deflector,Rear	1
20	36244	(010000–)	Flap, Rear	1
21	62644	(010000–)	Strip,.11T3.5W50.0L 7/.38S8.0C	1
22	65107	(010000–)	Strip,Retainer	2
23	65076	(010000–)	Seal	2
24	51091	(010000–)	Retainer,Seal,Side	2
25	51090	(010000–)	Seal,Pan,Side	2
26	35337	(010000–)	Door Wldt, Brush, Rh	1
27	51172	(010000–)	Clip, S.Br.Door, R.H.	1
28	75430	(010000–)	Pad, Tread	1

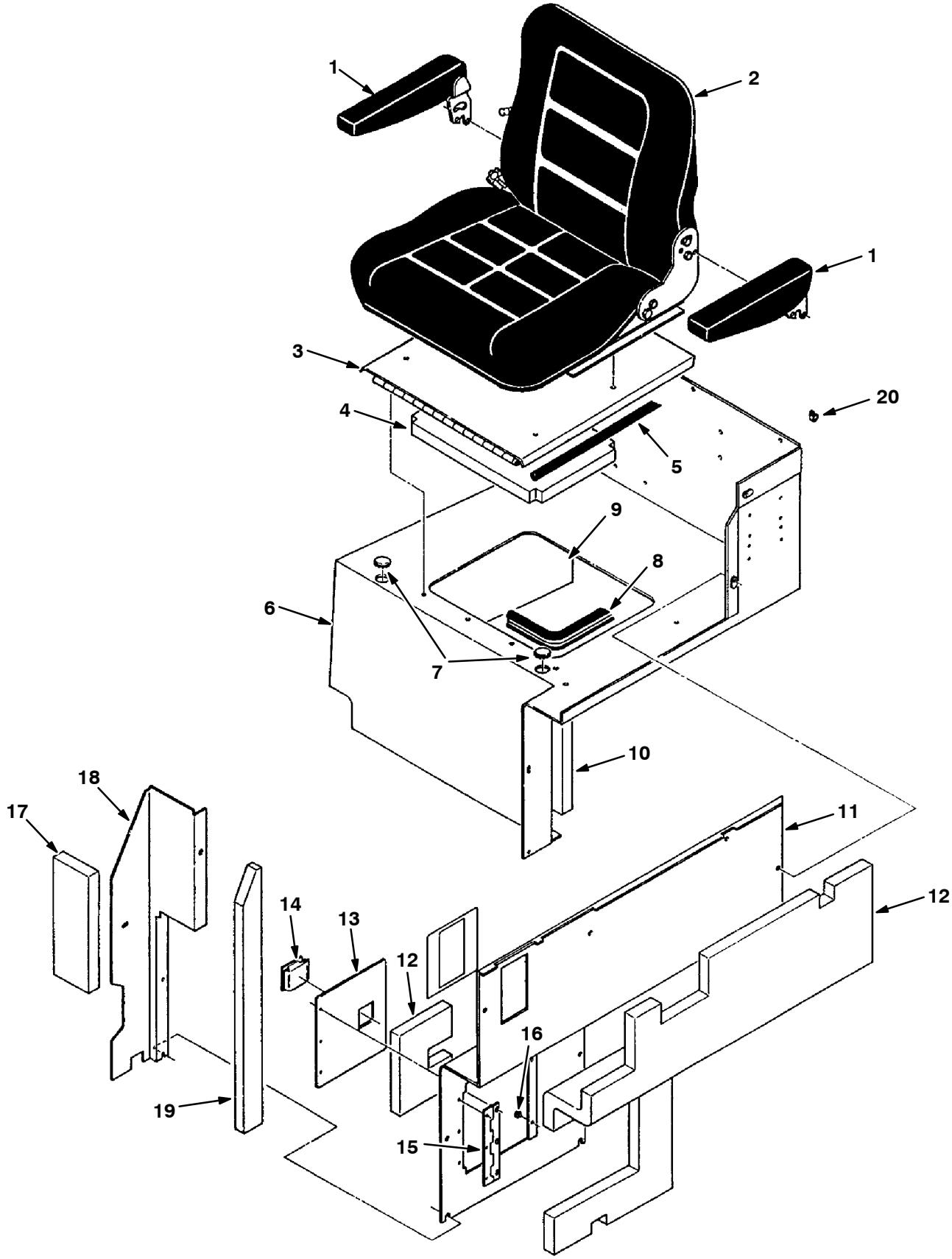

Fig. 4 – Seat Support Group

06670

Fig. 4 -- Seat Support Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	34252	(010000–)	Armrest Assy,Lh& Rh	1
2	34251	(010000–)	Seat, Grammer Gs–12	1
3	35403	(010000–)	Plate Wldt, Seat	1
4	60881	(010000–)	Insulation, S/Foam, Seat	1
5	60738	(010000–)	Molding, Trim 11–14Ga 51.5	1
6	35376	(010000–)	Frame Wldt, Seat Support	1
7	47178	(010000–)	Plugbtn 1.00H .11–.12 Chromstl	2
8	60739	(010000–)	Seal, 50.0 Lg	1
9	60882	(010000–)	Insulation, S/Foam, Seat Spt–R	1
10	60884	(010000–)	Insulation, S/Foam, Seat Spt–F	1
11	35394	(010000–)	Panel, Side	1
12	60887	(010000–)	Insulation, S/Foam, Access Pnl	1
13	35387	(010000–)	Door, Access	1
14	35397	(010000–)	Latch, Slide	1
15	35388	(010000–)	Hinge	1
16	36210	(010000–)	Bumper, Rubber	2
17	60885	(010000–)	Insulation, S/Foam, Fill Pnl	1
18	35347	(010000–)	Panel Wldt, Filler	1
19	60886	(010000–)	Insulation, S/Foam, Fill Pnl	1
20	40678	(010000–)	Clamp, Cable .44D .62Wide	3

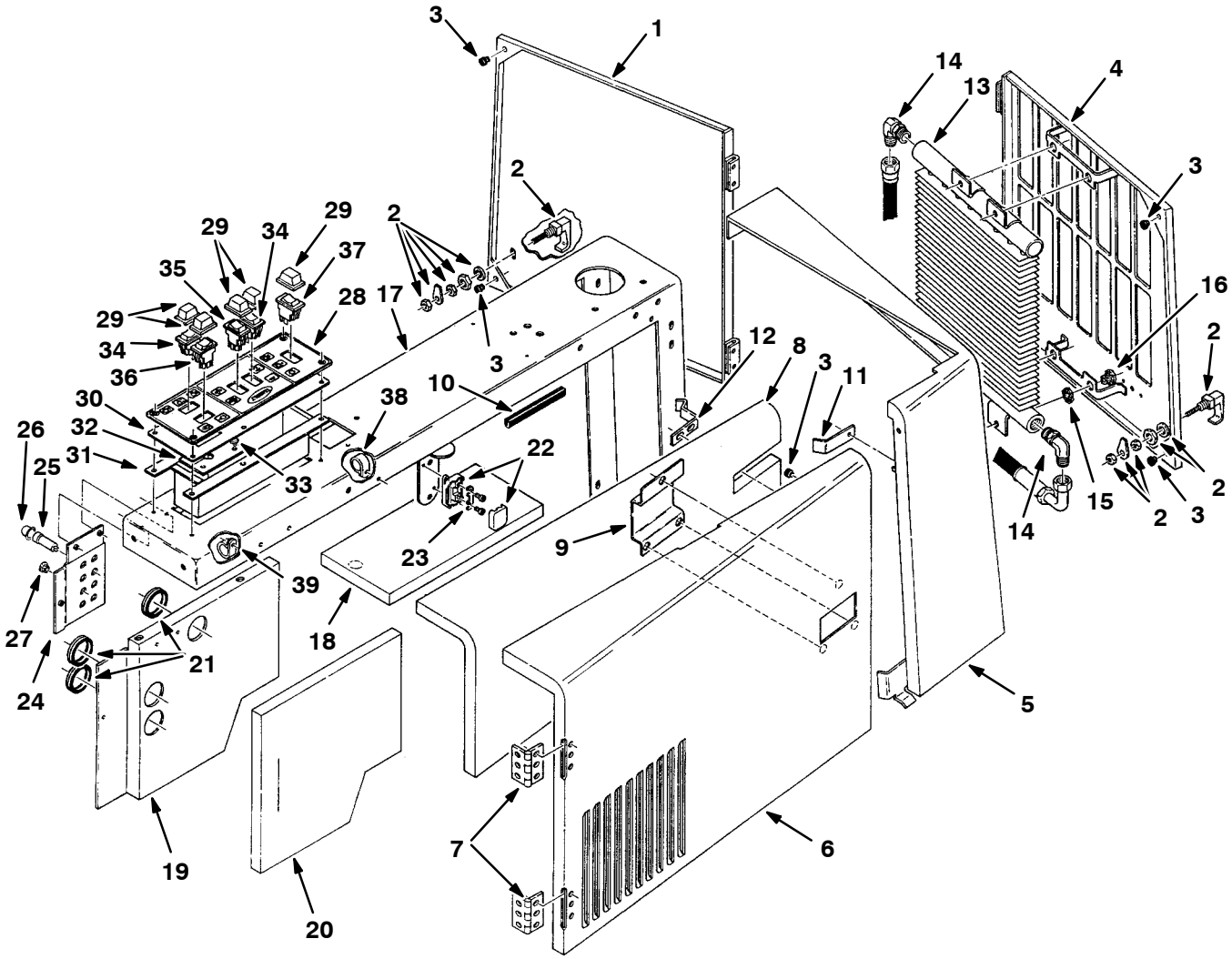

Fig. 5 – Side and Rear Doors Group

06671

Fig. 5 – Side and Rear Doors Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	34275	(010000–)	Door Weldmt, Rear W/Label	1
2	51375–1	(010000–)	Latch, Rear Door	2
3	51787	(010000–)	Bumper, Rubber	6
4	35478	(010000–)	Door Wldt, Rear Lh	1
5	35474	(010000–)	Panel Wldt, Corner Rear Lh	1
6	35460	(010000–)	Door Wldt, Engine Side	1
7	47974	(010000–)	Hinge, Reversed Type	2
8	35458	(010000–)	Foam, Acoustic	1
9	16755	(010000–)	Channel, Door Pull	1
10	62595–3	(010000–)	Molding, Trim 11–14Ga 5.75	1
11	35472	(010000–)	Angle, Stop Engine Door	1
12	53697	(010000–)	Catch, Spring	2
13	13698	(010000–)	Cooler, Hyd	1
14	46481	(010000–)	Ftg–Hyd E90 Jm12/Om12	2
15	62172	(010000–)	Ring	4
16	62173	(010000–)	Bushing, Isolator–Inner,Rbr.	4
17	35374	(010000–)	Channel Wldt, Stiffener, Lintl	1
18	60880	(010000–)	Insulation, S/Foam, Channel	1
19	35384	(010000–)	Panel Wldt, Noise Deflector	1
20	62210	(010000–)	Insulation,S/Foam1.0Xw/Cut–Off	1
21	47080	(010000–)	Grommet,Rbr,1.63Id,For .06Matl	3
22	34802	(010000–)	Fuse Holder	1
23	34803	(010000–)	Fuse, 80 Amp	1
24	35386	(010000–)	Panel, Circuit Breaker	1
25	57803	(010000–)	Breaker–Circuit, 15A Resetable	3
26	57751	(010000–)	Boot–Circuit Breaker	3
27	57167	(010000–)	Plugbtn .62H .03–.12 Blacknyl	5
28	35367	(010000–)	Plate, Switch	1
29	57807	(010000–)	Cover, Rocker Switch Seal	5
30	61861	(010000–)	Gasket, Switch Plate	1
31	61858	(010000–)	Box Wldt, Switch	1
32	61865	(010000–)	Seal, Harness	1
33	36214	(010000–)	Clip, Dart	4
34	60901	(010000–)	Switch, Rocker Dpdt (Mom)	2
35	60904	(010000–)	Switch, Rocker Dpdt (Mom)	1
36	60905	(010000–)	Switch, Rocker Spdt (Mom)	1
37	35389	(010000–)	Switch, Rocker, Progressive	1
38	40678–1	(010000–)	Clamp–Cable, .88Dia .56Wth	1
39	58366	(010000–)	Clamp,Support, Hyd.Hose	1

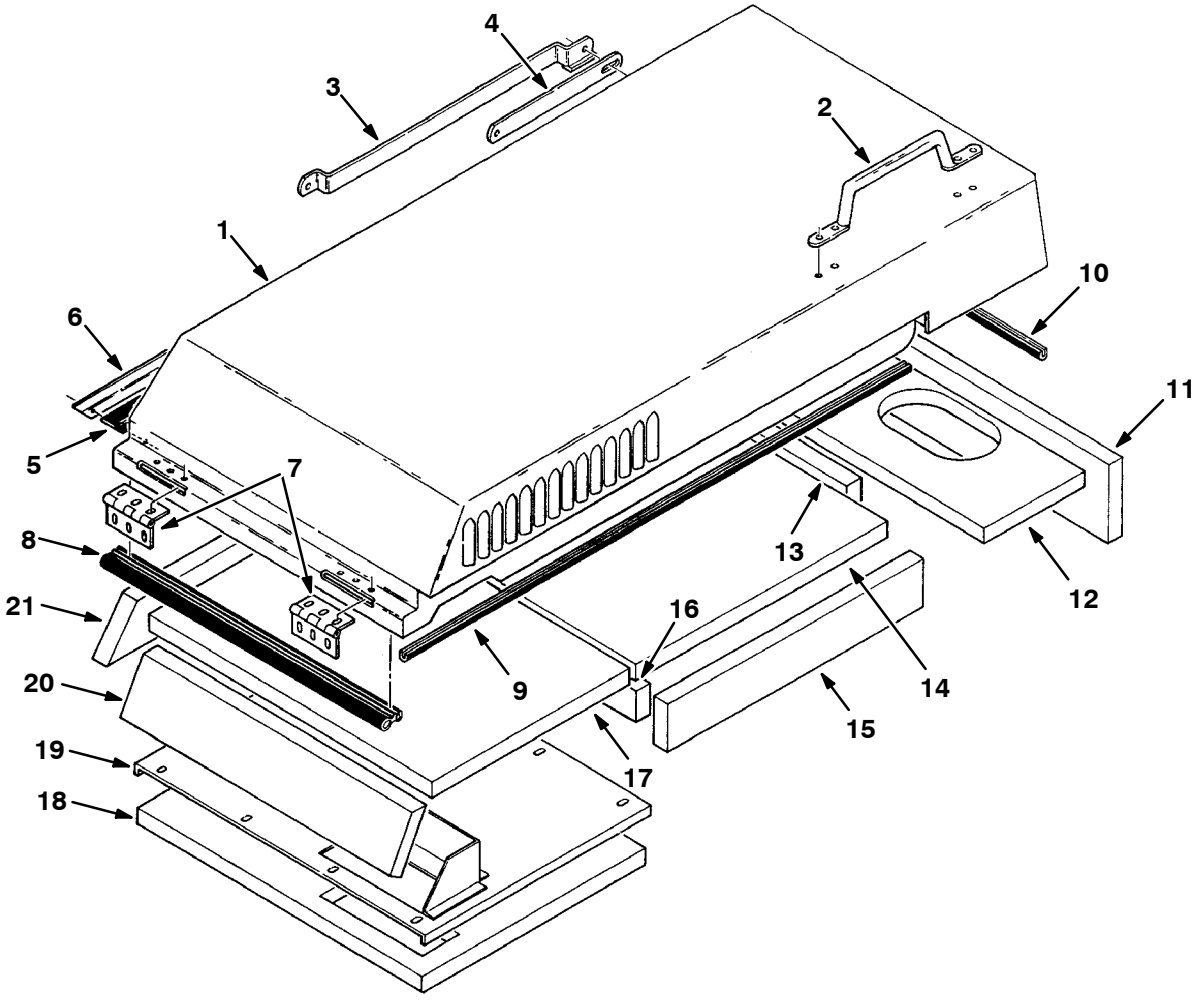

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Fig. 6 – Engine Hood Group

Key	TENNANT Part No.	Machine Serial Number		Description	Qty.
1	60700	(010000–	)	Hood Wldt, Engine	1
2	32822	(010000–	)	Handle, Grab	1
3	60706	(010000–	)	Arm Wldt, Hinge	1
4	62759	(010000–	)	Arm, Hinge – Short	1
5	60722	(010000–	)	Seal, Engine Cover	1
6	60721	(010000–	)	Strip, Retainer, Seal	1
7	47974	(010000–	)	Hinge, Reversed Type	2
8	60719	(010000–	)	Seal, 20.0 Lg	1
9	49758	(010000–	)	Molding, Trim 16Ga&Thinnr37.0	1
10	59118–2	(010000–	)	Molding, Trim 16Ga&Thinnr19.9	1
11	62055	(010000–	)	Insul.,S/Foam1.0X 4.8X21.0 L	1
12	34934	(010000–	)	Foam Acoustic	1
13	52843	(010000–	)	Insulation,Hood 1X3.0X15.0 L	1
14	39745	(010000–	)	Insulation,S/Foam1.0X17.6X20.0	1
15	39743	(010000–	)	Insulation,S/Foam1.0X 3.0X18.0	2
16	39744	(010000–	)	Insulation,S/Foam1.0X 2.0X19.1	1
17	39746	(010000–	)	Insulation,S/Foam1.0X14.0X19.0	1
18	36067	(010000–	)	Foam, Acoustic	1
19	60710	(010000–	)	Plate Wldt, Exhaust Chamber	1
20	39748	(010000–	)	Insulation,S/Foam1.0	1
21	39747	(010000–	)	Insulation,S/Foam1.0Xw/Cut–Off	1

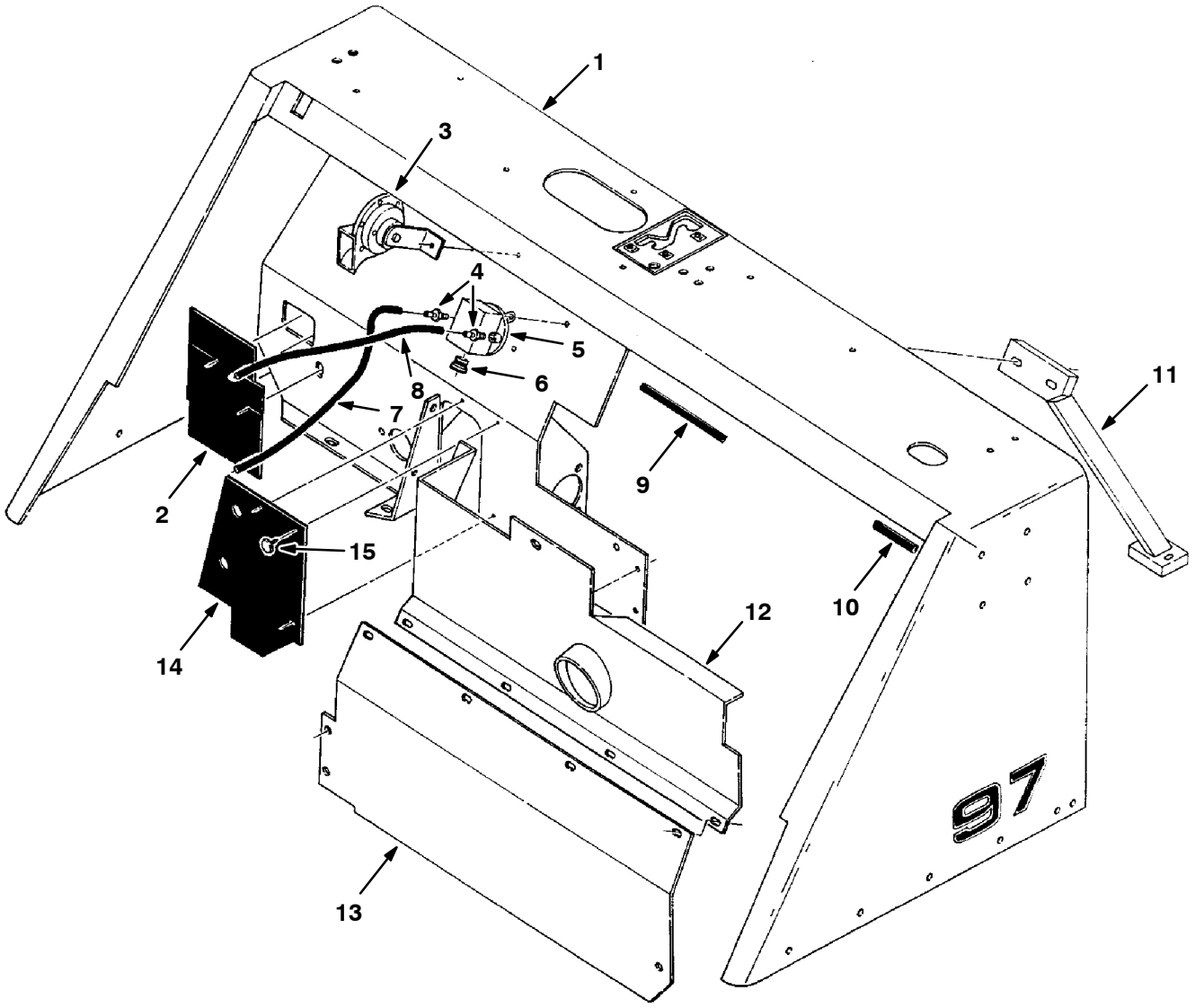

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Fig. 7 – Lintel Group

Key	TENNANT Part No.	Machine Serial Number		Description	Qty.
1	35391	(010000–	)	Lintel Wldt, Lo–D	1
2	60708	(010000–	)	Cover, Rubber, Cable	1
3	14138A	(010000–	)	Horn, 12V	1
4	40607	(010000–	)	Ftg–Brs Str Bm03/Pm02	2
5	34868	(010000–	)	Switch, Pressure	1
6	37031	(010000–	)	Strainrelief,F/Flat Spt–3 Cord	1
7	39780	(010000–	)	Hose Vac.,Rubber, .16Id,40.0L	1
8	39780–1	(010000–	)	Hose Vac.,Rubber, .16Id,28.0L	1
9	62595	(010000–	)	Molding, Trim 11–14Ga 7.0	1
10	50850	(010000–	)	Molding, Trim 11–14Ga 3.2	1
11	65054	(010000–	)	Brace Weldm.,Lintel	1
12	36185	(010000–	)	Panel Wldt, Front Upper, Lo–D	1
13	36193	(010000–	)	Panel, Front Lower, 97	1
14	35789	(010000–	)	Cover, Rubber	1
15	36214	(010000–	)	Clip, Dart	5

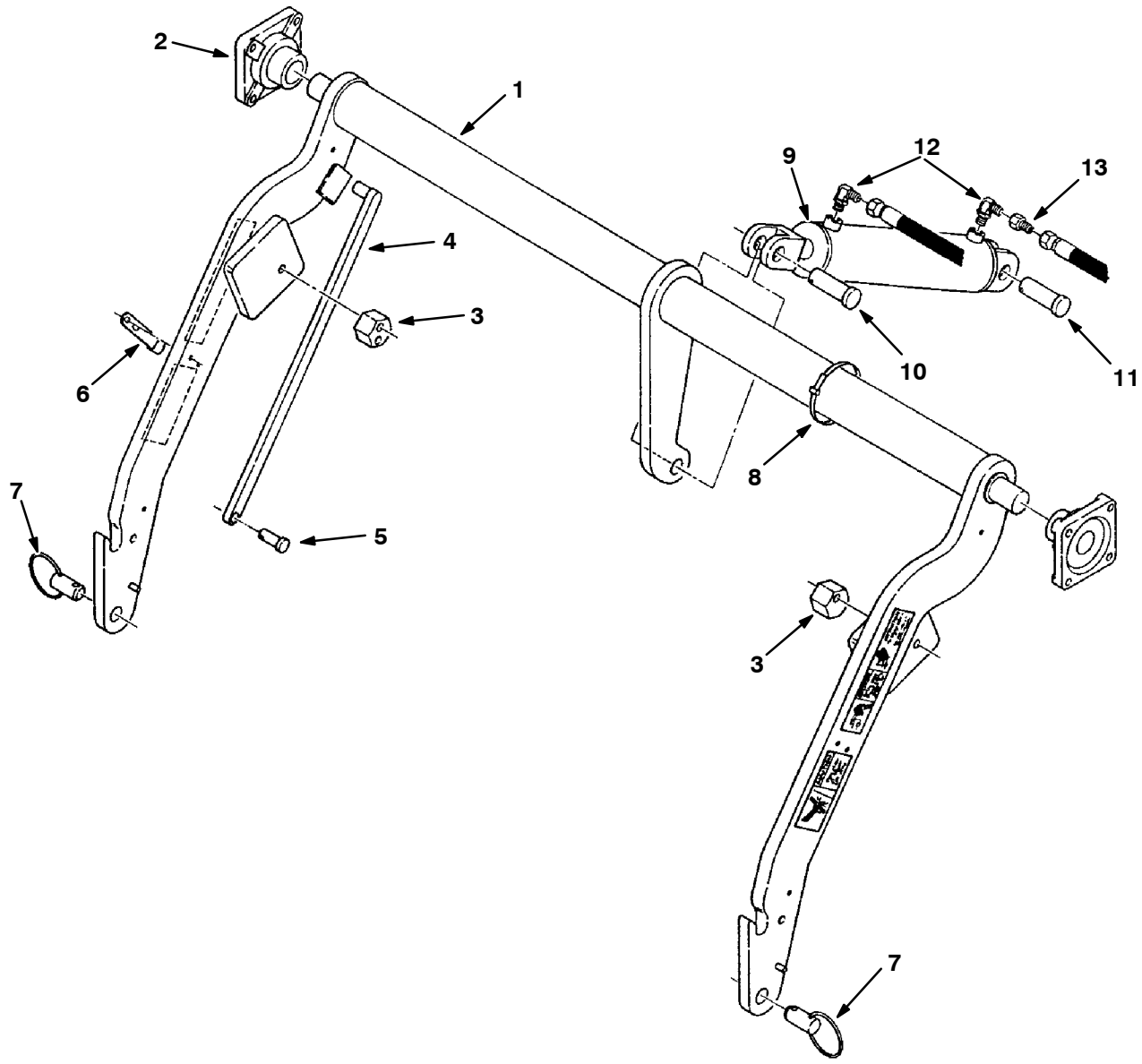

Fig. 8 – Hopper Lift Arms Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	60949	(010000–)	Arm, Lift, Lo–D W/Label	1
2	51315	(010000–)	Bearing–Flange,4 Hole 1.44Bore	2
3	36995	(010000–)	Cam, Eccentric	2
4	51883	(010000–)	Arm Weldm.,Hopper Stop L	1
5	51876	(010000–)	Pin,Clevis,0.62 Dia.X1.50 Lg	1
6	52036	(010000–)	Catch,Spring,Ht.Trtd.&Cad.Pltd	1
7	51316	(010000–)	Pin,Quick Release,1.00Diax2.34	2
8	44961	(010000–)	Tie, Cable 4.00D Max 14.50Lg	8
9	34327	(010000–)	Cylinder 3.0 20.8Ret11.80 2500	1
10	34410	(010000–)	Pin,Clevis 1.0D X 3.0L	1
11	04733–4	(010000–)	Pin,Clevis,1.00 Dia.X 2.50 Lg	1
12	77097	(010000–)	Ftg–Hyd E90 Jm04/Om04	2
13	35689	(010000–)	Ftg–Hyd Rst Jm04/.078	1

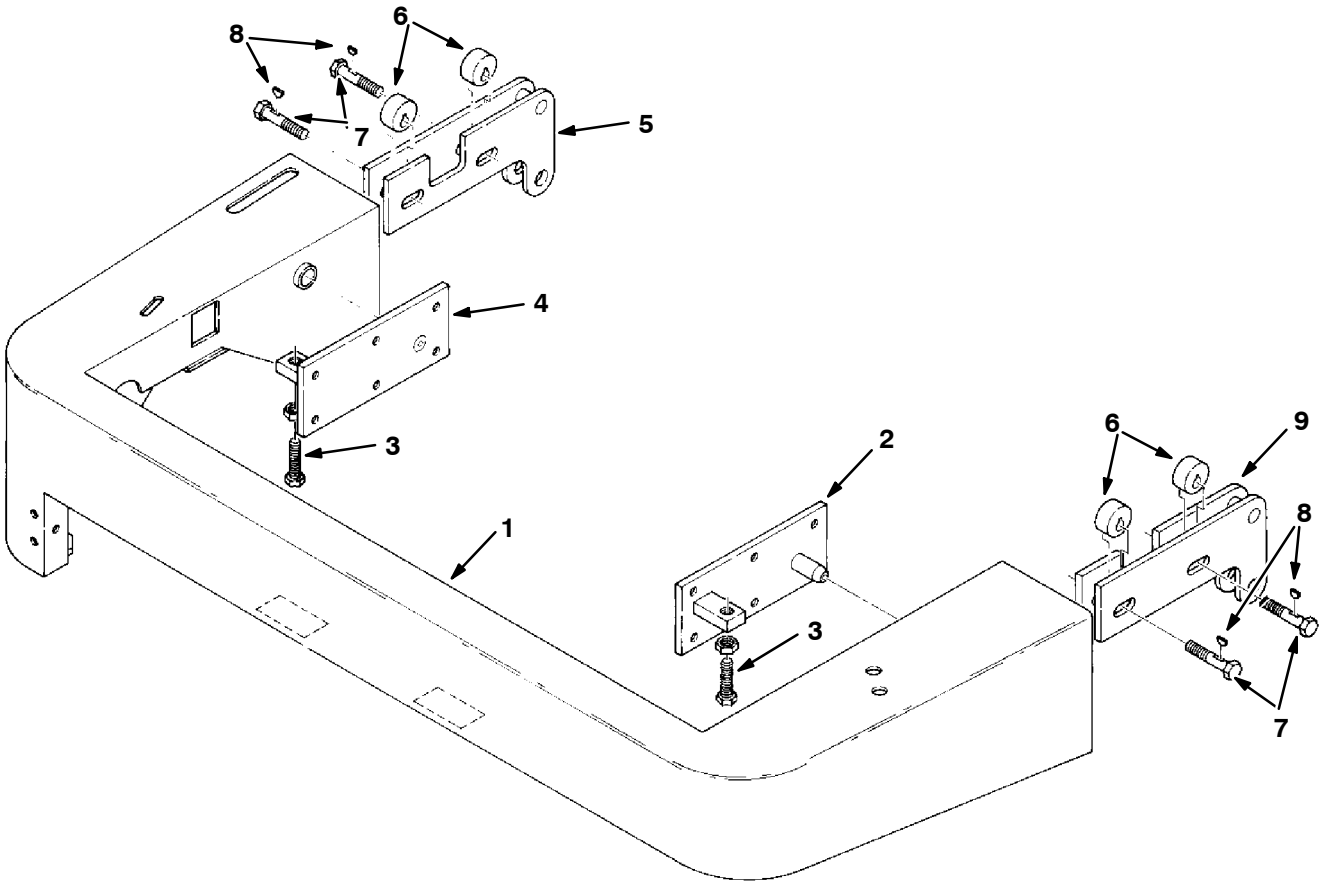

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Fig. 9 – Bumper Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	60953	(010000–)	Bumper, Hopper, Lo–D W/Label	1
2	51156	(010000–)	Left Hopper Adj. Weld.	1
3	39395	(010000–)	Scr–Hex .75–10X2.50 Full Thd	2
4	51151	(010000–)	Right Hopper Adj. Weld.	1
5	51116–1	(010000–)	Hopper L.Adapt.Weld.,R.H.	1
6	51128	(010000–)	Cam, Lift Bar	4
7	51108	(010000–)	Scrw Hex Cap .62–11X3.0	4
8	00500–5	(010000–)	Key–Wdruff 0.12 0.62 Asa#0405	4
9	51116	(010000–)	Hopper L.Adapt.Weld.,L.H.	1

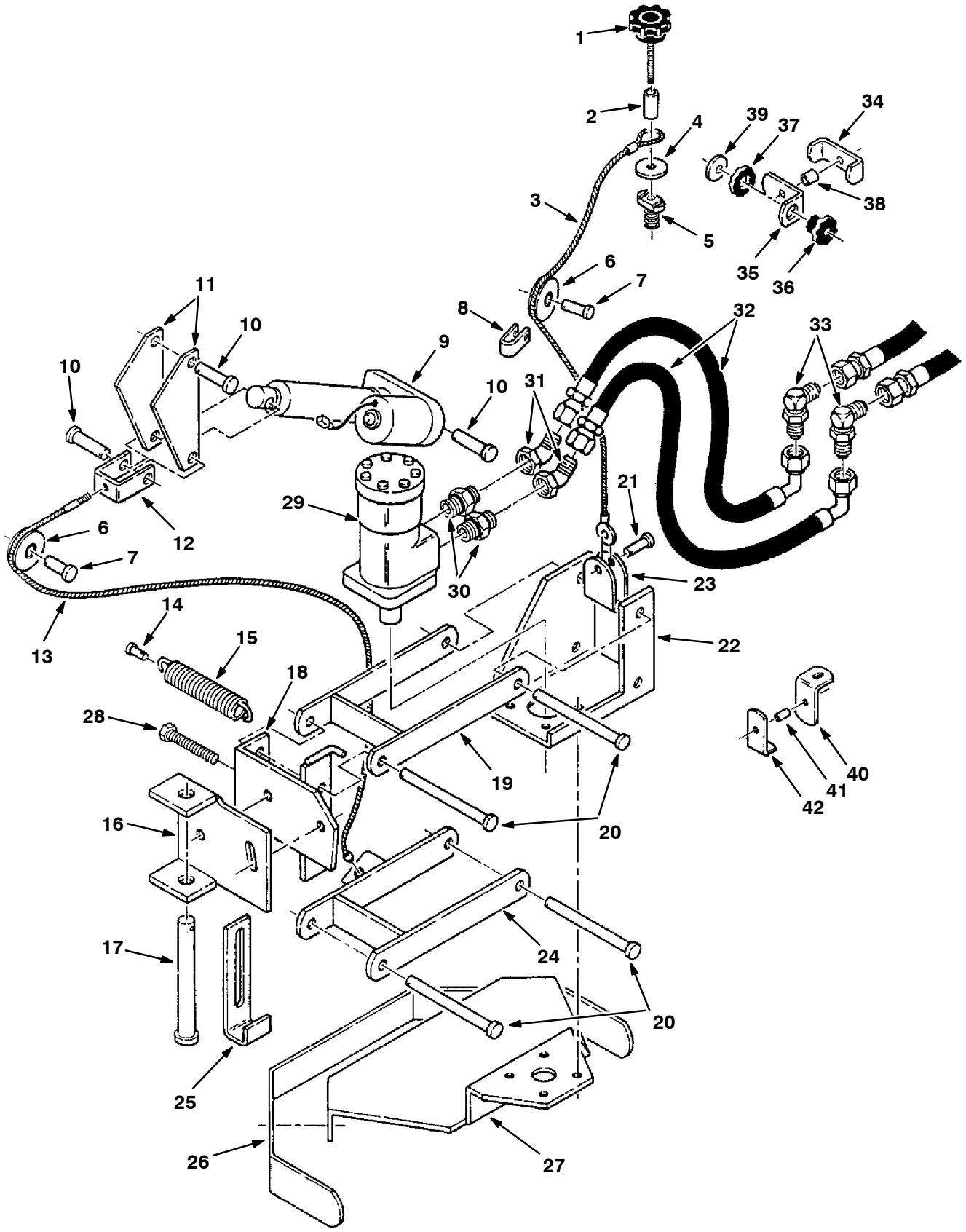

Fig. 10 – Side Brush Group

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Fig. 11 – Side Brush Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	41341	(010000–)	Knob, Plastic	1
2	40716	(010000–)	Sleeve,.385B .62D.62Cd.Cad	1
3	34500	(010000–)	Cable Side Brush Adjust .18X22	1
4	36996	(010000–)	Washer, .406B 1.50D .19Hr	1
5	34511	(010000–)	Nut,Spring Loaded .38–16	1
6	34532	(010000–)	Roller, Cable	2
7	51529	(010000–)	Pin,Clevis,0.50 Dia.X1.25 Lg	2
8	34529	(010000–)	Bracket, Cable Retainer	1
9	35297	(010000–)	Actuator, 12 Vdc	1
10	51534	(010000–)	Pin,Clevis,0.50 Dia.X 2.00 Lg	3
11	16781	(010000–)	Arm, Swing, Actuator, Stop	2
12	34504	(010000–)	Connector Cable	1
13	34501	(010000–)	Cable Side Brush Lift .18X18	1
14	46800	(010000–)	Pin, Clevis .312D.; .750 D.	1
15	47745	(010000–)	Sprng,Tens,1.12Odx.14Wire 6.3L	1
16	52667	(010000–)	Pivot Weldment	1
17	51414	(010000–)	Pin,Clevis,0.75 Dia.X 6.50 Lg	1
18	52663	(010000–)	Bracket Weld,Side Brush	1
19	45599	(010000–)	Link Weldt, Side Brush	1
20	51225	(010000–)	Pin,Clevis,0.50 Dia.X 5.50 Lg	4
21	46657	(010000–)	Pin,Clevis,0.37 Dia.X 1.25 Lg	1
22	62303	(010000–)	Brkt, Motor	1
23	52742	(010000–)	Channel, Connector – Cable	1
24	34523	(010000–)	Link,Parallel,Weld'T Lower	1
25	34522	(010000–)	Bracket Side Brush Stop	1
26	51210	(010000–)	Bumper,Side Brush,Spring Steel	1
27	51209A	(010000–)	Bracket,Support,Bumper S.Br.92	1
28	53963A	(010000–)	Scr–Hex .50–13X3.00 Full Thd	1
29	19349	(010000–)	Motor–Hyd Gear (See Hydraulic Components)	1
30	47508	(010000–)	Ftg–Hyd Str Jm06/Om10	2
31	16472	(010000–)	Ftg–Hyd E45 Jm06/Jf06	2
32	35486	(010000–)	Hose–Hyd Med06 Jf/J9	2
33	57075	(010000–)	Ftg–Hyd E90 Jm06/Jm06	2
34	51715	(010000–)	Clamp, Hose	1
35	62697	(010000–)	Brkt, Hose	1
36	62173	(010000–)	Bushing, Isolator–Inner,Rbr.	1
37	62172	(010000–)	Ring	1
38	09900–1	(010000–)	Sleeve, .260B .50D .75 Pnt.Gr	1
39	30013	(010000–)	Washer–Flt .31 Fender Pltd	1
40	34068	(010000–)	Brkt,Hose	1
41	34069	(010000–)	Sleeve, .260B .375D .75 Stl	1
42	34067	(010000–)	Clamp, Hose	1

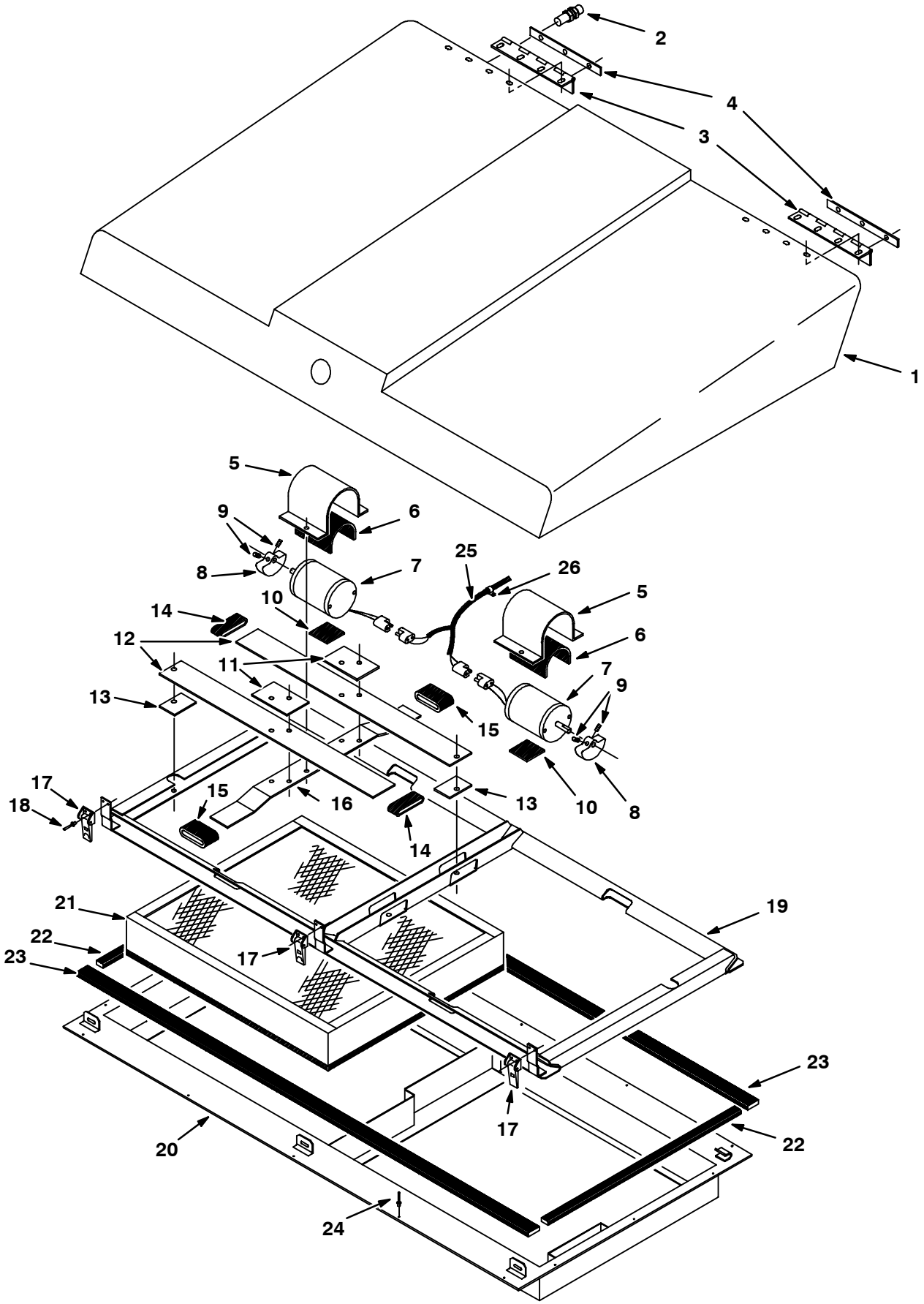

Fig. 11 -- Filter Box Assembly

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Fig. 11 – Filter Box Assembly

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35234	(010000–)	Cover Wldt, Filterbox	1
2	39923	(010000–)	Ftg,Bulkhead–Barb Wh 1074X4	1
3	34622	(010000–)	Hinge	2
4	34070	(010000–)	Shim,LdHinge	2
	35421	(010000–)	Filter Box Assy	1
5	36666	(010000–)	Strap, Motor, Shaker	2
6	36658	(010000–)	Bar–Flt .06T 4.00W 5.00L,Rbr	2
7	54121	(010000–)	Motor, Ele Shaker 12V	2
8	34773	(010000–)	Weight,Eccentric	2
9	20634	(010000–)	Scr–Set 10–24X0.25 Nylon Loc	4
10	36661	(010000–)	Bar–Flt .06T 1.00W 4.00L,Rbr	2
11	58483	(010000–)	Bar, Shaker	2
12	35220	(010000–)	Spring, Shaker	2
13	34741	(010000–)	Bar,Spacer	8
14	16785	(010000–)	Sleeve, Rubber 1.25Id X .125W	4
15	36665	(010000–)	Sleeve,1.12B 1.62D1.50 Rubber	4
16	82475	(010000–)	Bar, Spring, Shaker	1
17	87579	(010000–)	Latch, Tension	3
18	34738	(010000–)	Rivet, Pop–.125Dx.32X.25Dhd St	6
19	35224	(010000–)	Frame Wldt, Shaker	1
20	35225	(010000–)	Filterbox Wldt	1
21	35414	(010000–)	Filter Shpg Pkg, Panel 97	2
22	53052	(010000–)	Seal,Foam Rbr, .38 .75W 24.0L	2
23	34759	(010000–)	Seal .38 X 1.25 X 51.5	2
24	34738	(010000–)	Rivet, Pop–.125Dx.32X.25Dhd St	16
25	36092	(010000–)	Harness, Hopper	1
26	09385	(010000–)	Clamp, Cable .43D .50Wide	4

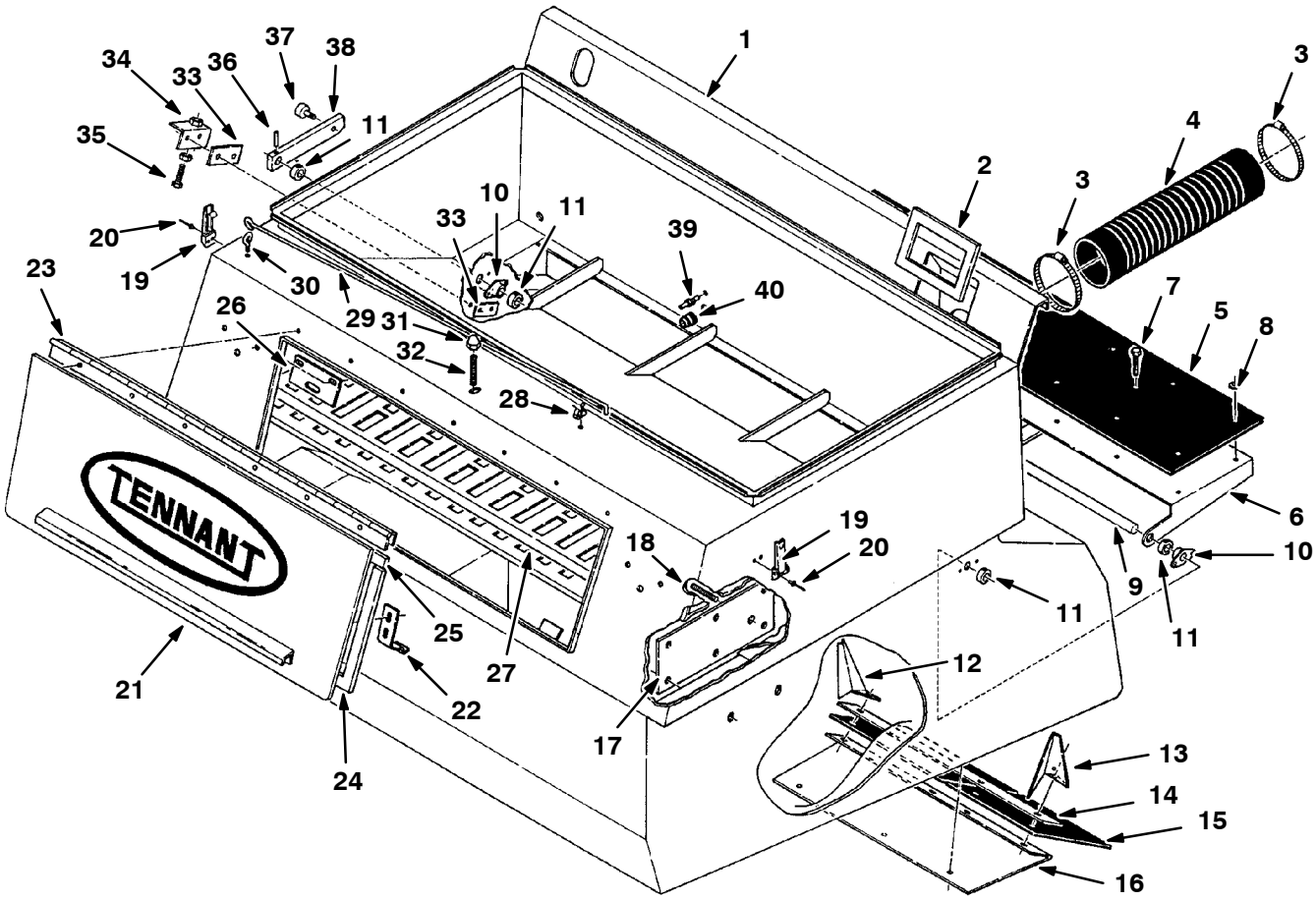

Fig. 12 – Hopper Group

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Fig. 12 – Hopper Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35366	(010000–)	Hopper Wldt, Low Dump	1
2	34638	(010000–)	Gasket,Hopper Cover	1
3	23498	(010000–)	Clamp–Wormdrive, 3.56– 4.50D	2
4	34076	(010000–)	Hose Flex, 4.0Id X 30.0Lg	1
5	16788	(010000–)	Seal, Dust Door	1
6	16794	(010000–)	Door Weld'T, Dust	1
7	55347	(010000–)	Scr–Hex .38–16X2.00 Full Thd	3
8	41178	(010000–)	Washer–Flt .25 Fender Pltd	14
9	16791	(010000–)	Rod Weldmt, Pivot	1
10	34096	(010000–)	Bearing–Flange,2 Hole .625Bore	2
11	34723	(010000–)	Collar, Locking, Plated	4
12	46595	(010000–)	Deflector, Dirt, R. H.	1
13	46596	(010000–)	Deflector, Dirt, L. H.	1
14	09928	(010000–)	Retainer, Hopper Lip	1
15	16783	(010000–)	Strip, Hopper Lip H.D. Neo.	1
16	51143	(010000–)	Plate,Wear,Hopper	1
17	51728	(010000–)	Plate, Inner Hopper	2
18	34533	(010000–)	Scr–Set .38–16X2.50 Oval	2
19	87579	(010000–)	Latch, Tension	2
20	34738	(010000–)	Rivet, Pop–.125Dx.32X.25Dhd St	4
21	35420	(010000–)	Door, Front W/Label	1
22	51934	(010000–)	Catch,Spring	2
23	35408	(010000–)	Hinge, Hopper Door	1
24	51163	(010000–)	Seal,Foam Rbr, .31 .75W 53.6L	1
25	51164	(010000–)	Seal,Foam Rbr, .31 .75W 34.1L	1
26	34703	(010000–)	Plate,Bolt	2
27	35233	(010000–)	Panel, Permafilter, Upper	1
28	23446	(010000–)	Clip–Finger Grip,0.31–0.75 Dia	1
29	62794	(010000–)	Rod, Hood Support	1
30	11893	(010000–)	Bolt–Eye, .25–20Zinc.56D 2.00L	1
31	51140	(010000–)	Nut–High Crown.50–13 Pltd	1
32	53963A	(010000–)	Scr–Hex .50–13X3.00 Full Thd	1
33	34079	(010000–)	Strip, Backing	2
34	34093	(010000–)	Brkt. Weldmt.,Adj., Dust Door	1
35	55347	(010000–)	Scr–Hex .38–16X2.00 Full Thd	3
36	26103	(010000–)	Pin,Roll,.18Odx1.25L,.187/.192	3
37	48930	(010000–)	Cam Follower	1
38	16787	(010000–)	Arm, Dust Door	1
39	39923	(010000–)	Ftg,Bulkhead–Barb Wh 1074X4	1
40	34864	(010000–)	Strain,Relief	1

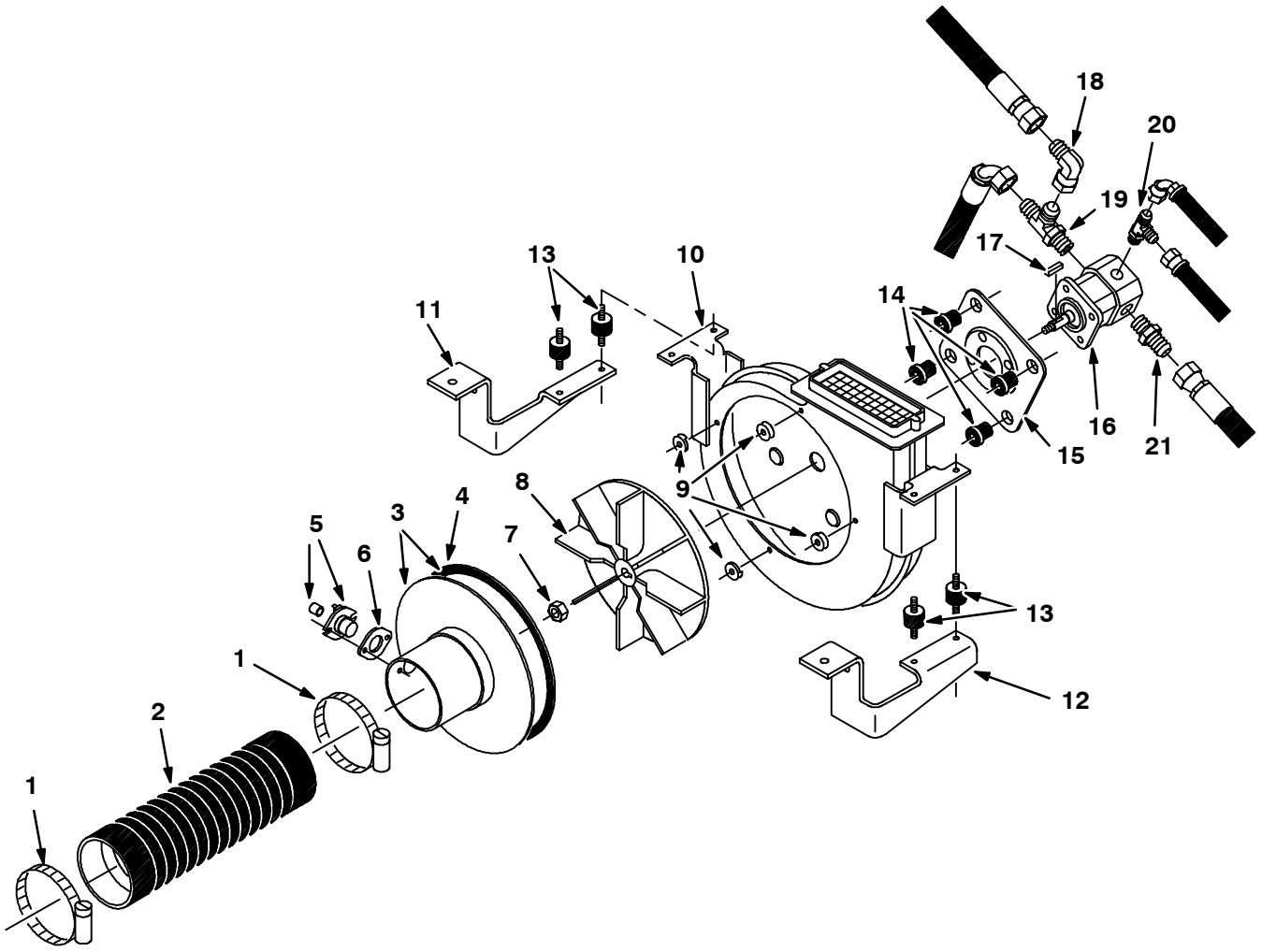

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Fig. 13 -- Vacuum Fan Group

Key	TENNANT Part No.	Machine Serial Number		Description	Qty.
1	23498	(010000–	)	Clamp–Wormdrive, 3.56– 4.50D	2
2	51768A	(010000–	)	Hose Flexflyte,4.00 Idx12.00Lg	1
3	82368	(010000–	)	Inlet Assy, Vac Fan W/Gasket	1
4	23542	(010000–	)	Seal,Foam Rbr, .31 .38W 30.5L	1
5	02712	(010000–	)	Thermostat Assembly, 140 Deg	1
6	82733	(010000–	)	Gasket, Fire Switch	1
7	31241	(010000–	)	Nut–Hxlocnyln .31–24 Thin Pltd	1
8	53034–1	(010000–	)	Impeller, 9.00Diax1.91Wx0.376B	1
9	03467A	(010000–	)	Clip,Vacuum Housing,Cad.Plate	4
10	35989	(010000–	)	Housing Wldt, Fac Fan	1
11	36174	(010000–	)	Bracket, Mtg, Vac Fan, Rh	1
12	36176	(010000–	)	Bracket, Mtg, Vac Fan, Lh	1
13	82661	(010000–	)	Isolator–Vibration .25–20	4
14	54274	(010000–	)	Isolator–Vibration,60 Lb.Ratng	4
15	54275A	(010000–	)	Bracket, Mounting Motor	1
16	77101	(010000–	)	Motor–Hyd Gear (See Hydraulic Components)	1
17	00966	(010000–	)	Key, Square 0.12 0.12 00.75 Lg	1
18	17980	(010000–	)	Ftg–Hyd E90 Jm08/Jf08	1
19	40755	(010000–	)	Ftg–Hyd Tee Jm08Jmom	1
20	34390	(010000–	)	Ftg–Hyd Tee Jm04Jmom	1
21	44869	(010000–	)	Ftg–Hyd Str Jm08/Om08	1

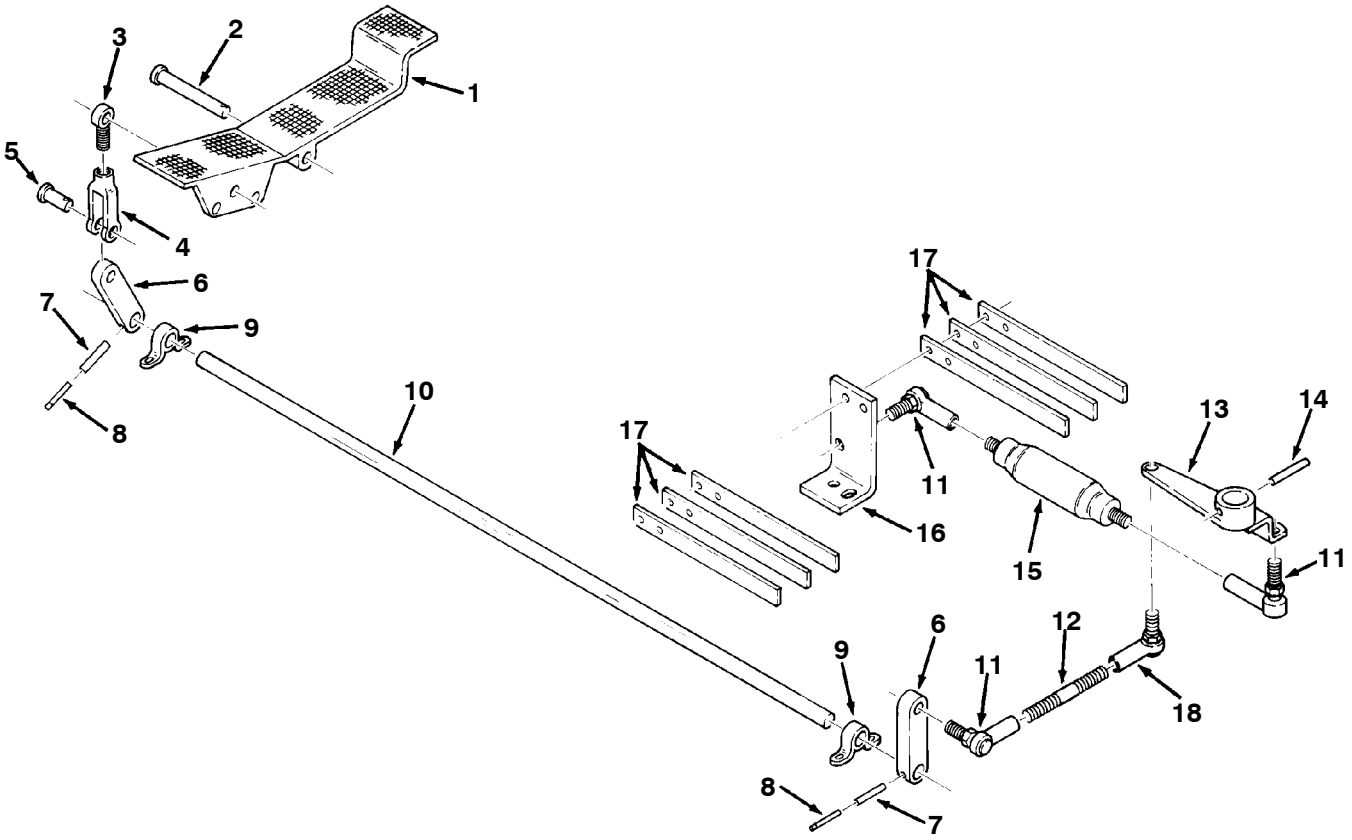

Fig. 14 – Directional Control Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	42240	(010000–)	Foot Pedal, Speed	1
2	06474A	(010000–)	Pin,Clevis,0.50 Dia.X 3.50 Lg	1
3	51303	(010000–)	Rod End,0.37–24Thd,0.37Bx1.0Lg	1
4	14330	(010000–)	Yoke, End, Adjustable	1
5	14331	(010000–)	Pin,Clevis,0.37 Dia.X 1.12 Lg	1
6	52789	(010000–)	Link,Direct Control	2
7	22134	(010000–)	Pin,Roll,.15Odx0.75L,.156/.160	2
8	46029	(010000–)	Pin,Roll,.09Odx0.87L,.094/.097	2
9	51304–1	(010000–)	Bearing–Plblk, 0.50Bore 2Hole	2
10	52790	(010000–)	Shaft, Cross, Directional Contr.	1
11	50493	(010000–)	Rod–End .375–24 W/Stud	3
12	16827	(010000–)	Rod–Thrd, Full .38–24	1
13	62702	(010000–)	Arm Weldt, Control	1
14	14854	(010000–)	Pin,Roll,.38Odx1.50L,.375/.382	1
15	62700	(010000–)	Shock Absorber	1
16	34903	(010000–)	Bracket, Return Spring	1
17	49681	(010000–)	Plate,Spring Steel Direct.Cont	6
18	50493	(010000–)	Rod–End .375–24 W/Stud	1

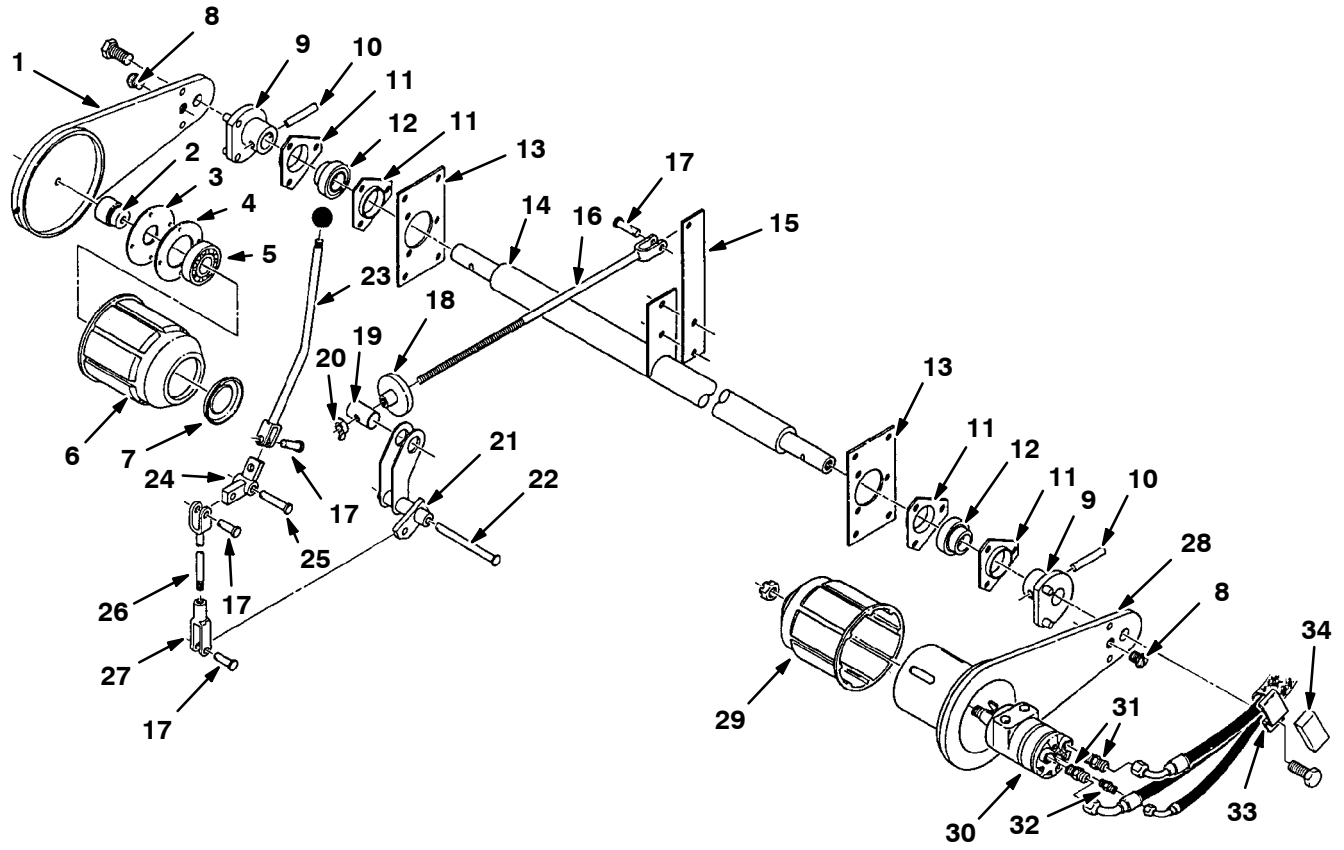

Fig. 15 -- Main Brush Lift and Drive Group

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Fig. 16 -- Main Brush Lift and Drive Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35333	(010000–)	Arm Wldt, Main Brush, Rh	1
2	30251	(010000–)	Shaft, Idler	1
3	30253	(010000–)	Plate, Seal	1
4	30252	(010000–)	Strip, Retainer, Bearing	1
5	24899	(010000–)	Bearing–Ball,1.38B 2.83D 0.67W	1
6	30254	(010000–)	Plug Wldt, Idler	1
7	30255	(010000–)	Plug, Tube	1
8	51938	(010000–)	Plug, Thread 3/4–10	2
9	51059	(010000–)	Hub Weldm.,Brush	2
10	51317	(010000–)	Pin,Roll,.38Odx2.00L,.375/.382	2
11	51449	(010000–)	Flange,Brg,3 Hole	4
12	51448	(010000–)	Bearing&Clr ,1.25B 2.44D 1.41W	2
13	62649–1	(010000–)	Plate Weldm., Adjusting Brush	2
14	62626	(010000–)	Shaft Weldt, Brush Lift	1
15	62625	(010000–)	Arm, Brush Lift Extension	1
16	62619	(010000–)	Link, Main Brush Lift Lower	1
17	06598	(010000–)	Pin,Clevis,0.50 Dia.X 1.42 Lg	4
18	51452	(010000–)	Knob,0.50–13,3.00Dia,Cast Iron	1
19	51391	(010000–)	Pin, Swivel Main Br. Lift	1
20	39274	(010000–)	Nut–Wing .50–13 Pltd	1
21	62620	(010000–)	Tube Weldt, Brush Control	1
22	51225	(010000–)	Pin,Clevis,0.50 Dia.X 5.50 Lg	1
23	51447–1	(010000–)	Handle, Brush Lift Cad Plated	1
24	51492	(010000–)	Bellcrank Weldt	1
25	06279	(010000–)	Pin,Clevis,0.50 Dia.X 2.50 Lg	1
26	62618	(010000–)	Link, Main Brush Lift Upper	1
27	51462	(010000–)	Clevis,Adjust.0.50–13Th.Cad.	1
28	35332	(010000–)	Arm Wldt, Main Brush, Lh	1
29	87631	(010000–)	Plug Weld, Brush Drive, Sweep	1
30	27800	(010000–)	Motor–Hyd Gear (See Hydraulic Components)	1
31	44869	(010000–)	Ftg–Hyd Str Jm08/Om08	2
32	55586	(010000–)	Ftg–Hyd Str Jm04/Om04	1
33	60733	(010000–)	Bracket, Retainer, Hose	1
34	60732	(010000–)	Seal, Foam Rubber, .75X1.5X3.5	1

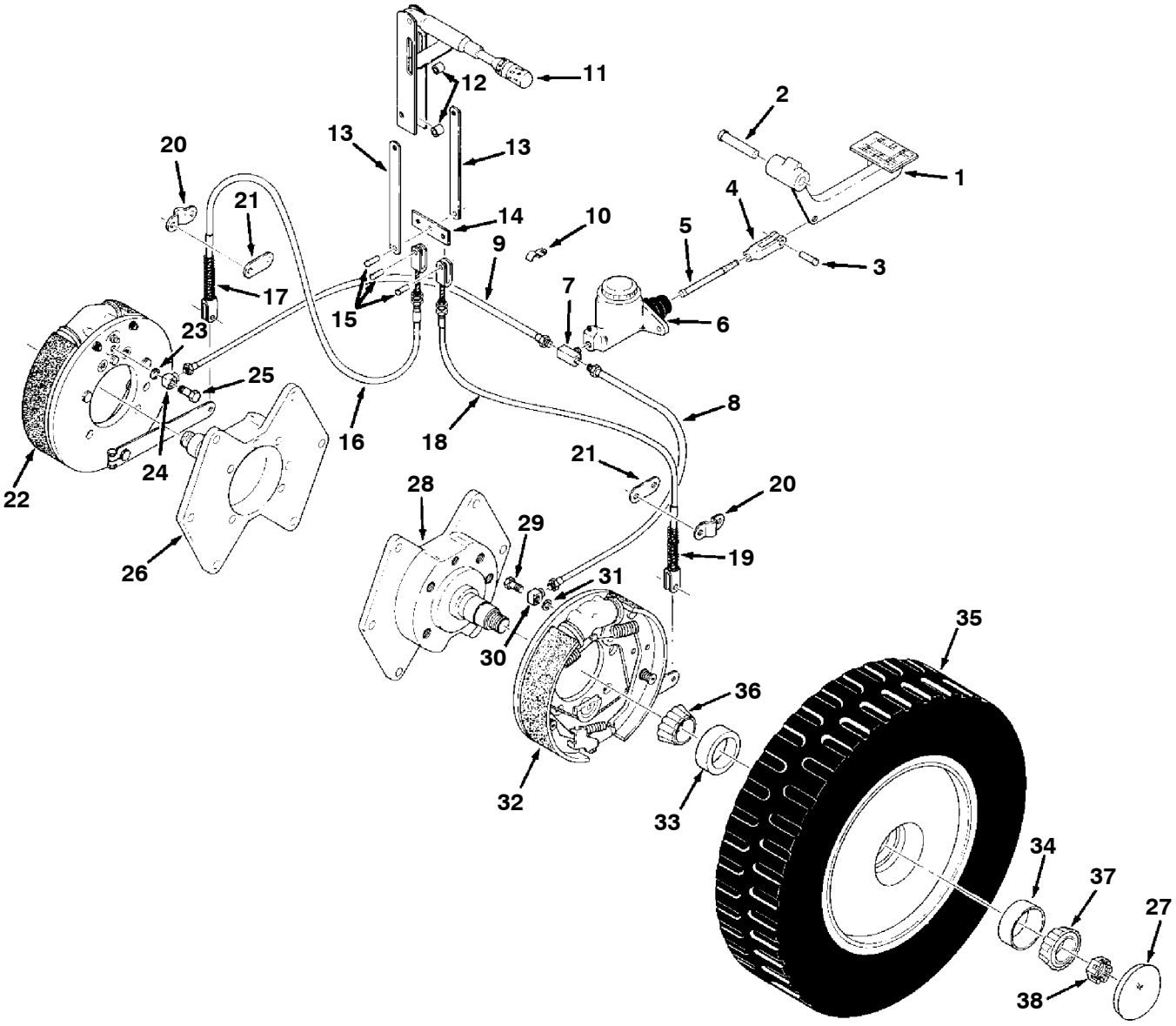

Fig. 16 -- Front Wheels and Brakes Group

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Fig. 16 – Front Wheels and Brakes Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	65128	(010000–)	Brake Pedal	1
2	23683	(010000–)	Pin,Clevis,0.50 Dia.X 3.00 Lg	1
3	14331	(010000–)	Pin,Clevis,0.37 Dia.X 1.12 Lg	1
4	14330	(010000–)	Yoke,End,Adjustable	1
5	52163	(010000–)	Push Rod,Brake	1
6	SK2136	(010000–)	Cylinder Replmt.Kit–Br	1
	SK2137	(010000–)	Repair Kit Replacement	1
7	51483	(010000–)	Ftg,Brass,Tee 06lf– 02Pm– 06lf	1
8	76058	(010000–)	Tube Assy,Brake Line 58.0 Lg	1
9	42241	(010000–)	Tube Assy,Brake Line 20.0 Lg	1
10	04681	(010000–)	Bracket, Clamp, Cable, Battery	3
11	51545	(010000–)	Lever, Brake	1
12	51562	(010000–)	Sleeve, .344B .50D .81 Cr.Anc	2
13	51912	(010000–)	Link,.12T .8W 8.0L 2/.32H7.0C	2
14	40354	(010000–)	Strip,.19T1.0W 3.0L 3/.32Hcomc	1
15	10120	(010000–)	Pin,Clevis,0.31 Dia.X 0.75 Lg	3
16	47963	(010000–)	Cable Assy, Brake,R.H	1
17	47960	(010000–)	Sprng,Comp,0.37Idx.06Wire 6.0L	1
18	47963–1	(010000–)	Cable Assy, Brake,L.H	1
19	47960	(010000–)	Sprng,Comp,0.37Idx.06Wire 6.0L	1
20	65129	(010000–)	Clamp, Cable– Brake	2
21	65129–1	(010000–)	Spacer, Clamp – Brake	2
	61907	(010000–)	Axle Assy, Front, Rh	1
22	61915	(010000–)	Brake Assy, Rh, Rework	1
	61911	(010000–)	Brake Shoe Pkg, Lined,1 Wheel	1
22	45743	(010000–)	Cup&Boot, Wheel Cylinder	1
23	13962	(010000–)	Washer, .391B .56D .033Coppr	1
24	36739	(010000–)	Brake Ftg,Conn.Wag.Ele.#F24200	1
25	36740	(010000–)	Brake Ftg,Bolt Wag.Ele.#F24199	1
26	65121	(010000–)	Spindle, Front Axle – Rh	1
27	51373	(010000–)	Cap, Grease	2
	61908	(010000–)	Axle Assy, Front, Lh	1
28	65122	(010000–)	Spindle, Front Axle L.H.	1
29	36740	(010000–)	Brake Ftg,Bolt Wag.Ele.#F24199	1
30	36739	(010000–)	Brake Ftg,Conn.Wag.Ele.#F24200	1
31	13962	(010000–)	Washer, .391B .56D .033Coppr	1
32	61914	(010000–)	Brake Assy, Lh, Rework	1
	45744	(010000–)	Brake Shoe&Lining Pkg –1Whl	1
	45743	(010000–)	Cup&Boot, Wheel Cylinder	1
	47879	(010000–)	Tire & Wheel Assy	2
33	17808	(010000–)	Bearing–Cup , 2.72Dia 0.59Wth	1
34	51338	(010000–)	Bearing–Cup , 2.56Dia 0.55Wth	1
35	47878	(010000–)	Tire, Solid, 21X 5X11.9 Prs–On	1
36	17809	(010000–)	Bearing–Cone, 1.50Bore 0.75Wth	2
37	51193	(010000–)	Bearing–Cone, 1.38Bore 0.72Wth	2
38	14242	(010000–)	Nut–Hxslot 1.00–20 Pltd	2

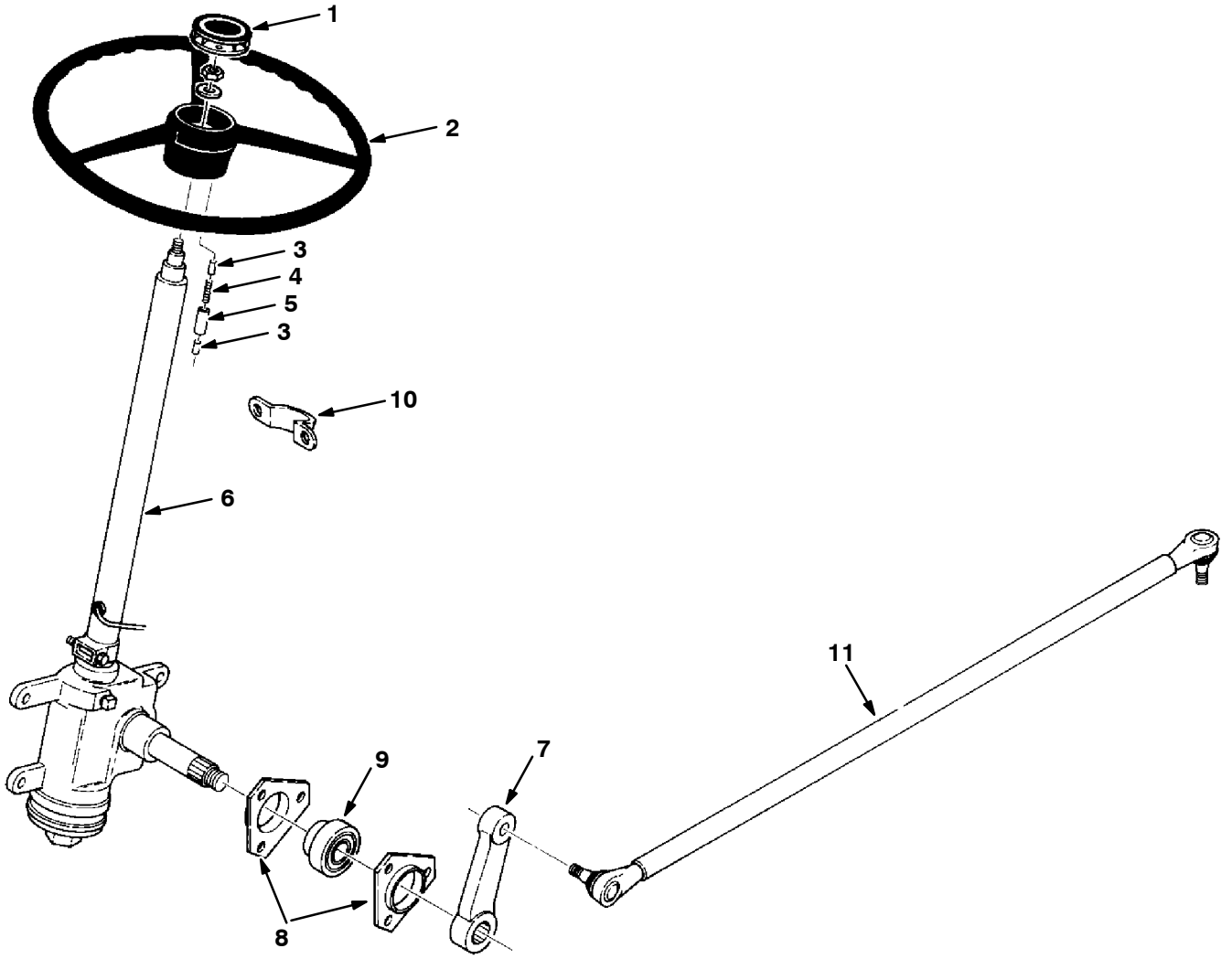

Fig. 17 -- Steering Control Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	51363	(010000–)	Steering Column Assy	1
1	47010	(010000–)	Button, Horn, Purch Kit	1
2	47008	(010000–)	Wheel, Steering	1
3	46311	(010000–)	Horn Brush	2
4	46313	(010000–)	Sprng,Comp,0.96Idx.01Wire 1.4L	1
5	46312	(010000–)	Tube,Acrylic.38D.X.25 Id.X1.81	1
6	47007	(010000–)	Gear &Column Assy,Steerng,Sagn	1
7	51299	(010000–)	Arm–Pitman, 6.50 Long	1
8	51449	(010000–)	Flange,Brg,3 Hole	2
9	48050	(010000–)	Bearing&Clr,1.12B 2.44D 1.41W	1
10	51470	(010000–)	Support,Steering Column	1
11	51096	(010000–)	Link Weldm.,Steering 37.62	1

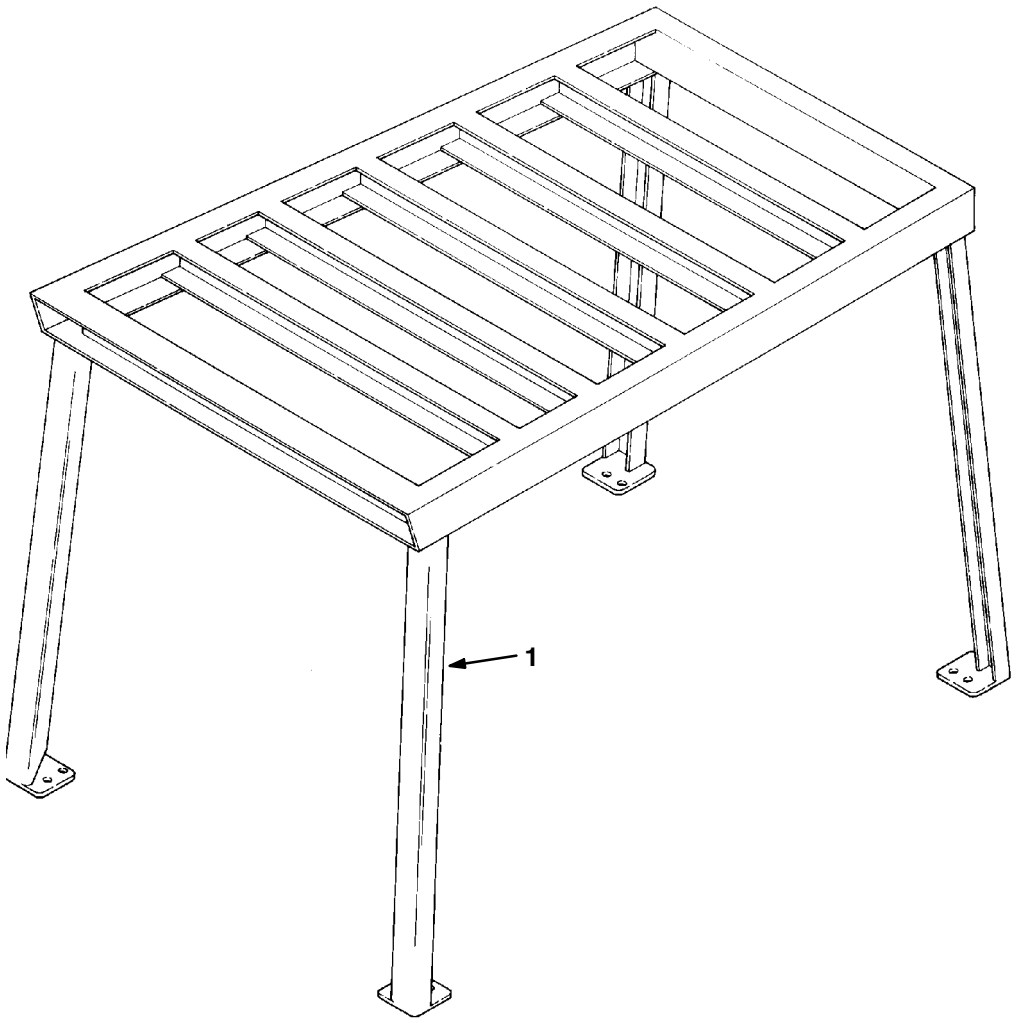

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Fig. 18 – Overhead Guard Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	62009	(010000–)	Guard, Overhead	1

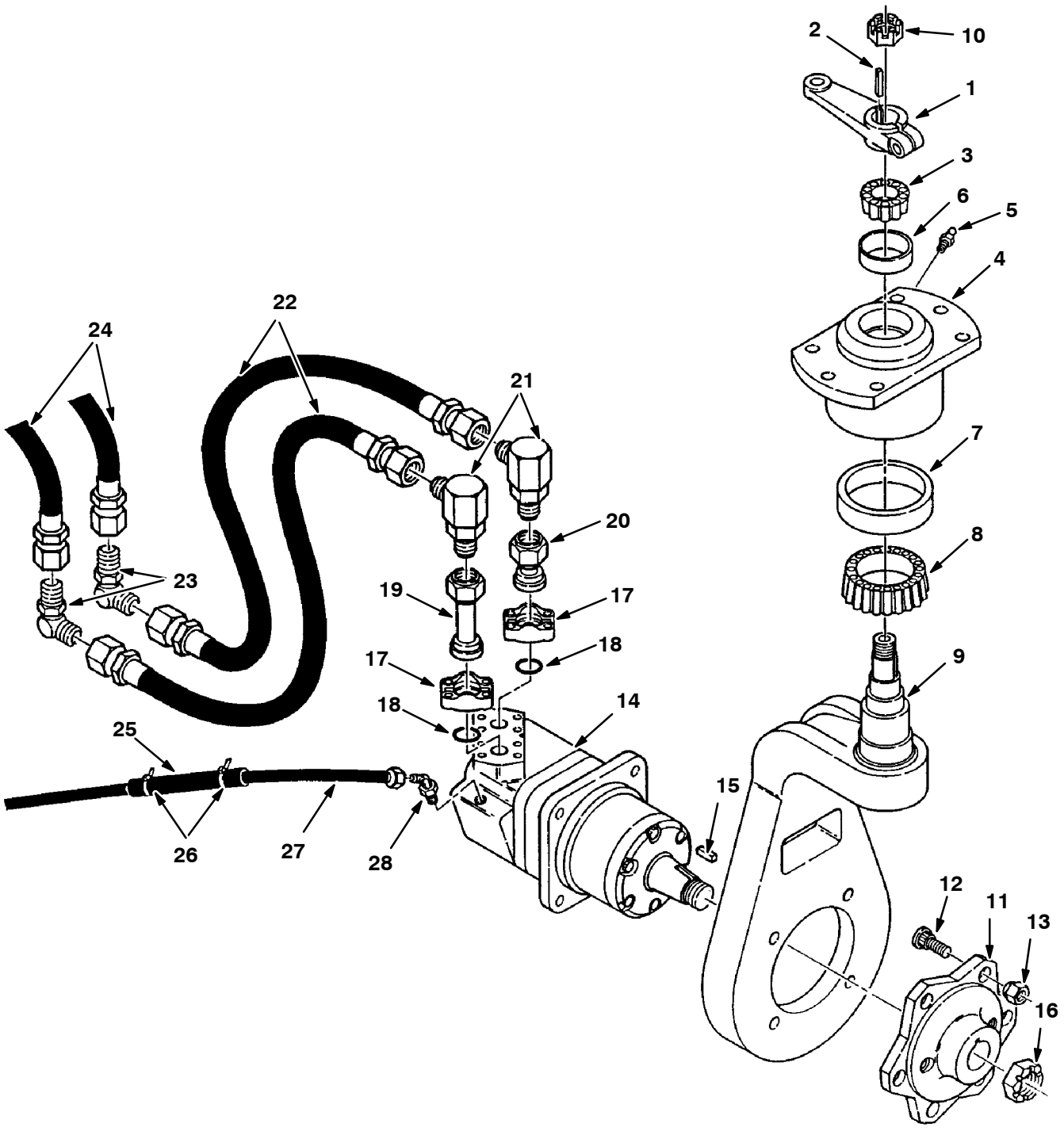

Fig. 19 – Rear Wheel Support Group

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Fig. 19 – Rear Wheel Support Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	51283	(010000–)	Arm, Steering,Rear	1
2	00928	(010000–)	Key, Square 0.25 0.25 01.00 Lg	1
3	51339	(010000–)	Bearing–Cone, 1.38Bore 0.71Wth	1
4	51002	(010000–)	Block Assy,Spindle	1
5	47801	(010000–)	Ftg, Grease.25–28Th Strt .63L	1
6	51338	(010000–)	Bearing–Cup , 2.56Dia 0.55Wth	1
7	51340	(010000–)	Bearing–Cup , 4.33Dia 0.74Wth	1
8	51341	(010000–)	Bearing–Cone, 2.63Bore 0.87Wth	1
9	62433	(010000–)	Spindle Weldt, Rear Axle	1
10	14242	(010000–)	Nut–Hxslot 1.00–20 Pltd	1
11	62456	(010000–)	Hub Assy, Drive Wheel	1
12	32126	(010000–)	Stud, Wheel .50–20 X 1.50 Pltd	6
13	24339	(010000–)	Nut–Wheel .50–20 60 Angle	6
14	75025	(010000–)	Motor,Hyd (See Hydraulic Components)	1
15	45623	(010000–)	Key Cl	1
16	45622	(010000–)	Nut Cl	1
17	40510	(010000–)	Ftg–Hyd Sfg Ff12	2
18	11453	(010000–)	Seal,Oring, 1.00Idx 1.25X.12Th	2
19	34348	(010000–)	Tube–Hyd 12 Sa12/Jf12	1
20	34347	(010000–)	Tube–Hyd 12 Sa12/Jf12	1
21	08025	(010000–)	Ftg–Hyd El90 Swivel Jm12Jm	2
22	08024	(010000–)	Hose–Hyd Hi 12 Jf–J4	2
23	51785	(010000–)	Ftg–Hyd E90 Jm12/Jm12	2
24	57951	(010000–)	Hose–Hyd Hi 12 Jf/J4	2
25	34054	(010000–)	Sleeve–Nyln #12 25.0L	1
26	49266	(010000–)	Tie, Cable 1.75D Max 7.50Lg	2
27	34388	(010000–)	Hose–Hyd Low04 Jf/J9	1
28	34359	(010000–)	Ftg–Hyd E45 Jm04/Om04	1

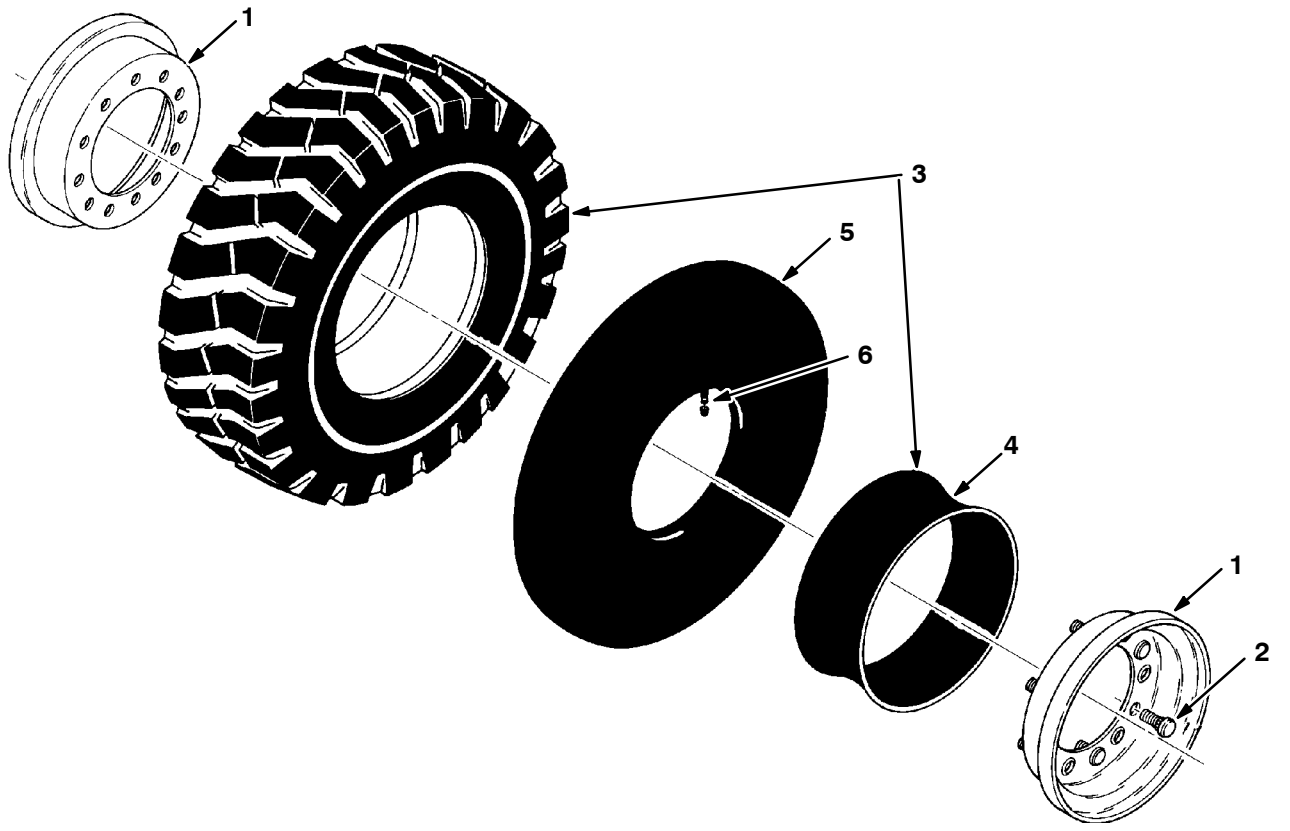

Fig. 20 – Rear Wheel Assembly

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	51357	(010000–)	Tire and Rim Assy, Pneumatic	1
1	52775	(010000–)	Rim Kit,Tire,Jeep&Cont.	1
2	51355	(010000–)	Wheel Stud,0.50–20Thd,1.203Lg.	6
	52510	(010000–)	Tire Assembly	1
3	51360	(010000–)	Tire,690/600–9 10 Ply Pneumtc.	1
4	51362	(010000–)	Flap,Tire–Tube ,690/600–9	1
5	51361	(010000–)	Tube,Tire–Inner,690/600–9	1
6	45786	(010000–)	Cap, Valve Stem	1

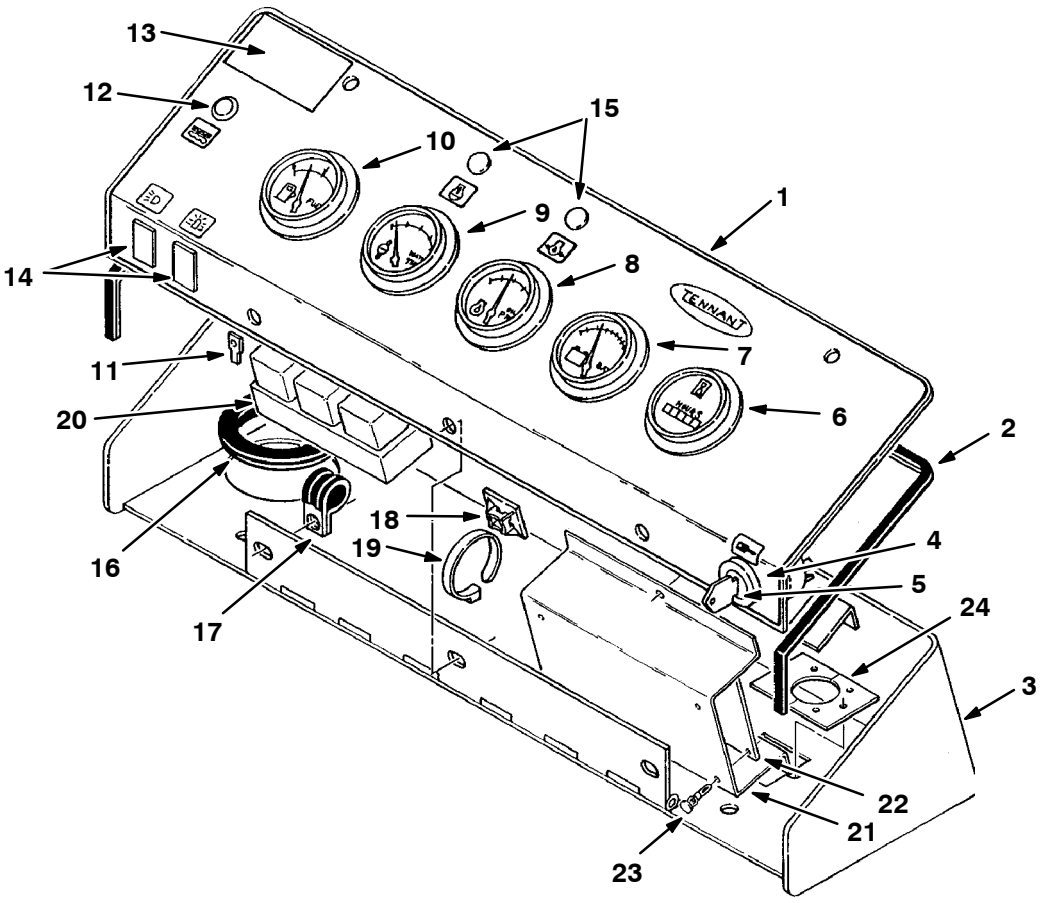

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Fig. 21 – Instrument Panel Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35373	(010000–)	Panel, Instrument, Front	1
2	34335	(010000–)	Seal, Instrument Panel	1
3	35400	(010000–)	Box Wldt, Instrument	1
4	87536	(010000–)	Switch Ignition	1
5	87866	(010000–)	Key Set,Switch Ku	1
6	34810	(010000–)	Hourmeter	1
7	55557	(010000–)	Gauge, Voltage – Eng/Met	1
8	34811	(010000–)	Gage,Oil Press	1
9	58591	(010000–)	Gauge, Water Temperature	1
10	34813	(010000–)	Gage,Fuel	1
11	48252	(010000–)	Terminal,Tab Male	1
12	34820	(010000–)	Light, Indctr/Red 12V .1A Jmco	1
13	35316	(010000–)	Label, Instrument Panel Lo–D	1
14	57772	(010000–)	Plate–Cover	2
15	56992	(010000–)	Plugbtn .50H .03–.12 Blacknyl	2
16	10632–19	(010000–)	Grommet,Rbr,2.12Id,For .12Matl	1
17	40678–1	(010000–)	Clamp–Cable, .88Dia .56Wth	2
18	55248	(010000–)	Cabletie Mount, Adhesive	2
19	49266	(010000–)	Tie, Cable 1.75D Max 7.50Lg	2
20	10865	(010000–)	Relay 12V Spdt W/Suppression	3
21	35402	(010000–)	Bracket, Circuit Board	1
22	60957	(010000–)	Logic Board Kit 97	1
23	15840	(010000–)	Pin, Prong, Pc Board	4
24	35317	(010000–)	Plate, Connector	2

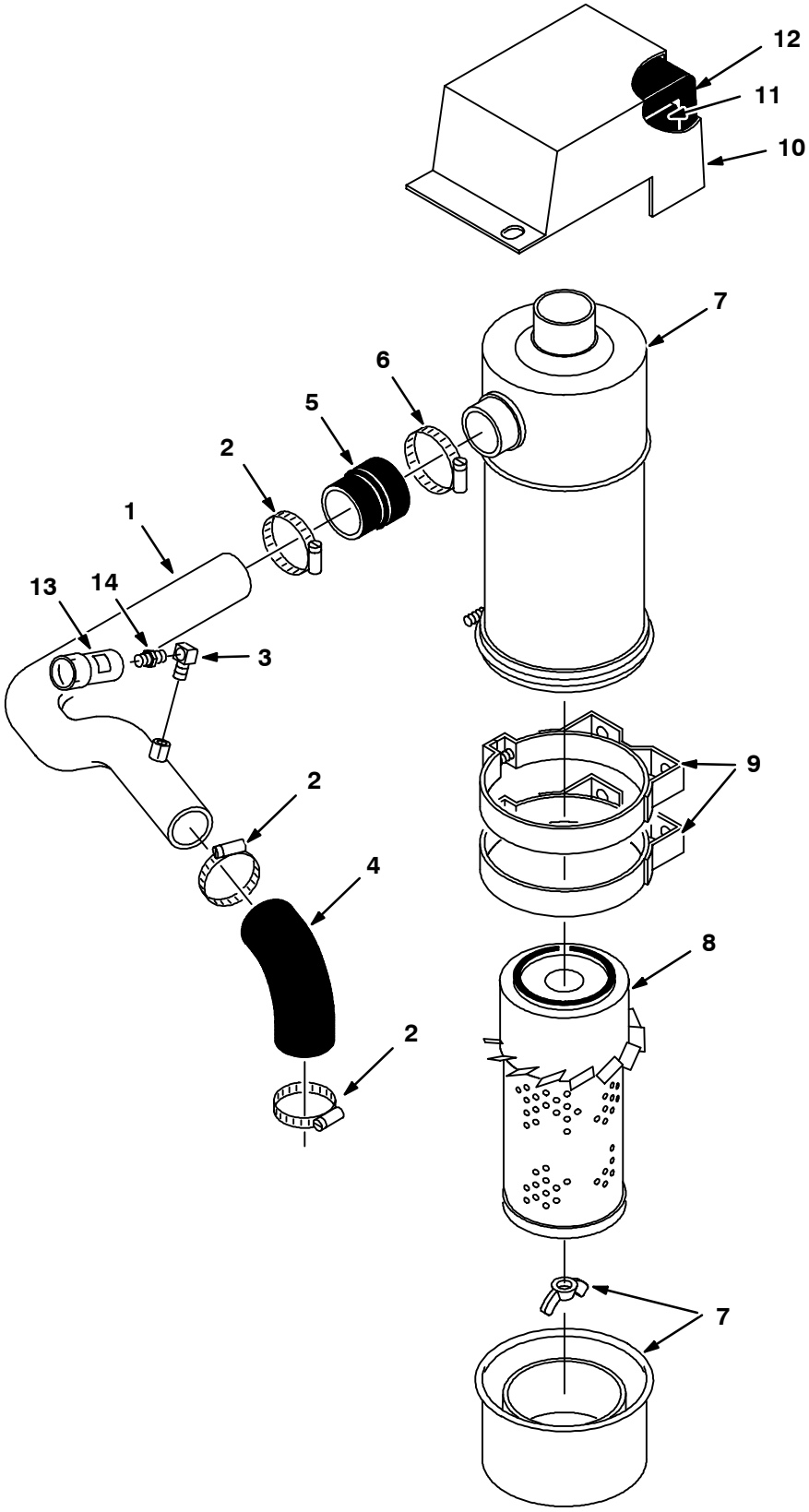

Fig. 22 -- Air Cleaner Group

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Fig. 22 – Air Cleaner Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35052	(010000–)	Tube, Air Intake	1
2	22297	(010000–)	Clamp, Wormdrive, 1.56– 2.50D	3
3	11984	(010000–)	Ftg,Brass,Elb,02Npt–02Npt	1
4	76825	(010000–)	Elbow, Carburetor 2.00Id	1
5	52992	(010000–)	Adaptor, Molded Donaldson2.25B	1
6	14432	(010000–)	Clamp–Wormdrive, 1.81– 2.75D	1
7	76319	(010000–)	Air Cleaner	1
8	76335	(010000–)	Element Assy	1
9	34493	(010000–)	Band Assy, Donaldson	2
10	35056	(010000–)	Cover, Rain	1
11	35055	(010000–)	Insulation, Acoustic, Side	2
12	35054	(010000–)	Insulation, Acoustic 16.0X6.3	1
13	03026	(010000–)	Indicator,Service,Air Filter	1
14	51560–5	(010000–)	Filter, Service Indicator	1

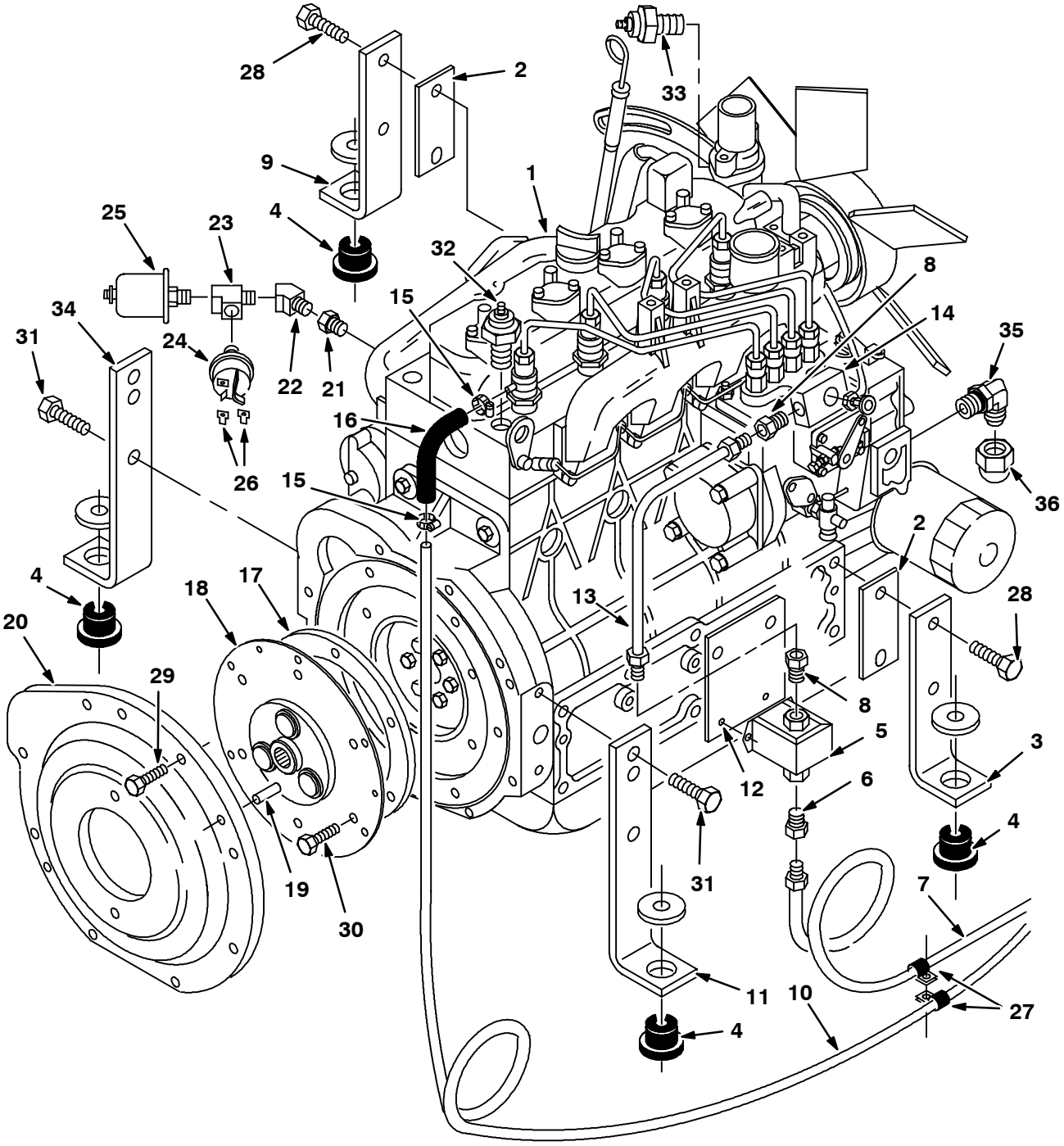

Fig. 23 – Engine Group

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Fig. 23 – Engine Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	25070	(010000–)	Engine	1
2	33828	(010000–)	Strip, Spacer, Rear Motor Mtg	2
3	25062	(010000–)	Bracket, Eng Mtg, Left Rear	1
4	51176	(010000–)	Dampner, Engine	4
5	19171	(010000–)	Pump, Fuel, Electric	1
6	40585	(010000–)	Ftg–Brs St If05/Pm02	1
7	36028	(010000–)	Fuelline Assy	1
8	06869	(010000–)	Ftg–Brs Str If04/Pm02	2
9	25061	(010000–)	Bracket, Eng Mtg, Right Rear	1
10	33822	(010000–)	Fuelline Assy, Bleed Line	1
11	25063	(010000–)	Bracket, Eng Mtg, Front	1
12	25069	(010000–)	Plate, Fuel Pump	1
13	36027	(010000–)	Fuelline	1
14	33737	(010000–)	Banjo, Fuel	1
15	43844	(010000–)	Clamp–Wormdrive, 0.25– 0.62D	2
16	50467	(010000–)	Hose, Rbr .188 I.D. X 4.0 Lg	1
17	25522	(010000–)	Ring, Coupling Mtg	1
18	25080	(010000–)	Coupling, Flywheel 3 Bushings	1
19	82579	(010000–)	Pin,Spring,10.5Mm X 26Mm	2
20	25066	(010000–)	Housing, Flywheel, Machined	1
21	33613	(010000–)	Ftg–Hyd Str (Bspp) Mpm02/Pf02	1
22	24976	(010000–)	Ftg–Brs E45 Pm02/Pf02	1
23	26426	(010000–)	Ftg,Brass,Tee 02Pf– 02Pf– 02Pm	1
24	51805	(010000–)	Switch, Oil Pressure 1.5A 12V	1
25	34808	(010000–)	Sender,Oil Pressure	1
26	68106	(010000–)	Terminal Tab	2
27	46236	(010000–)	Clamp–Cable, 0.25Dia 0.56Wth	2
28	82573	(010000–)	Scr Hex M12X1.25 25 8.8 Pltd	4
29	33612	(010000–)	Scr–Hex M10X1.25 35 8.8 Pltd	7
30	07299	(010000–)	Scr–Hex M10X1.25 25 8.8 Pltd	6
31	33609	(010000–)	Scr–Hex M14X1.5 25 8.8 Pltd	4
32	33875	(010000–)	Send Unit, Temperature, Water	1
33	25314	(010000–)	Switch,Temp.	1
34	25064	(010000–)	Bracket, Eng Mtg, Front Rh	1
35	33595	(010000–)	Ftg–Hyd E90 Mom16/Jm08	1
36	60090	(010000–)	Ftg–Hyd Cap Jf08	1

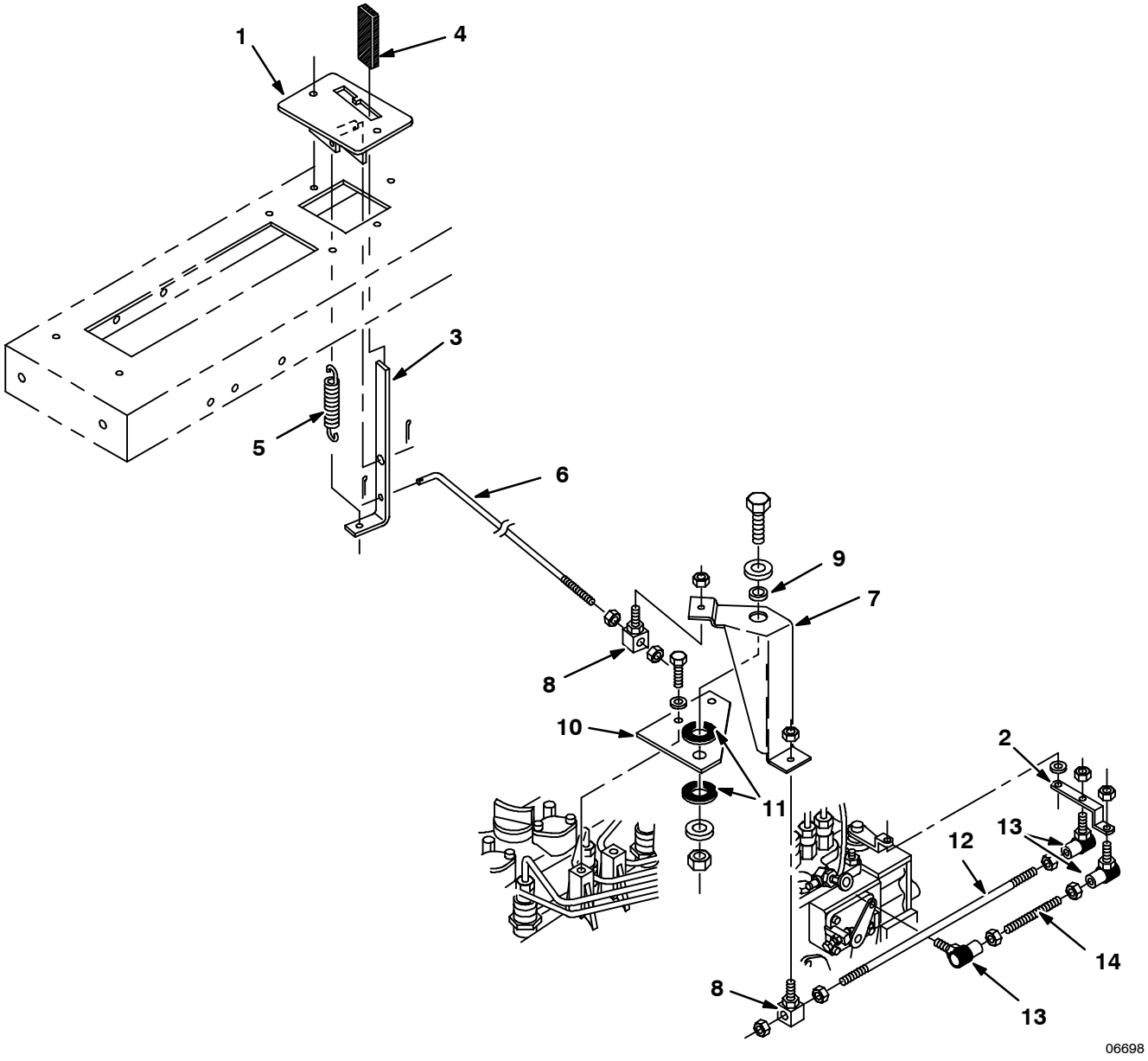

Fig. 24 – Throttle Linkage Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	36198	(010000–)	Bracket Wldt, Throttle	1
2	82597	(010000–)	Link, Throttle	1
3	36207	(010000–)	Handle, Throttle	1
4	36238	(010000–)	Grip, Vinyl .18 X .75 X 2.75	1
5	75575	(010000–)	Sprng,Tens,0.500Dx.06Wire 2.5L	1
6	36218	(010000–)	Rod, Throttle, Diesel	1
7	32298	(010000–)	Bellcrank, Throttle, Kubota	1
8	34924	(010000–)	Swivel, Control .250–20 .25Dia	2
9	32297	(010000–)	Spacer	1
10	25068	(010000–)	Plate, Pivot Throttle	1
11	76979	(010000–)	Bearing, Thrust	2
12	25029	(010000–)	Rod, Injection Pump	1
13	14601	(010000–)	Balljoint.250–28	3
14	42196	(010000–)	Rod–Thrd, Full .25–28	1

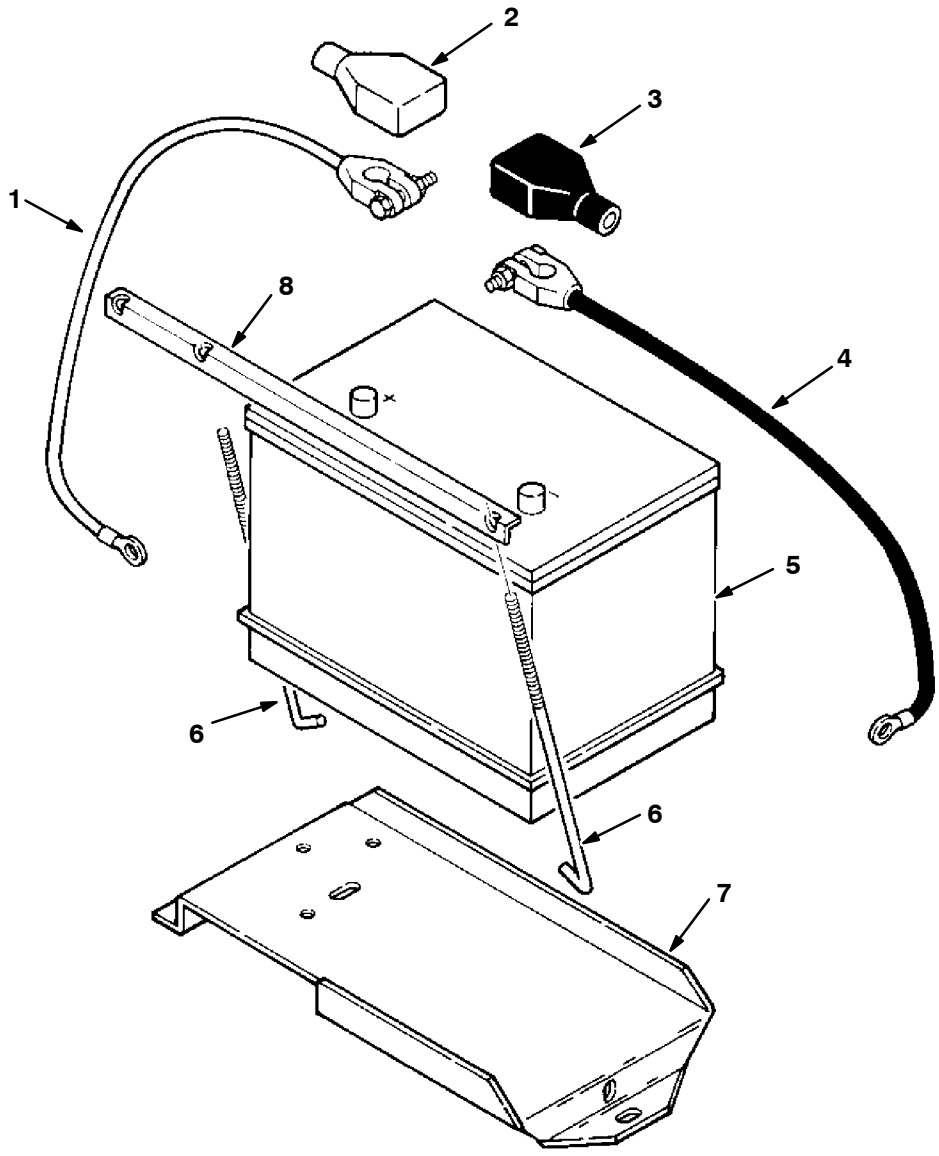

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Fig. 25 – Battery Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	34823	(010000–)	Cable, Batt. Pos. 33”L	1
2	68873	(010000–)	Boot,Batt.Term. 1–2Ga. Red	1
3	68872	(010000–)	Boot,Batt.Term.1–2Ga. Black	1
4	34821	(010000–)	Cable, Batt, Neg. 36”L	1
5	10136	(010000–)	Battery, 12V, Cc Amps:625 Wet	1
6	13015–1	(010000–)	Bolt,Hold Down,Battery,10.0 Lg	2
7	34283	(010000–)	Tray, Battery Retaining	1
8	16700	(010000–)	Angle, Battery Hold Down	1

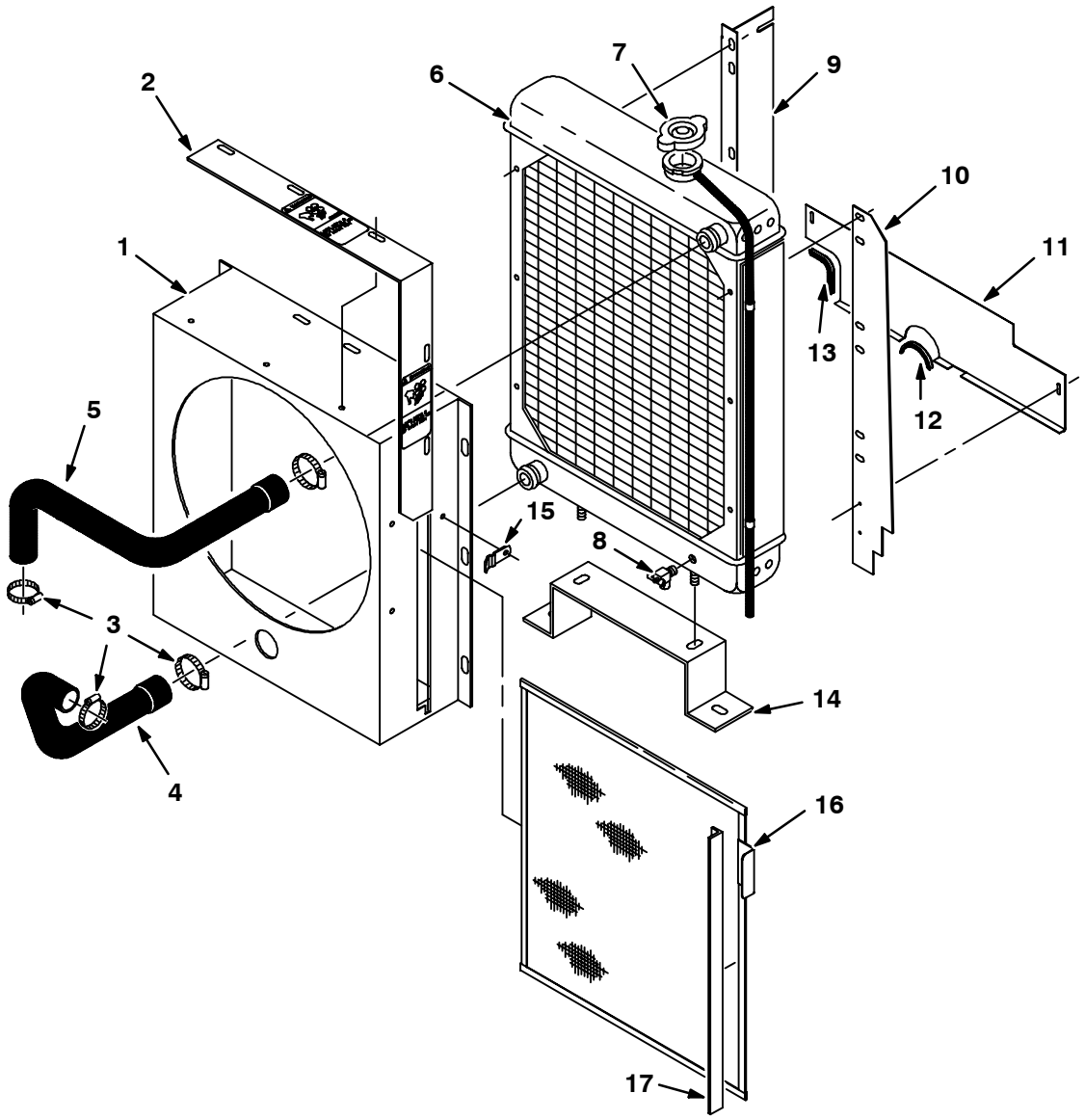


Fig. 26 – Radiator Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35463	(010000–)	Panel Wldt, Shroud, Fan Kubota	1
2	34987	(010000–)	Wrap Fan Shroud	1
3	11531	(010000–)	Clamp, Wormdrive, 1.06– 2.00D	4
4	25081	(010000–)	Hose, Radiator, Lower	1
5	25082	(010000–)	Hose, Radiator, Upper	1
6	50605	(010000–)	Radiator, Modine#1A 14315 D	1
7	48655	(010000–)	Cap,Radiator–Purchased	1
8	51305	(010000–)	Drain Cock,.25Npt Wh#120 Angl	1
9	34927	(010000–)	Panel Rh Radiator	1
10	34926	(010000–)	Panel Lh Radiator	1
11	35974	(010000–)	Angle, Recirculation	1
12	62170–3	(010000–)	Molding, Trim 16Ga&Thinnr 4.4	1
13	59118–4	(010000–)	Molding, Trim 16Ga&Thinnr 7.0	1
14	34989	(010000–)	Mount,Radiator	1
15	35471	(010000–)	Spring, Latch Screen	1
16	35470	(010000–)	Screen Wldt	1
17	36197	(010000–)	Seal, Fan Shroud	1

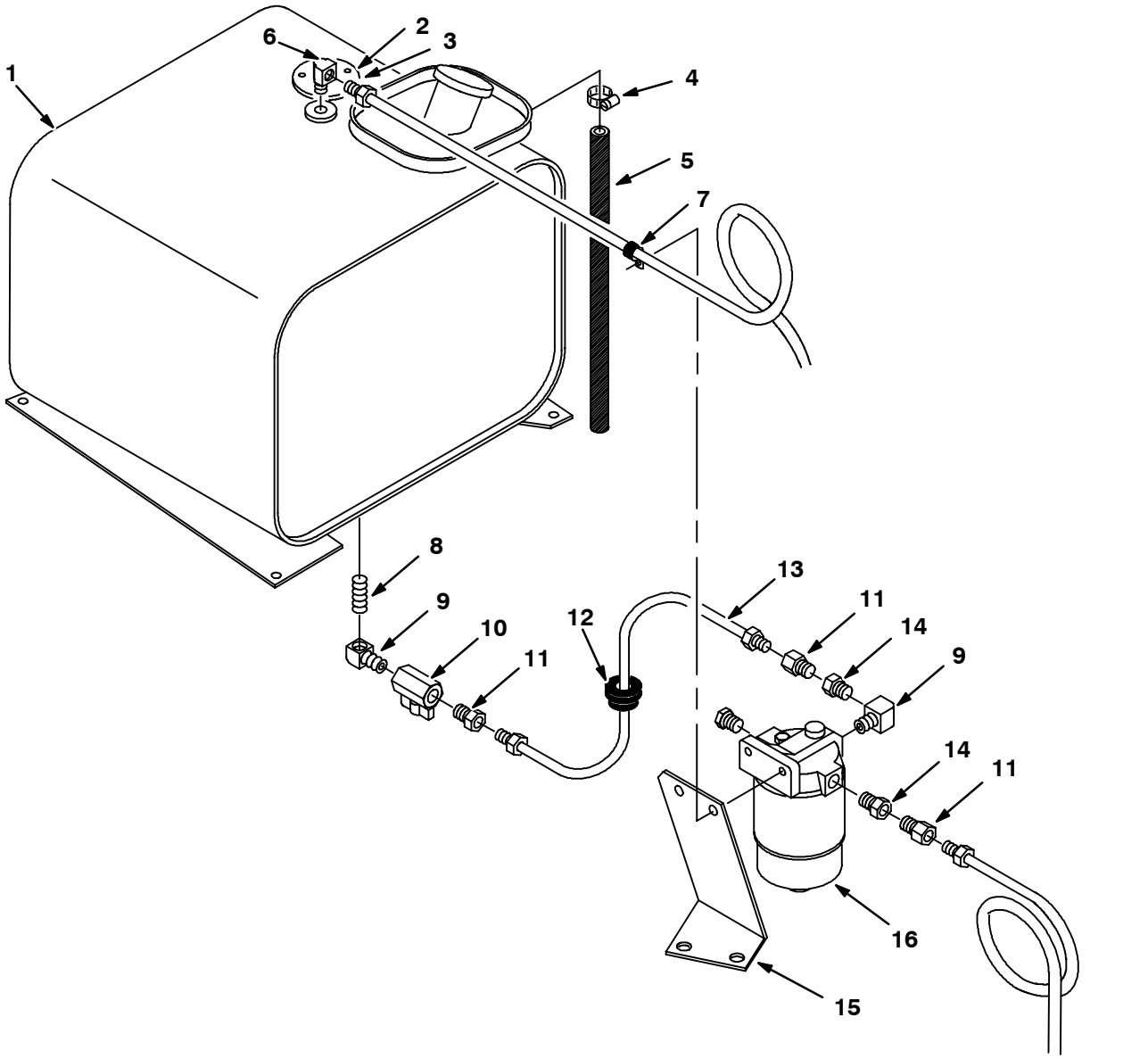


Fig. 27 – Fuel Tank Group

Key	TENNANT Part No.	Machine Serial Number		Description	Qty.
1	34220	(010000–	)	Tank Fuel	1
2	07873	(010000–	)	Send Unit	1
3	14131	(010000–	)	Gasket, 2.7D 1.5B.12T 5/ 2.1Bc	1
4	54333	(010000–	)	Clamp–Wormdrive, 0.31– 0.88D	1
5	34258	(010000–	)	Hose, Fuelline, .50Id X 14.5Lg	1
6	15555	(010000–	)	Ftg–Brs	E90
If04/Pm02	1				
7	46236	(010000–	)	Clamp–Cable, 0.25Dia 0.56Wth	1
8	48144	(010000–	)	Ftg,Pipe,Nip.Blk0.12Ptx 1.50Lg	1
9	11984	(010000–	)	Ftg,Brass,Elb,02Npt–02Npt	2
10	08873	(010000–	)	Valve, Ball–.12Npt Pfpf L	1
11	40585	(010000–	)	Ftg–Brs Str If05/Pm02	3
12	09280	(010000–	)	Grommet,Rbr,0.56Id,For .16Matl	1
13	33820	(010000–	)	Fuelline Assy, .312Od	1
14	17414	(010000–	)	Ftg–Hyd Str Pm04/Pf02	2
15	34958	(010000–	)	Brkt, Fuel Filter	1

16	06868	(010000–)	Filter, Fuel, Water Separator	1

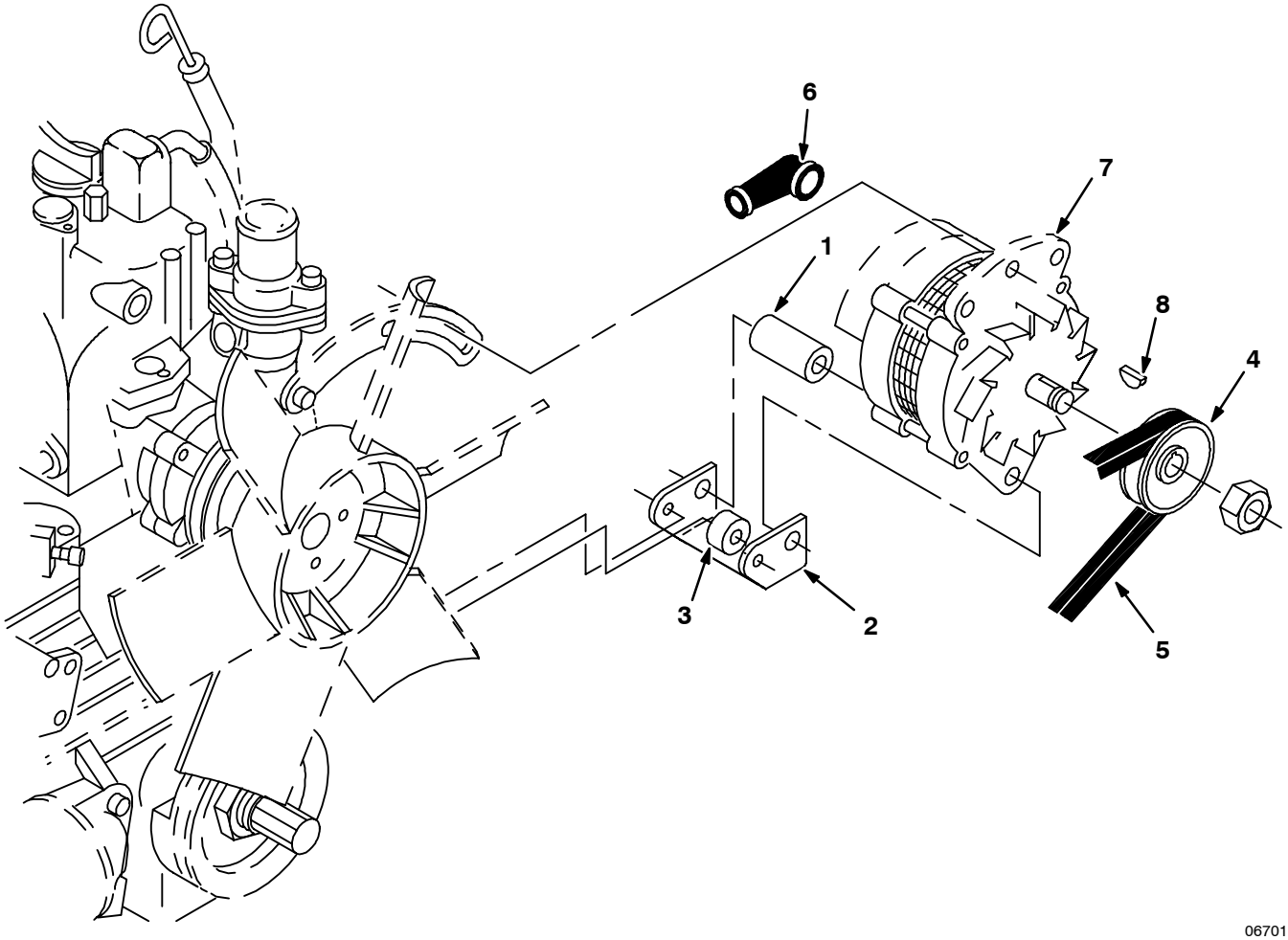
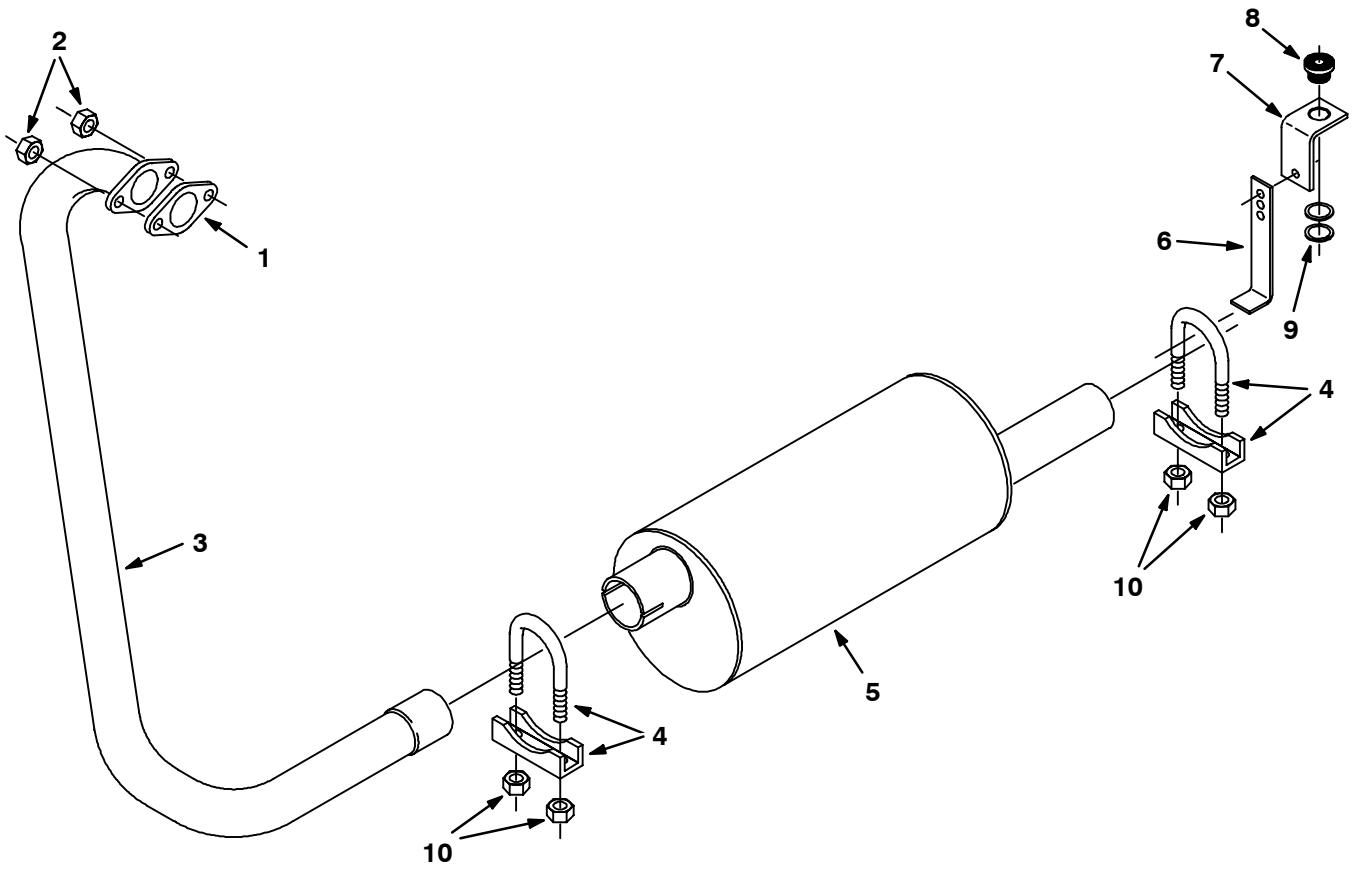


Fig. 28 -- Alternator Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	33647	(010000–)	Sleeve, .56B, 1.00D, 1.930Lg	1
2	33641	(010000–)	Bracket, Alt. Kubota	1
3	02965	(010000–)	Sleeve, 0.375B,1.00 D, .53 Stl	1
4	54914	(010000–)	Sheave	1
5	04022	(010000–)	V–Belt, A–42	1
6	34065	(010000–)	Boot, Packard Electric (Altern	1
7	03233	(010000–)	Alternator, 37 A. Sealed Brush	1
8	00500–5	(010000–)	Key–Wdruff 0.12 0.62	1



06708

Fig. 29 – Muffler Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	34908	(010000–)	Gasket,Tailpipe	1
2	39312	(010000–)	Nut Hx Std M10X1.5	2
3	25076	(010000–)	Pipe, Exhaust	1
4	05881	(010000–)	Clamp–Muffler,For 2.00 Od Tube	2
5	52906	(010000–)	Muffler–Exh, Rnd	1
6	47990	(010000–)	Brkt–L,5.2 1.2 .12 .5L3/.34H	1
7	47989	(010000–)	Brkt–L,2.6 2.0 .19 1.5L2/Hls	1
8	54274	(010000–)	Isolator–Vibration,60 Lb.Ratng	1
9	09832	(010000–)	Washer, .812B 1.06D .06Cr.	2
10	87435	(010000–)	Nut–Hxflexloc .31–18 Reg Pltd	4

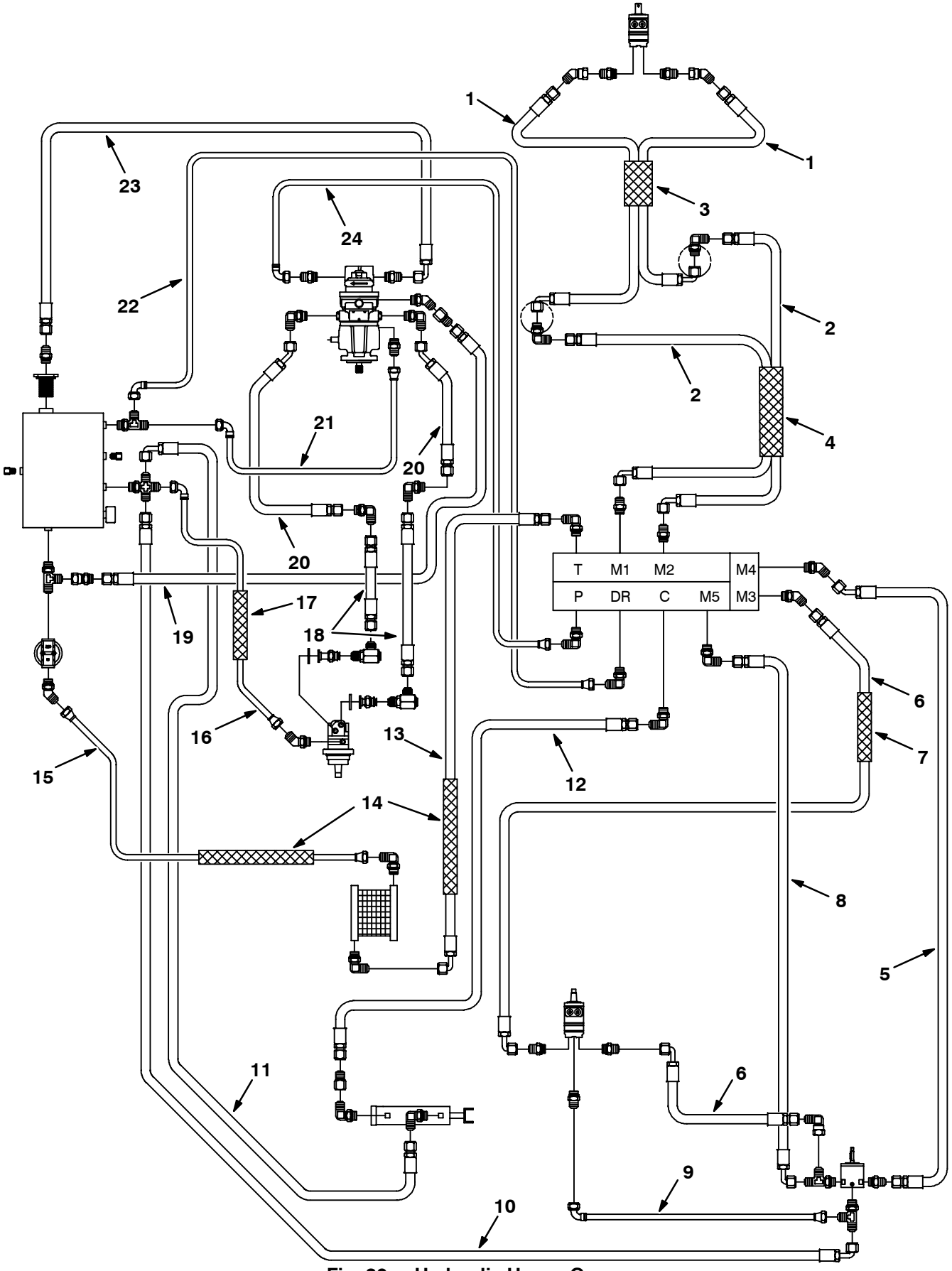


Fig. 30 -- Hydraulic Hoses Group

06709

Fig. 30 – Hydraulic Hoses Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35486	(010000–)	Hose–Hyd Med06 Jf/J9	2
2	31594	(010000–)	Hose–Hyd Med06 Jf/J9	2
3	82830	(010000–)	Sleeve–Nyln #24 16.0L	1
4	34313	(010000–)	Sleeve, Hyd.Hose 1.75Id X 67.0	1
5	16463	(010000–)	Hose–Hyd Med08 Jf/J4	1
6	35485	(010000–)	Hose–Hyd Med08 Jf/J9	2
7	34329	(010000–)	Sleeve–Nyln #28 20.0L	1
8	34355	(010000–)	Hose–Hyd Med08 Jf/J9	1
9	02549	(010000–)	Hose–Hyd Low04 Jf/J9	1
10	34420	(010000–)	Hose–Hyd Low04 Jf/J9	1
11	31600	(010000–)	Hose–Hyd Low04 Jf/J9	1
12	82814	(010000–)	Hose–Hyd Med04 Jf/Jf	1
13	31720	(010000–)	Hose–Hyd Med12 Jf/J9	1
14	35484	(010000–)	Sleeve–Nyln #24 45.0L	2
15	35487	(010000–)	Hose–Hyd Low12 Jf/Jf	1
16	34388	(010000–)	Hose–Hyd Low04 Jf/J9	1
17	34054	(010000–)	Sleeve–Nyln #12 25.0L	1
18	08024	(010000–)	Hose–Hyd Hi 12 Jf–J4	2
19	34376	(010000–)	Hose–Hyd Med06 Jf/Jf	1
20	57951	(010000–)	Hose–Hyd Hi 12 Jf/J4	2
21	34378	(010000–)	Hose–Hyd Low04 Jf/J9	1
22	82806	(010000–)	Hose–Hyd Low04 Jf/J9	1
23	34351	(010000–)	Hose–Hyd Suc20 Jf/J9	1
24	35488	(010000–)	Hose–Hyd Med12 Jf/Jf	1

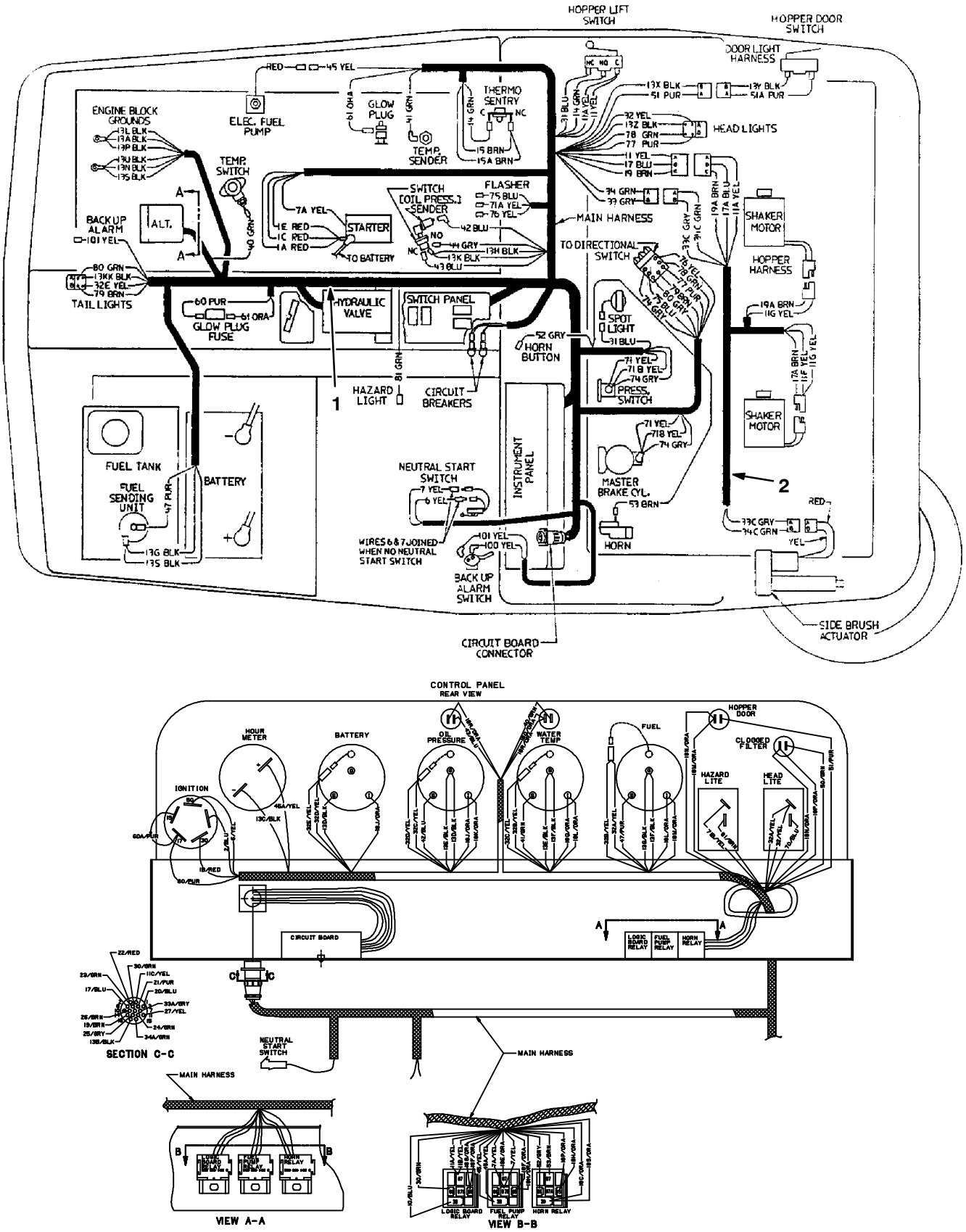


Fig. 31 – Wire Harnesses Group, Low Dump

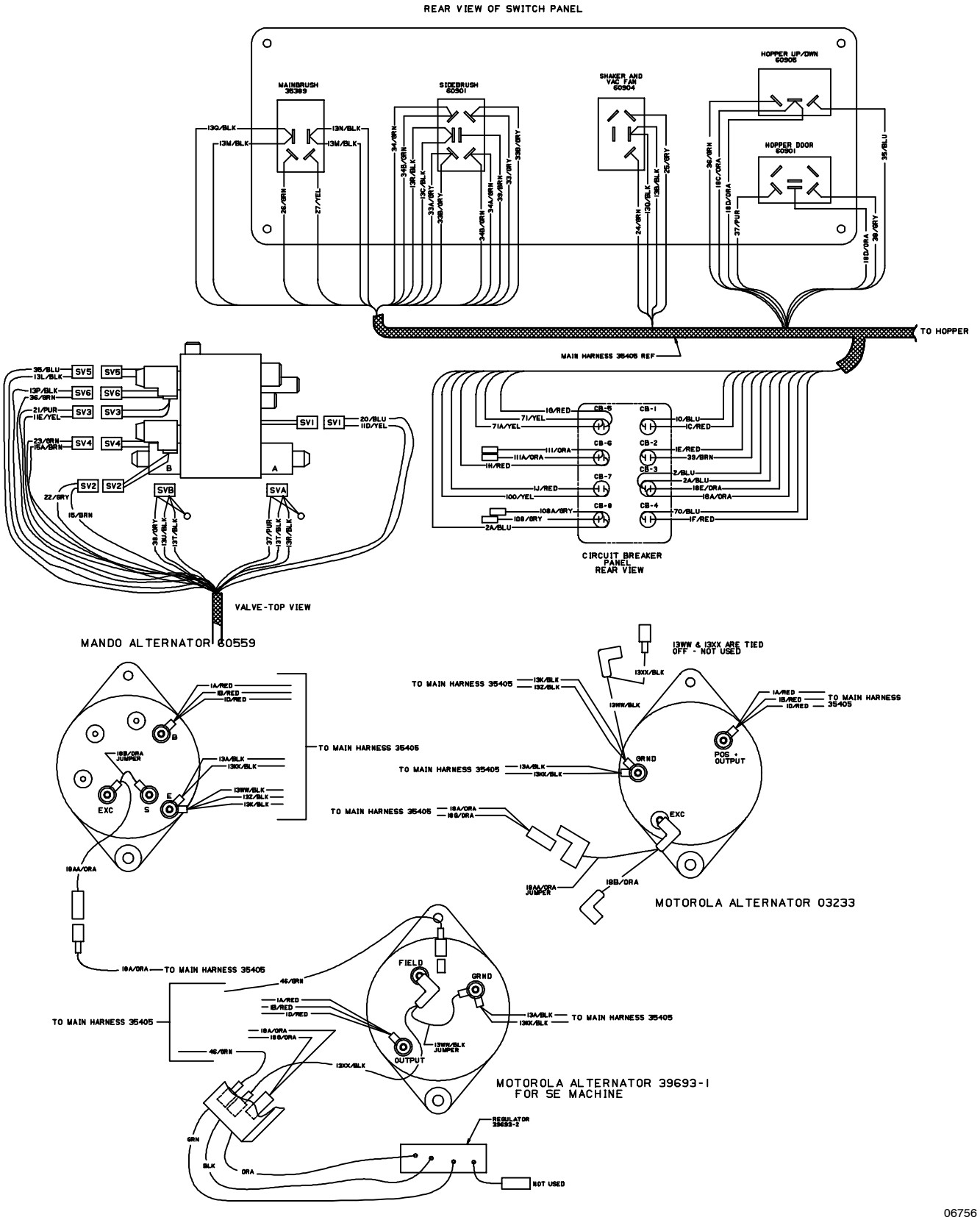
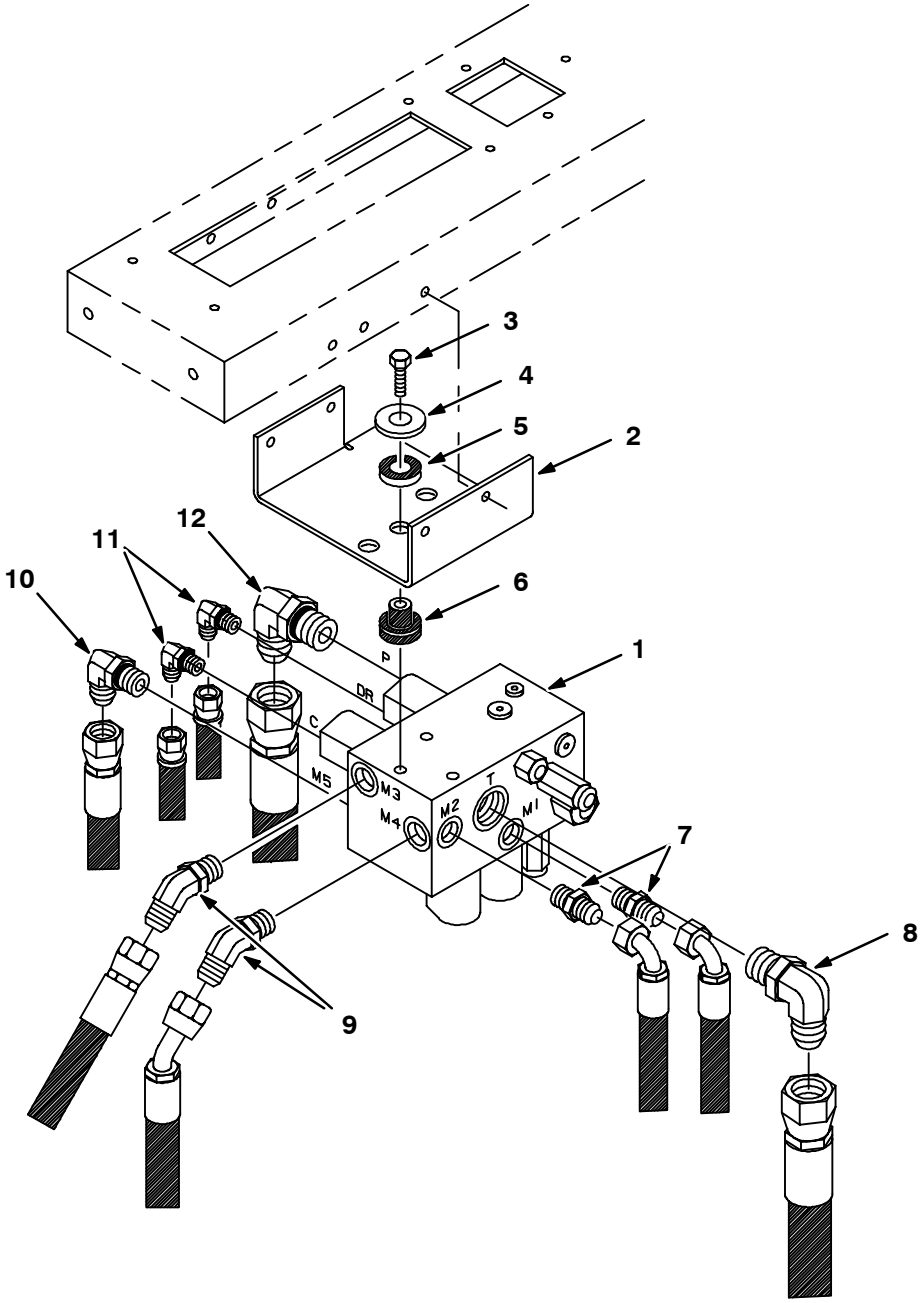


Fig. 31 – Wire Harnesses Group, Low Dump

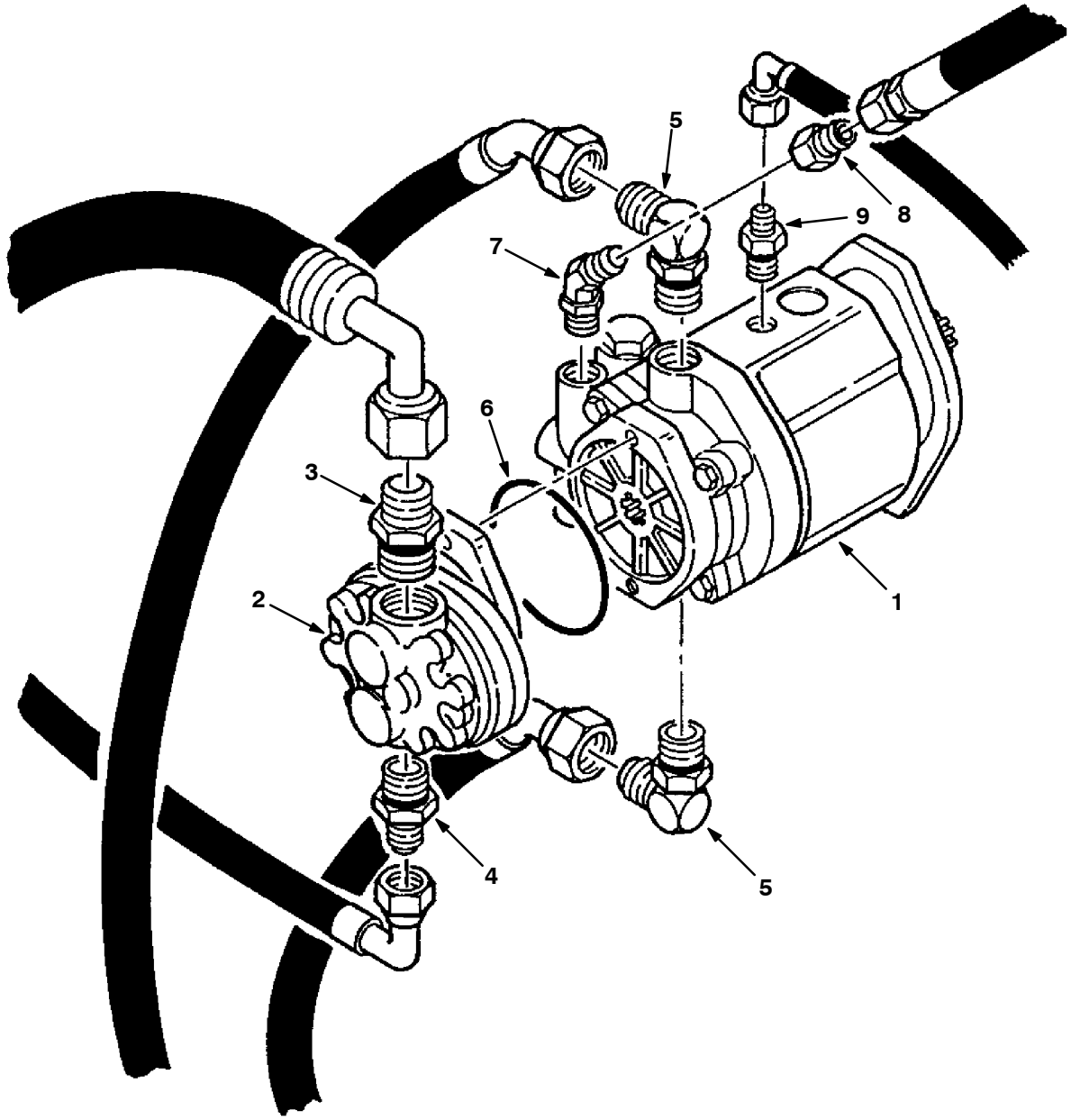
Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35405	(010000–)	Harness, Main	1
2	36092	(010000–)	Harness, Hopper	1



06710

Fig. 32 -- Control Valves Group

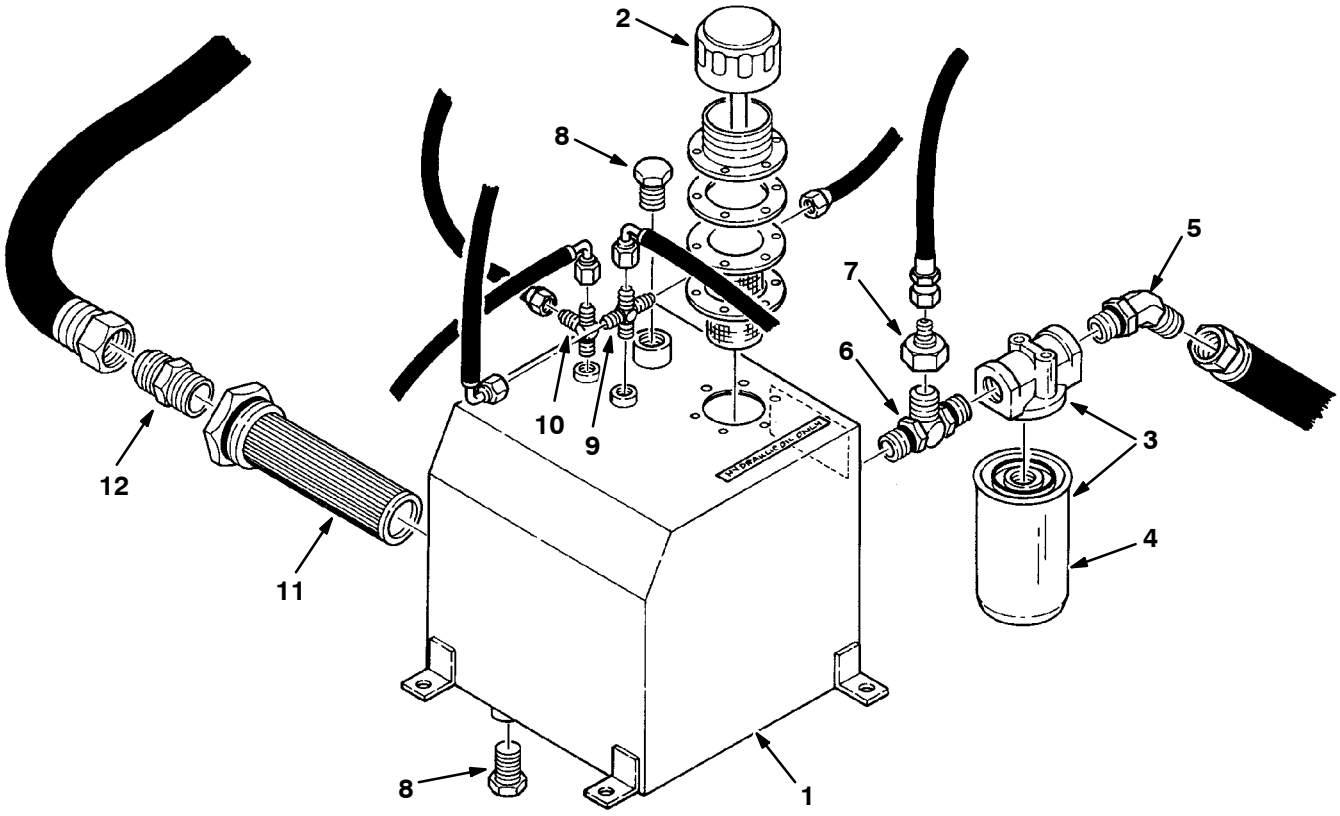
Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35492	(010000–)	Valve Hyd, Solenoid (See Hydraulic Components)	1
2	35385	(010000–)	Bracket Assy, Valve	1
3	46559	(010000–)	Scr–Hex .38–16X1.25 Nylon Loc	3
4	33948	(010000–)	Washer–Flt .38 Fender Pltd	3
5	62172	(010000–)	Ring	3
6	62173	(010000–)	Bushing, Isolator–Inner,Rbr.	3
7	56690	(010000–)	Ftg–Hyd Str Jm06/Om06	2
8	46481	(010000–)	Ftg–Hyd E90 Jm12/Om12	1
9	42226	(010000–)	Ftg–Hyd E45 Jm08/Om08	2
10	44868	(010000–)	Ftg–Hyd E90 Jm08/Om08	1
11	77097	(010000–)	Ftg–Hyd E90 Jm04/Om04	2
12	46481	(010000–)	Ftg–Hyd E90 Jm12/Om12	1



06711

Fig. 33 – Hydraulic Pumps Group

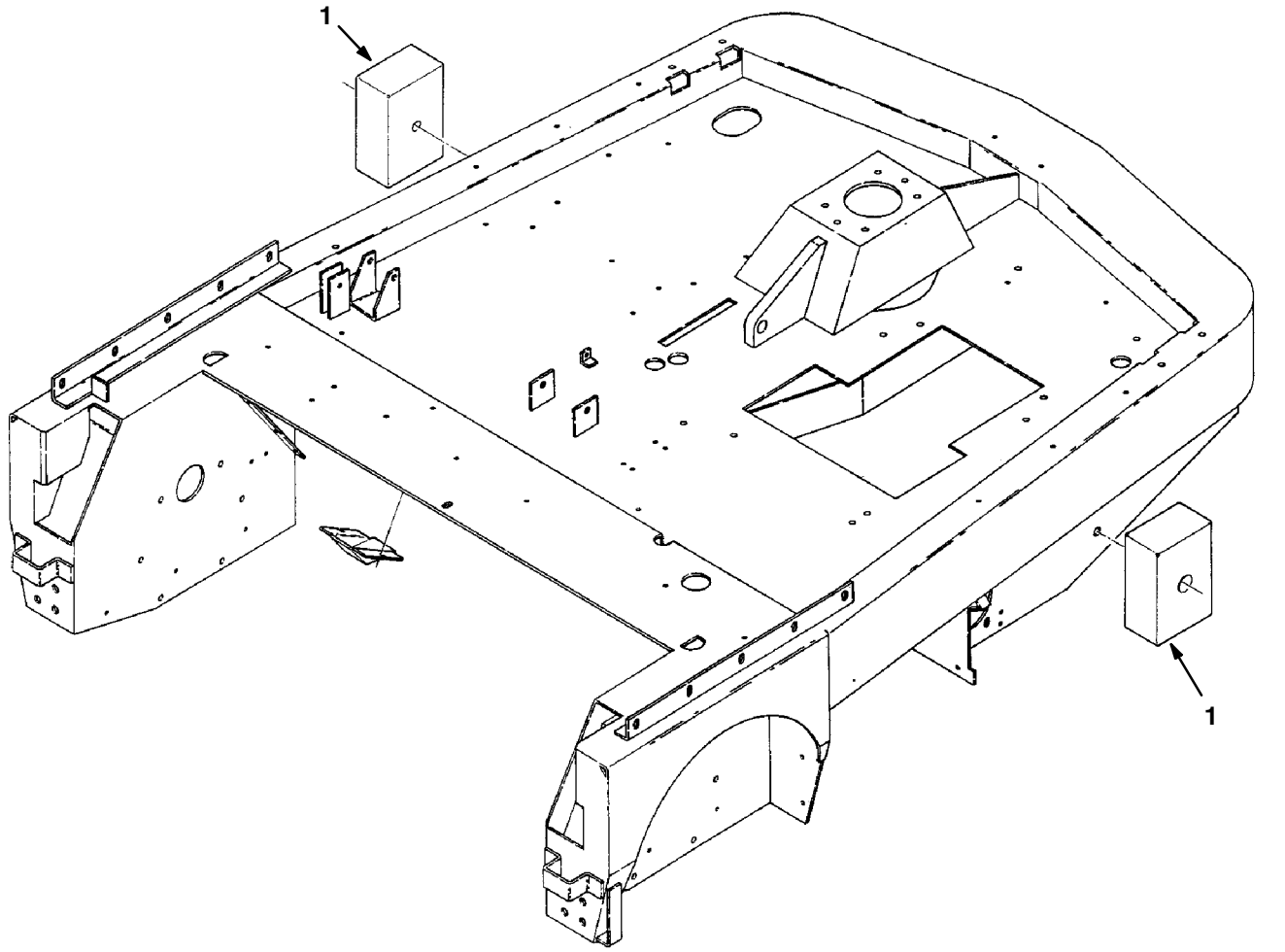
Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35730	(010000–)	Pump, Hyd Piston (See Hydraulic Components)	1
2	35490	(010000–)	Pump–Hyd, Gear (See Hydraulic Components)	1
3	67811	(010000–)	Ftg–Hyd Str Jm20/Om16	1
4	06750	(010000–)	Ftg–Hyd Str Jm12/Om10	1
5	46481	(010000–)	Ftg–Hyd E90 Jm12/Om12	2
6	65145–1	(010000–)	O–Ring Gland	1
7	42226	(010000–)	Ftg–Hyd E45 Jm08/Om08	1
8	47753	(010000–)	Ftg–Hyd Str Jm06/Jf08	1
9	55685	(010000–)	Ftg–Hyd Str Jm04/Om06	1



06712

Fig. 34 – Hydraulic Reservoir Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	16740	(010000–)	Reservoir Wldt, Hyd	1
2	82780	(010000–)	Breather,Hyd.Filler,Dip,5Psi	1
3	55619	(010000–)	Filter Assy, Spin–On 10Micron	1
4	55740	(010000–)	Filtr Element Ph	1
5	16081	(010000–)	Ftg–Hyd E45 Jm12/Om12	1
6	34396	(010000–)	Ftg–Tee 1.0Gom/1.06Om/1.06Om	1
7	34375	(010000–)	Ftg–Hyd Str Jm06/Jf12	1
8	40362	(010000–)	Ftg–Hyd Plg Om10	2
9	82802	(010000–)	Ftg–Hyd Crs Jm04/Om04	1
10	34390	(010000–)	Ftg–Hyd Tee Jm04Jmom	1
11	31613	(010000–)	Strainer–Hyd Suction 25–100–03	1
12	58858	(010000–)	Ftg–Hyd Str Jm20/Om20	1



06713

Fig. 35 – Counterweight Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35053	(010000–)	Counterweight	1

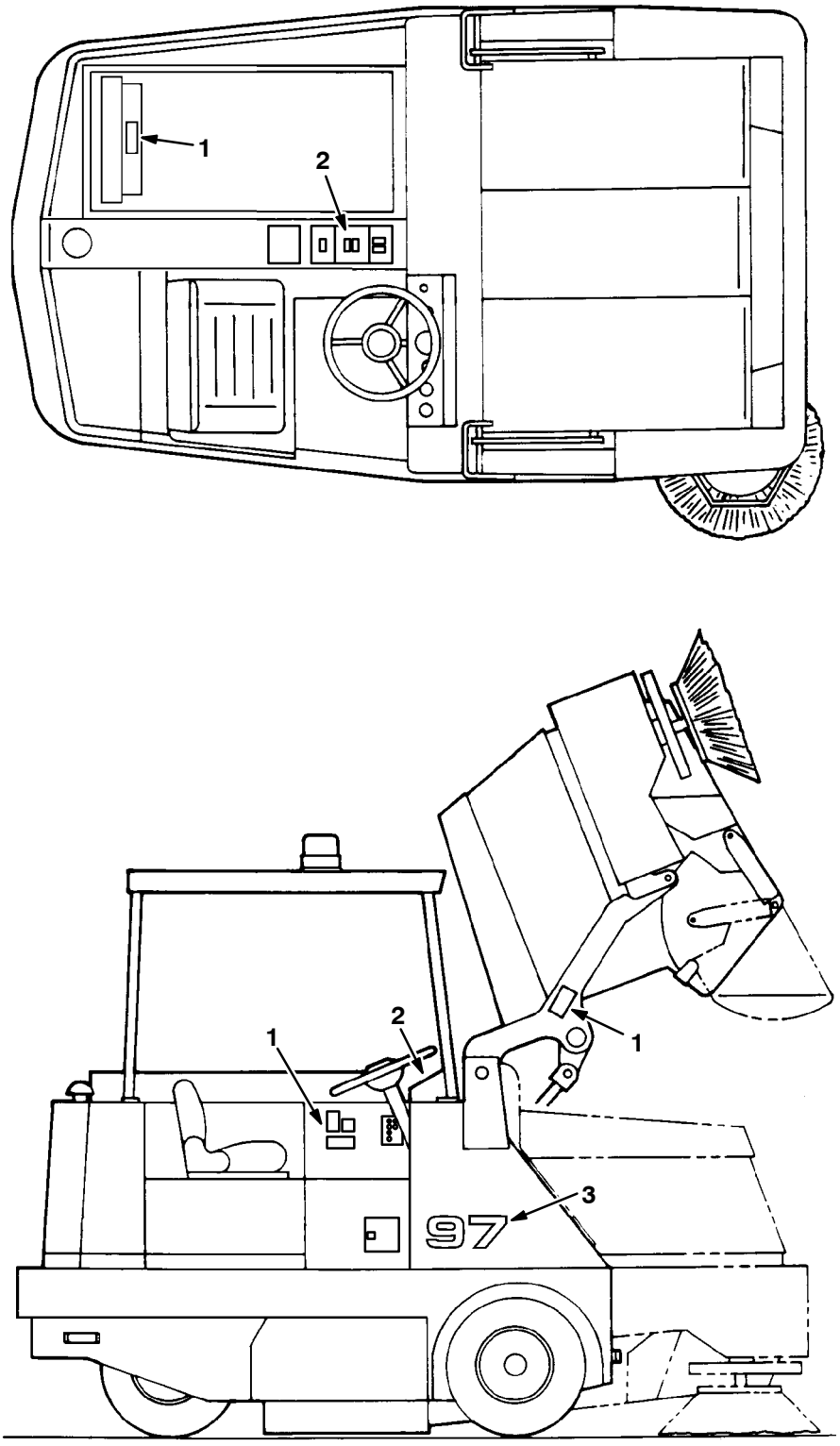


Fig. 36 – Labels Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	60874	(010000–)	Label Kit, 97 Complete	1
1	36220	(010000–)	Label Set, Hazard And Info 97	1
2	36160	(010000–)	Label Set, Operational 97	1
3	36237	(010000–)	Label, 97	2

SECTION 6

CONTENTS

NOTE: SECTION 6, MULTI–LEVEL DUMP MODEL PARTS*, lists repair parts for a Multi-level Dump model machine.*

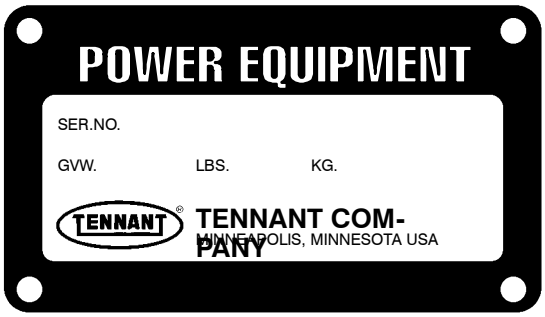
ORDERING REPAIR PARTS

The components used in this machine have been carefully selected for performance and safety. Use only TENNANT specified or equivalent parts.

To receive prompt service in filling of your parts orders, please direct all orders for parts with TENNANT part numbers to the TENNANT, and all orders for parts with vendor part numbers to the local supplier of the respective vendor.

When ordering parts, please furnish all of the following information:

1. Machine model number - shown on the machine data plate.



2. Machine serial number - shown on the machine data plate.
3. Power source - gasoline, LPG, diesel, electric.
4. Company name.
5. Shipping address.
6. Billing address.
7. Name, first and last - of person ordering parts.
8. Telephone number.
9. Purchase order number.
10. Part number, description, and quantity - of each item on the order.
11. Customer ID Number.

Do not order parts by key number or the figure number of the illustrated parts. Indented items indicate parts of assemblies. Standard hardware is furnished only when part of a purchased assembly. Please get hardware from a local hardware supplier.

If the old part cannot be identified, send it to us with the quantity needed specified on the order.

Any claim for loss or damage to a shipment in transit should be filed promptly against the transportation company making the delivery. Shipments will be complete unless the packing list or order acknowledgement indicate items back ordered.

If parts received are suspected to be incorrect or defective, please write, wire, or phone the TENNANT representative from whom you ordered the part. They will give authorization for return and/or handle replacement shipments when required.

SERIAL NUMBER INFORMATION EXPLANATION

Serial number listings are shown to indicate on which machines each part can be used. These listings are explained by the following examples:

(000000–) The part can be used on all machines.

(003342–) The part can be used on all machines beginning with the serial number listed.

(000000–004320) The part can be used on all machines up to and including serial number listed.

(004321–005678) The part can be used on all machines between and including the serial numbers listed.

Where xxxxxx's are listed in place of a serial number, it indicates a change was made but the exact serial number had not been established when the catalog went to press.

SI UNITS OF MEASURE (INTERNATIONAL SYSTEM)

Metric equivalents have been included, where applicable, throughout this parts catalog.

FASTENER STRENGTH IDENTIFICATION

Fasteners required to have high–strength qualities equivalent to SAE Grade 8 are identified throughout this catalog by the description GR 8. Unless identified by this description, all standard fasteners are SAE Grade 5.

(Specifications and design subject to change without notice.)

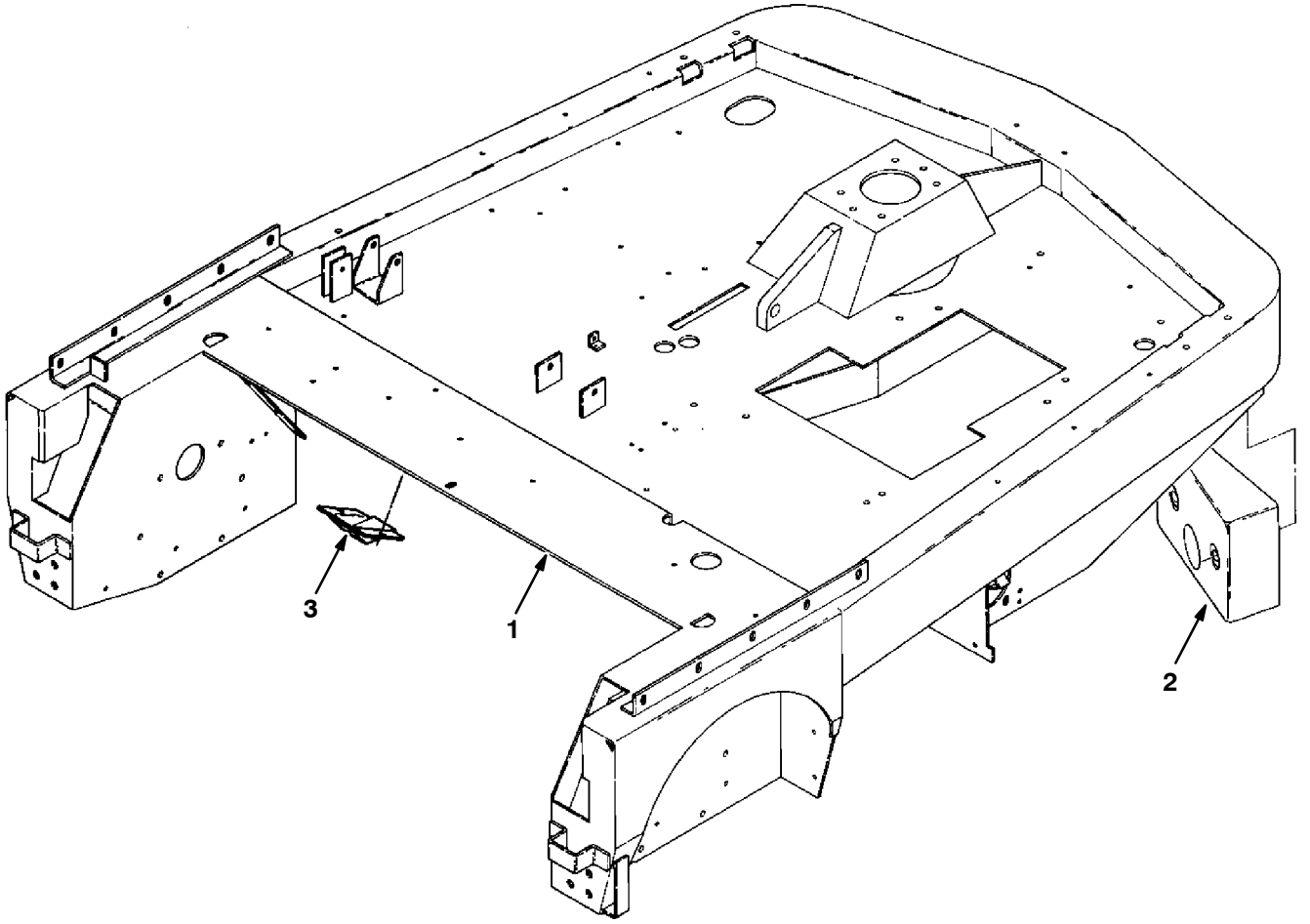
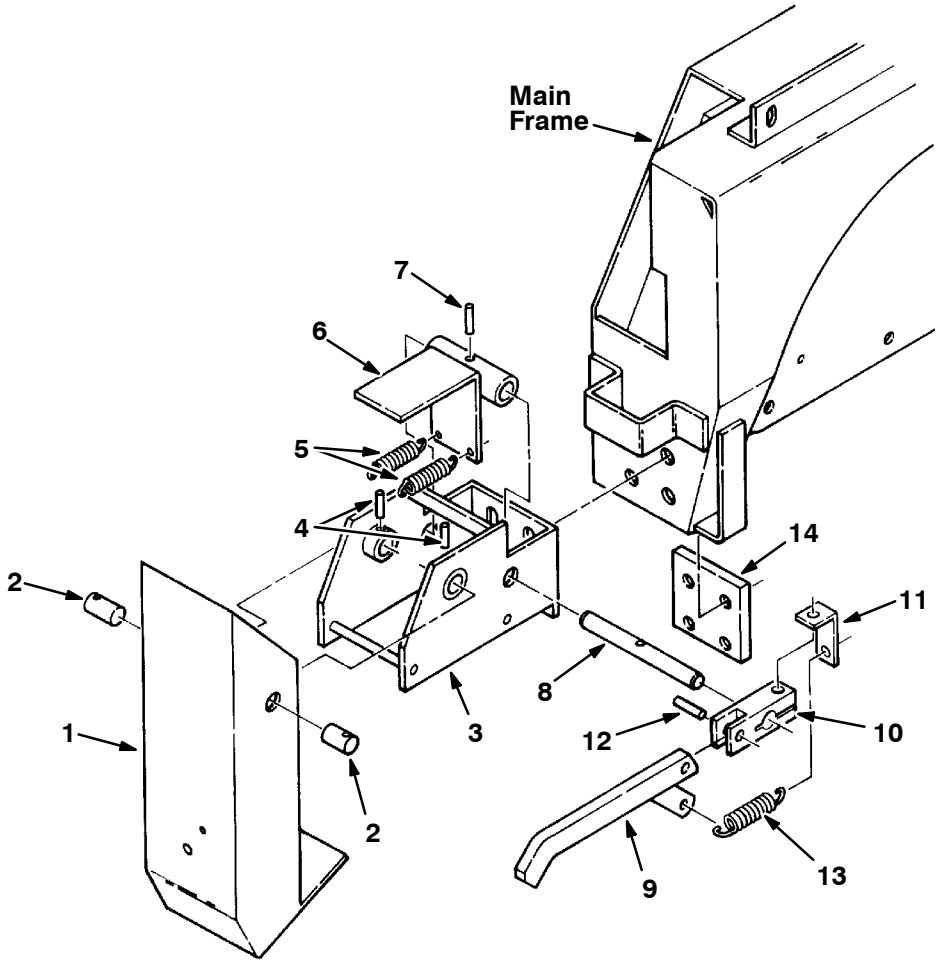


Fig. 1 – Main Frame Group, Multi–Level Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35214	(010000–)	Frame Wldt, Main, 97 MLD	1
2	52115	(010000–)	Counterweight	2
3	34064	(010000–)	Ramp Weldm'T, Cam	1



06722

Fig. 2 – Stabilizer Leg Assembly, Multi–Level Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	52564	(010000–)	Stabilizer Leg Assembly	1
1	52565	(010000–)	Leg, Safety	1
2	52568	(010000–)	Pin–Drld, .75Dia,3Li/.94Btwn L	2
3	52570	(010000–)	Bracket Weldm.,Leg Mount L	1
4	26239	(010000–)	Pin,Rol.25Odx1.25L,.250/.256 L	2
5	13352	(010000–)	Sprng,Tens,0.62Odx.08Wire2.0 L	2
6	52575	(010000–)	Bracket Weldm.,Stop L	1
7	23999–3	(010000–)	Pin,Rol.37Odx1.25L,.375/.382 L	1
8	52577	(010000–)	Shaft,Stabilizer Leg Stop Plat	1
8	09000	(010000–)	Lever Assy, Stablzr. Leg Stop	1
9	09933	(010000–)	Lever Weld, Stablzr.Leg Stop	1
10	08996	(010000–)	Block, Stab Leg Stop Arm Pivot	1
11	09934	(010000–)	Brkt–L,2.4 1.2 .12 1.0L2/.44H	1
12	08961	(010000–)	Pin, Spirol–.38X1.00 Stl Pltd	1
13	54222	(010000–)	Sprng,Tens,1.00Odx.09Wire 2.8L	1
14	52571	(010000–)	Strip,.50T4.0W 4.0L 4/.50–13Th	1

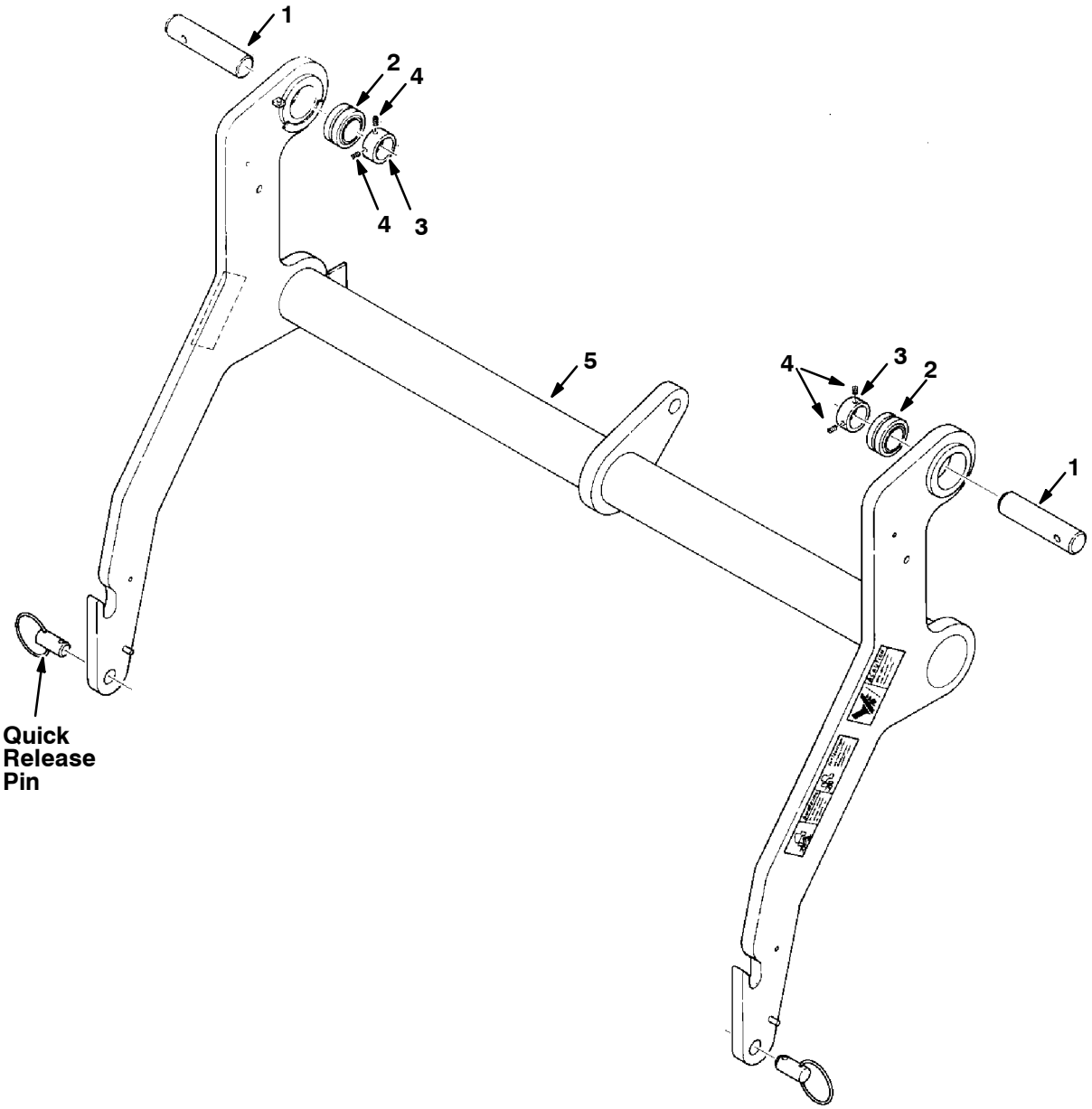
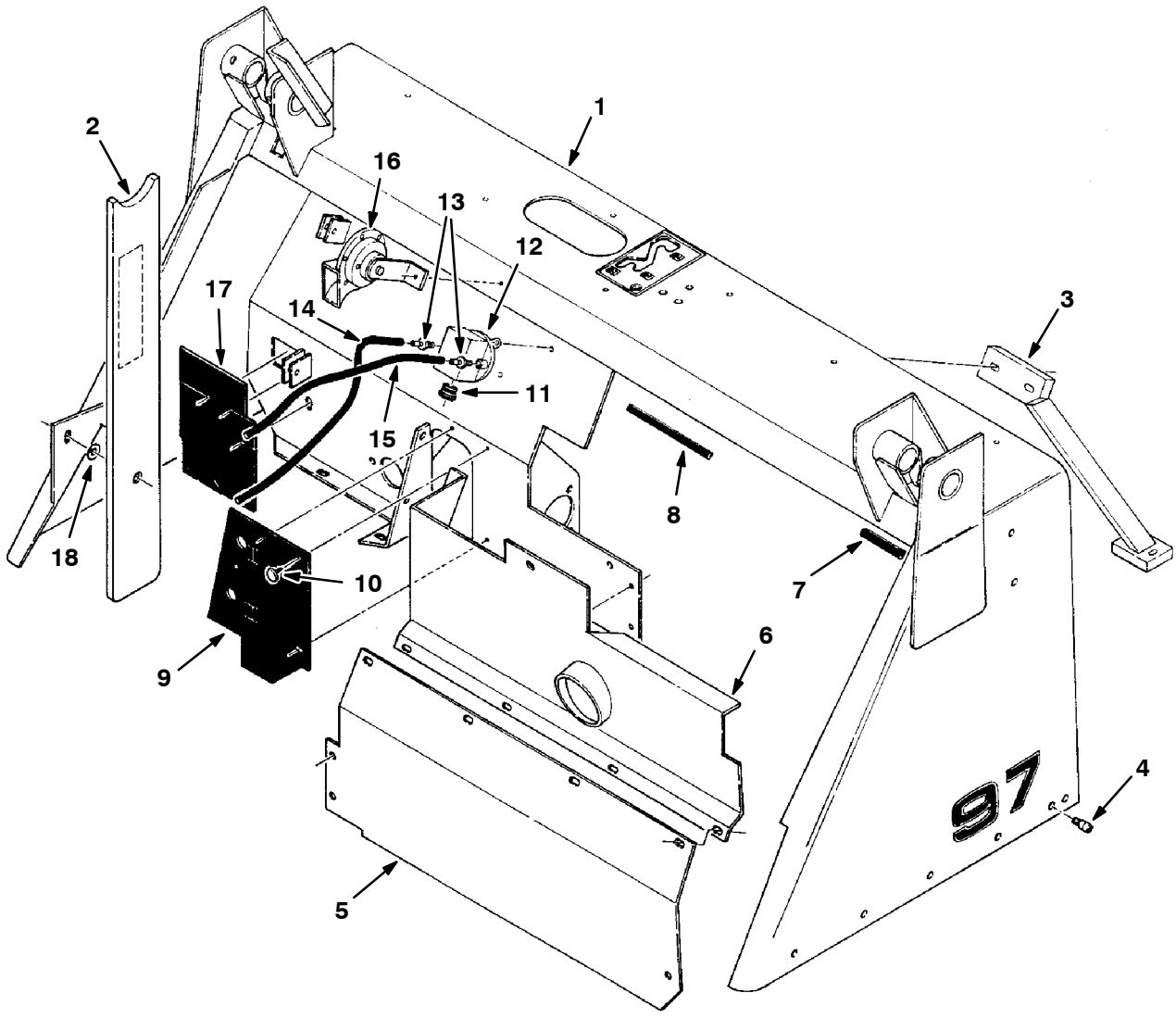


Fig. 3 – Hopper Lift Arms Group, Multi–Level Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	52062	(010000–)	Pin–Drld,1.50D 6.3L/ 1.25Btwn	2
2	42120–9	(010000–)	Bearing–Self Align,1.500 Bore	2
3	32816	(010000–)	Collar, Locking	2
4	50011	(010000–)	Scr–Set .25–20X0.38 Nylon Loc	4
5	60950	(010000–)	Arm, Lift, MLD W/Label	1



06725

Fig. 4 – Lintel Group, Multi–Level Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35379	(010000–)	Lintel Wldt, MLD	1
2	60948	(010000–)	Bar, Safety MLD W/Label	1
3	65054	(010000–)	Brace Weldm.,Lintel	1
4	36758	(010000–)	Scr–Shld .500Dx0.50L .38–16	2
5	36193	(010000–)	Panel, Front Lower,97	1
6	36187	(010000–)	Panel Wldt, Front Upper, MLD	1
7	50850	(010000–)	Molding, Trim 11–14Ga 3.2	1
8	62595	(010000–)	Molding, Trim 11–14Ga 7.0	1
9	35789	(010000–)	Cover, Rubber	1
10	36214	(010000–)	Clip, Dart	5
11	37031	(010000–)	Strainrelief,F/Flat Spt–3 Cord	1
12	34868	(010000–)	Switch, Pressure	1
13	40607	(010000–)	Ftg–Brs Str Bm03/Pm02	2
14	39780	(010000–)	Hose Vac.,Rubber, .16Id,40.0L	1
15	39780–1	(010000–)	Hose Vac.,Rubber, .16Id,28.0L	1
16	14138A	(010000–)	Horn, 12V	1
17	60708	(010000–)	Cover, Rubber, Cable	1
18	24227	(010000–)	Washer–Dished, .50 Std.Flat	1

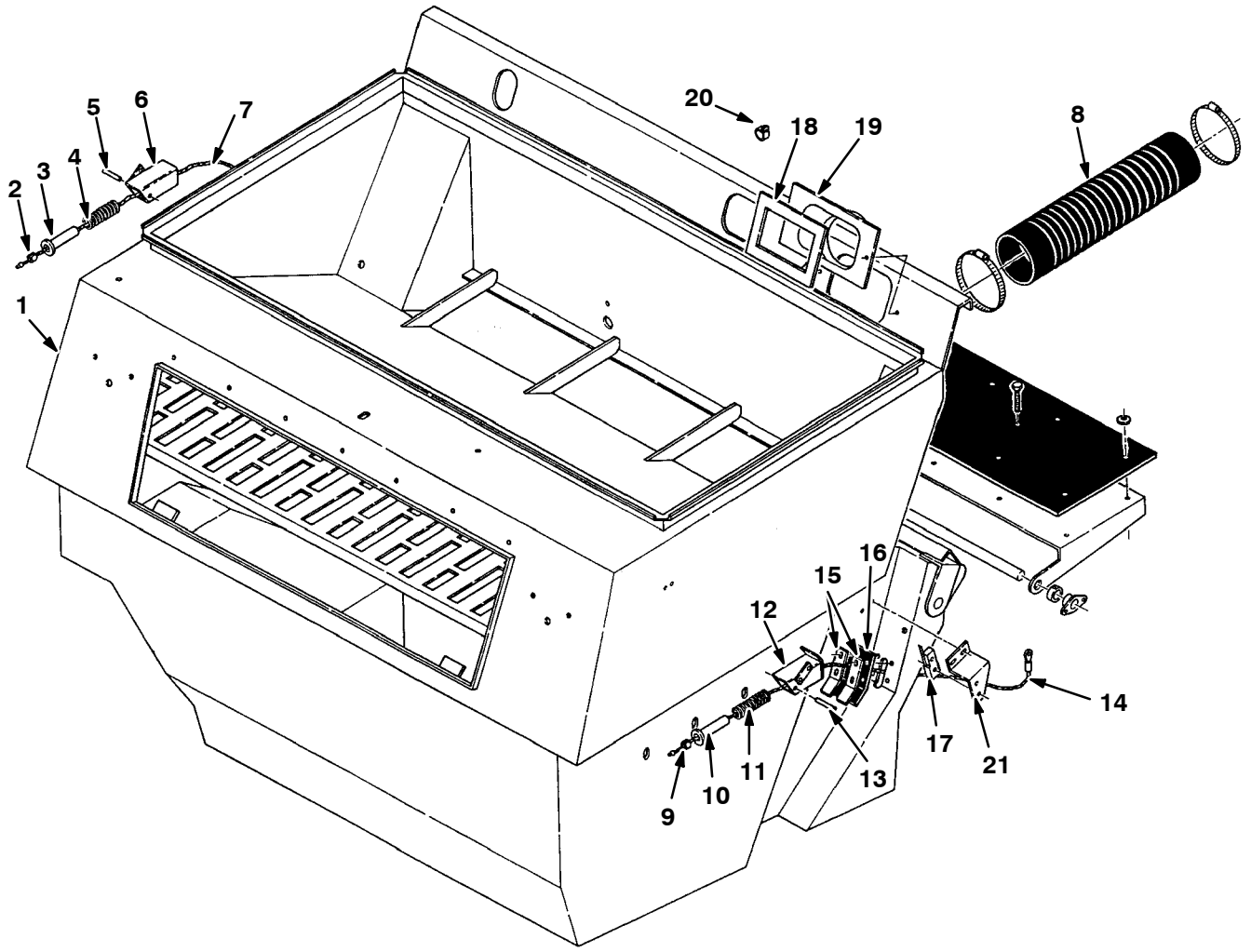


Fig. 5 -- Hopper Group, Multi–Level Dump

06726

Fig. 5 -- Hopper Group, Multi–Level Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35418	(010000–)	Hopper Wldt, MLD	1
	34593	(010000–)	Cable Assy, Upper Door, R.H.	1
2	34678	(010000–)	Sleeve,Cable	1
3	34683	(010000–)	Retainer Spring	1
4	39577	(010000–)	Sprng,Comp,0.62Idxfl.Wire 3.0L	1
5	23146	(010000–)	Pin,Roll,.18Odx1.62L,.187/.192	1
6	39583	(010000–)	Tube Weldm., Spring, R.H	1
7	34677	(010000–)	Cable Assy	1
8	34076	(010000–)	Hose Flex, 4.0Id X 30.0Lg	1
	34594	(010000–)	Cable Assy, Upper Door, L.H.	1
9	34678	(010000–)	Sleeve,Cable	1
10	34683	(010000–)	Retainer Spring	1
11	39577	(010000–)	Sprng,Comp,0.62Idxfl.Wire 3.0L	1
12	07878	(010000–)	Tube Wldt, Spring, Lh	1
13	23146	(010000–)	Pin,Roll,.18Odx1.62L,.187/.192	1
14	34677	(010000–)	Cable Assy	1
15	34681	(010000–)	Retainer Seal	4
16	34682	(010000–)	Seal,Neoprene	2
17	34639	(010000–)	Switch	1
18	34659	(010000–)	Gasket,Hopper Cover	1
19	34657	(010000–)	Transition.Hopper	1
20	06777	(010000–)	Clamp–Cable, 0.65Dia 0.50Wth	2
21	07877	(010000–)	Bracket, Switch	1

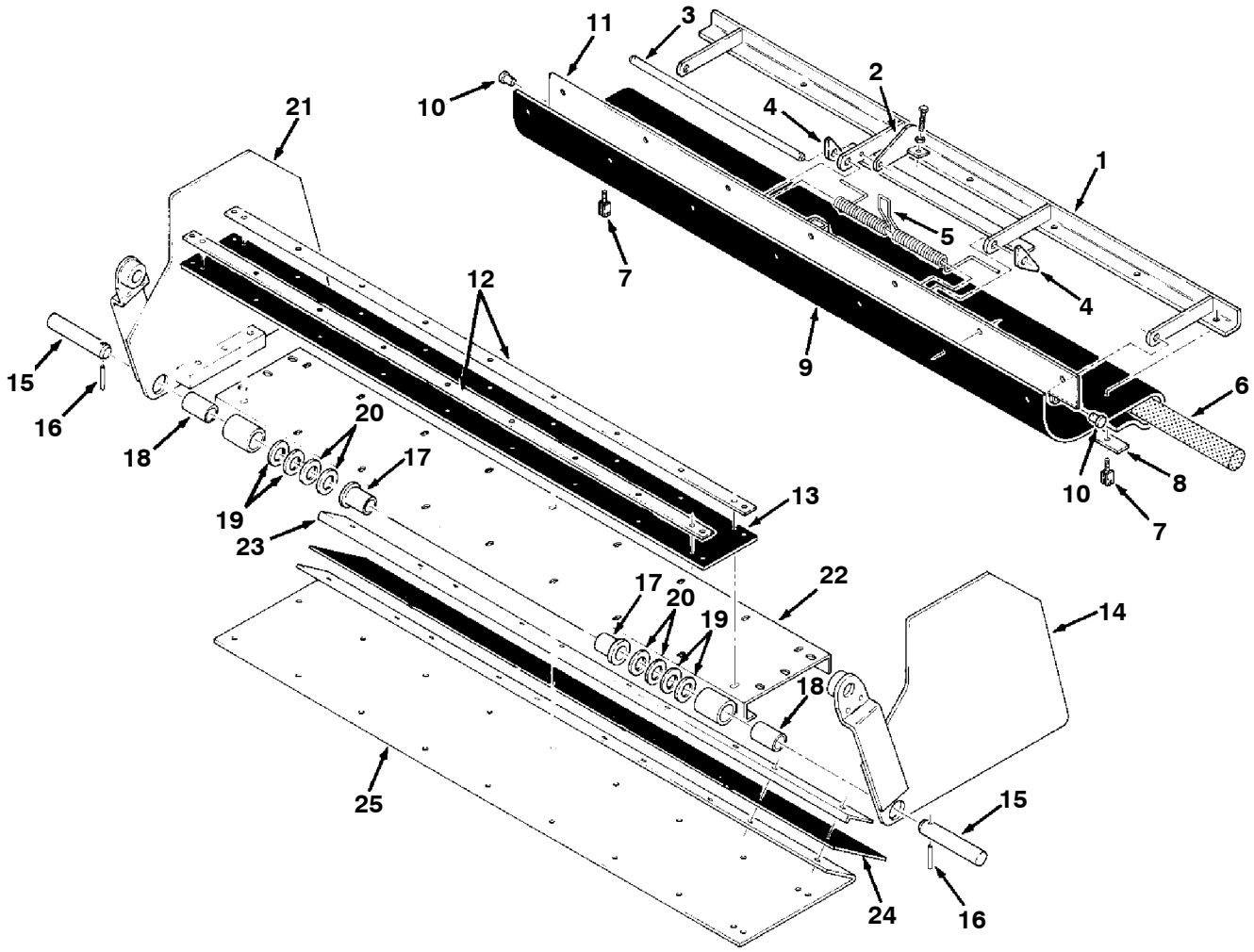
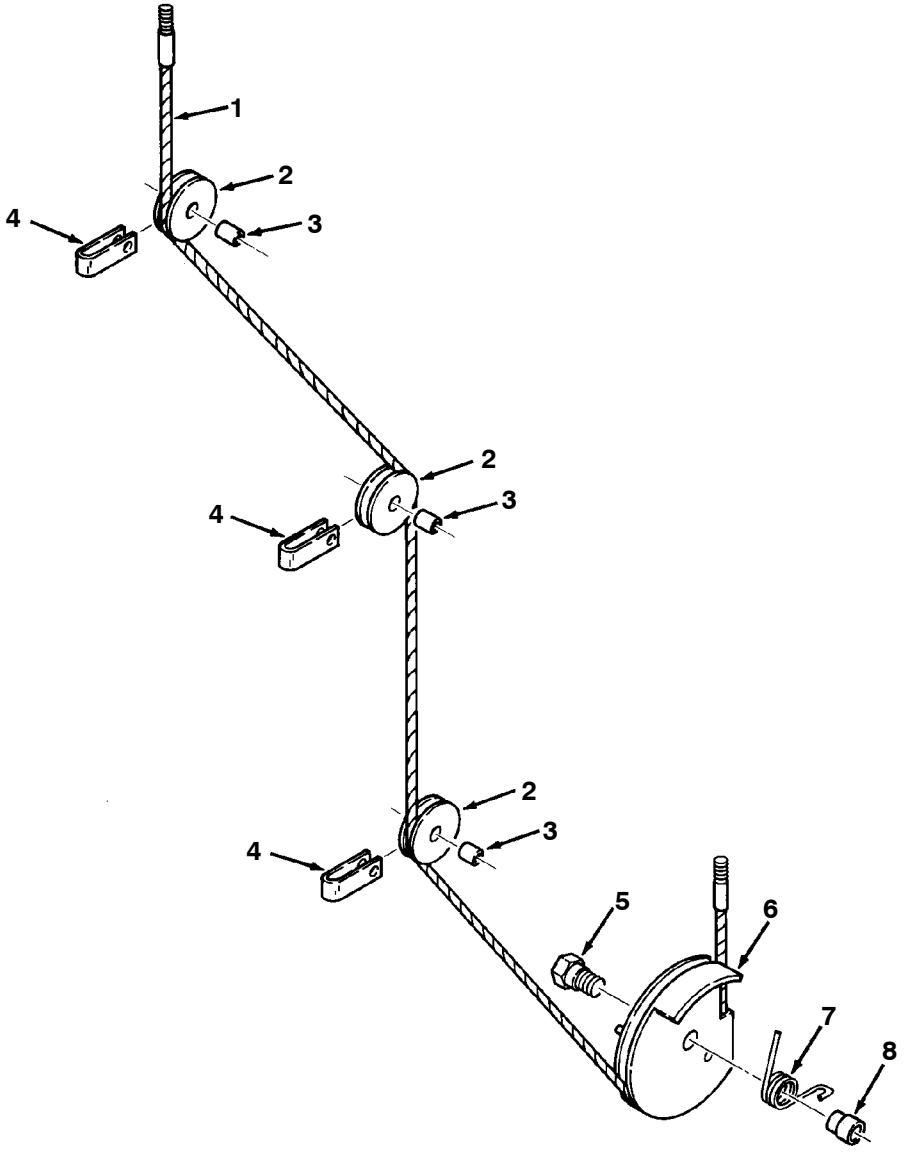


Fig. 6 – Hopper Hinged and Dump Doors Group, Multi–Level Dump

06727

Fig. 6 – Hopper Hinged and Dump Doors Group, Multi–Level Dump

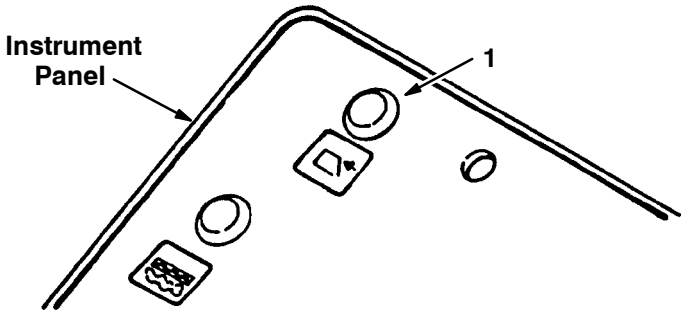
Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	39629	(010000–)	Hinge Weldt, Hopper Door	1
2	34744	(010000–)	Bracket Weldmt	1
3	39597	(010000–)	Rod, Hinge .50Diax15.25 2/.12H	1
4	39574	(010000–)	Stop, Door	2
5	39573A	(010000–)	Spring, Special,Upper Door 92	1
6	34690	(010000–)	Sponge Cord 1.5Dia	1
7	39598	(010000–)	Clevis Weldm., Cable	2
8	39587	(010000–)	Strip,.12T1.0W47.0L 7/.41Hcomc	1
9	34689	(010000–)	Seal,Door	1
10	51529	(010000–)	Pin,Clevis,0.50 Dia.X 1.25 Lg	2
11	39590	(010000–)	Hinge Weldm., Upper	1
12	34686	(010000–)	Strip Backing	2
13	34685	(010000–)	Seal	1
14	34672	(010000–)	Side Weldt,Lh Hopper Door	1
15	34670	(010000–)	Pin,Door Pivot	2
16	75302	(010000–)	Pin,Roll,.19Odx1.75L,.187/.192	2
17	34679	(010000–)	Brg. Flanged 1.00Bore	2
18	67029	(010000–)	Sleeve,1.000B 1.25D2.00 Bronze	2
19	32599	(010000–)	Washer,1.015B 1.75D .032 Crs	4
20	32598	(010000–)	Washer,1.060B 1.75D .125 Hrs	4
21	34673	(010000–)	Side Weldt,Rh Hopper Door	1
22	34674	(010000–)	Door Weld'T Lower	1
23	09928	(010000–)	Retainer, Hopper Lip	1
24	16784	(010000–)	Strip, Hopper Lip H.D. Neo.	1
25	34687	(010000–)	Plate Weld'T,Wear	1



06729

Fig. 7 – Speed Limiter Assembly, Multi–Level Dump

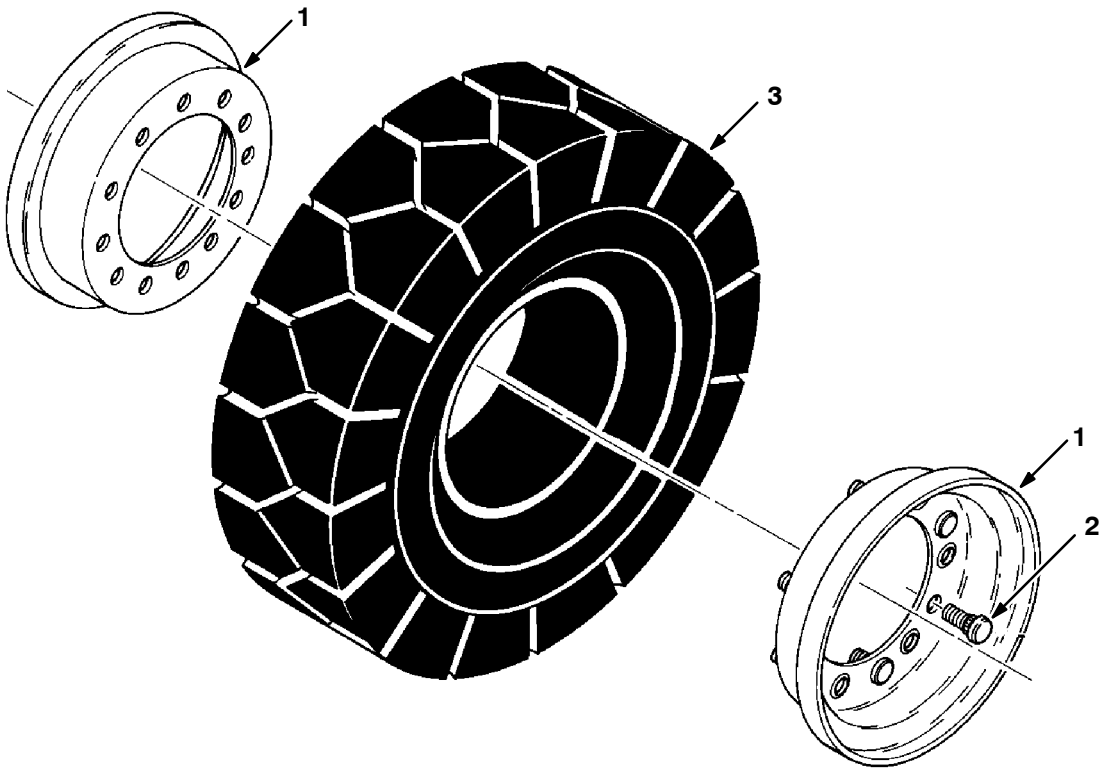
Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	62683	(010000–)	Speed Limiter Assy	1
1	62792	(010000–)	Cable Assy,Stud&Stud 44.5 Lg	1
2	46328	(010000–)	Roller, Cable	3
3	01275	(010000–)	Sleeve,.312B .49D.38 Crs	3
4	46327	(010000–)	Bracket, Cable Retainer	3
5	29087	(010000–)	Scr–Shld .437Dx0.15L .31–24	1
6	62664	(010000–)	Cam Weldm., Speed Limiter	1
7	20029	(010000–)	Sprng,Tors,0.81Idx.08Wire, 3T	1
8	62667	(010000–)	Bushing, Step	1



06731

Fig. 8 – Instrument Panel Group, Multi–Level Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	34820	(010000–)	Light, Indctr/Red 12V .1A Jmco	1



06733

Fig. 9 – Rear Wheel Assembly, Multi–Level Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	51705	(010000–)	Solid Tire and Wheel Assy	1
1	52775	(010000–)	Rim Kit,Tire, 92Jeep&Cont.	1
2	51355	(010000–)	Wheel Stud,0.50–20Thd,1.203Lg.	6
3	51711	(010000–)	Tire,20.50X6.00X9.00,Sld,B/Cat	1

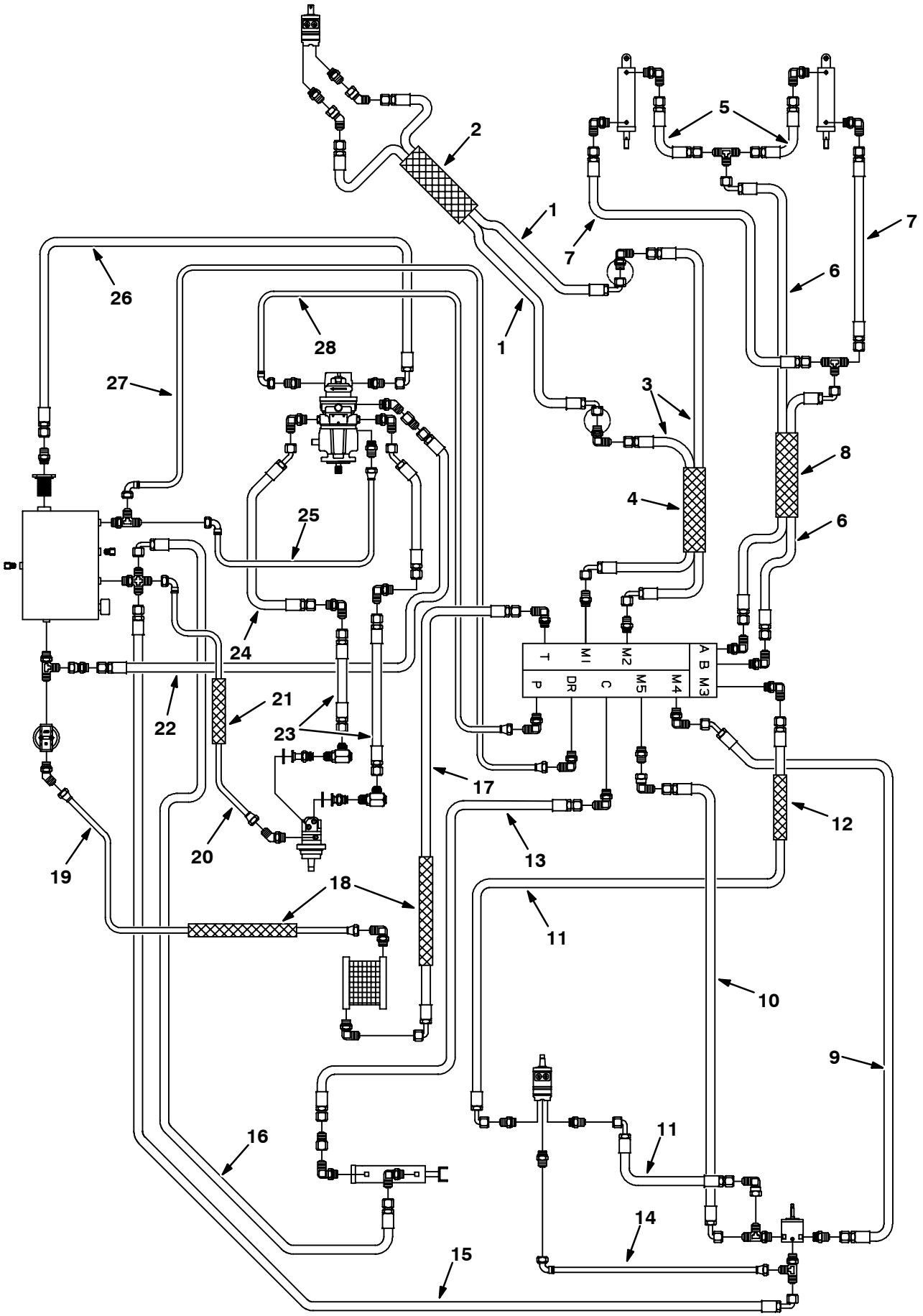
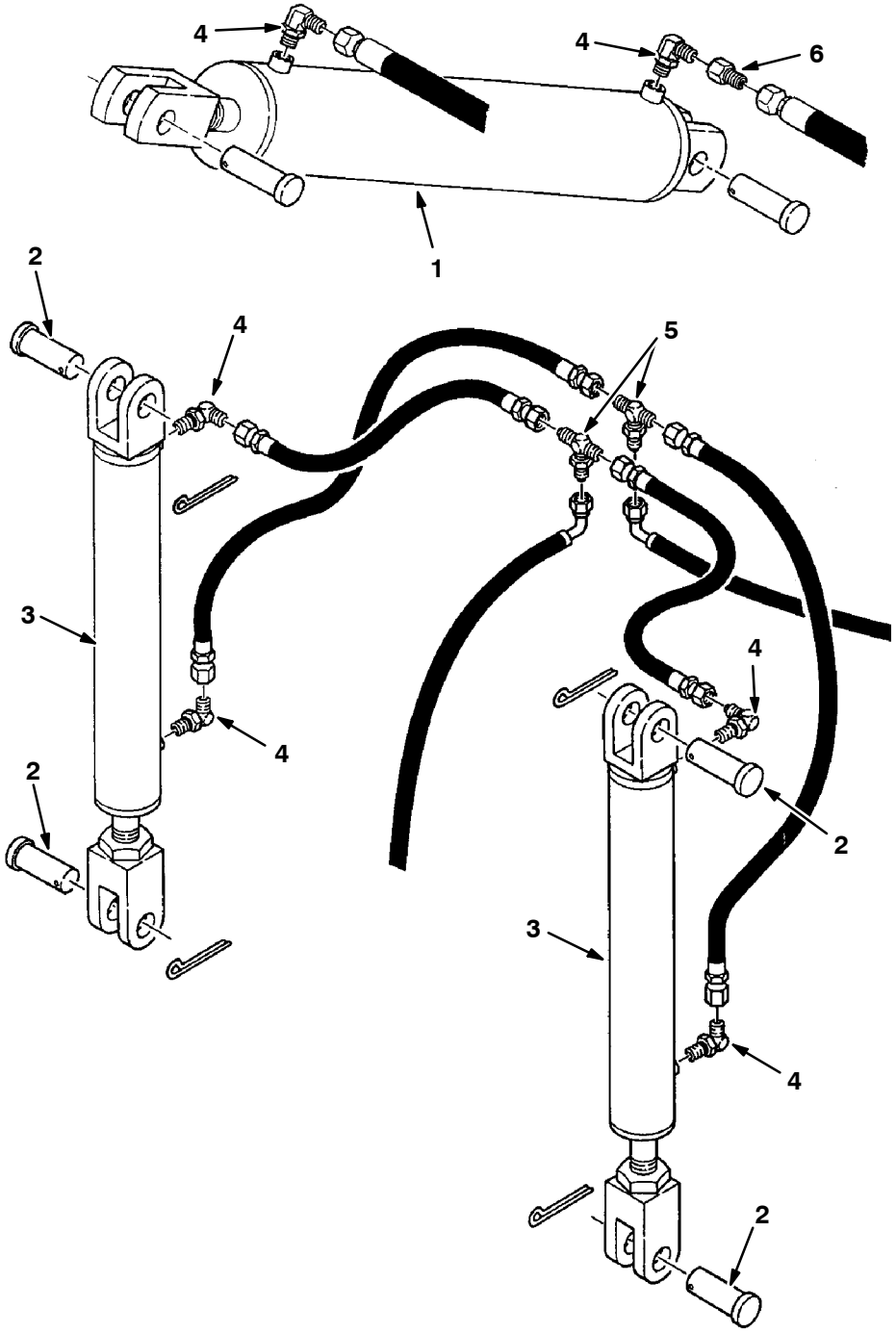


Fig. 10 – Hydraulic Hoses Group, Multi–Level Dump

06735

Fig. 10 – Hydraulic Hoses Group, Multi–Level Dump

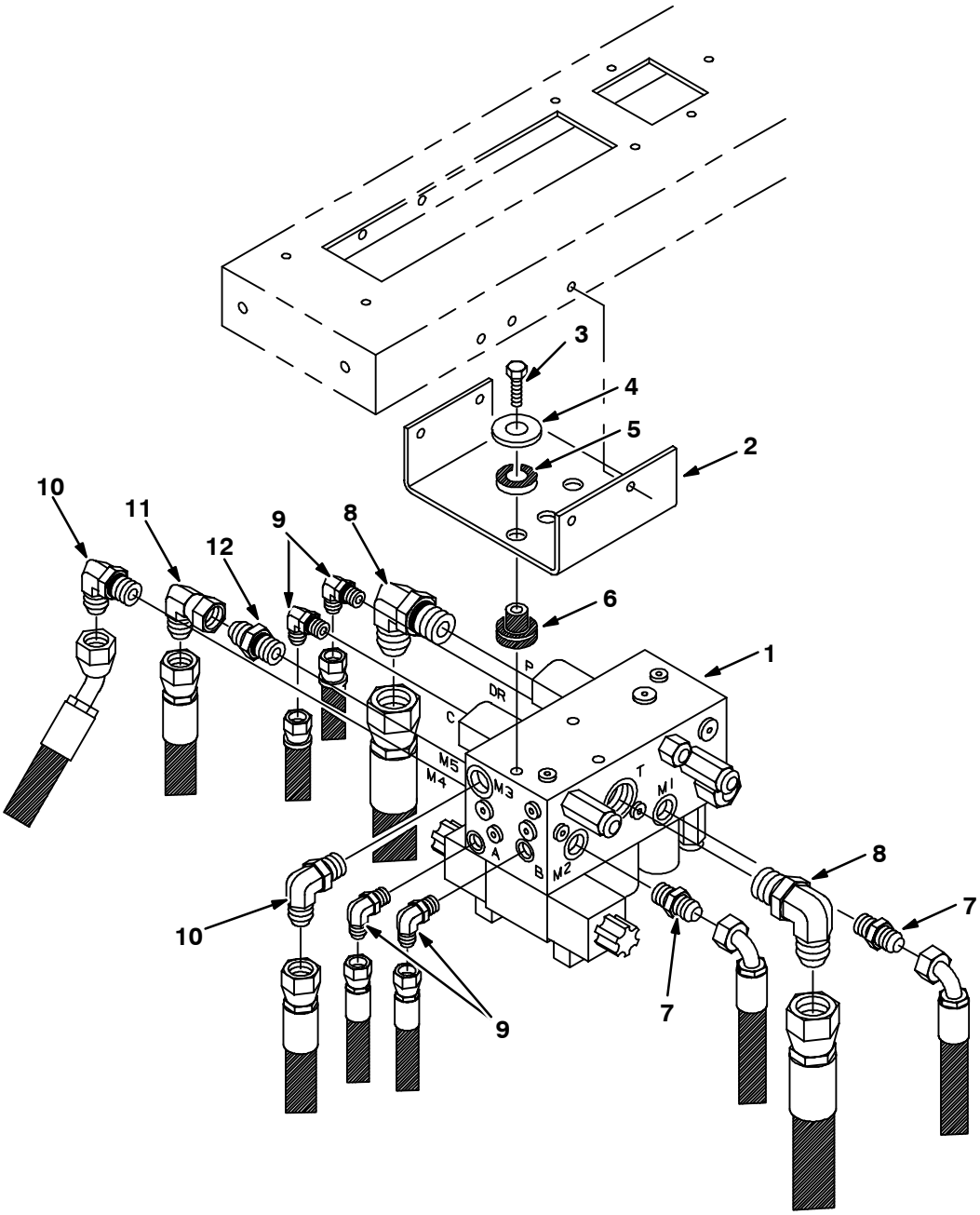
Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35486	(010000–)	Hose–Hyd Med06 Jf/J9	2
2	82830	(010000–)	Sleeve–Nyln #24 16.0L	1
3	02469	(010000–)	Hose–Hyd Med 06 Jf/J9	2
4	34313	(010000–)	Sleeve, Hyd.Hose 1.75Id X 67.0	1
5	34380	(010000–)	Hose–Hyd Med04 Jf/Jf	2
6	82816	(010000–)	Hose–Hyd Med04 Jf/J9	2
7	34382	(010000–)	Hose–Hyd Med04 Jf/Jf	2
8	82833	(010000–)	Sleeve–Nyln #20 35.0L	1
9	16463	(010000–)	Hose–Hyd Med08 Jf/J4	1
10	34355	(010000–)	Hose–Hyd Med08 Jf/J9	1
11	35485	(010000–)	Hose–Hyd Med08 Jf/J9	2
12	34329	(010000–)	Sleeve–Nyln #28 20.0L	1
13	82814	(010000–)	Hose–Hyd Med04 Jf/Jf	1
14	02549	(010000–)	Hose–Hyd Low04 Jf/J9	1
15	34420	(010000–)	Hose–Hyd Low04 Jf/J9	1
16	31600	(010000–)	Hose–Hyd Low04 Jf/J9	1
17	31720	(010000–)	Hose–Hyd Med12 Jf/J9	1
18	35484	(010000–)	Sleeve–Nyln #24 45.0L	2
19	35487	(010000–)	Hose–Hyd Low12 Jf/Jf	1
20	34388	(010000–)	Hose–Hyd Low04 Jf/J9	1
21	34054	(010000–)	Sleeve–Nyln #12 25.0L	1
22	16431	(010000–)	Hose–Hyd Med06 Jf/Jf	1
23	08024	(010000–)	Hose–Hyd Hi 12 Jf–J4	2
24	57951	(010000–)	Hose–Hyd Hi 12 Jf/J4	1
25	34378	(010000–)	Hose–Hyd Low04 Jf/J9	1
26	34351	(010000–)	Hose–Hyd Suc20 Jf/J9	2
27	82806	(010000–)	Hose–Hyd Low04 Jf/J9	1
28	35488	(010000–)	Hose–Hyd Med12 Jf/Jf	1



06736

Fig. 11 – Lift and Dump Cylinders Group, Multi–Level Dump

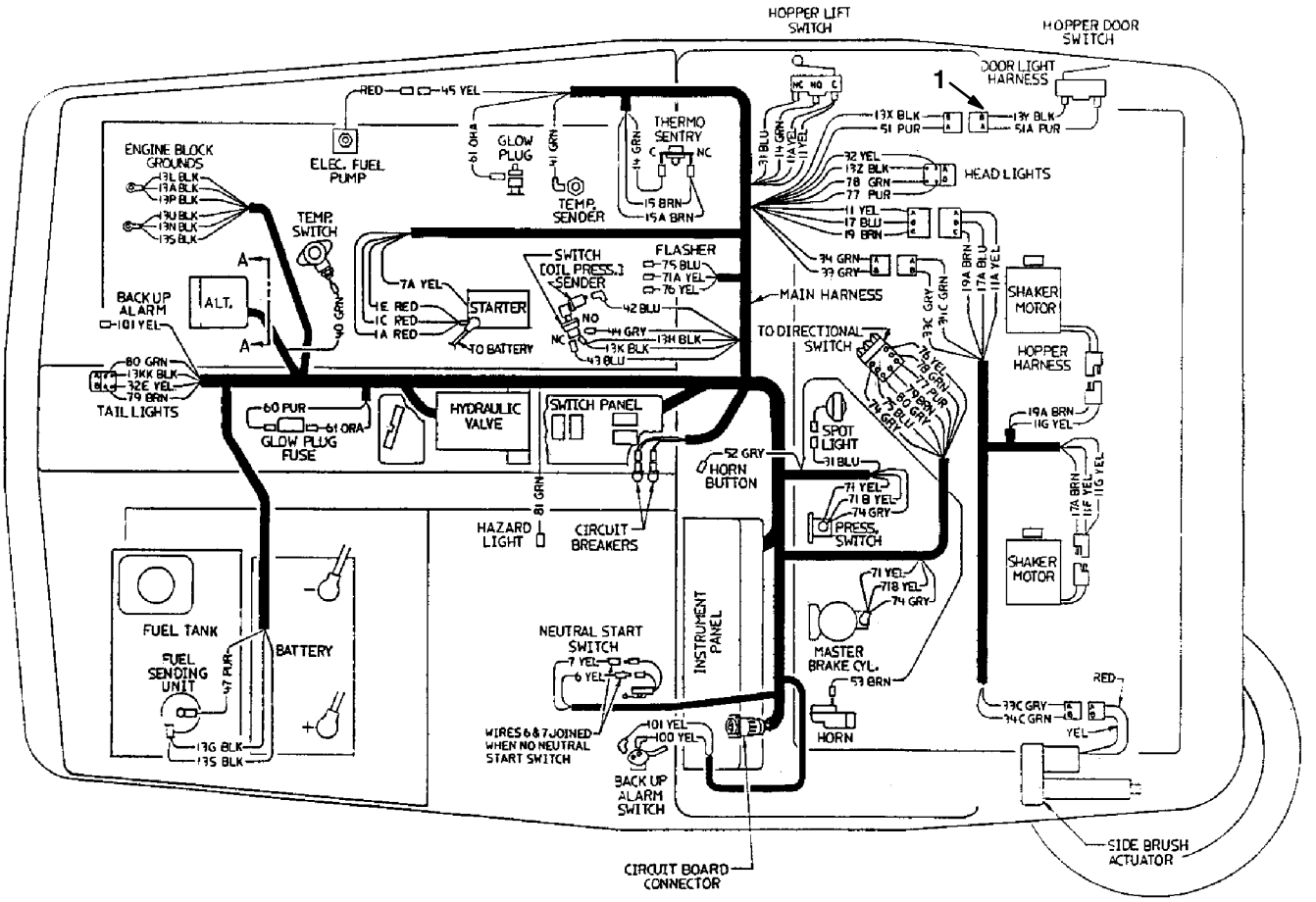
Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	34326	(010000–)	Cylinder, Hydraulic (See Hydraulic Components)	1
2	04733–4	(010000–)	Pin,Clevis,1.00 Dia.X 2.50 Lg	4
3	04443	(010000–)	Cylinder, Hydraulic (See Hydraulic Components)	2
4	77097	(010000–)	Ftg–Hyd E90 Jm04/Om04	6
5	34392	(010000–)	Ftg–Hyd Tee Jm04Jmjm	2
6	35689	(010000–)	Ftg–Hyd Rst Jm04/.078	1



06738

Fig. 12 – Control Valve Group, Multi–Level Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35491	(010000–)	Valve Hyd, Solenoid (See Hydraulic Components)	1
2	35385	(010000–)	Bracket Assy, Valve	1
3	46559	(010000–)	Scr–Hex .38–16X1.25 Nylon Loc	3
4	33948	(010000–)	Washer–Flt .38 Fender Pltd	3
5	62172	(010000–)	Ring	3
6	62173	(010000–)	Bushing, Isolator–Inner,Rbr.	3
7	56690	(010000–)	Ftg–Hyd Str Jm06/Om06	2
8	46481	(010000–)	Ftg–Hyd E90 Jm12/Om12	2
9	77097	(010000–)	Ftg–Hyd E90 Jm04/Om04	4
10	44868	(010000–)	Ftg–Hyd E90 Jm08/Om08	2
11	17980	(010000–)	Ftg–Hyd E90 Jm08/Jf08	1
12	44869	(010000–)	Ftg–Hyd Str Jm08/Om08	1



06759

Fig. 13 – Wire Harness Group, Multi–Level Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	36209	(010000–)	Harness, Light,Hopper Door Ind	1

SECTION 7

CONTENTS

NOTE: SECTION 7, ACCESSORIES*, lists repair parts included as part of the available accessories.*

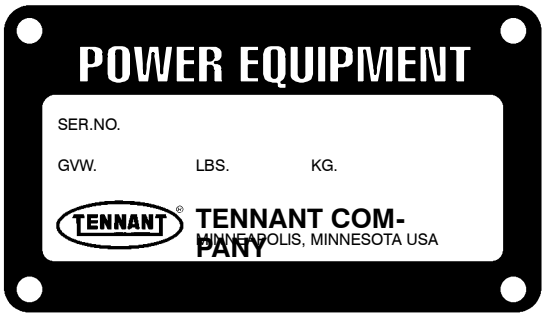
ORDERING REPAIR PARTS

The components used in this machine have been carefully selected for performance and safety. Use only TENNANT specified or equivalent parts.

To receive prompt service in filling of your parts orders, please direct all orders for parts with TENNANT part numbers to the TENNANT, and all orders for parts with vendor part numbers to the local supplier of the respective vendor.

When ordering parts, please furnish all of the following information:

1. Machine model number - shown on the machine data plate.



2. Machine serial number - shown on the machine data plate.
3. Power source - gasoline, LPG, diesel, electric.
4. Company name.
5. Shipping address.
6. Billing address.
7. Name, first and last - of person ordering parts.
8. Telephone number.
9. Purchase order number.
10. Part number, description, and quantity - of each item on the order.
11. Customer ID Number.

Do not order parts by key number or the figure number of the illustrated parts. Indented items indicate parts of assemblies. Standard hardware is furnished only when part of a purchased assembly. Please get hardware from a local hardware supplier.

If the old part cannot be identified, send it to us with the quantity needed specified on the order.

Any claim for loss or damage to a shipment in transit should be filed promptly against the transportation company making the delivery. Shipments will be complete unless the packing list or order acknowledgement indicate items back ordered.

If parts received are suspected to be incorrect or defective, please write, wire, or phone the TENNANT representative from whom you ordered the part. They will give authorization for return and/or handle replacement shipments when required.

SERIAL NUMBER INFORMATION EXPLANATION

Serial number listings are shown to indicate on which machines each part can be used. These listings are explained by the following examples:

(000000–) The part can be used on all machines.

(003342–) The part can be used on all machines beginning with the serial number listed.

(000000–004320) The part can be used on all machines up to and including serial number listed.

(004321–005678) The part can be used on all machines between and including the serial numbers listed.

Where xxxxxx's are listed in place of a serial number, it indicates a change was made but the exact serial number had not been established when the catalog went to press.

SI UNITS OF MEASURE (INTERNATIONAL SYSTEM)

Metric equivalents have been included, where applicable, throughout this parts catalog.

FASTENER STRENGTH IDENTIFICATION

Fasteners required to have high–strength qualities equivalent to SAE Grade 8 are identified throughout this catalog by the description GR 8. Unless identified by this description, all standard fasteners are SAE Grade 5.

(Specifications and design subject to change without notice.)

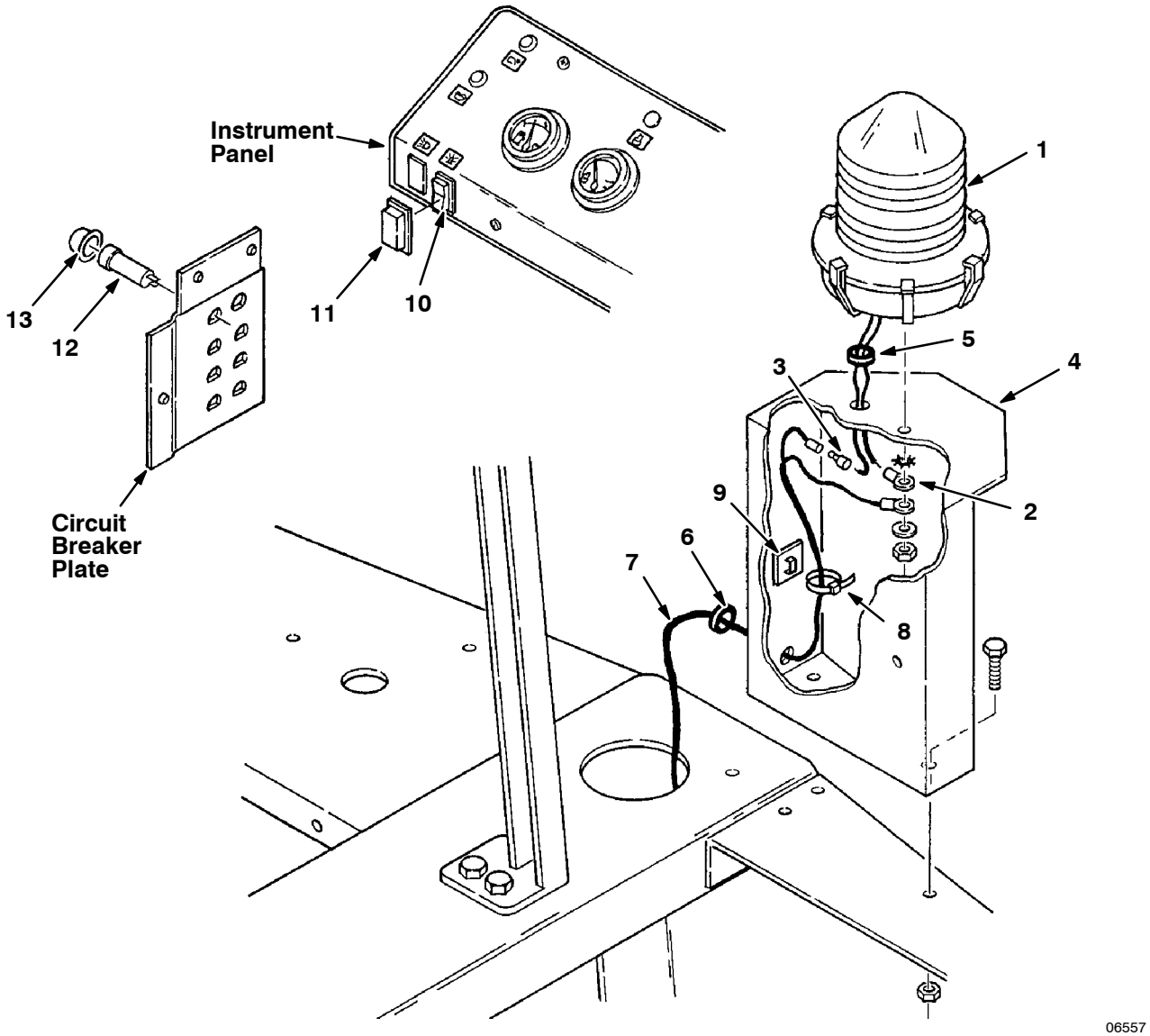


Fig. 14 – Flashing Light Kit, Left Rear Corner

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	60913	(000000–)	Light Kit, Flsh/Amb Lrc 97	1
1	82198	(000000–)	Light,Flashing Amb 12V–Purch.	1
	45779	(000000–)	Bulb, General Electric #Ge1156	1
	58520	(000000–)	Lens,Flashing Lite Fr207 Amber	1
2	29192	(000000–)	Terminal,Ring,.250Stud,16&14Ga	1
3	55272	(000000–)	Plug, Snap Terminal	1
4	35955	(000000–)	Bracket, Rotating Light	1
5	10632–7	(000000–)	Grommet,Rbr,0.25Id,For .25Matl	1
6	10632–11	(000000–)	Grommet,Rbr,0.38Id,For .19Matl	1
7	60755	(000000–)	Harness, Wire, Flash/Rot Light	1
8	55248	(000000–)	Cabletie Mount, Adhesive	4
9	49266	(000000–)	Tie, Cable 1.75D Max 7.50Lg	7
10	60902	(000000–)	Switch,Rocker Spst	1
11	57807	(000000–)	Cover, Rocker Switch Seal	1
12	57803	(000000–)	Breaker–Circuit, 15A Resetable	1
13	57751	(000000–)	Boot–CircuitBreaker	1
	58518	(000000–)	Lens,Flashing Lite Fr207 Red	1
	58519	(000000–)	Lens,Flashing Lite Fr207 Blue	1

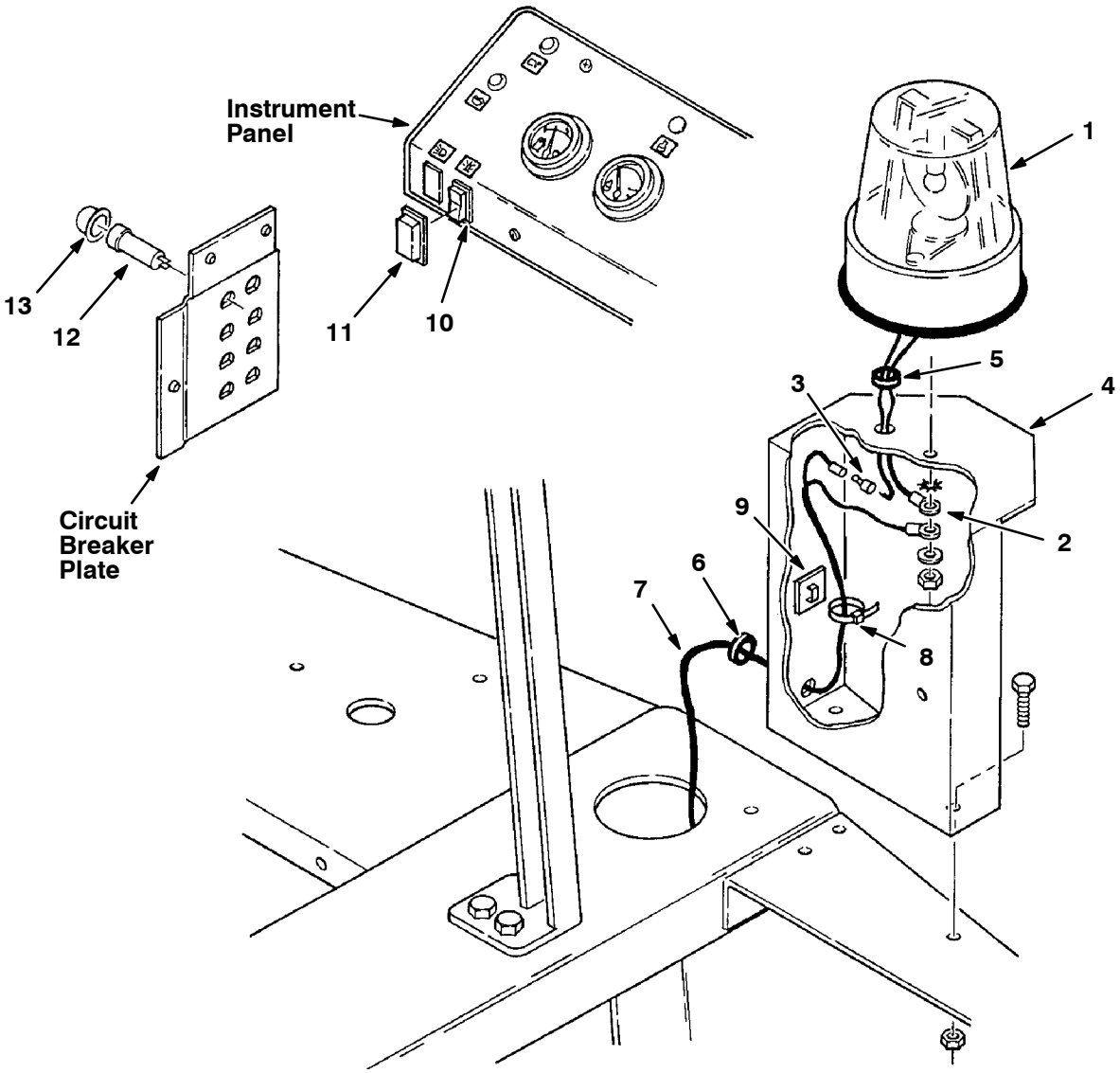


Fig. 15 – Revolving Light Kit, Left Rear Corner

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	60914	(000000–)	Light Kit, Rev/Amb Lrc 97	1
1	82199	(000000–)	Light,Rev.Amber 12V–Purchased	1
	45779	(000000–)	Bulb, General Electric #Ge1156	1
	44681–1	(000000–)	Lens,Rev.Light,Amber	1
2	29192	(000000–)	Terminal,Ring,.250Stud,16&14Ga	1
3	55272	(000000–)	Plug, Snap Terminal	1
4	35955	(000000–)	Bracket, Rotating Light	1
5	10632–7	(000000–)	Grommet,Rbr,0.25Id,For .25Matl	1
6	10632–11	(000000–)	Grommet,Rbr,0.38Id,For .19Matl	1
7	60755	(000000–)	Harness, Wire, Flash/Rot Light	1
8	55248	(000000–)	Cabletie Mount, Adhesive	4
9	49266	(000000–)	Tie, Cable 1.75D Max 7.50Lg	7
10	60902	(000000–)	Switch, Rocker Spst	1
11	57807	(000000–)	Cover, Rocker Switch Seal	1
12	57803	(000000–)	Breaker–Circuit, 15A Resetable	1
13	57751	(000000–)	Boot–Circuit Breaker	1
	44681	(000000–)	Lens,Rev.Light,Red	1
	44681–2	(000000–)	Lens,Rev.Light,Blue	1

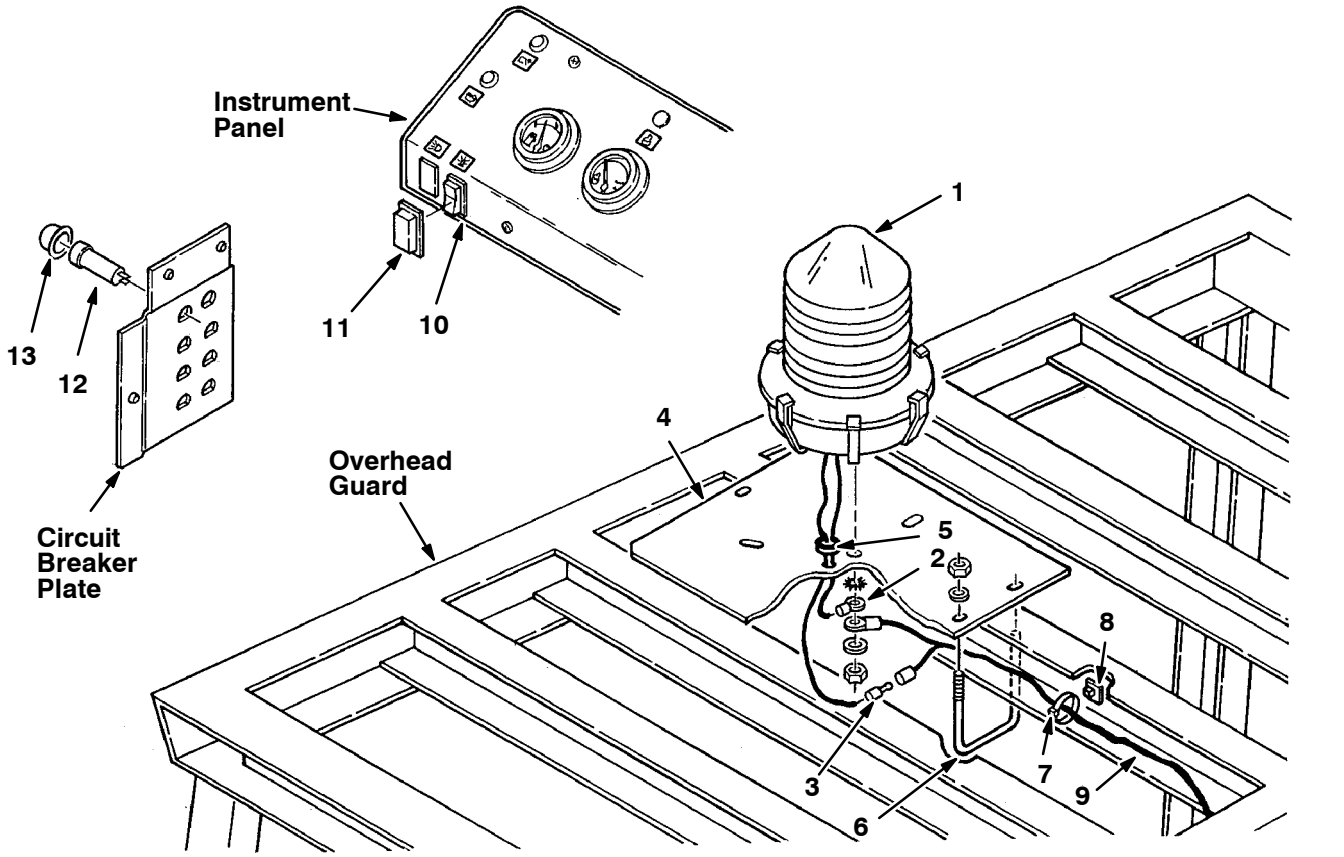


Fig. 16 – Flashing Light Kit, Overhead Guard and Cab

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	60778	(000000–)	Light Kit, Flsh Ohgd/Cab 97	1
1	82198	(000000–)	Light,Flashing Amb 12V–Purch.	1
	45779	(000000–)	Bulb, General Electric #Ge1156	1
	58520	(000000–)	Lens,Flashing Lite Fr207 Amber	1
2	29192	(000000–)	Terminal,Ring,.250Stud,16&14Ga	1
3	55272	(000000–)	Plug, Snap Terminal	1
4	33782	(000000–)	Plate, Ohg Lite Mounting	1
5	10632–5	(000000–)	Grommet,Rbr,0.25Id,For .09Matl	1
6	33783	(000000–)	U–Bolt, .25X2.5X3.4	2
7	49266	(000000–)	Tie, Cable 1.75D Max 7.50Lg	8
8	55248	(000000–)	Cabletie Mount, Adhesive	5
9	60769	(000000–)	Harness, Wire, Flash/Rot Light	1
10	60902	(000000–)	Switch, Rocker Spst	1
11	57807	(000000–)	Cover, Rocker Switch Seal	1
12	57803	(000000–)	Breaker–Circuit, 15A Resetable	1
13	57751	(000000–)	Boot–Circuit Breaker	1
	58518	(000000–)	Lens,Flashing Lite Fr207 Red	1
	58519	(000000–)	Lens,Flashing Lite Fr207 Blue	1

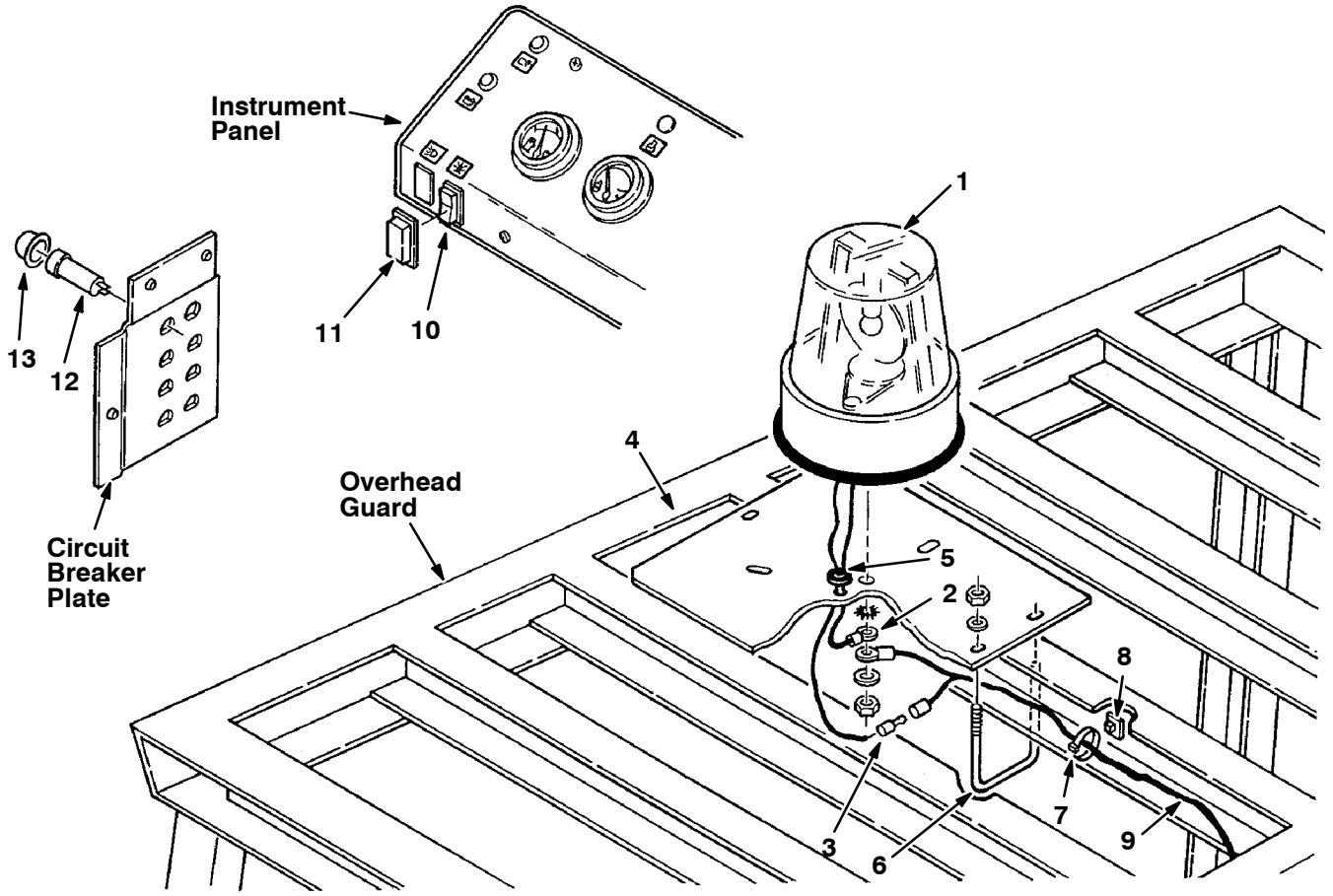


Fig. 17 -- Revolving Light Kit, Overhead Guard and Cab

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	60779	(000000–)	Light Kit, Rev Ohgd/Cab 97	1
1	82199	(000000–)	Light,Rev.Amber 12V–Purchased	1
	44681–1	(000000–)	Lens,Rev.Light,Amber	1
	45779	(000000–)	Bulb, General Electric #Ge1156	1
2	29192	(000000–)	Terminal,Ring,.250Stud,16&14Ga	1
3	55272	(000000–)	Plug, Snap Terminal	1
4	33782	(000000–)	Plate, Ohg Lite Mounting	1
5	10632–5	(000000–)	Grommet,Rbr,0.25Id,For .09Matl	1
6	33783	(000000–)	U–Bolt, .25X2.5X3.4	2
7	49266	(000000–)	Tie, Cable 1.75D Max 7.50Lg	8
8	55248	(000000–)	Cabletie Mount, Adhesive	5
9	60769	(000000–)	Harness, Wire, Flash/Rot Light	1
10	60902	(000000–)	Switch, Rocker Spst	1
11	57807	(000000–)	Cover, Rocker Switch Seal	1
12	57803	(000000–)	Breaker–Circuit, 15A Resetable	1
13	57751	(000000–)	Boot–Circuit Breaker	1
	44681	(000000–)	Lens,Rev.Light,Red	1
	44681–2	(000000–)	Lens,Rev.Light,Blue	1

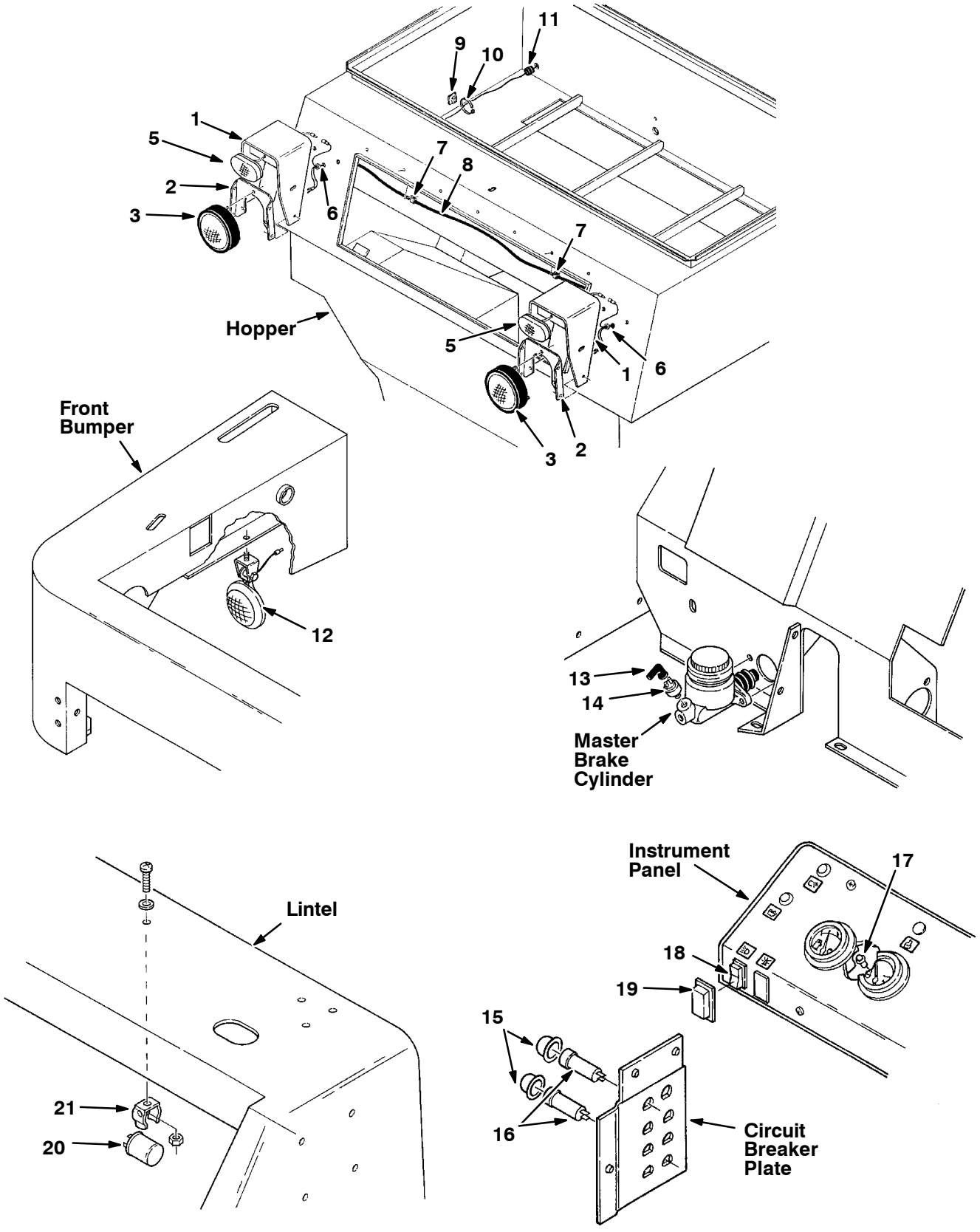


Fig. 18 – Operating Lights Kit

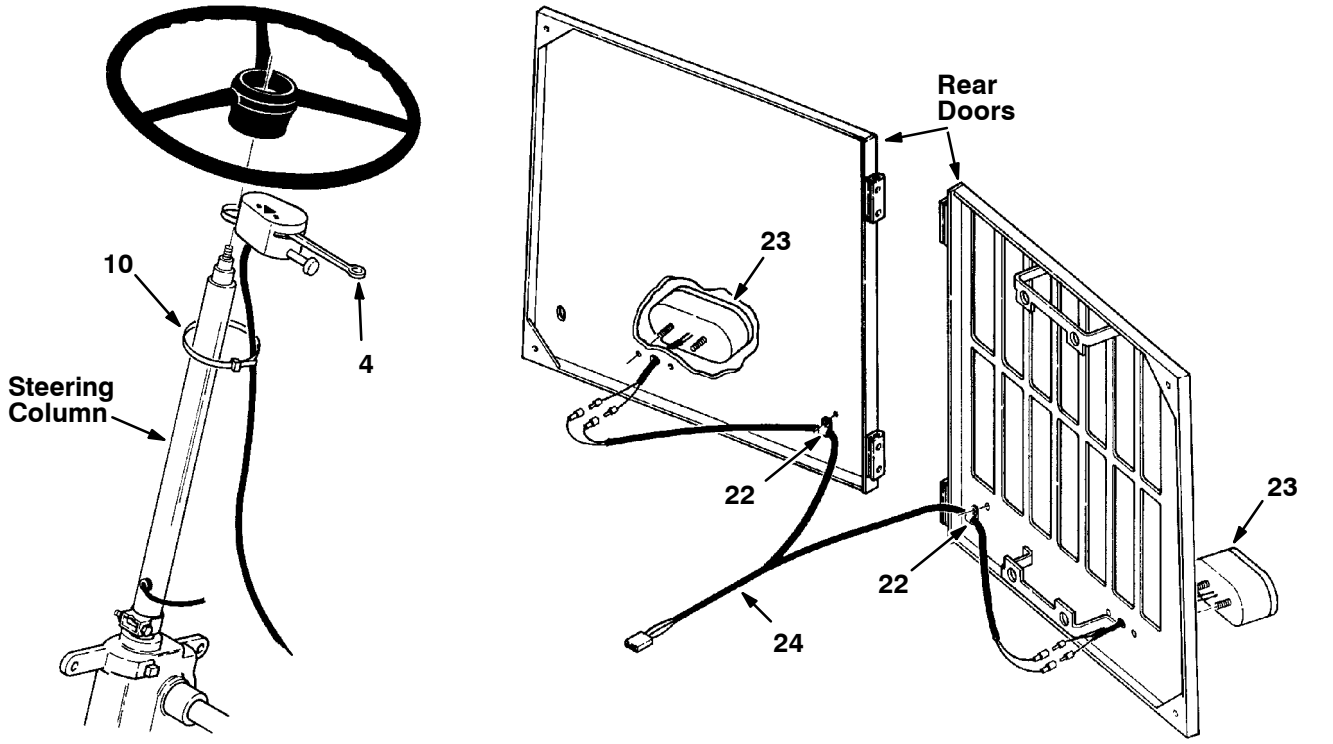


Fig. 18 -- Operating Lights Kit

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	35923	(000000–)	Light Kit, Operating 97 All	1
1	34700	(000000–)	Headlight Weld'T	2
2	46110	(000000–)	Plate Weldm.,Headlight	2
3	51569	(000000–)	Light Assy Head/Clr 12V–2.9A	2
	10801	(000000–)	Light, Head/Rnd 12V 1.5A#4406	1
4	60751	(000000–)	Signal Assy Rework, E1740 Turn	1
5	34848	(000000–)	Light Assy Mark/Yel 12V–. A	2
6	10632–20	(000000–)	Grommet,Rbr,0.38Id,For .06Matl	2
7	26395–1	(000000–)	Clamp–Cable, 0.56Dia 0.38Wth	4
8	35890	(000000–)	Harness, Headlight	1
9	55248	(000000–)	Cabletie Mount, Adhesive	4
10	49266	(000000–)	Tie, Cable 1.75D Max 7.50Lg	8
11	20154	(000000–)	Strainrelief,For#14–3 So Cord	1
12	34473	(000000–)	Light Assy Spot/Clr V–. A	1
	32827	(000000–)	<1156 Bulb (Delco#L1157) Ge	1
13	18342	(000000–)	Protector, Spark Plug	1
14	13959	(000000–)	Switch	1
15	57751	(000000–)	Boot–Circuit Breaker	2
16	57803	(000000–)	Breaker–Circuit, 15A Resetable	2
17	60752	(000000–)	Light Assy Inst/Clr 12V–. A	4
18	60902	(000000–)	Switch, Rocker Spst	1
19	57807	(000000–)	Cover, Rocker Switch Seal	1
20	31922	(000000–)	Flasher, Heavy Duty	1
21	24576–1	(000000–)	Bracket, Flasher	1
22	26395–2	(000000–)	Clamp–Cable, 0.38Dia 0.38Wth	2
23	55274	(000000–)	Taillight Assy	2
	45780	(000000–)	Bulb, 12V .5A 4Cp#1157	1
24	35877	(000000–)	Harness, Taillight	1

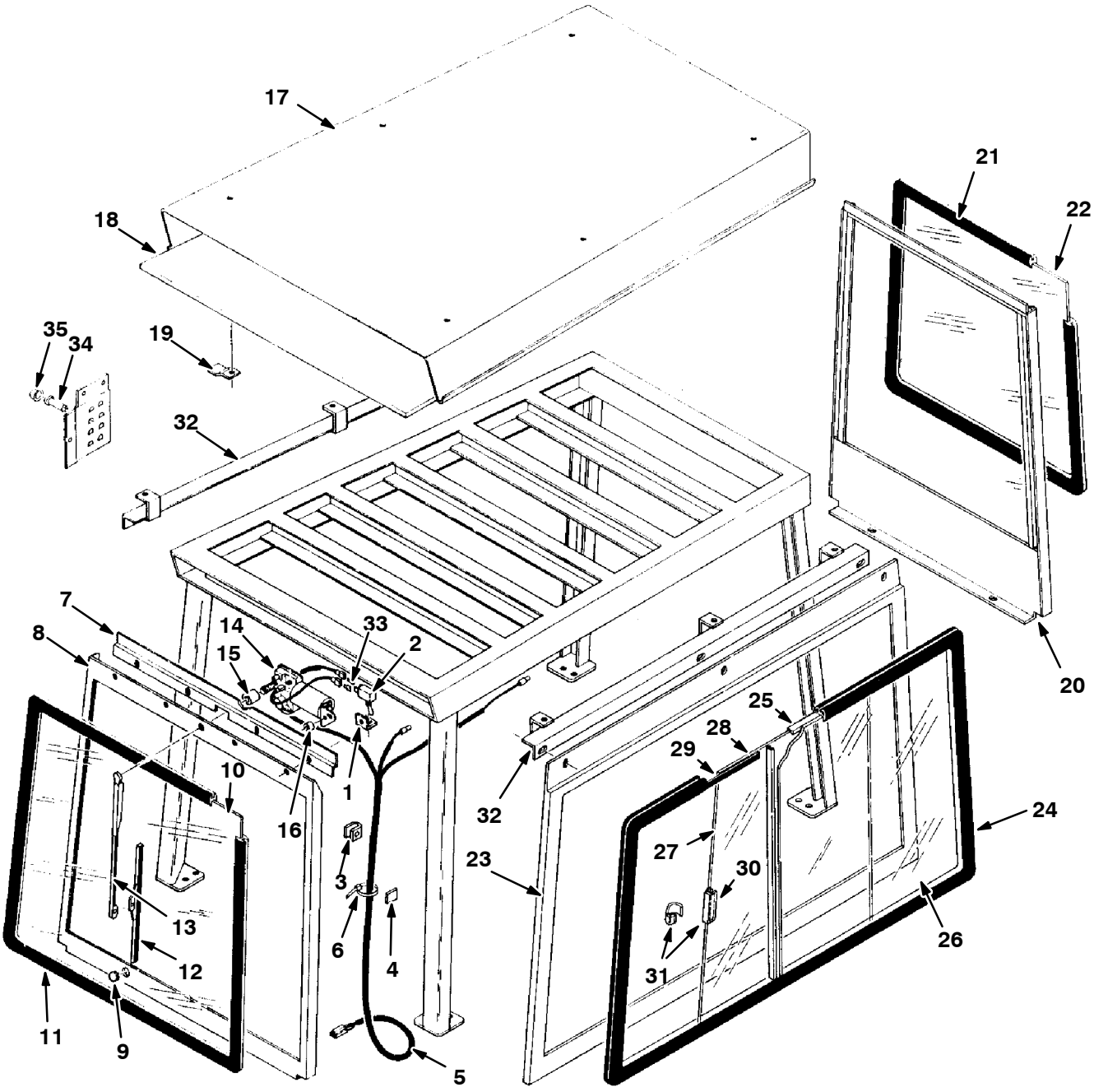


Fig. 19 – Cab Group

06549

Fig. 19 – Cab Group

NOTE: Cab Kit, TENNANT Part Number 60763, Includes Fig. 6 and 7.

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	62039	(000000–)	Brkt–L,1.5 1.2 .12 1.2L2/Hls	1
2	10701	(000000–)	Switch, Toggle 6A 125V Sp St	1
3	51675	(000000–)	Clip, Cab	14
4	55248	(000000–)	Cabletie Mount, Adhesive	3
5	60756	(000000–)	Harness,Wire,Cab Fan/Lite/Wipe	1
6	49266	(000000–)	Tie, Cable 1.75D Max 7.50Lg	3
7	62028	(000000–)	Rail,Attaching	1
8	25169	(000000–)	Frame Assy, Cab, Windshield	1
9	01493	(000000–)	Plugbtn 1.00H .03–.12 Blacknyl	1
10	25938	(000000–)	Glass, Safety .23 X 26.9X 25.5	1
11	51596	(000000–)	Extrusion,Weath.Str#102–31,105	1
12	23947	(000000–)	Blade,Windshield Wiper	1
13	15121	(000000–)	Arm, Windshield–Wiper	1
14	02507	(000000–)	Motor Kit, Wiper 12V 85 Degree	1
15	03280	(000000–)	Sleeve, .652B .875D .750 Stl	1
16	03281	(000000–)	Sleeve, .261 B .375 D .500 Stl	1
17	62095	(000000–)	Cab Roof ,Osha, 92Cont.	1
18	62098	(000000–)	Insulation,S/Foam .5Xanglx43.0	1
19	62045	(000000–)	Clip	7
20	60941	(000000–)	Frame Assy, Cab, Window Rear	1
21	60935	(000000–)	Strip Rbr.25X.50X55.7 S&M#6422	1
22	60936	(000000–)	Glass, Safety .23X 21.7X 22.5	1
23	25171	(000000–)	Frame Assy, Cab, Window Lh	1
24	51609	(000000–)	Weatherstrip, Rubber	1
25	51611	(000000–)	Channel,Glassrun,Flx#B127,130	1
26	25944	(000000–)	Glass, Safety .23 X 22.0X 24.5	1
27	25943	(000000–)	Glass, Safety .23 X 20.4X 24.5	1
28	51677	(000000–)	Channel, Rigid	1
29	51608	(000000–)	Strip,Rbr.25X.50S&M #6422,63.,	1
30	58974	(000000–)	Pad, Neoprene .06 X .7 X 2.7	2
31	15066	(000000–)	Finger Pull	1
32	62029A	(000000–)	Angle Weldt, 92 Cab	2
33	48252	(000000–)	Terminal,Tab Male	2
34	57803	(000000–)	Breaker–Circuit, 15A Resetable	1
35	57751	(000000–)	Boot–Circuit Breaker	1

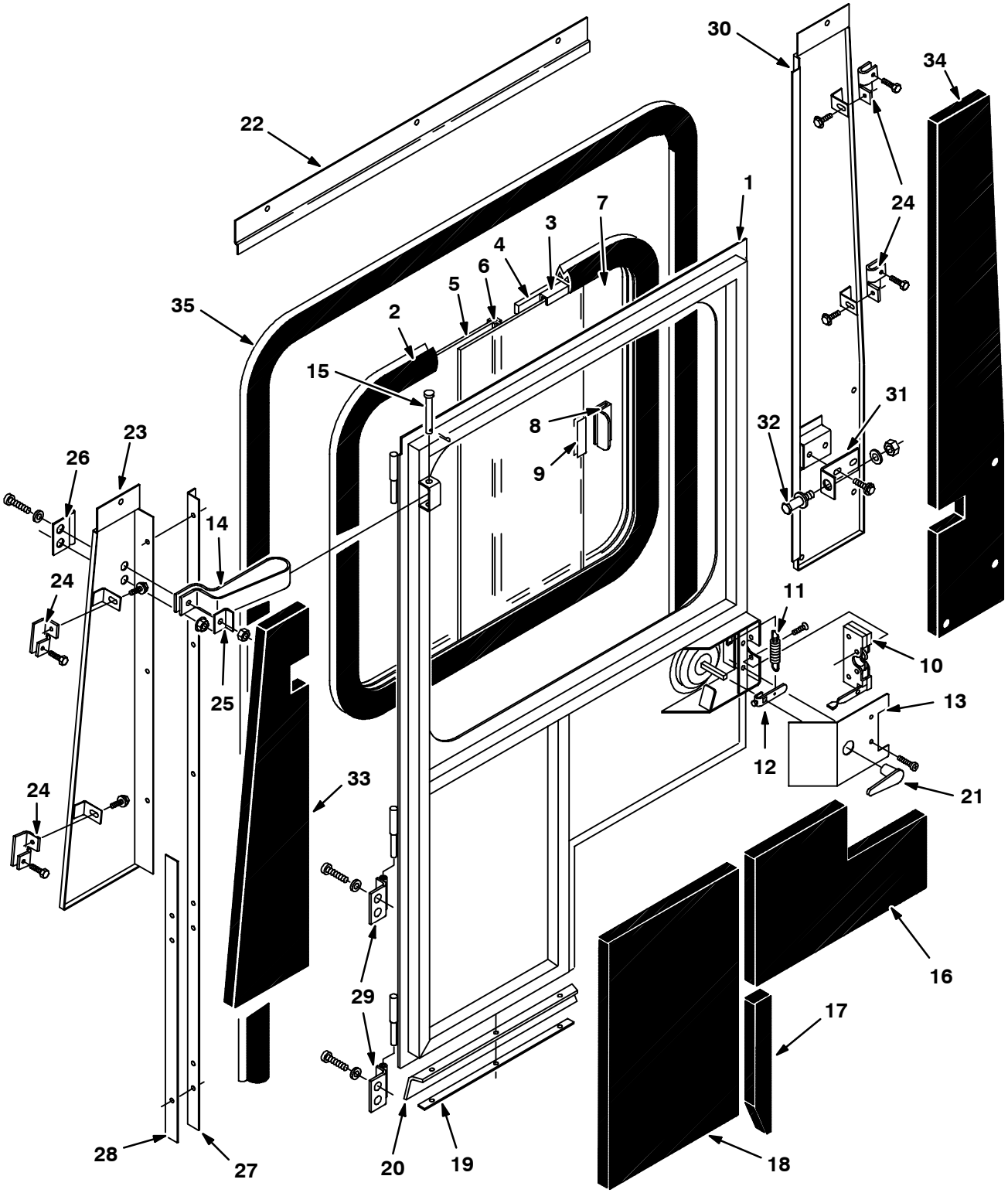


Fig. 20 -- Cab Door Group

06550

Fig. 20 -- Cab Door Group

NOTE: Cab Kit, TENNANT Part Number 60763, Includes Fig. 6 and 7.

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	60791	(000000–)	Door Wldt, 97 Cab	1
2	60898	(000000–)	Molding, Weatherstrip	1
3	60897	(000000–)	Channel, Flexible	1
4	60899	(000000–)	Spacer, Rubber	1
5	60868	(000000–)	Window, Door, Stationary	1
6	34049	(000000–)	Channel, Rigid	1
7	60867	(000000–)	Window, Door, Sliding	1
8	15066	(000000–)	Finger Pull	1
9	58974	(000000–)	Pad, Neoprene .06 X .7 X 2.7	2
10	58489	(000000–)	Latch, Hook (Supplier'S Rh)	1
11	57793	(000000–)	Spring, Tension	1
12	60866	(000000–)	Cam, Doorlatch, Rework	1
13	60848	(000000–)	Cover, Door Latch, 97	1
14	60862	(000000–)	Sleeve, Door Stop	1
15	02126	(000000–)	Pin, Clevis .375Dia X 3.0Lg	1
16	60869	(000000–)	Insulation, S/Foam, Door, Ctr	1
17	60876	(000000–)	Insulation, S/Foam, Door Edge	1
18	60877	(000000–)	Insulation, S/Foam, Door, Lwr	1
19	60864	(000000–)	Strip, Retainer	1
20	60865	(000000–)	Seal, Door, Cab, 97	1
21	57647	(000000–)	Handle, Door, Chrome	1
22	60782	(000000–)	Panel, Door Frame, Upper	1
23	60854	(000000–)	Panel Wldt, Door Frame, Front	1
24	60786	(000000–)	Clip, Cab Panel	4
25	60863	(000000–)	Angle, Door Stop	1
26	60861	(000000–)	Hinge Wldt	1
27	60894	(000000–)	Angle, Seal Mtg	1
28	60895	(000000–)	Strip, Filler	1
29	60859	(000000–)	Hinge Wldt	2
30	60856	(000000–)	Panel Wldt, Door Frame, Rear	1
31	60789	(000000–)	Bracket, Door Strike	1
32	58898	(000000–)	Bolt, Latch,For 58489 Or 58844	1
33	60878	(000000–)	Insulation, S/Foam, Rh–Front	1
34	60879	(000000–)	Insulation, S/Foam, Rh–Rear	1
35	57648	(000000–)	Seal, 123.75 Lng, Door	1

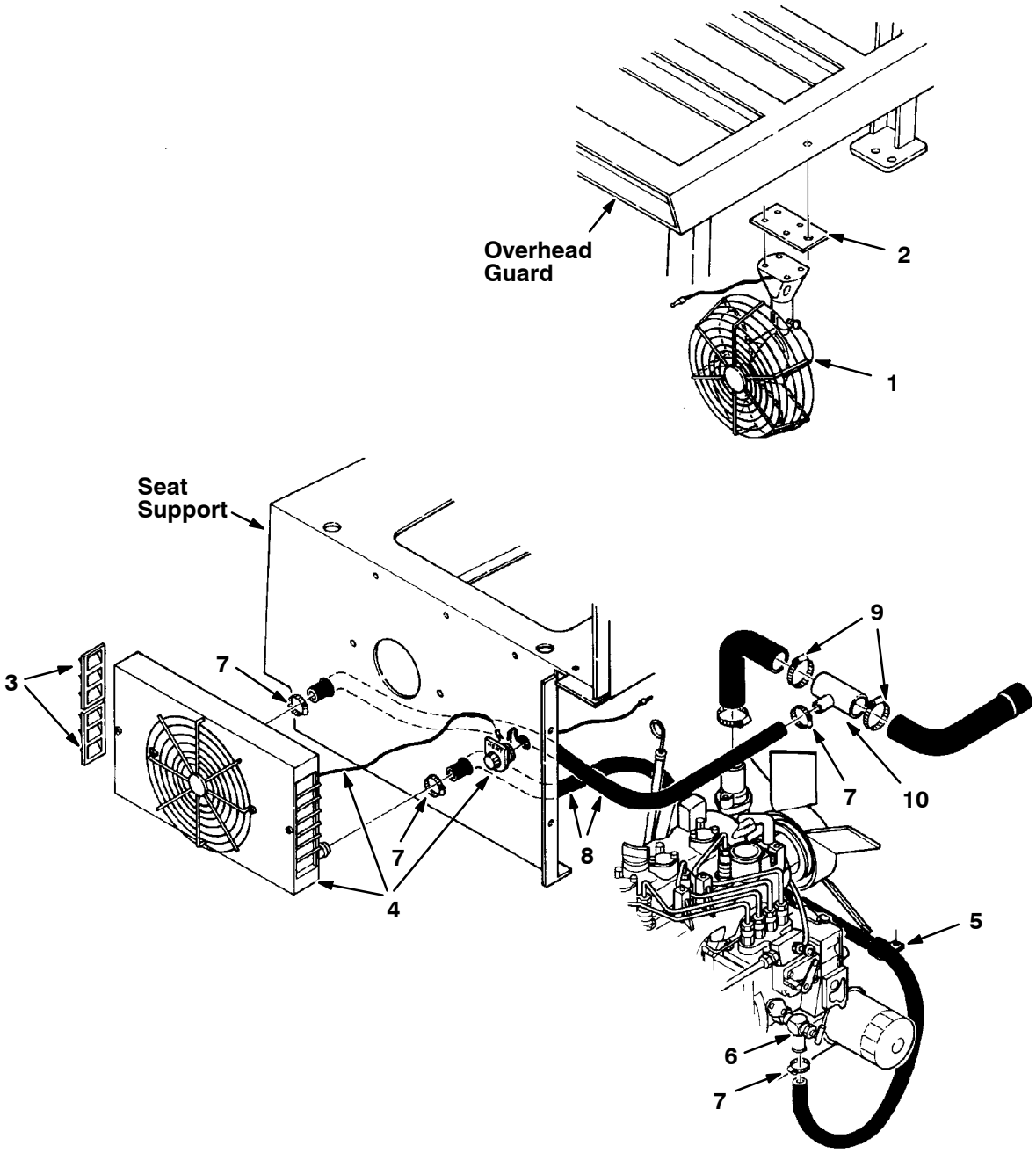


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Fig. 21 – Heater Defroster Kit, Diesel

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	60767	(000000–)	Heater Kit, E1740 Diesel	1
1	34528	(000000–)	Fan Assy,Defroster	1
2	52360	(000000–)	Plate, Mounting.	1
3	52433–2	(000000–)	Deflector,Air	2
4	16871	(000000–)	Heater Kit (Hupp)	1
5	30408	(000000–)	Clip, Keeper, Open	1
6	16873	(000000–)	Valve, Heater 6Pm–10 Barb	1
7	63810	(000000–)	Clamp–Wormdrive, 0.56– 1.06D	4
8	57912	(000000–)	Hose,.62 Idx84.0 Lng, Heater	2
9	11531	(000000–)	Clamp, Wormdrive, 1.06– 2.00D	2
10	35314	(000000–)	Tube Wldt, Tee	1

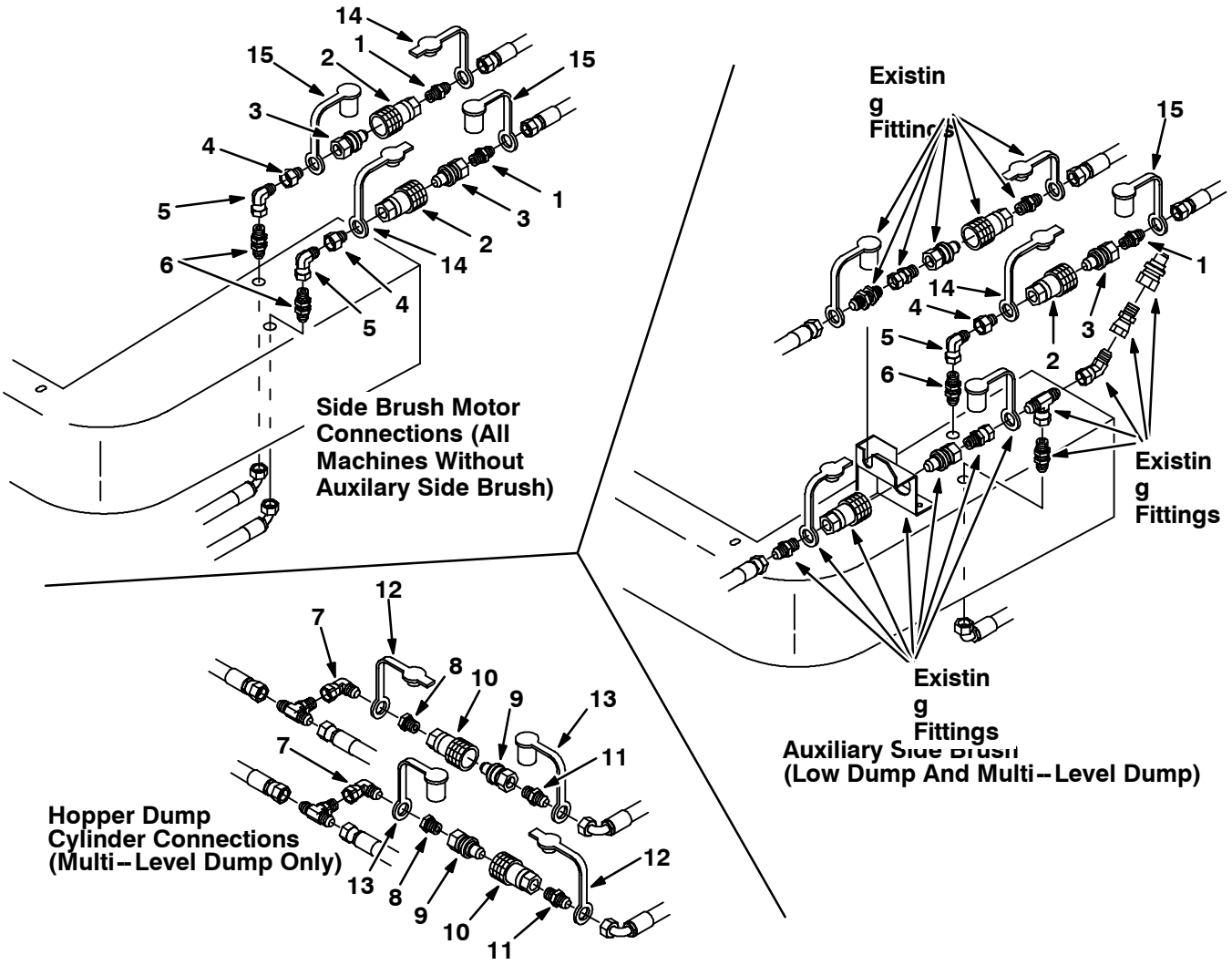

Fig. 22 – Snow Blade Adapter Kit

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	60915	(000000–)	Adapter Kit, E1740 Snow Blade	1
1	56690	(000000–)	Ftg–Hyd Str Jm06/Om06	2
2	16818	(000000–)	Ftg–Hyd Coupling Half Fem Of06	2
3	16817	(000000–)	Ftg–Hyd Coupling Half Mal Of06	2
4	35432	(000000–)	Ftg–Hyd Str Jf06/Om06	2
5	47504	(000000–)	Ftg–Hyd E90 Jm06/Jf06	2
6	16864	(000000–)	Ftg–Hyd Str Jm06/Jm06	2
7	34415	(000000–)	Ftg. Hyd. Elbow	2
8	17414	(000000–)	Ftg–Hyd Str Pm04/Pf02	2
9	34413	(000000–)	Ftg–Hyd Coupling Half Mal Pf04	2
10	34414	(000000–)	Ftg–Hyd Coupling Half Fem Pf04	2
11	06678	(000000–)	Ftg–Hyd Str Pm04/Jm04	2
12	33797	(000000–)	Plug,Dust–Hyd.Coupling	2
13	33798	(000000–)	Cap,Dust–Hyd.Coupling	2
14	60746	(000000–)	Dust Plug–Hyd, Coupling 06	2
15	60747	(000000–)	Cap, Dust–Hyd Coupling 06	2

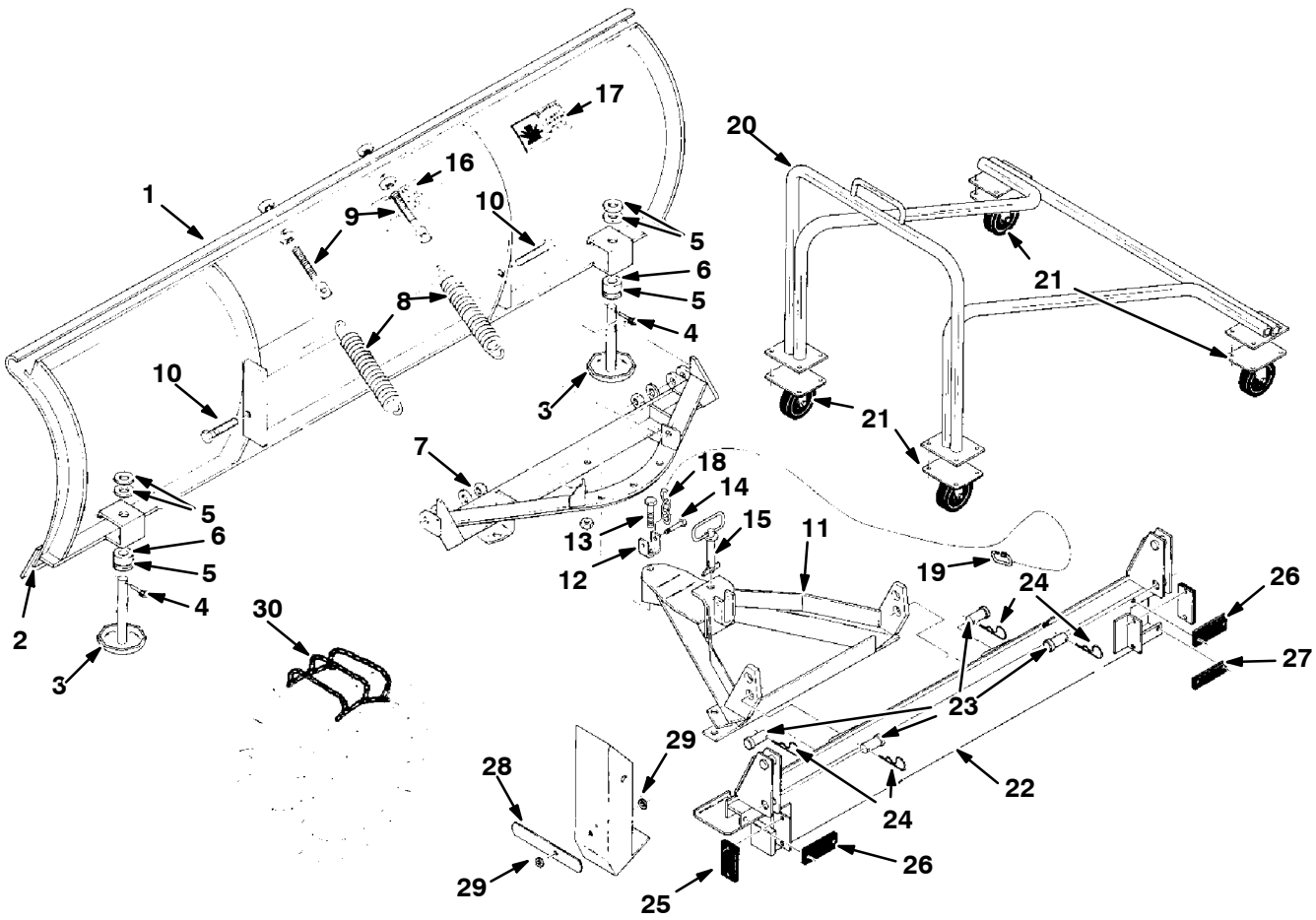

Fig. 23 -- Snow Blade Kit

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Fig. 23 -- Snow Blade Kit

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	62063	(000000–)	Snow–Blade Kit 92J/92/95	1
	31305	(000000–)	Blade & Frame Assy, Snow Blade	1
1	31303	(000000–)	Blade Assembly–Snowplow 7'–6"	1
2	08045	(000000–)	<49076 Cutting Edge 7'6" Wp	1
3	08046	(000000–)	<23467 Disc Shoe Assy Wp	2
4	08047	(000000–)	<93010 Linch Pin Wp	1
5	32969	(000000–)	Washer–Flt 1.00 Sae Hard Pltd	19
6	08048	(000000–)	<60045 Spacer Wp	1
	31311	(000000–)	Quadrant & A–Frame Assy	1
7	31302	(000000–)	Quadrant Assy–Snowplow	1
8	47713–1	(000000–)	<23039 Spring Wp	2
9	47713–2	(000000–)	<90493 Eye Bolt Wp	2
10	39639	(000000–)	Scr Hex .62–11X3.00	2
11	31304	(000000–)	A–Frame Unit–Snow Plow	1
12	08051	(000000–)	<60197 Clevis Wp	1
13	58056	(000000–)	Scr Hex .75–10X3.00	1
14	08063	(000000–)	<90063 Bolt .38–16X3 Wp	1
15	08052	(000000–)	Pin, Sector .62Dia X 4.0L	1
16	32182	(000000–)	Sprocket, Drive,Pntd.By Tennnt	1
17	32180	(000000–)	Label, Warning–Snowplow	1
18	62076	(000000–)	Chain,Coil#5/16, 6Ft.Lg	1
19	62080	(000000–)	Link,Chain,Connecting .31 Thd.	1
20	52001	(000000–)	Dolly,Hopper, 92	1
21	51701A	(000000–)	Caster,4Hole,Swivl,4.00Dia Whl	4
22	32178	(000000–)	Crossbar Weldt,Snow–Blade 92	1
23	04733–5	(000000–)	Pin,Clevis,1.00 Dia.X 2.00 Lg	4
24	55094	(000000–)	Pin,Hair Cotter #Lhcot–3,Leitk	4
25	62071A	(000000–)	Bumper,Frame,Snowblade,Armaplt	2
26	62072A	(000000–)	Bumper,Frame,Snowblade,Armaplt	2
27	62073A	(000000–)	Bumper,Frame,Snowblade,Armaplt	1
28	32179	(000000–)	Stop, Arm	1
29	52508	(000000–)	Washer–Wavy Spring,#Ww–381–&–8	2
30	62074	(000000–)	Chain,Tire 6.90/6.00–9	1

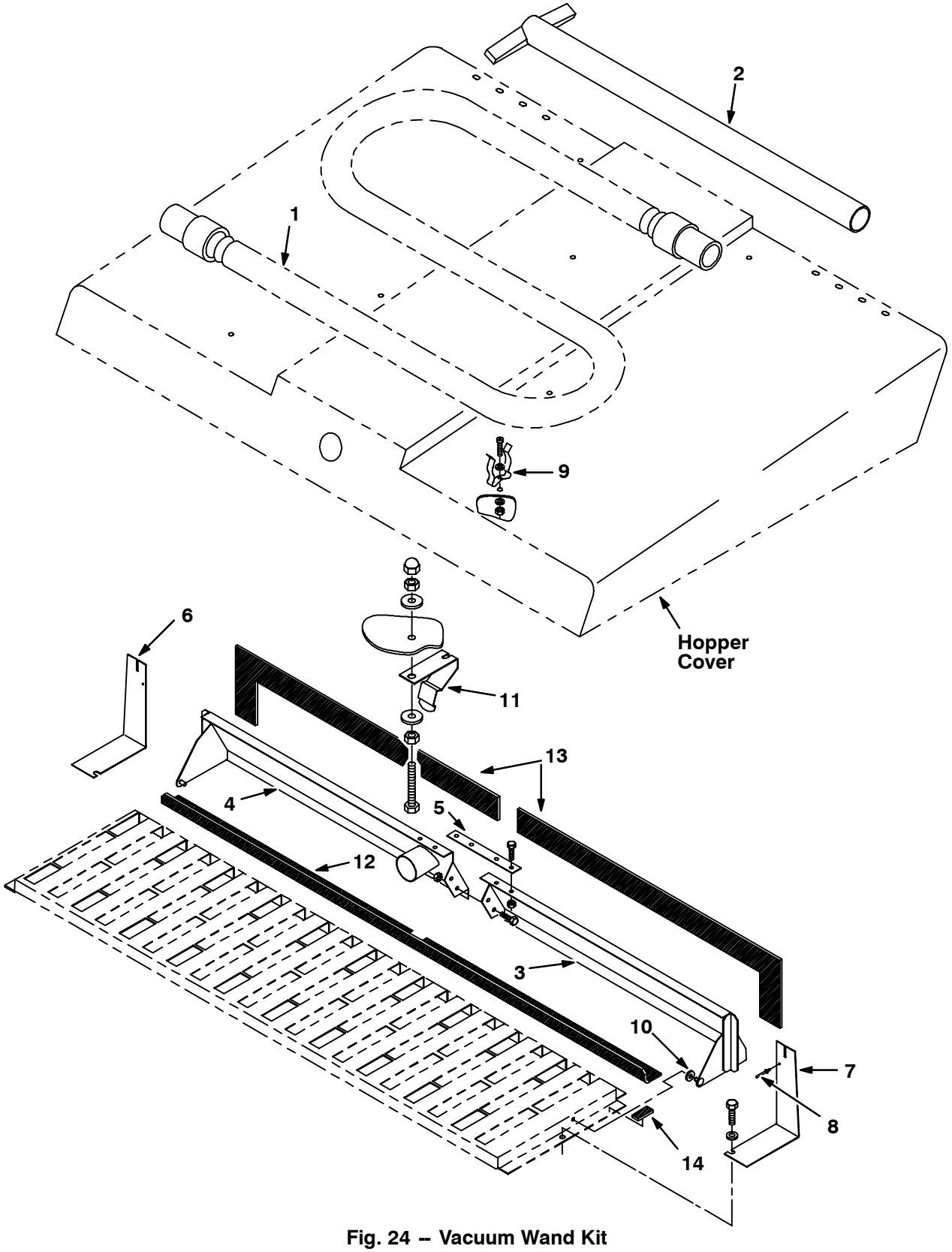

Fig. 24 -- Vacuum Wand Kit

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Fig. 24 -- Vacuum Wand Kit

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	36155	(000000–)	Vacuum Wand Kit, 97	1
1	54009	(000000–)	Hose&2Cuff Assy,Vinyl2.0Id10Ft	1
2	54012	(000000–)	Wand Weldment	1
3	35452	(000000–)	Door Wldt, Vac Wand, Lh	1
4	35240	(000000–)	Door Wldt, Vac Wand, Rh	1
5	36135	(000000–)	Strip, Joining	1
6	35249	(000000–)	Angle, Filler, Vac Wand Door	1
7	35250	(000000–)	Angle, Filler, Vac Wand Door	1
8	34738	(000000–)	Rivet,Pop–.125Dx.32X.25Dhd St	2
9	36158	(000000–)	Clip, Finger Grip	7
10	16236	(000000–)	Washer,Nyl,0.26 Bx0.72 X.07 Th	2
11	35351	(000000–)	Latch, Spring, Vac Wand Door	1
12	61843	(000000–)	Seal, Vac Wand Door	1
13	61844	(000000–)	Seal, Vac Wand Door	2
14	41830	(000000–)	Seal,Foam Rbr, .19 .62W 1.5L	2

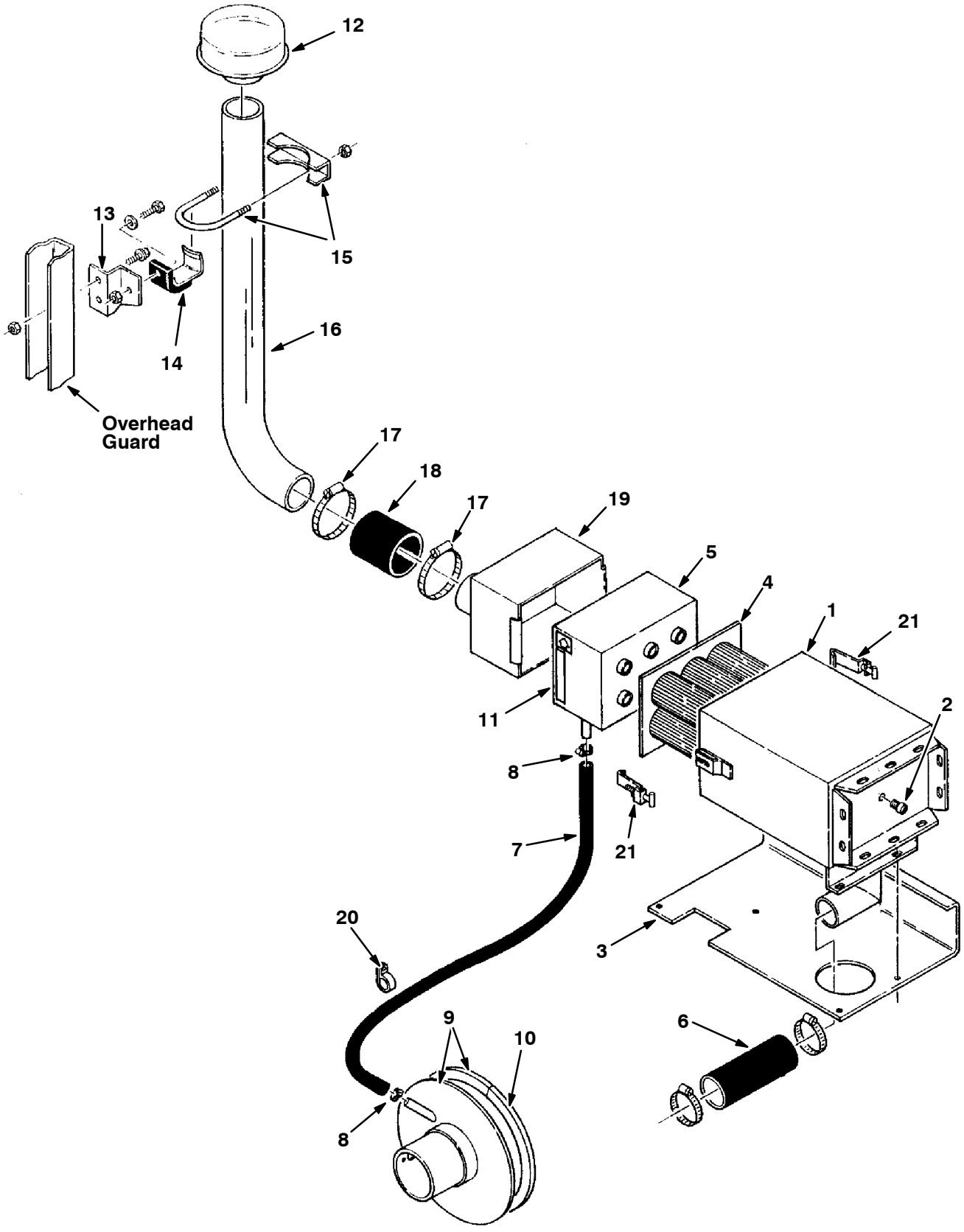

Fig. 25 – Air Cleaner Kit

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Fig. 25 – Air Cleaner Kit

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	60744	(000000–)	Air Clnr Kit, Farr 97 All	1
1	34498	(000000–)	Air Cl.Weld'T–Farr	1
2	02246	(000000–)	Ftg–Plug Npt 02Pm Slottd	1
3	34499	(000000–)	Bumper Farr	1
4	39929–3	(000000–)	Filter, Air – 6 Tube	1
5	39929–2	(000000–)	Pre–Cleaner, Air Intake	1
6	15543–1	(000000–)	Coupling, Air Cleaner Tube L	1
7	52922	(000000–)	Hose Rbr,0.50 Id,Ie#A108 , 60	1
8	54333	(000000–)	Clamp–Wormdrive, 0.31– 0.88D	2
9	35945	(000000–)	Cover Assy, Vac Fan W/Gasket	1
10	23542	(000000–)	Seal,Foam Rbr, .31 .38W 30.5L	1
11	48088–6	(000000–)	Label, Instr.	1
12	76322	(000000–)	Cap Assy,Intake	1
13	39870	(000000–)	Bracket, Support – Tube	1
14	39957	(000000–)	Support, Air Intake Tube	1
15	13888	(000000–)	Clamp–Muffler,For 2.50 Od Tube	1
16	34889	(000000–)	Tube,Air Intake	1
17	43555	(000000–)	Clamp–Wormdrive, 1.62– 3.50D	2
18	34887	(000000–)	Hose,Air Cleaner Coupling	1
19	34888	(000000–)	Cover Weld'T,Air Cleaner	1
20	49287	(000000–)	Clamp–Cable, 0.75Dia 0.88Wth	1
21	49195	(000000–)	Fastener Assy,Farr#A42067	2

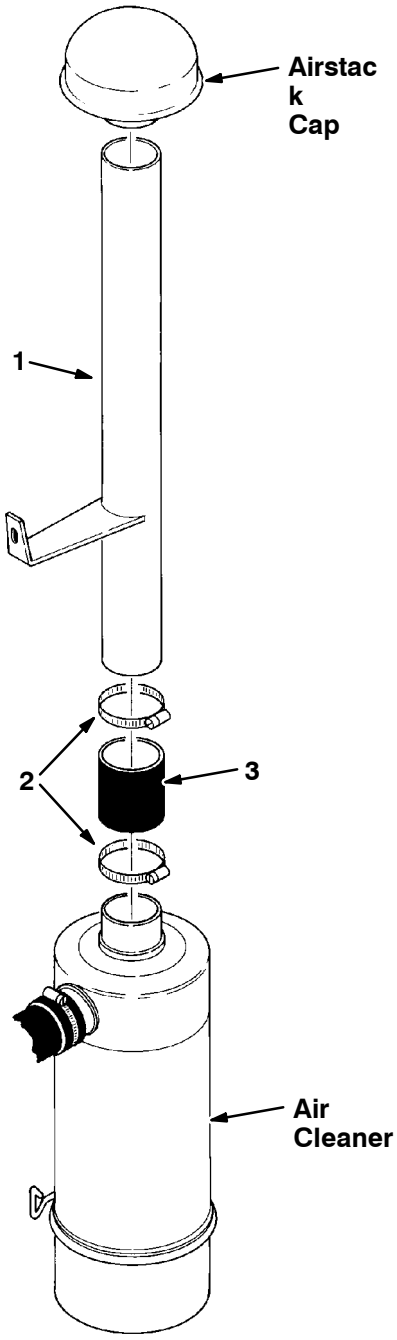

Fig. 26 – Air Filter Intake Kit, Diesel

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	34038	(000000–)	Hi–Rise Intake Kit, A Fltr 95D	1
1	16811	(000000–)	Tube Weld'T Air Cleaner 21/2"	1
2	43555	(000000–)	Clamp–Wormdrive, 1.62– 3.50D	2
3	34887	(000000–)	Hose,Air Cleaner Coupling	1

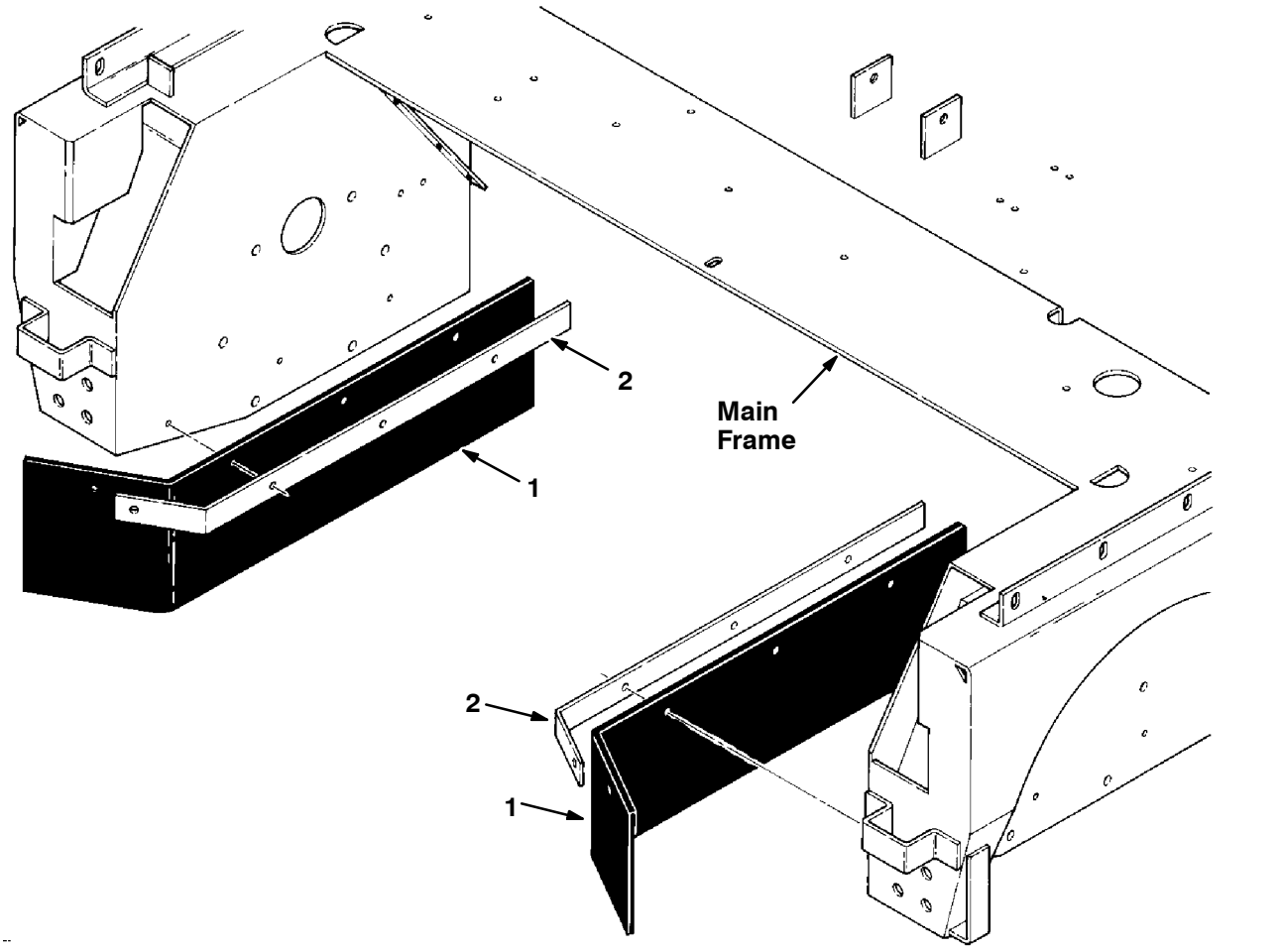

Fig. 27 -- Debris Deflector Kit

Key	Tennant Part No.	Machine Serial Number	Description	Qty.
	36779	(000000–)	Deflector Kit, Debris	1
1	36789	(000000–)	Skirt	2
2	36790	(000000–)	Retainer, Wheel Skirt	2

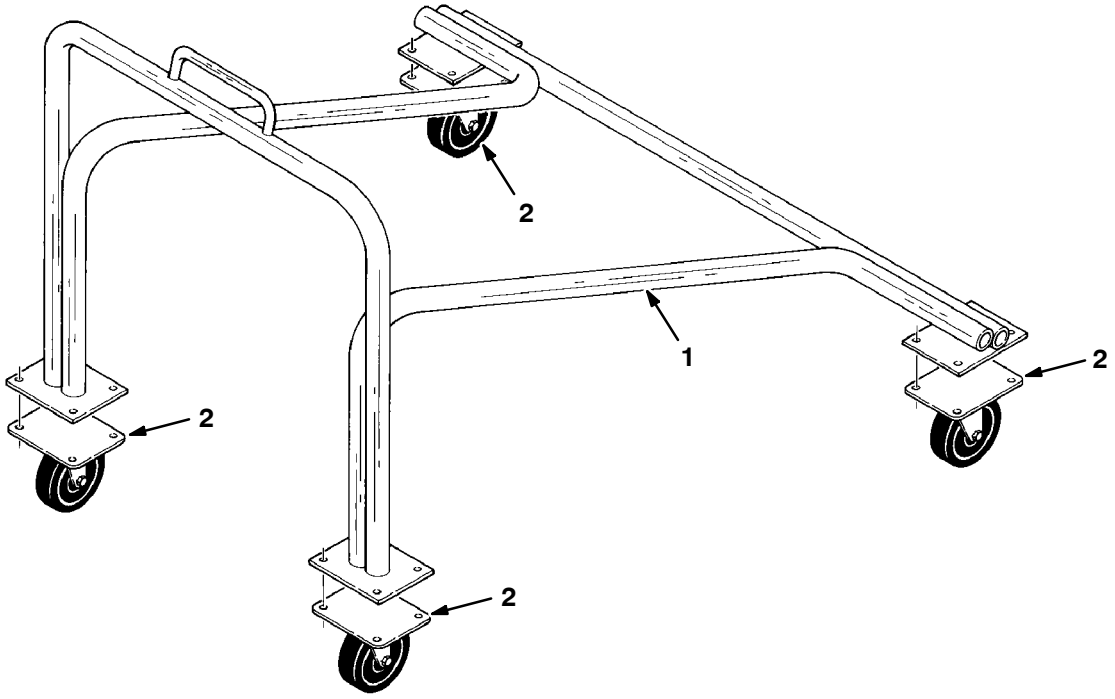

Fig. 28 – Hopper Dolly Kit, Low Dump, Multi–Level Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	52001	(000000–)	Dolly, Hopper	1
2	51701A	(000000–)	Caster, Swivel	4

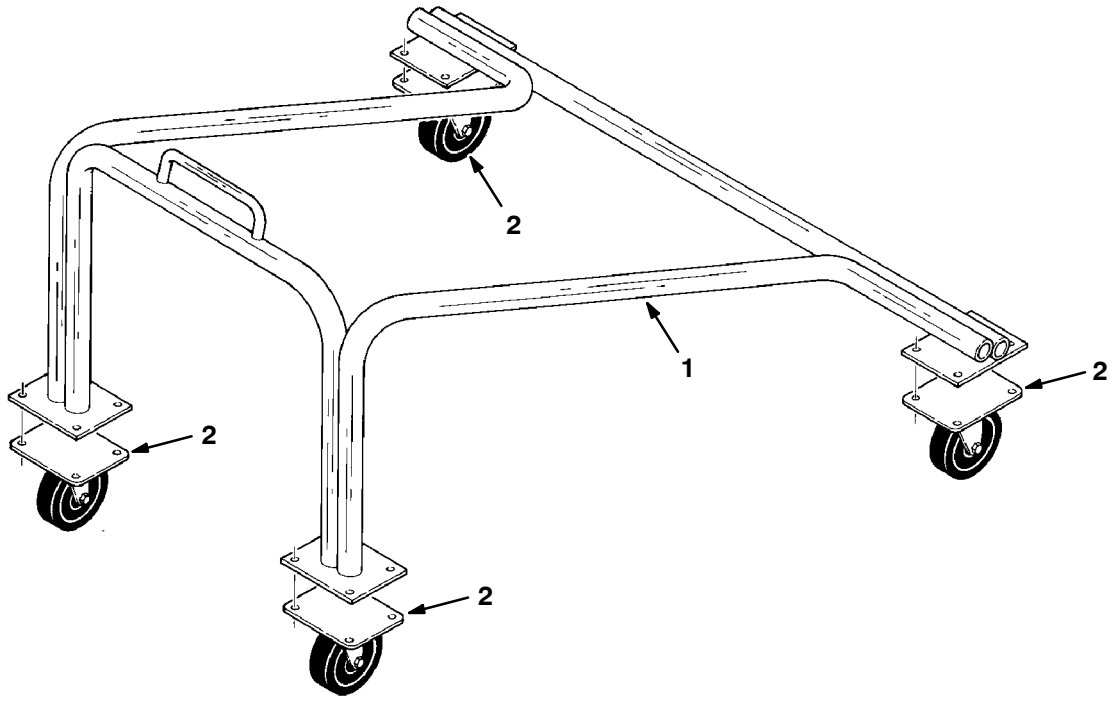

Fig. 29 – Hopper Dolly Kit, SE

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	39676	(000000–)	Dolly, Hopper	1
2	51701A	(000000–)	Caster, Swivel	4

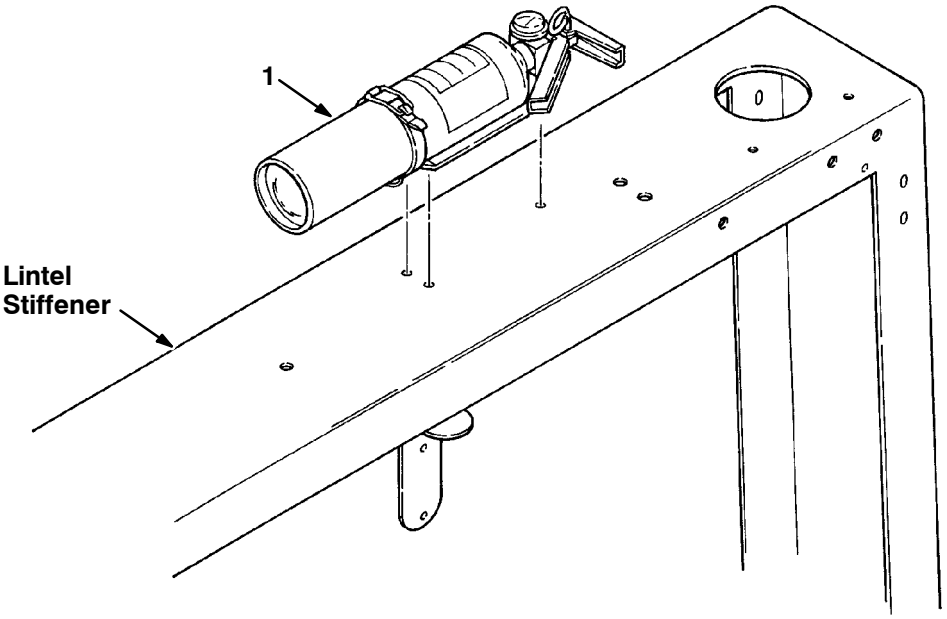

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Fig. 30 – Fire Extinguisher Kit

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	50615	(000000–)	Fire Extinguishing Kit	1
1	25312	(000000–)	Extinguisher, Fire	1

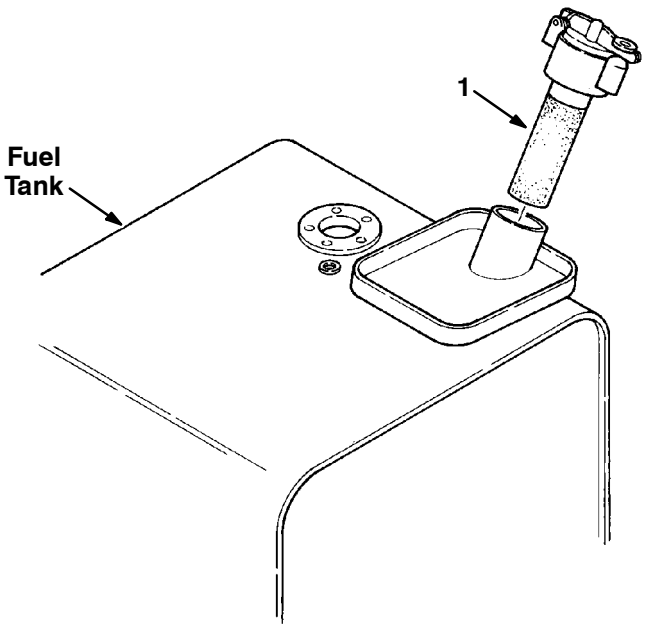

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Fig. 31 – Protectoseal Fuel Tank Cap

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	02506–6	(000000–)	Cap, Fuel Tank, Protectoseal	1

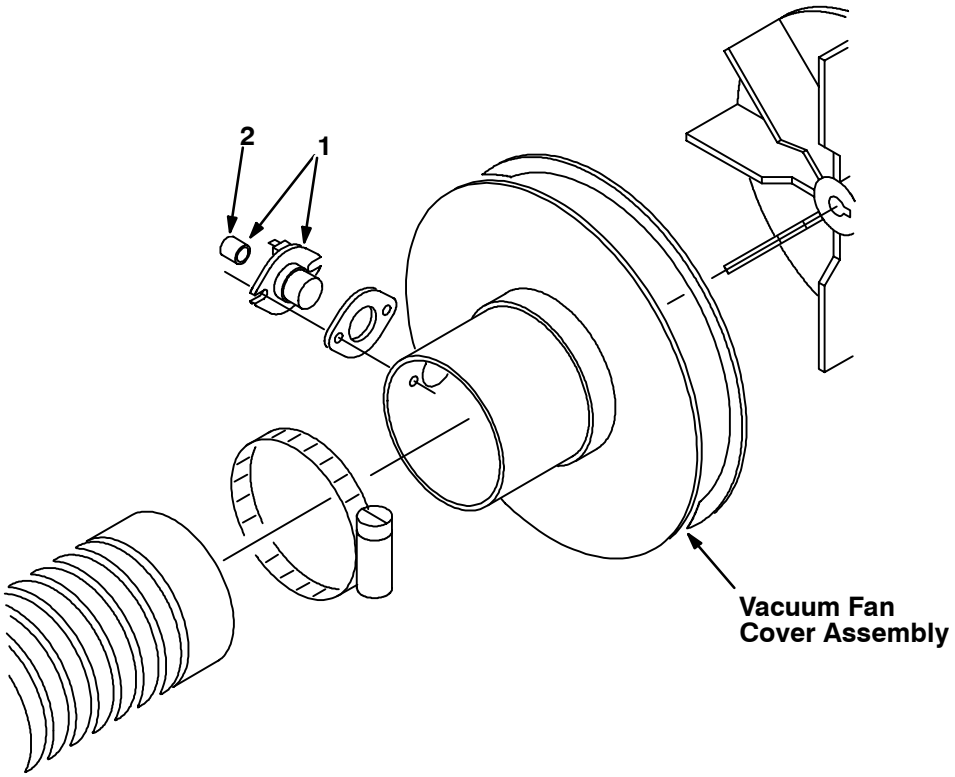

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Fig. 32 -- Thermostat Assembly

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	02713	(000000–)	Thermostat Assembly, 155 Deg	1
2	02940	(000000–)	Cap,Vinyl,Black–.38Idx.50X.03	1

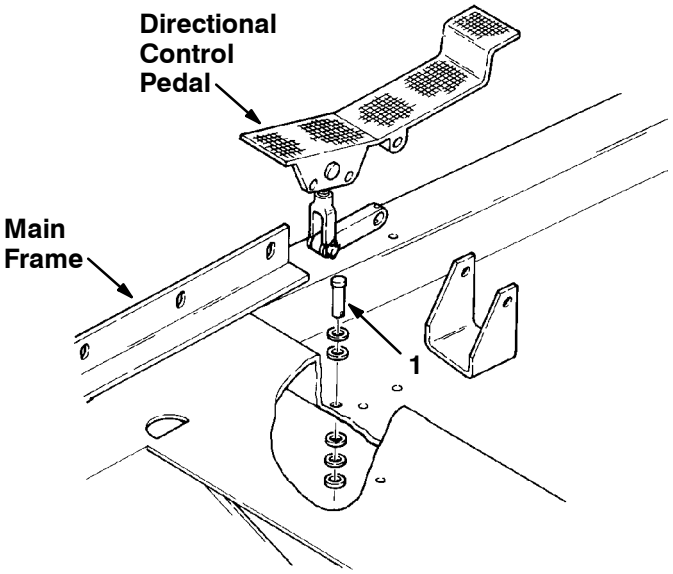

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Fig. 33 -- Speed Control Kit

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	52276	(000000–)	Speed Control Kit	1
1	43290	(000000–)	Pin, Clevis	1

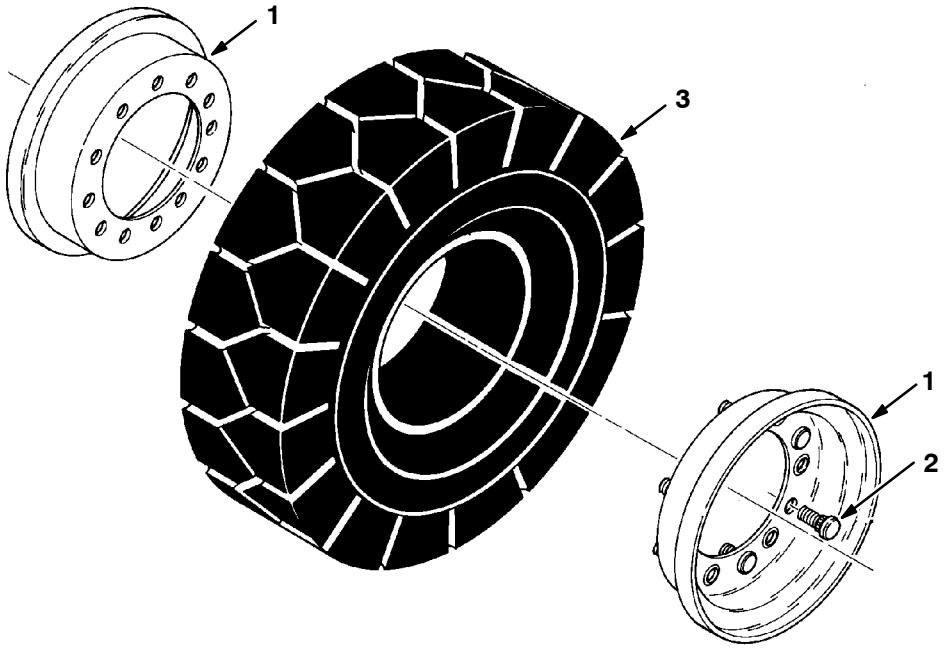

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Fig. 34 – Rear Wheel Kit, Low Dump

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	51705	(000000–)	Tire and Wheel Assembly	1
1	52775	(000000–)	Rim Assembly	1
2	51355	(000000–)	Stud, Wheel	6
3	51711	(000000–)	Tire	1

03452

Fig. 35 – Urethane Tire Kit

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	16869	(000000–)	Urethane Tire Kit	1

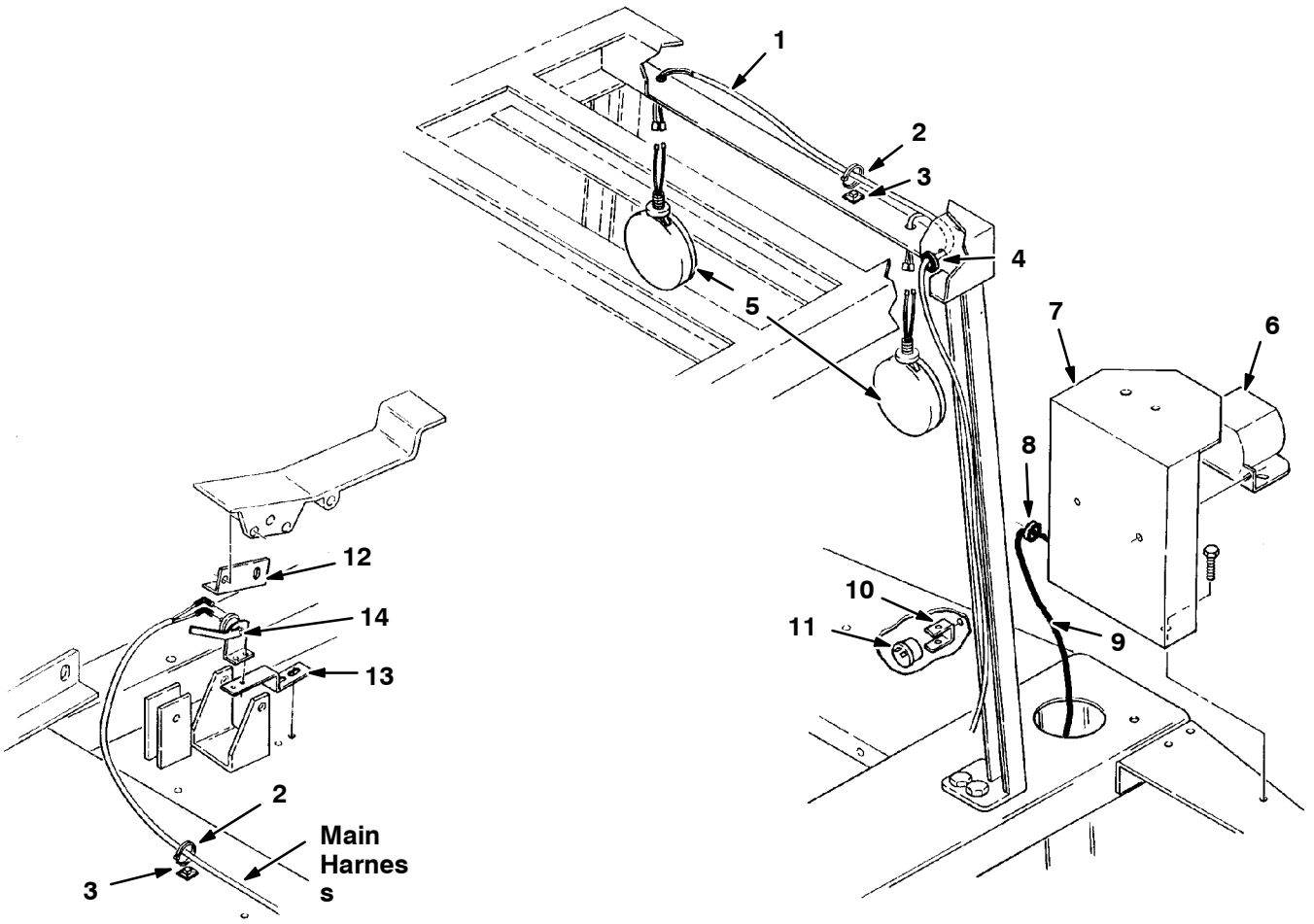

Fig. 36 -- Back--Up Alarm Kit

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
	60761	(000000–)	Alarm Kit, Back–Up Aud/V 97	1
1	60748	(000000–)	Harness, Wire, Back–Up Lights	1
2	49266	(000000–)	Tie, Cable 1.75D Max 7.50Lg	8
3	55248	(000000–)	Cabletie Mount, Adhesive	6
4	87514	(000000–)	Grommet,Rbr,0.44Id,For .25Matl	1
5	36438	(000000–)	Headlight Assy,210G	2
	36439	(000000–)	Bulb, 12V .9A 15Cp#1004	1
6	61920	(000000–)	Horn Assy, Back–Up Alarm	1
7	35955	(000000–)	Bracket, Rotating Light	1
8	10632–11	(000000–)	Grommet,Rbr,0.38Id,For .19Matl	1
9	60749	(000000–)	Harness, Wire,Flash/Horn Alarm	1
10	24576–1	(000000–)	Bracket, Flasher	1
11	24576	(000000–)	Flasher,12V.Ideal Co.Hd552Ps83	1
12	33891	(000000–)	Bracket, Cam, Back–Up Alarm	1
13	33879	(000000–)	Bracket, Switch, Back–Up Alarm	1
14	33878	(000000–)	Switch,A/V Alarm Prop.Pedal L	1

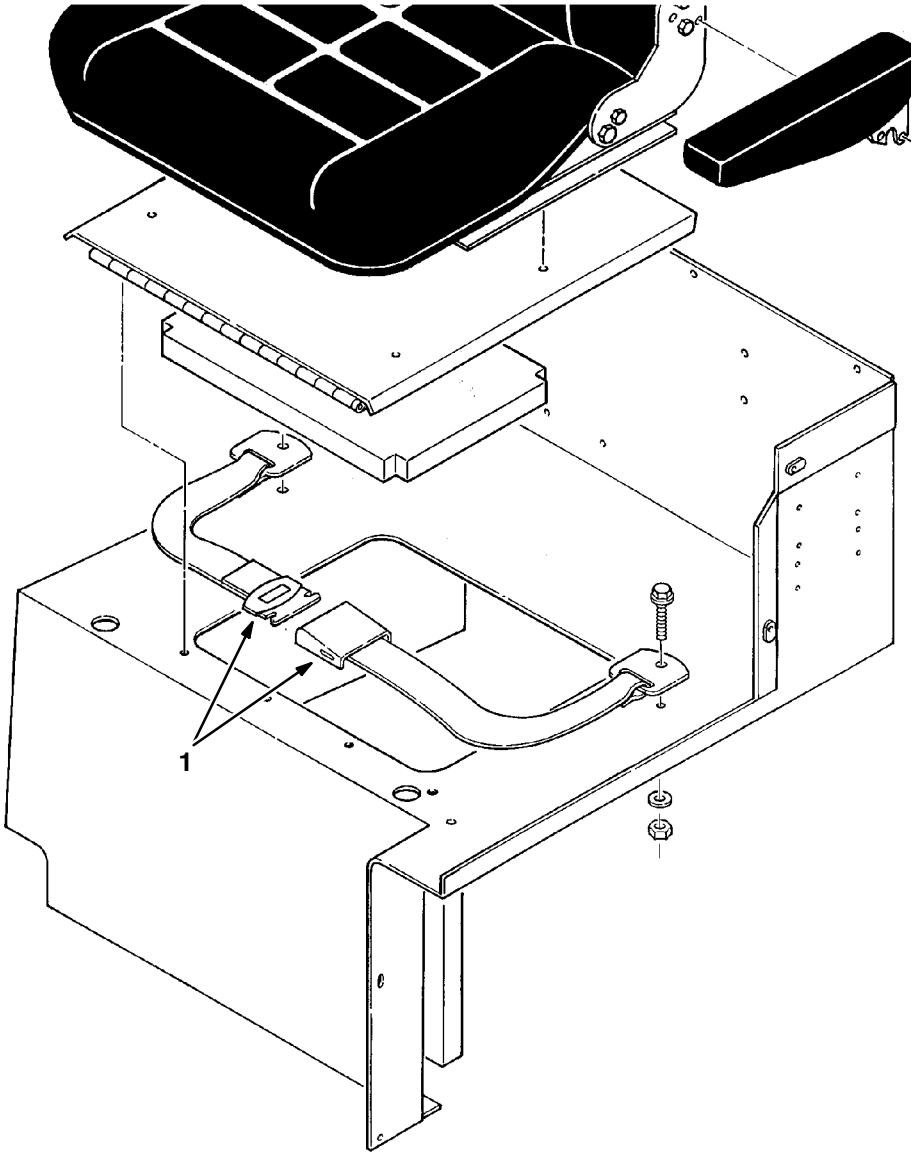

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Fig. 37 – Seat Belt Kit

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35960	(000000–)	Seat Belt Kit 97	1

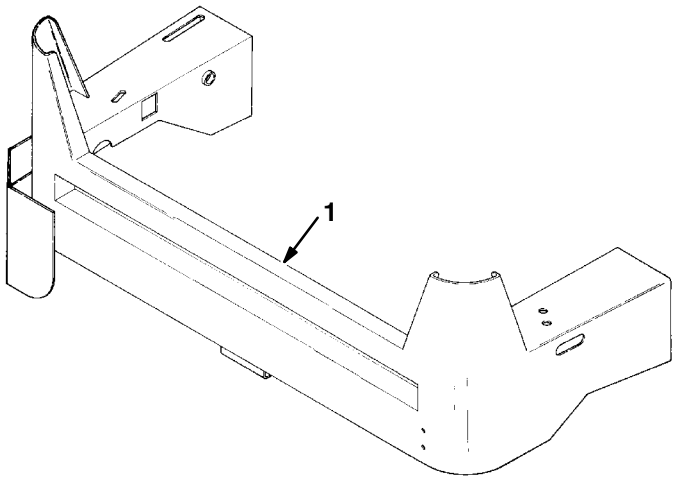

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Fig. 38 – Front Bumper Group, SE

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35764	(000000–)	Bumper Wldt, Front Se	1

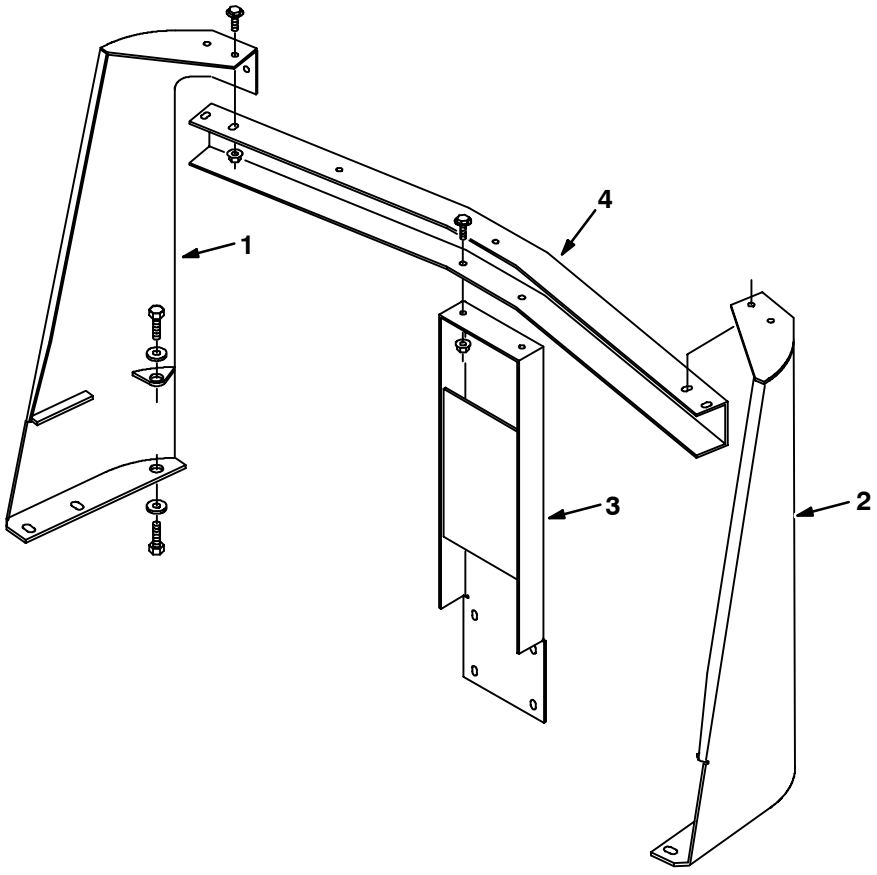

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Fig. 39 – Rear Bumper Group, SE

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35441	(000000–)	Tower Wldt, Rh	1
2	35442	(000000–)	Tower Wldt, Lh	1
3	35443	(000000–)	Channel Wldt, Center	1
4	35437	(000000–)	Channel, Top	1

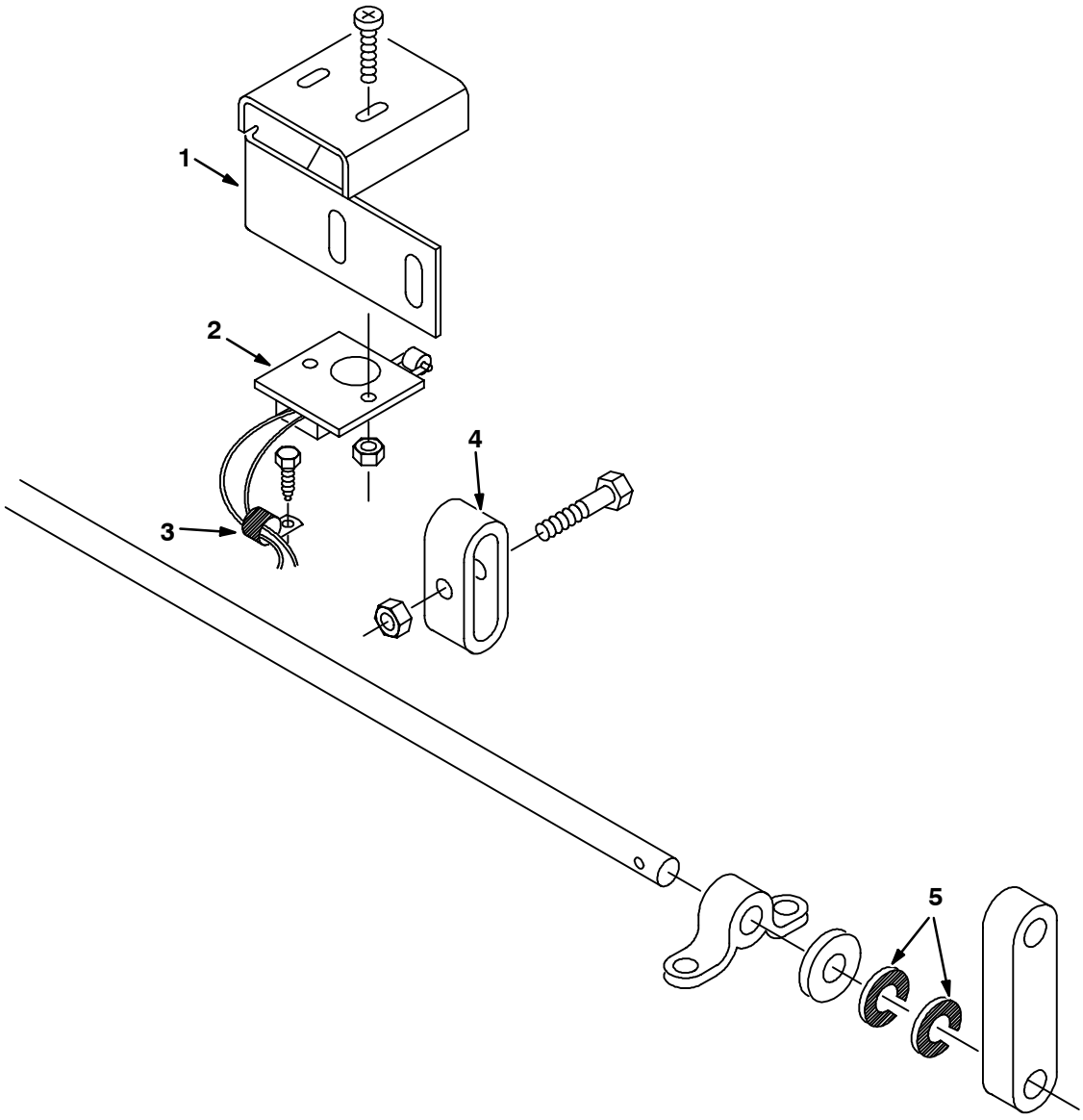


Fig. 40 – Neutral Start Switch Group, SE

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35876	(000000–)	Bracket	1
2	35905	(000000–)	Switch, Waterproof, 10A	1
3	40678	(000000–)	Clamp, Cable .44D .62Wide	1
4	39855	(000000–)	Bar–Link	1
5	46147	(000000–)	Washer, .50 B .88D .06Neopre	2

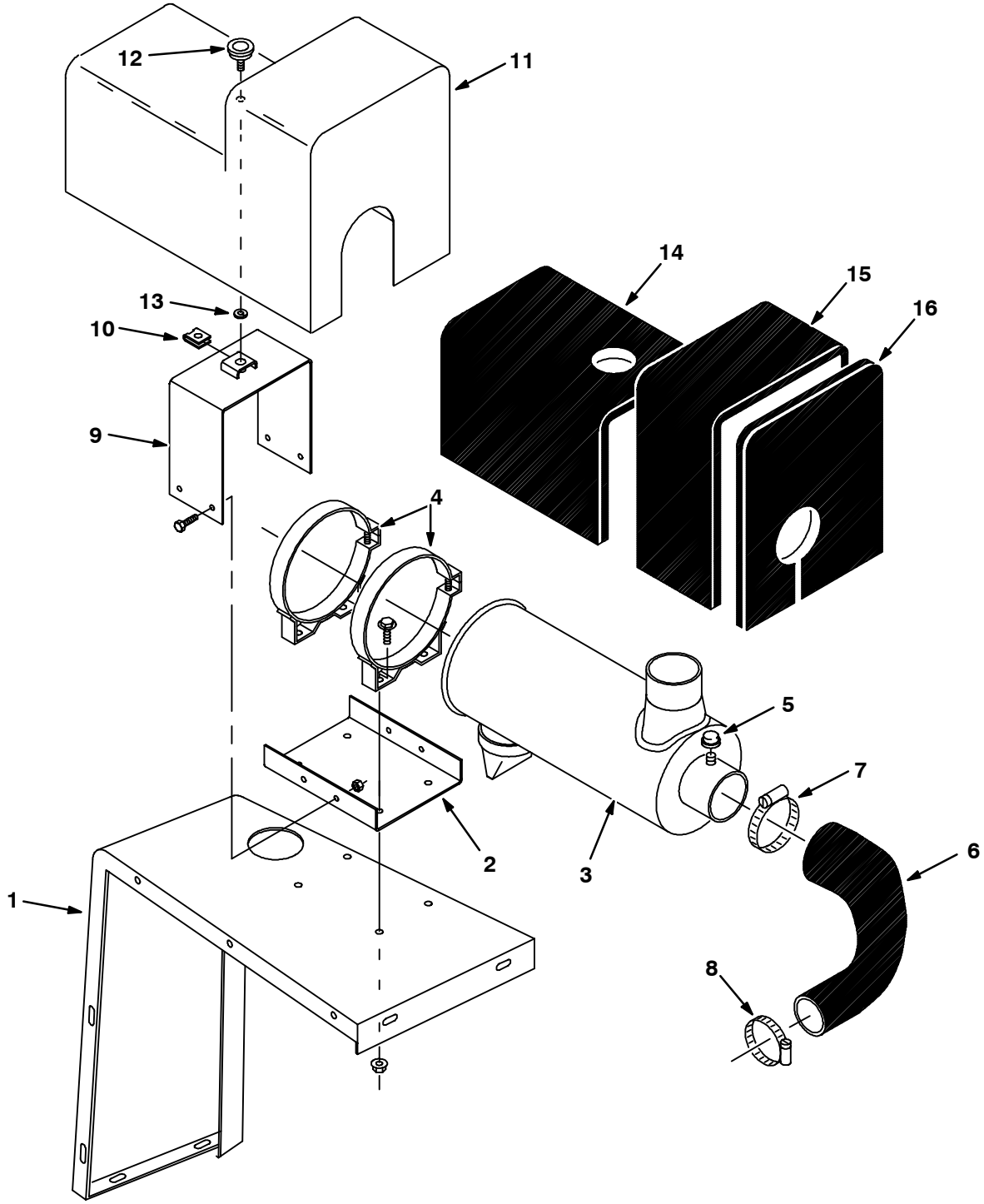


Fig. 41 -- Air Cleaner Group, SE

06650

Fig. 41 -- Air Cleaner Group, SE

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	60924	(000000–)	Panel Wldt, Corner, Rear, Rh	1
2	60906	(000000–)	Channel, Base	1
3	35424	(000000–)	Cleaner, Air	1
4	76321	(000000–)	Band,Mtg.	2
5	60745	(000000–)	Ftg Cap Npt 02Pf	1
6	35875	(000000–)	Hose, Molded,A Clnr	1
7	43555	(000000–)	Clamp–Wormdrive, 1.62– 3.50D	1
8	14432	(000000–)	Clamp–Wormdrive, 1.81– 2.75D	1
9	60909	(000000–)	Mount Wldt, Air Cleaner	1
10	28165	(000000–)	Fasten er,Southco# 17–10027–11	1
11	60918	(000000–)	Cover Wldt, Air Cleaner 97	1
12	29982	(000000–)	Knob,0.31–06,1.38Dia,Plastic	1
13	26015	(000000–)	Fastener,Southco# 17–10014–12	1
14	60910	(000000–)	Insul.,S/Foam.75X11.75X 12.12	1
15	60911	(000000–)	Insul.,S/Foam.75X 5.62X 33.88	1
16	60912	(000000–)	Insul.,S/Foam.75X 12.38X 10.38	1

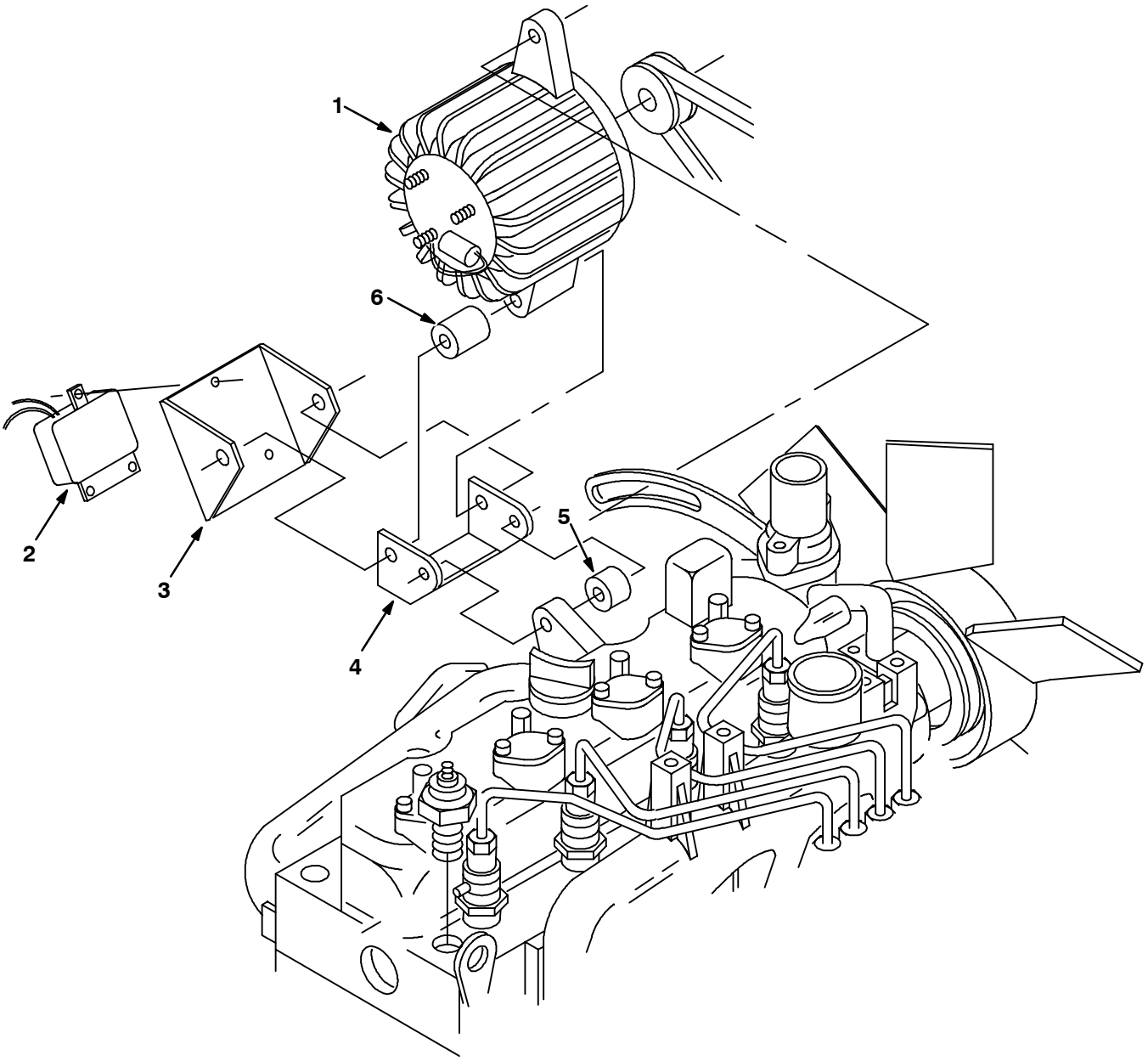


Fig. 42 – Alternator Group, Diesel, SE

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	39693–1	(000000–)	Alternator – Motorola	1
2	39693–2	(000000–)	Regulator – Motorola	1
3	34831	(000000–)	SE Reg.crad le	1
4	33701	(000000–)	Bracket, Alt Kubota SE	1
5	06918	(000000–)	Sleeve, .375B 1.00D .69 cd znc	1
6	33736	(000000–)	Sleeve, .56B 1.00D 1.19lg znc	1

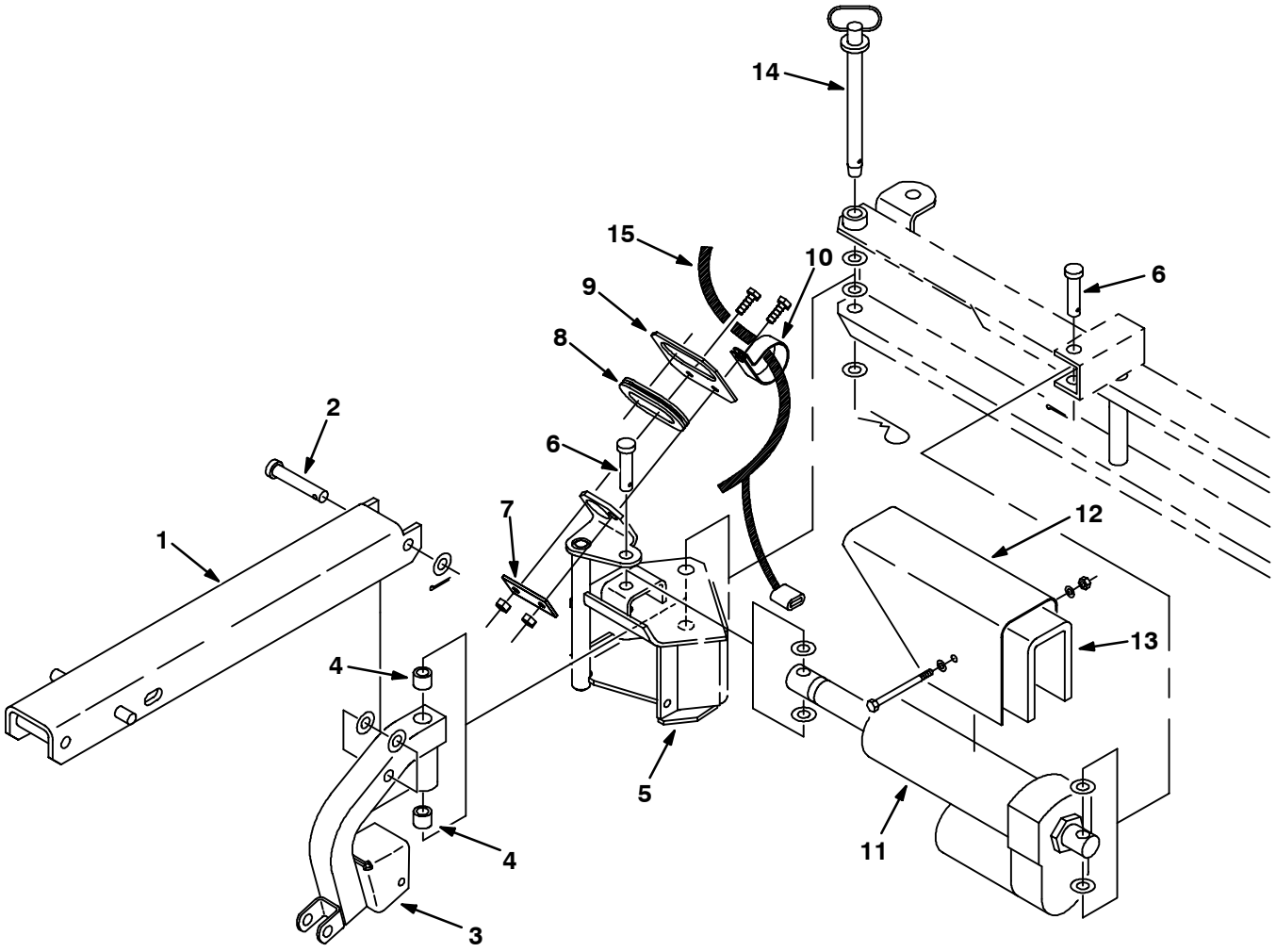


Fig. 43 -- Auxiliary Side Brush Pivot Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35253	(000000–)	Channel, Arm	1
2	23683	(000000–)	Pin,Clevis,0.50 Dia.X 3.00 Lg	1
3	35281	(000000–)	Arm Wldt, Brush Pivot	1
4	45097	(000000–)	Bearing, Fiberglide .62X.625	2
5	35274	(000000–)	Lever Wldt, Actuator Pivot	1
6	51534	(000000–)	Pin,Clevis,0.50 Dia.X2.00 Lg	2
7	35305	(000000–)	Plate, Mount	1
8	10632–19	(000000–)	Grommet, Rbr,2.12Id,For .12 Matl	1
9	35306	(000000–)	Plate, Hose Mount	1
10	43560	(000000–)	Clamp–Cable, 1.75Dia 0.75Wth	1
11	35426	(000000–)	Actuator Assy	1
12	35279	(000000–)	Cover, Actuator	1
13	34219	(000000–)	Foam, Acoustic 7.75X9.38X1.00	1
14	35278	(000000–)	Pin, Hitch, .62 Dia	1
15	35303	(000000–)	Harness, Wire, Actuator	1

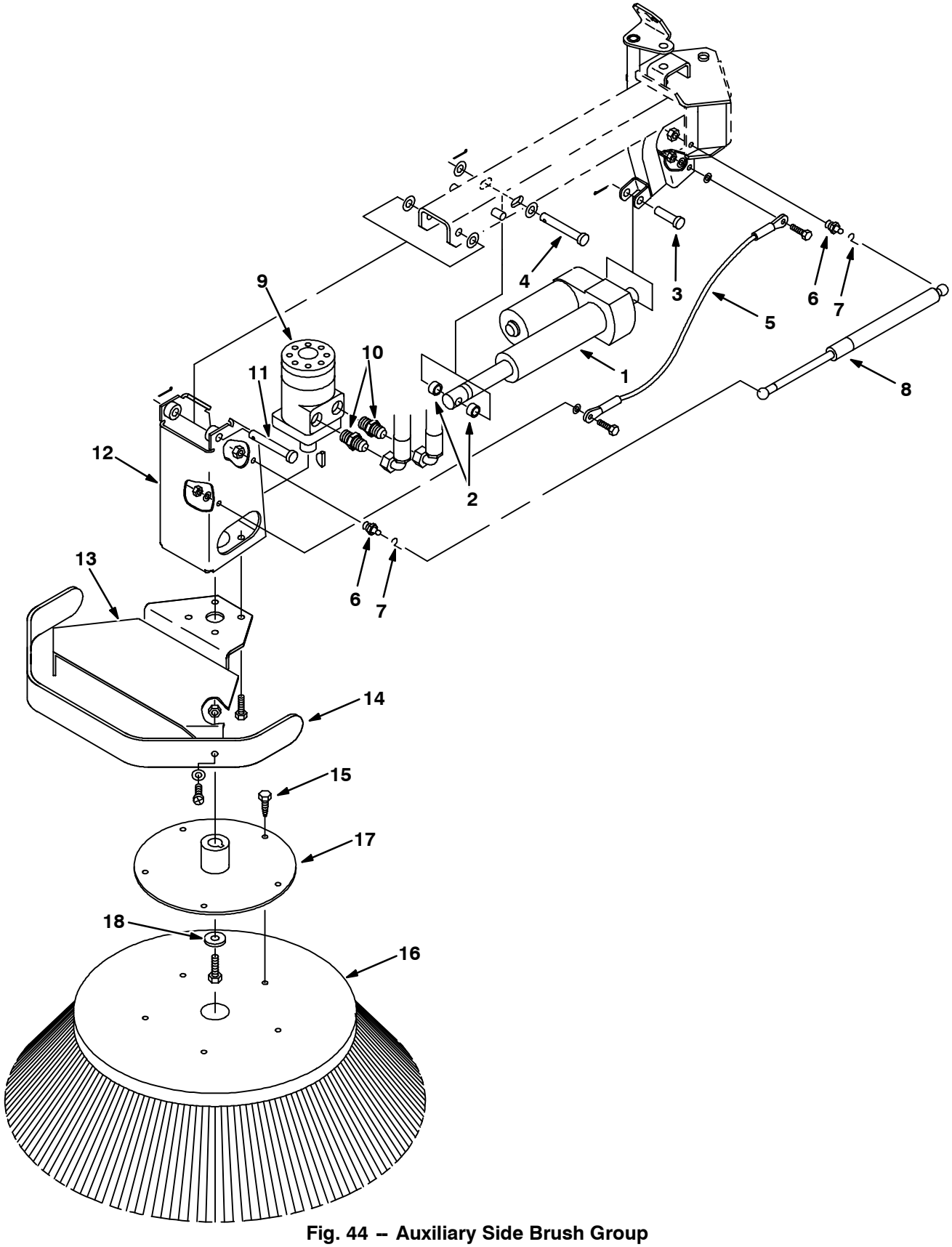


Fig. 44 -- Auxiliary Side Brush Group

06657

Fig. 44 – Auxiliary Side Brush Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35297	(000000–)	Actuator, 12 Vdc	1
2	82229	(000000–)	Sleeve, .562B .88D.50 Zinc	2
3	43290	(000000–)	Pin,Clevis,0.50 Dia.X 1.75 Lg	1
4	67290	(000000–)	Pin,Clevis,0.50 Dia.X 3.75 Lg	1
5	35298	(000000–)	Cable, Motor Bracket	1
6	58494	(000000–)	Stud, Ball, Gas Spring	2
7	64595	(000000–)	Clip, Safety	2
8	64535	(000000–)	Spring–Gas 120Lb 7.1 Stroke	1
9	19349	(000000–)	Motor–Hyd Gear In 5.9 B 2500	1
10	47508	(000000–)	Ftg–Hyd Str Jm06/Om10	2
11	51538	(000000–)	Pin,Clevis,0.50 Dia.X 5.00 Lg	1
12	35251	(000000–)	Bracket, Motor Mount	1
13	60743	(000000–)	Bracket, Bumper Support	1
14	51210	(000000–)	Bumper,Side Brush,Spring Steel	1
15	39394	(000000–)	Scr–Lag .31–09X1.25 Pltd	5
16	51021N	(000000–)	Brush–Side Swp –26 D – Nyl	1
17	35776	(000000–)	Plate Wldt, Support,Side Brush	1
18	19191	(000000–)	Spacer, Hub	1

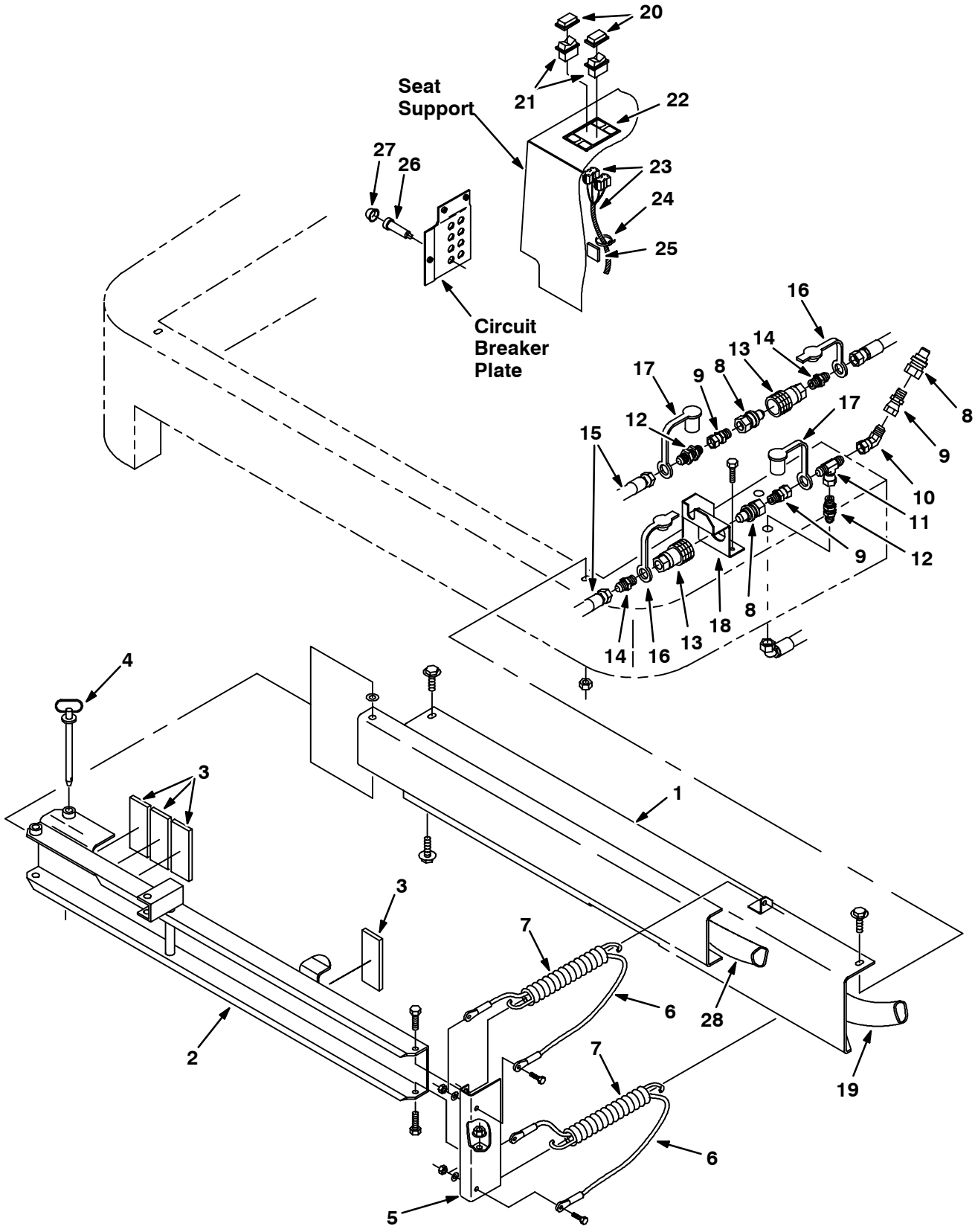


Fig. 45 -- Auxiliary Side Brush Bumper and Hydraulics Group

06659

Fig. 45 – Auxiliary Side Brush Bumper and Hydraulics Group

Key	TENNANT Part No.	Machine Serial Number	Description	Qty.
1	35258	(000000–)	Channel Wldt	1
2	35264	(000000–)	Channel Wldt, Cross	1
3	35280	(000000–)	Seal	4
4	35278	(000000–)	Pin, Hitch, .62 Dia	1
5	35313	(000000–)	Bracket Wldt	1
6	35298	(000000–)	Cable, Motor Bracket	2
7	47745	(000000–)	Sprng,Tens,1.12Odx.14Wire 6.3L	2
8	16817	(000000–)	Ftg–Hyd Coupling Half Mal Of06	3
9	35432	(000000–)	Ftg–Hyd Str Jf06/Om06	3
10	16472	(000000–)	Ftg–Hyd E45 Jm06/Jf06	1
11	35586	(000000–)	Ftg–Hyd Tee1 Jm06Jfjm	1
12	16864	(000000–)	Ftg–Hyd Str Jm06/Jm06	2
13	16818	(000000–)	Ftg–Hyd Coupling Half Fem Of06	2
14	56690	(000000–)	Ftg–Hyd Str Jm06/Om06	2
15	35951	(000000–)	Hose–Hyd Med06 Jf/J9	2
16	60746	(000000–)	Dust Plug–Hyd, Coupling 06	2
17	60747	(000000–)	Cap, Dust–Hyd Coupling 06	2
18	35429	(000000–)	Bracket Wldt, Hose	1
19	34329	(000000–)	Sleeve–Nyln #28 20.0L	1
20	57807	(000000–)	Cover, Rocker Switch Seal	2
21	30394	(000000–)	Switch, Rocker Dpdt (Mom)	2
22	35304	(000000–)	Label, Brush Control	1
23	35913	(000000–)	Harness, Wire,Power	1
24	49266	(000000–)	Tie, Cable 1.75D Max7.50Lg	13
25	55248	(000000–)	Cabletie Mount, Adhesive	3
26	57803	(000000–)	Breaker–Circuit, 15 Resetbl	1
27	57751	(000000–)	Boot–Circuit Breaker	1
28	34313	(000000–)	Sleeve, Hyd.Hose 1.75Id X 67.0	1

SECTION 8

CONTENTS

NOTE: SECTION 8, HYDRAULIC COMPONENTS, *lists repair parts for repairable hydraulic components.*

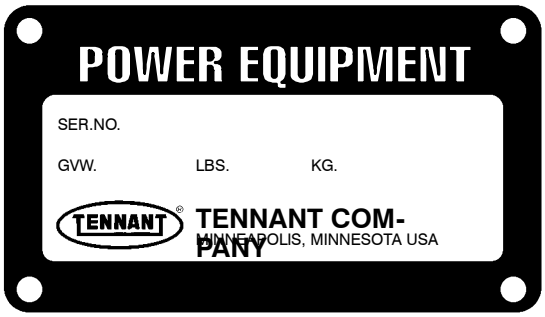
ORDERING REPAIR PARTS

The components used in this machine have been carefully selected for performance and safety. Use only TENNANT specified or equivalent parts.

To receive prompt service in filling of your parts orders, please direct all orders for parts with TENNANT part numbers to the TENNANT, and all orders for parts with vendor part numbers to the local supplier of the respective vendor.

When ordering parts, please furnish all of the following information:

1. Machine model number - shown on the machine data plate.



2. Machine serial number - shown on the machine data plate.
3. Power source - gasoline, LPG, diesel, electric.
4. Company name.
5. Shipping address.
6. Billing address.
7. Name, first and last - of person ordering parts.
8. Telephone number.
9. Purchase order number.
10. Part number, description, and quantity - of each item on the order.
11. Customer ID Number.

Do not order parts by key number or the figure number of the illustrated parts. Indented items indicate parts of assemblies. Standard hardware is furnished only when part of a purchased assembly. Please get hardware from a local hardware supplier.

If the old part cannot be identified, send it to us with the quantity needed specified on the order.

Any claim for loss or damage to a shipment in transit should be filed promptly against the transportation company making the delivery. Shipments will be complete unless the packing list or order acknowledgement indicate items back ordered.

If parts received are suspected to be incorrect or defective, please write, wire, or phone the TENNANT representative from whom you ordered the part. They will give authorization for return and/or handle replacement shipments when required.

SERIAL NUMBER INFORMATION EXPLANATION

Serial number listings are shown to indicate on which machines each part can be used. These listings are explained by the following examples:

(000000–) The part can be used on all machines.

(003342–) The part can be used on all machines beginning with the serial number listed.

(000000–004320) The part can be used on all machines up to and including serial number listed.

(004321–005678) The part can be used on all machines between and including the serial numbers listed.

Where xxxxxx's are listed in place of a serial number, it indicates a change was made but the exact serial number had not been established when the catalog went to press.

SI UNITS OF MEASURE (INTERNATIONAL SYSTEM)

Metric equivalents have been included, where applicable, throughout this parts catalog.

FASTENER STRENGTH IDENTIFICATION

Fasteners required to have high–strength qualities equivalent to SAE Grade 8 are identified throughout this catalog by the description GR 8. Unless identified by this description, all standard fasteners are SAE Grade 5.

(Specifications and design subject to change without notice.)

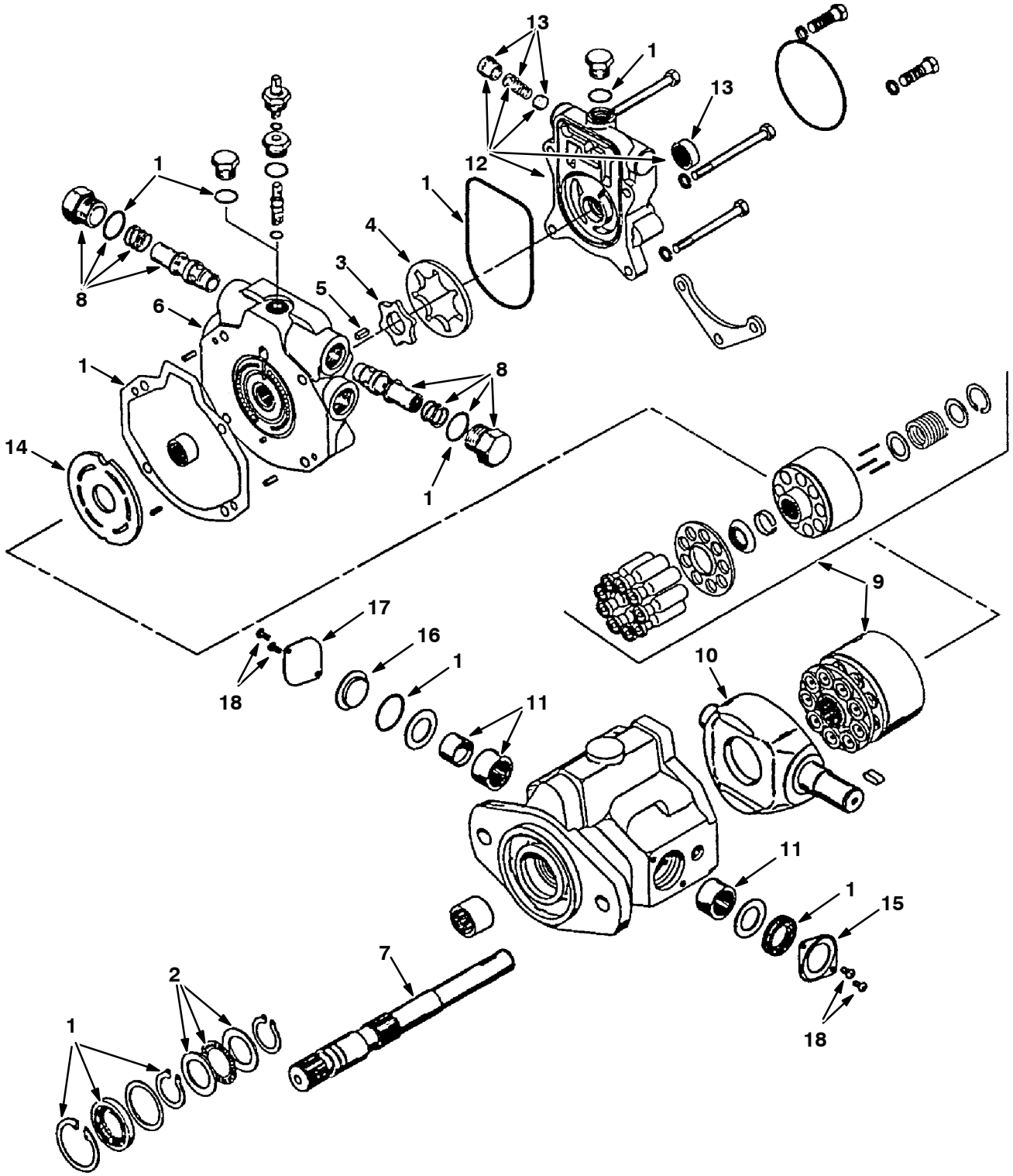
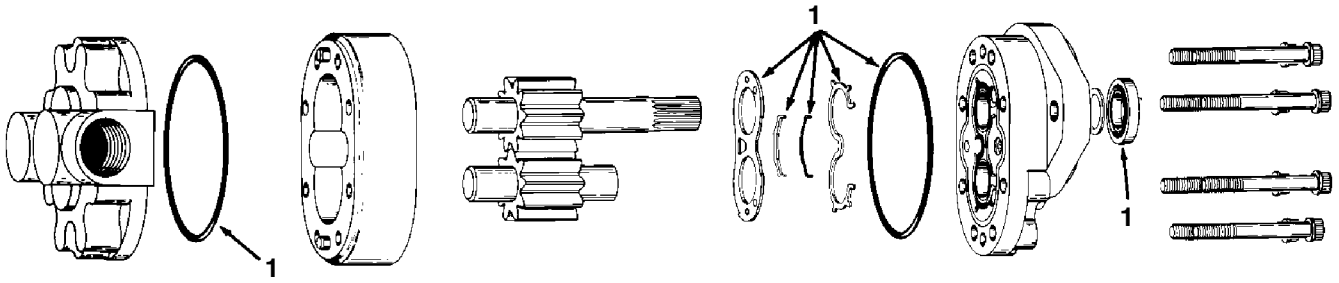


Fig. 1 – Hydraulic Pump Breakdown, 35730

06760

Fig. 1 – Hydraulic Pump Breakdown, 35730

Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty.
	35730	(000000–)	Pump, Hyd Piston	1
1	61881	(000000–)	Seal Kit En	1
2	37467	(000000–)	Brg.Repair Kit Ce	1
3	61877	(000000–)	Inner Gerotor En	1
4	61878	(000000–)	Outer Gerotor En	1
5	61879	(000000–)	Key En	1
6	61880	(000000–)	Backplate En	1
7	34094	(000000–)	Drive Shaft Ce	1
8	34160	(000000–)	Relief Valve Ce	1
9	61882	(000000–)	Rotating Kit En	1
10	61883	(000000–)	Cam Plate En	1
11	34097	(000000–)	Bearing & Inner Race	2
12	61876	(000000–)	Chg.Pmp.Adaptor En	1
13	55936	(000000–)	Valve Kit, Relief, Chrg Pump	1
14	61886	(000000–)	Valve Plate En	1
15	61888	(000000–)	Cover Seal En	1
16	61889	(000000–)	O–Ring Cover En	1
17	61890	(000000–)	Trunion Cover En	1
18	61891	(000000–)	Screws En	4



06762

Fig. 2 – Accessories Pump Breakdown, 35490

Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty.
	35490	(000000–)	Pump–Hyd, Gear Ex 1.37 2500	1
1	57064	(000000–)	Seal Kit,Pump Ce	1

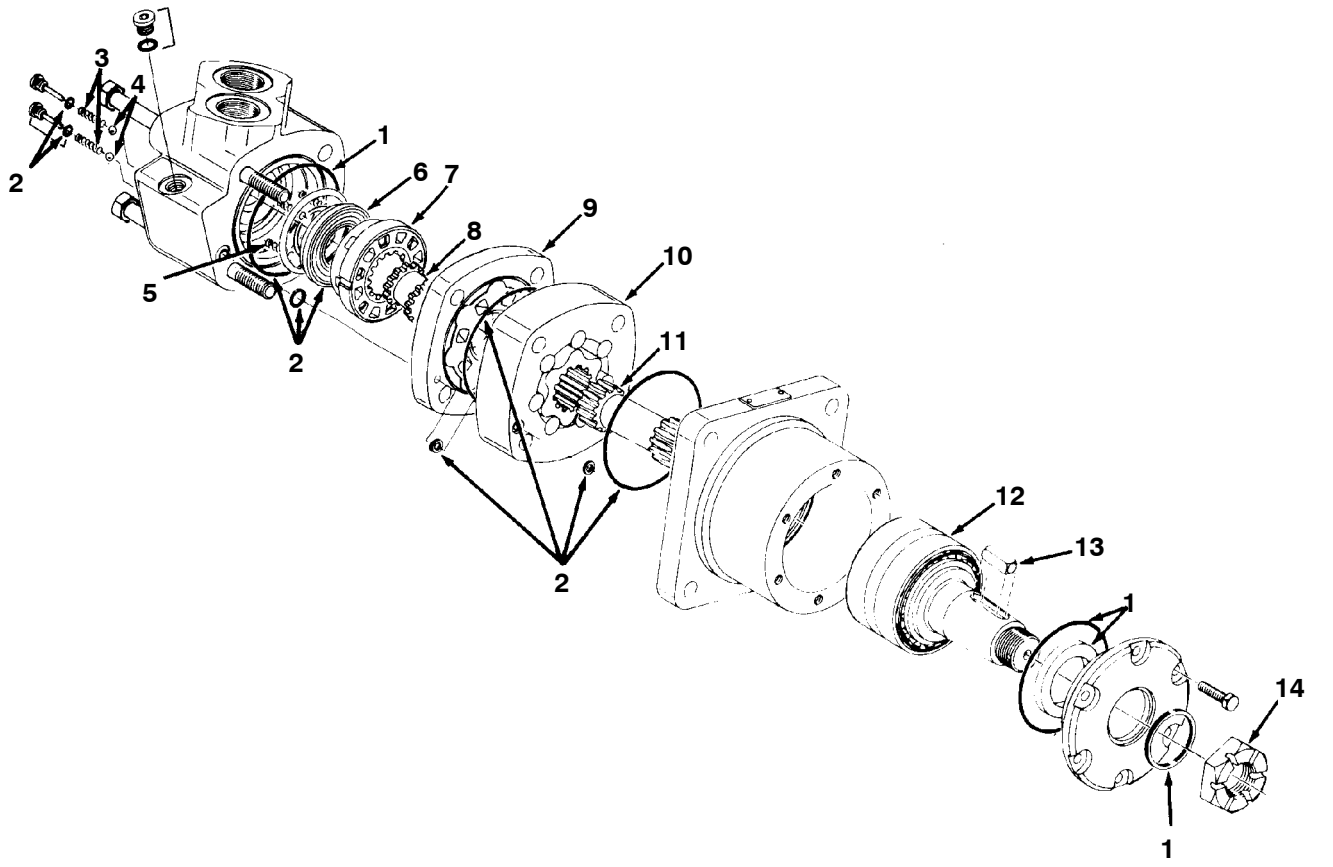
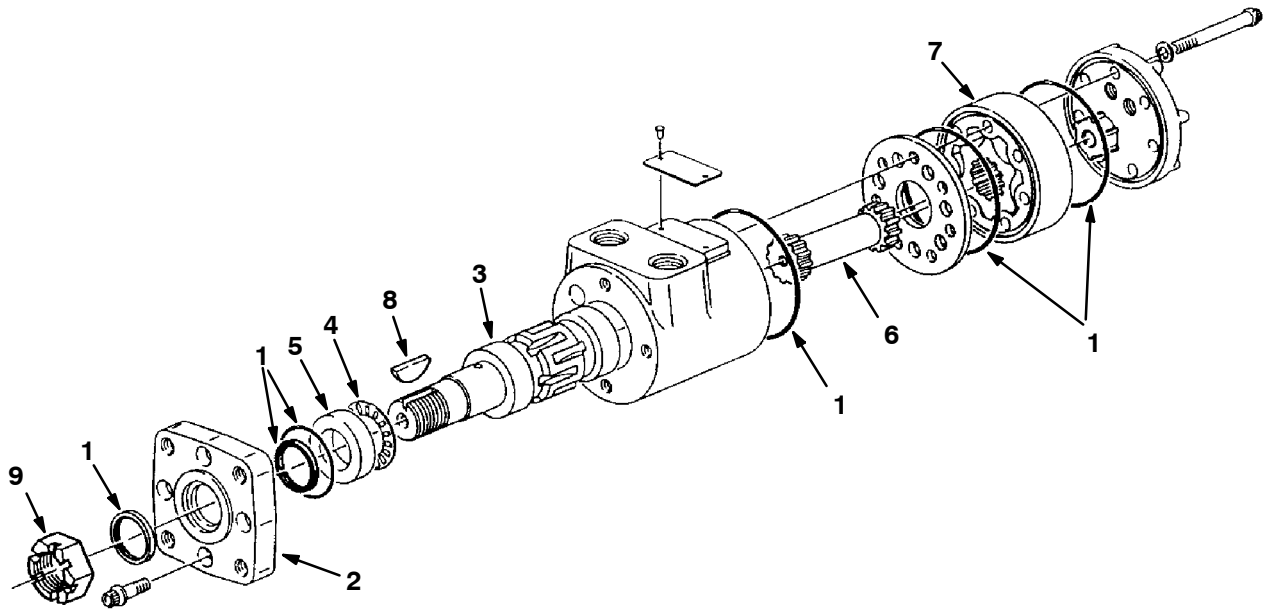


Fig. 3 – Motor Breakdown, 75025

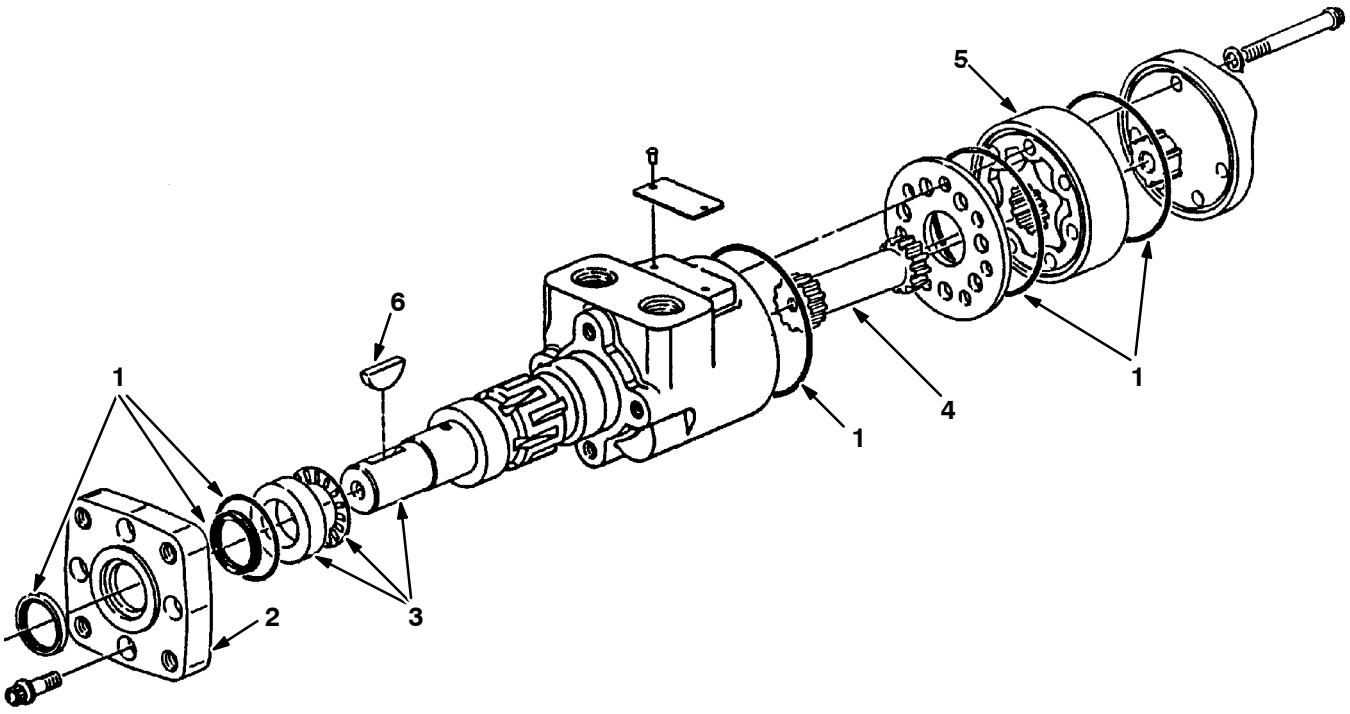
Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty.
	75025	(000000–)	Motor, Propelling	1
1	SK1547	(000000–)	Seal Kit, Shaft	1
2	SK1614	(000000–)	Seal Kit, Overhaul	1
3	34179	(000000–)	Spring	2
4	37766	(000000–)	Ball, Steel	3
5	34178	(000000–)	Spring	3
6	37723	(000000–)	Plate, Balance	1
7	34185	(000000–)	Valve	1
8	34183	(000000–)	Drive, Valve	1
9	34184	(000000–)	Plate, Valve	1
10	34182	(000000–)	Gerotor	1
11	34181	(000000–)	Drive	1
12	34180	(000000–)	Shaft and Bearing Kit	1
13	45623	(000000–)	Key	1
14	45622	(000000–)	Nut	1



05347

Fig. 4 -- Hydraulic Motor Breakdown, 27800

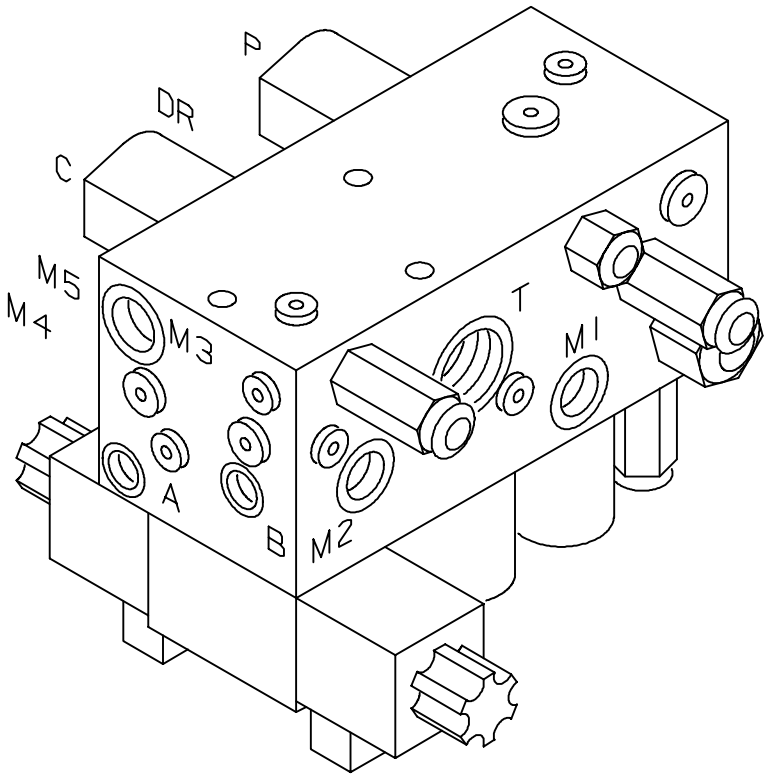
Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty
	27800	(000000–)	Motor, Hydraulic	1
1	28835	(000000–)	Seal Kit	1
2	31354	(000000–)	Flange, Mounting	1
	31374	(000000–)	Output Shaft Assembly	1
3	31375	(000000–)	Shaft, Output	1
4	45628	(000000–)	Bearing	1
5	16695	(000000–)	Race, Thrust	1
6	31380	(000000–)	Drive	1
7	31383	(000000–)	Gerotor Set	1
8	00500–15	(000000–)	Key, Woodruff	1
9	39527	(000000–)	Nut, slotted Hex	1



05188

Fig. 5 -- Hydraulic Motor Breakdown, 19349

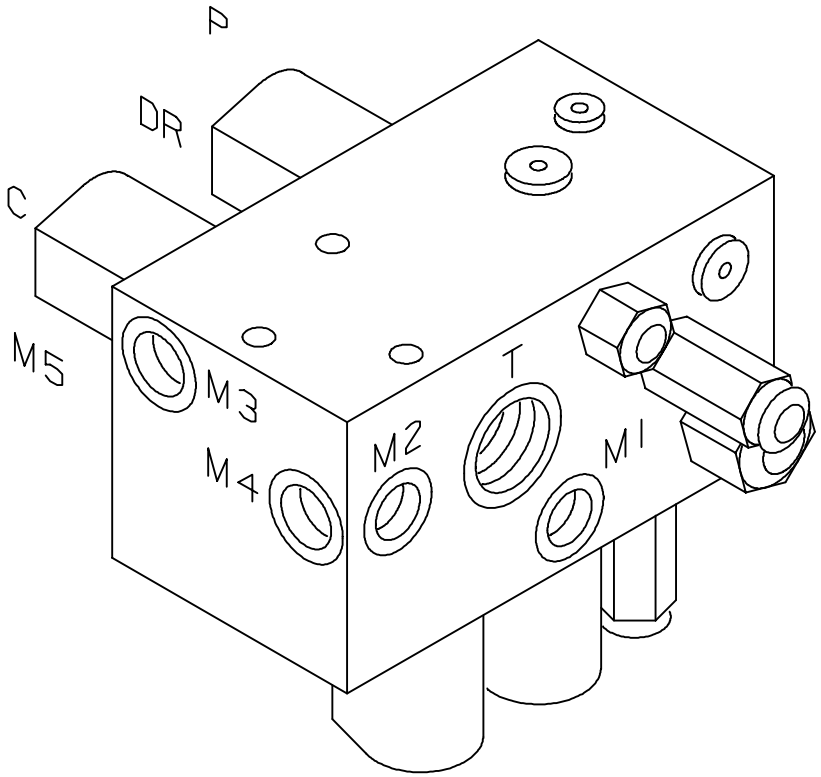
Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty.
	19349	(000000–)	Motor, Hydraulic	1
1	28835	(000000–)	Seal, Kit	1
2	31354	(000000–)	Flange, Mounting	1
3	28853	(000000–)	Shaft Assembly, Output	1
4	34172	(000000–)	Drive	1
5	57542	(000000–)	Geroter Set	1
6	00500–15	(000000–)	Key, Woodruff	1



06765

Fig. 6 – Hydraulic Solenoid Valve Breakdown, 35491

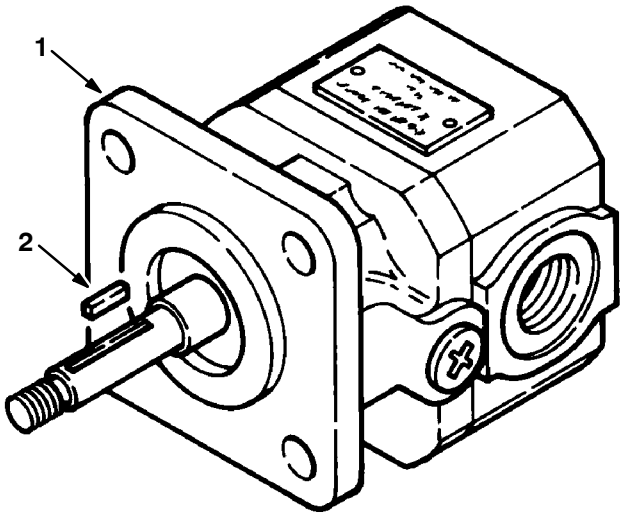
Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty.
	35491	(000000–)	Valve–Hyd, Solenoid	1
1	35494	(000000–)	Cart,Pri.Flowreg Cp	1
2	35495	(000000–)	Cart,Difrel.Cp	1
3	35496	(000000–)	Cart,Po Rel.Cp	1
4	35050	(000000–)	Logic Valve Cp	1
5	13894	(000000–)	Flow Control1 Cp	1
6	13899	(000000–)	Reliefvlv3&4 Cp	1
7	02607	(000000–)	Valve Cartrdg Cp	4
8	25629	(000000–)	Valve,Stem–4Way Cp	1
9	35497	(000000–)	Valve Stem N.O. Cp	1
10	35493	(000000–)	Coil Assy 12Vdc Cp	6
11	13909	(000000–)	Valve Assy Ph Cp	1
12	33932	(000000–)	Nut–Hxlocnyln M 4X0.7 Reg Ss	2
13	13902	(000000–)	Plug #2 Cp	7
14	13903	(000000–)	Plug, Gage #4 Cp	5
15	13904	(000000–)	Plug, Gage #6 Cp	5
16	13891	(000000–)	Seal Kit–Prtl Cp	1
17	13893	(000000–)	Seal Kit–Comp Cp	1



06763

Fig. 7 – Hydraulic Solenoid Valve Breakdown, 35492

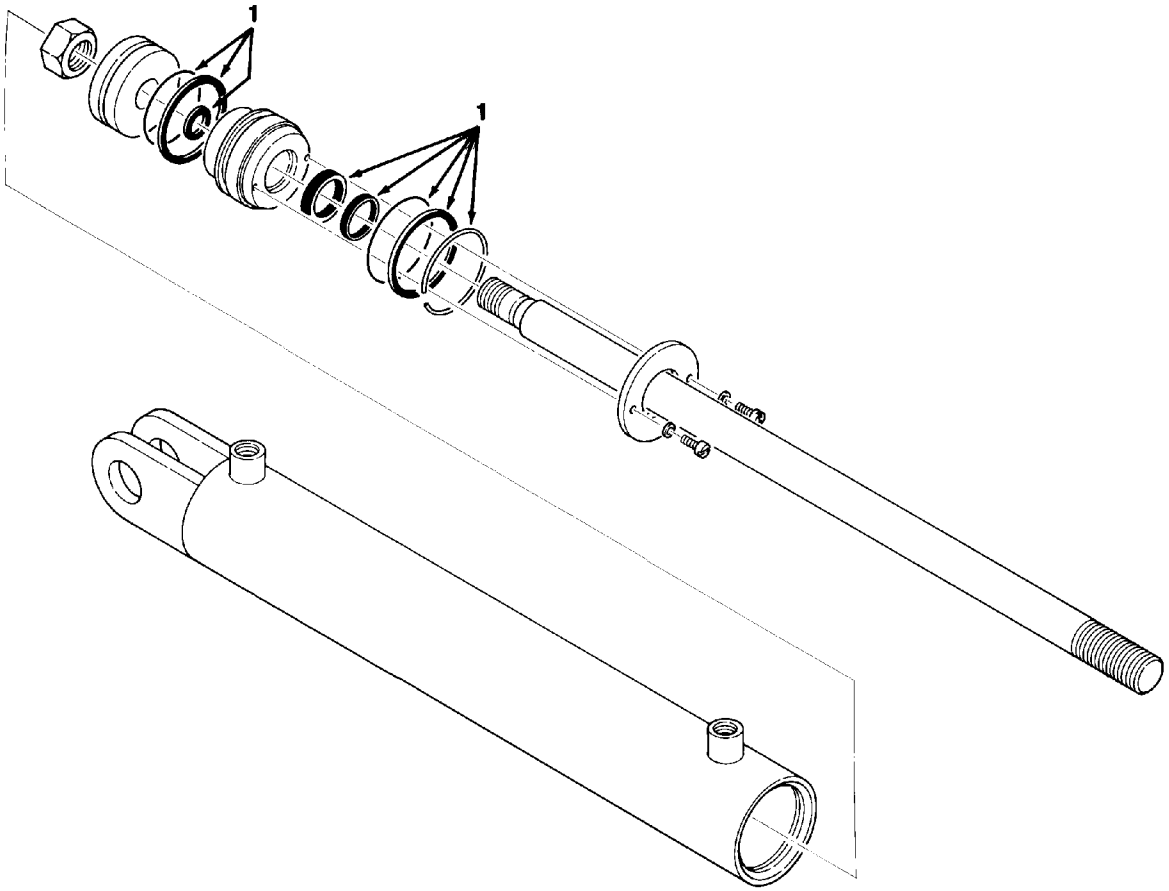
Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty.
	35492	(000000–)	Valve Hyd, Solenoid	1
1	35494	(000000–)	Cart,Pri.Flowreg Cp	1
2	35495	(000000–)	Cart,Difrel.Cp	1
3	35496	(000000–)	Cart,Po Rel.Cp	1
4	35050	(000000–)	Logic Valve Cp	1
5	13894	(000000–)	Flow Control1 Cp	1
6	02607	(000000–)	Valve Cartrdg Cp	4
7	25629	(000000–)	Valve,Stem–4Way Cp	1
8	35497	(000000–)	Valve Stem N.O. Cp	1
9	35493	(000000–)	Coil Assy 12Vdc Cp	6
10	13902	(000000–)	Plug #2 Cp	5
11	13903	(000000–)	Plug, Gage #4 Cp	1
12	13904	(000000–)	Plug, Gage #6 Cp	4
13	13891	(000000–)	Seal Kit–Prtl Cp	1
14	13893	(000000–)	Seal Kit–Comp Cp	1



02613

Fig. 8 – Motor Breakdown, 77101

Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty.
1	77101	(000000–)	Motor, Hydraulic	1
	SK2561	(000000–)	Seal Kit	1
2	00966	(000000–)	Key, Square	1



02819

Fig. 9 – Cylinder Breakdown, 04443

Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty.
	04443	(000000–)	Cylinder, Hydraulic	1
1	04477	(000000–)	Seal Kit	1

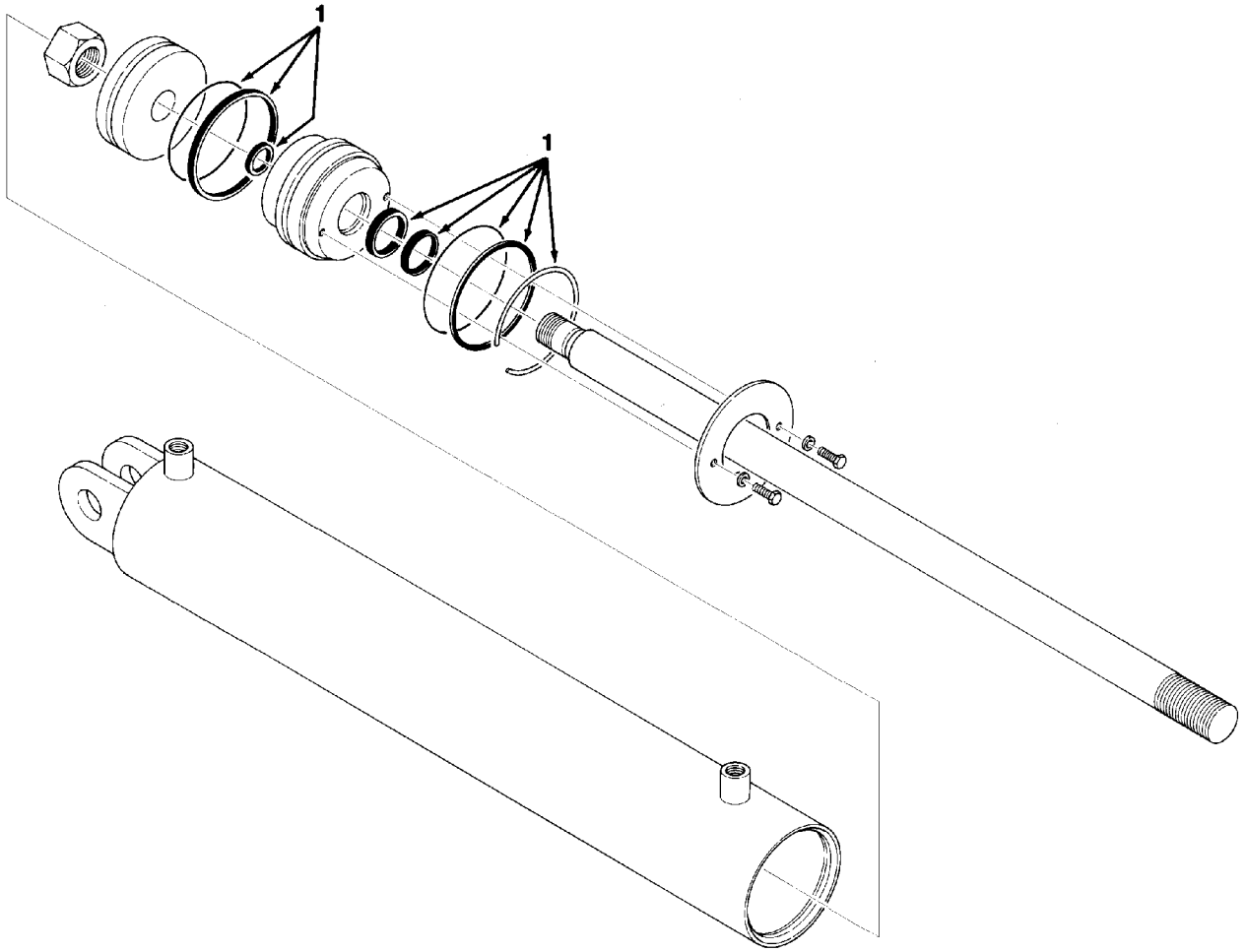
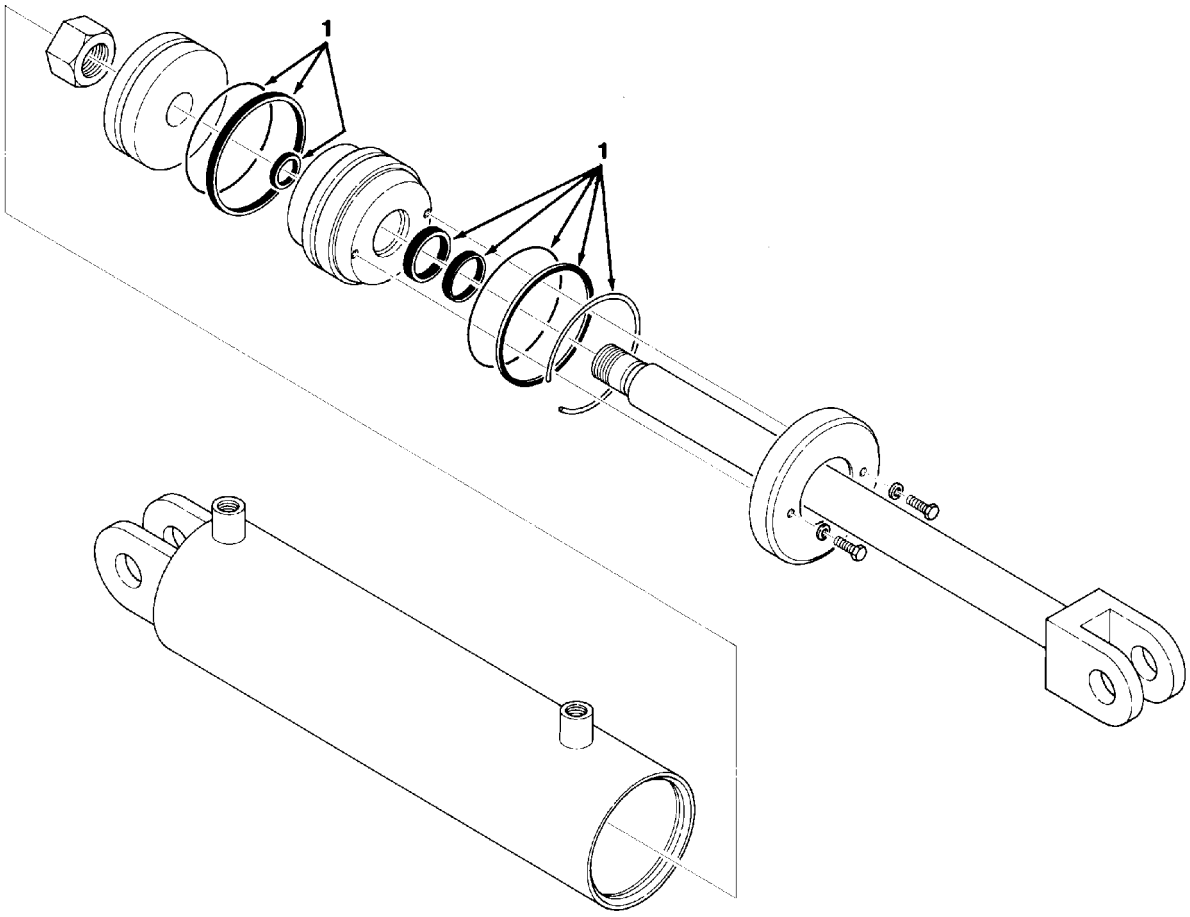


Fig. 10 – Cylinder Breakdown, 34326

Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty.
	34326	(000000–)	Cylinder, Hydraulic	1
1	34779	(000000–)	Seal Kit	1



02821

Fig. 11 – Cylinder Breakdown, 34327

Key	TENNANT Part No.	Manufacturer Serial Number	Description	Qty.
	34327	(000000–)	Cylinder, Hydraulic	1
1	34781	(000000–)	Seal Kit	1

SECTION 9

CONTENTS

NOTE: SECTION 9, ENGINE PARTS, DIESEL KUBOTA, *lists repair parts for diesel powered engines, TENNANT part number 25070.*

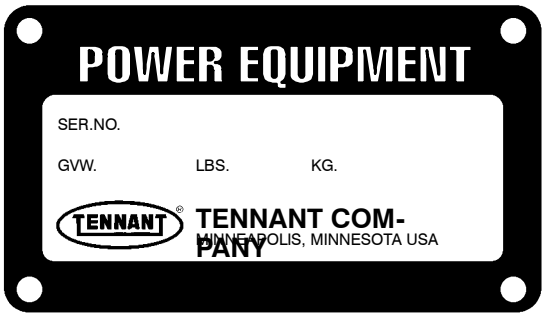
ORDERING REPAIR PARTS

The components used in this machine have been carefully selected for performance and safety. Use only Tennant Company specified or equivalent parts.

To receive prompt service in filling of your parts orders, please direct all orders for parts with Tennant Company part numbers to the Tennant Company, and all orders for parts with vendor part numbers to the local supplier of the respective vendor.

When ordering parts, please furnish all of the following information:

1. Machine model number - shown on the machine data plate.



2. Machine serial number - shown on the machine data plate.
3. Power source - gasoline, LPG, diesel, electric.
4. Company name.
5. Shipping address.
6. Billing address.
7. Name, first and last - of person ordering parts.
8. Telephone number.
9. Purchase order number.
10. Part number, description, and quantity - of each item on the order.
11. Customer ID Number.

Do not order parts by key number or the figure number of the illustrated parts. Indented items indicate parts of assemblies. Standard hardware is furnished only when part of a purchased assembly. Please get hardware from a local hardware supplier.

If the old part cannot be identified, send it to us with the quantity needed specified on the order.

Any claim for loss or damage to a shipment in transit should be filed promptly against the transportation company making the delivery. Shipments will be complete unless the packing list or order acknowledgement indicate items back ordered.

If parts received are suspected to be incorrect or defective, please write, wire, or phone the Tennant Company representative from whom you ordered the part. They will give authorization for return and/or handle replacement shipments when required.

SERIAL NUMBER INFORMATION EXPLANATION

Serial number listings are shown to indicate on which machines each part can be used. These listings are explained by the following examples:

(000000–) The part can be used on all machines.

(003342–) The part can be used on all machines beginning with the serial number listed.

(000000–004320) The part can be used on all machines up to and including serial number listed.

(004321–005678) The part can be used on all machines between and including the serial numbers listed.

Where xxxxxx's are listed in place of a serial number, it indicates a change was made but the exact serial number had not been established when the catalog went to press.

SI UNITS OF MEASURE (INTERNATIONAL SYSTEM)

Metric equivalents have been included, where applicable, throughout this parts catalog.

FASTENER STRENGTH IDENTIFICATION

Fasteners required to have high–strength qualities equivalent to SAE Grade 8 are identified throughout this catalog by the description GR 8. Unless identified by this description, all standard fasteners are SAE Grade 5.

(Specifications and design subject to change without notice.)

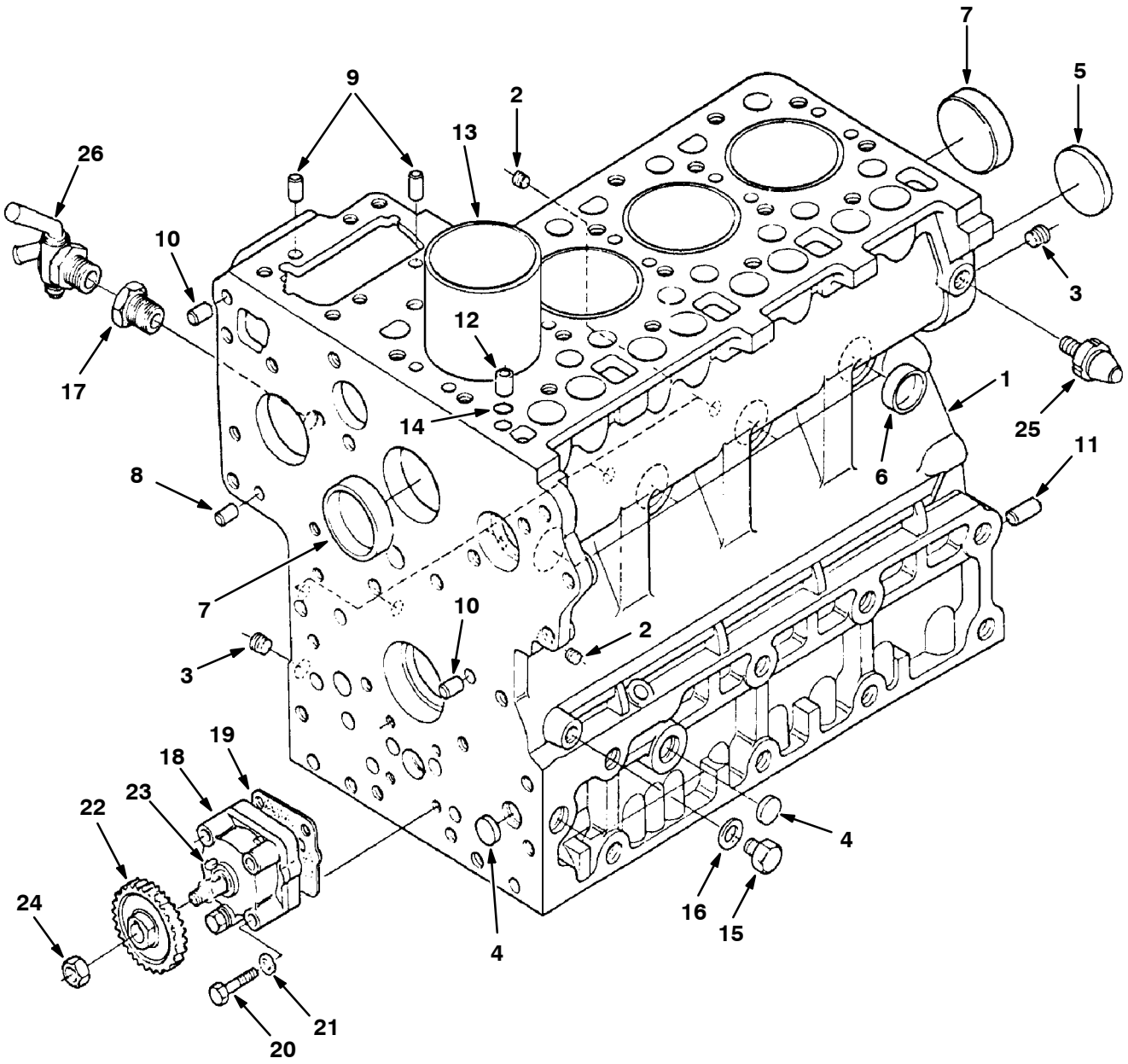


Fig. 1 – Engine Block Group

05645

Fig. 1 -- Engine Block Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	41786	15476-0101-0	(000000-)	Crankcase Assembly	1
2	39051	15521-9602-0	(000000-)	Plug	6
3	39052	15521-9603-0	(000000-)	Plug	2
4	30071	06311-75018	(000000-)	Plug	3
5	30070	06311-75045	(000000-)	Plug	1
6	39054	15221-0338-0	(000000-)	Cap, Sealing	6
7	39055	15221-0339-0	(000000-)	Cap, Sealing	2
8	39056	05012-00408	(000000-)	Pin, Straight	2
9	39057	05012-00609	(000000-)	Pin, Straight	2
10	39058	05012-00612	(000000-)	Pin, Straight	2
11	39059	05012-01018	(000000-)	Pin, Straight	1
12	39060	15221-3365-0	(000000-)	Pin, Pipe	1
13	30067	15521-0231-0	(000000-)	Liner, Cylinder	4
14	39063	15221-3370-0	(000000-)	O-ring	1
15	39062	15221-3361-0	(000000-)	Plug	1
16	10895	15021-3366-0	(000000-)	Gasket	1
17	39061	15291-7316-0	(000000-)	Joint	1
18	30068	15471-3501-0	(000000-)	Pump Assembly	1
19	12709	15221-3515-0	(000000-)	Gasket	1
20	41789	01053-50650	(000000-)	Bolt	4
21	39065	04512-50060	(000000-)	Washer, Spring	4
22	39066	19202-3566-0	(000000-)	Gear, Oil Pump	1
23	39067	05712-00410	(000000-)	Key, Feather	1
24	41788	15221-3568-2	(000000-)	Nut	1
25	87940	15841-3901-0	(000000-)	Switch, Oil	1
26	41787	15575-7310-0	(000000-)	Cock, Drain	1

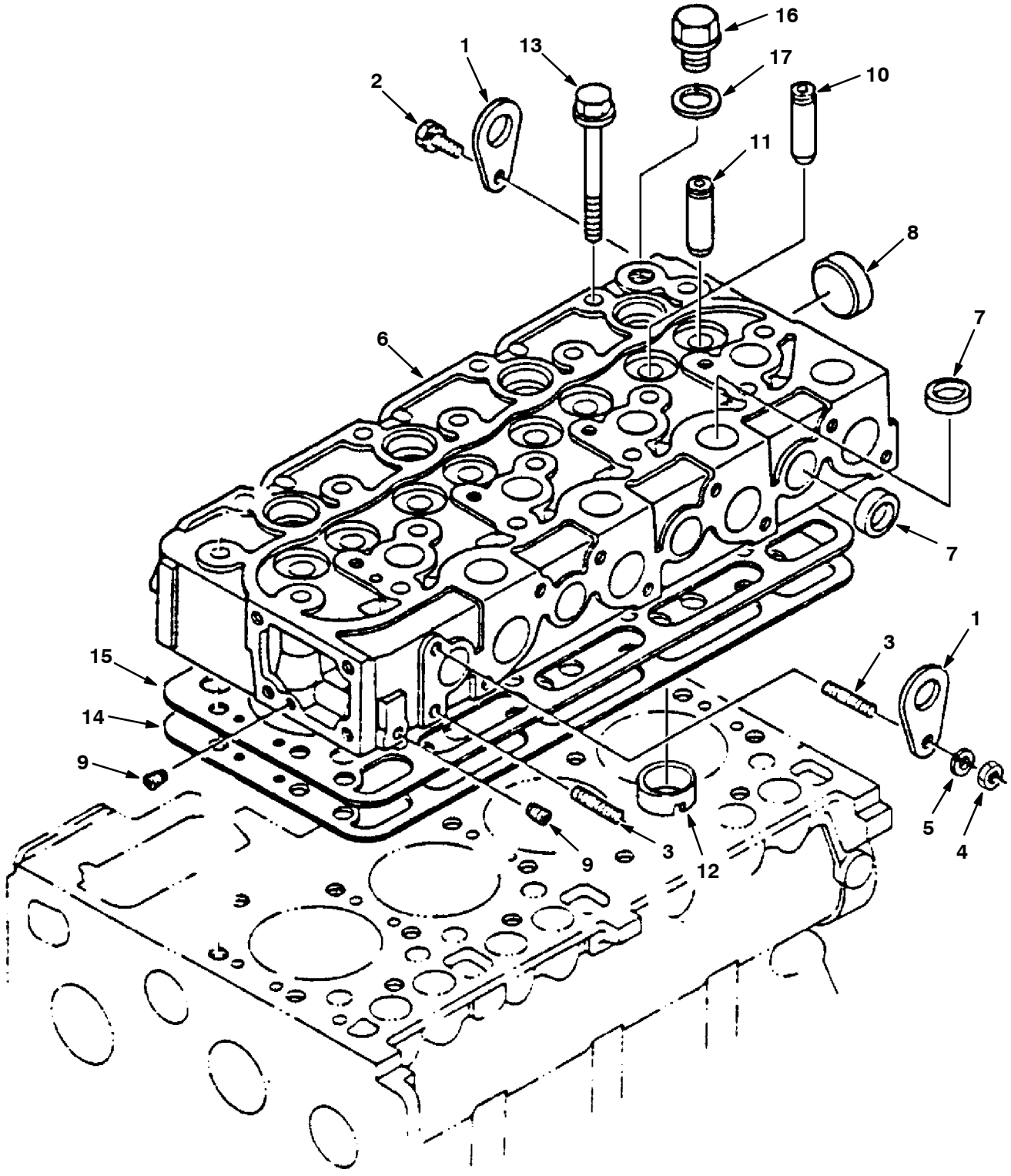


Fig. 2 – Cylinder Head Group

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Fig. 2 – Cylinder Head Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	39093	15221–0175–0	(000000–)	Hook, Engine	2
2	39094	01123–50816	(000000–)	Bolt	1
3	41794	15471–9153–0	(000000–)	Stud	2
4	39096	02156–50080	(000000–)	Nut	1
5	39097	04512–50080	(000000–)	Washer, Spring	1
6	41795	15476–0304–3	(000000–)	Head Assembly	1
7	30053	15221–0337–0	(000000–)	Cap, Sealing	12
8	39087	15221–0349–0	(000000–)	Cap, Sealing	1
9	39088	15261–9601–0	(000000–)	Plug	2
10	39089	15221–1358–0	(000000–)	Guide, Valve	4
11	31291	17321–1356–0	(000000–)	Guide, Valve	4
12	31292	15521–0314–0	(000000–)	Combustion Chamber	4
13	39090	19202–0345–0	(000000–)	Bolt, Cylinder Head	18
14	41796	15808–0331–0	(000000–)	Gasket, Cylinder	1
15	41797	15476–0332–0	(000000–)	Shim, Cylinder	1
16	39098	15000–3608–0	(000000–)	Plug	1
17	39099	04717–01600	(000000–)	Washer, Seal	1

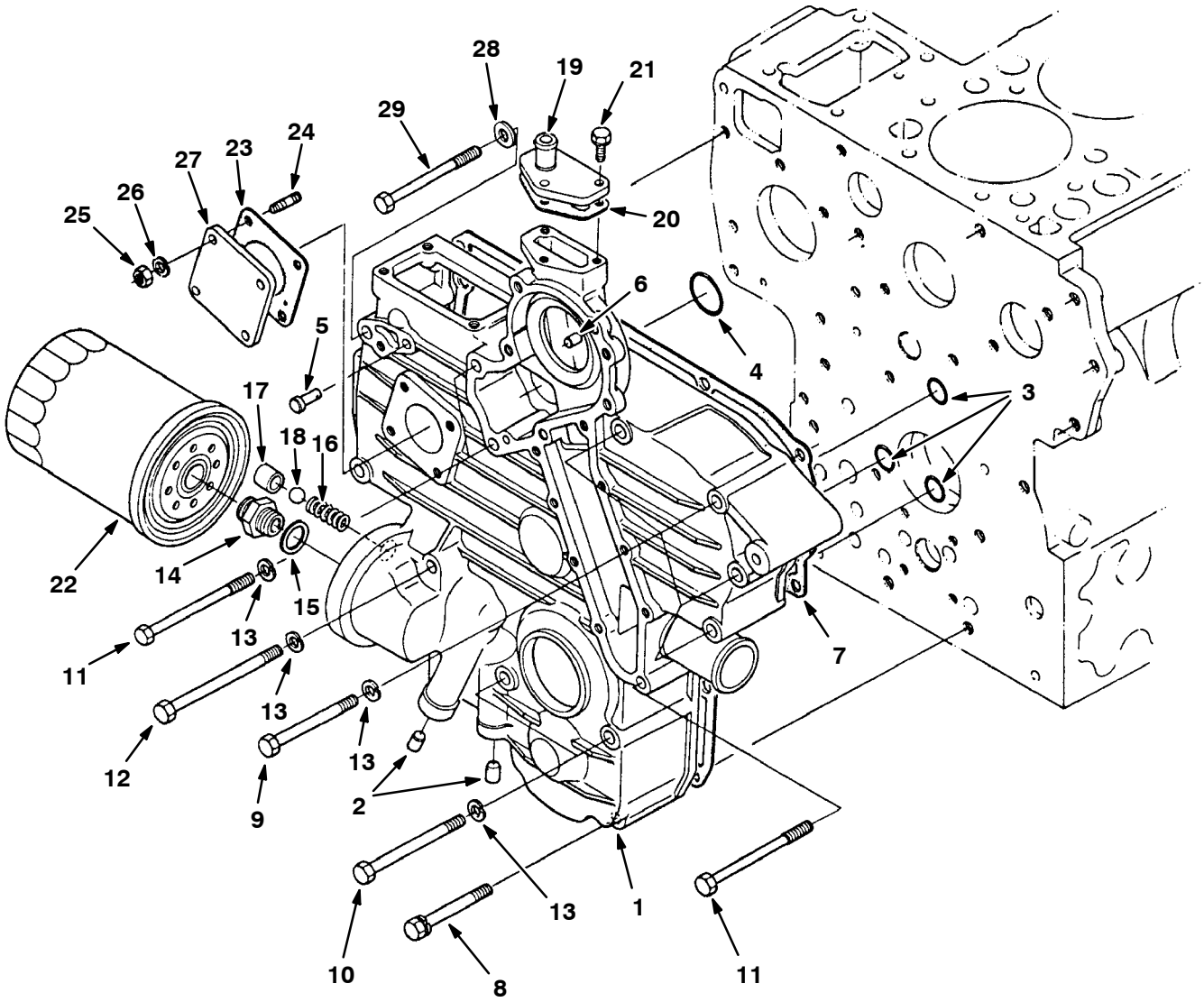

Fig. 3 – Gear Case Group

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Fig. 3 – Gear Case Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	31293	15521–0402–2	(000000–)	Gear Case Assembly	1
2	31294	15261–9602–0	(000000–)	Plug, Pin	2
3	39103	04811–00150	(000000–)	O–ring	3
4	39104	04811–00360	(000000–)	O–ring	1
5	39105	15221–5628–0	(000000–)	Pin, Spring	1
6	39058	05012–00612	(000000–)	Pin, Straight	2
7	41798	15521–0413–3	(000000–)	Gasket	1
8	39106	01123–50860	(000000–)	Bolt	2
9	39107	01153–50870	(000000–)	Bolt	5
10	39109	01153–50880	(000000–)	Bolt	2
11	31299	17367–9102–0	(000000–)	Bolt	3
12	39112	01153–50895	(000000–)	Bolt	2
13	39097	04512–50080	(000000–)	Washer, Spring	9
14	39113	15521–3229–0	(000000–)	Joint, Pipe	1
15	39114	04011–50180	(000000–)	Washer, Plain	1
16	39115	15241–3695–0	(000000–)	Spring	1
17	39116	15521–3693–0	(000000–)	Seat, Valve	1
18	39117	07715–03213	(000000–)	Ball	1
19	39118	15521–7332–0	(000000–)	Flange	1
20	10903	15521–7333–0	(000000–)	Gasket	1
21	39119	01023–50620	(000000–)	Bolt	3
22	31328	17321–3243–0	(000000–)	Cartridge, Oil Filter	1
23	12796	15221–8813–0	(000000–)	Gasket	1
24	39120	15221–8821–0	(000000–)	Stud	4
25	39121	02056–50060	(000000–)	Nut	4
26	39065	04512–50060	(000000–)	Washer, Spring	4
27	39122	15223–8334–0	(000000–)	Cover	1
28	39148	04012–50080	(000000–)	Washer, Plain	1
29	31298	17367–9101–0	(000000–)	Bolt	1

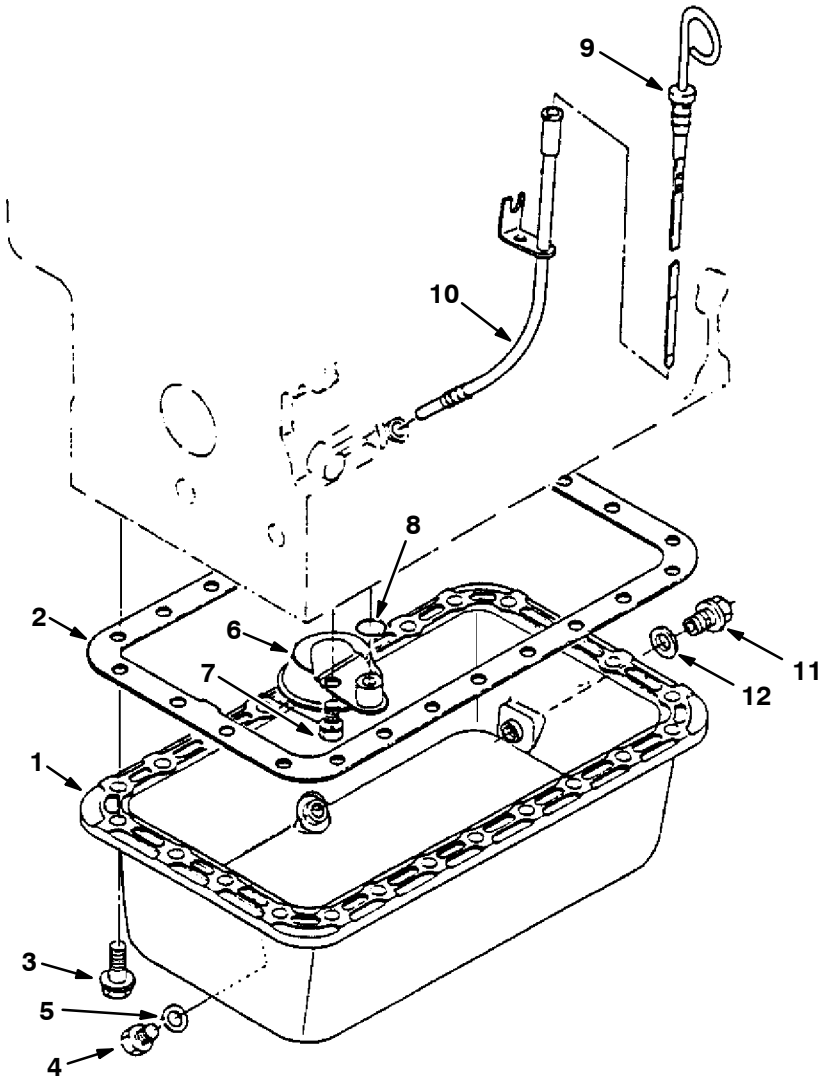

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Fig. 4 – Oil Pan Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	41790	15434–0161–0	(000000–)	Oil Pan	1
2	41791	15469–0162–0	(000000–)	Gasket, Pan	1
3	31286	17333–9101–0	(000000–)	Bolt	24
4	30051	15221–3375–0	(000000–)	Plug	1
5	10906	70000–6525–9	(000000–)	Gasket	1
6	31289	15628–3211–0	(000000–)	Filter, Oil	1
7	39094	01123–50816	(000000–)	Bolt	1
8	41792	04811–00160	(000000–)	O–ring	1
9	41793	15471–3641–0	(000000–)	Gauge, Oil	1
10	31290	15471–3642–0	(000000–)	Guide, Oil Gauge	1
11	31287	15951–3375–0	(000000–)	Plug, Drain	1
12	31288	04724–00160	(000000–)	Gasket	1

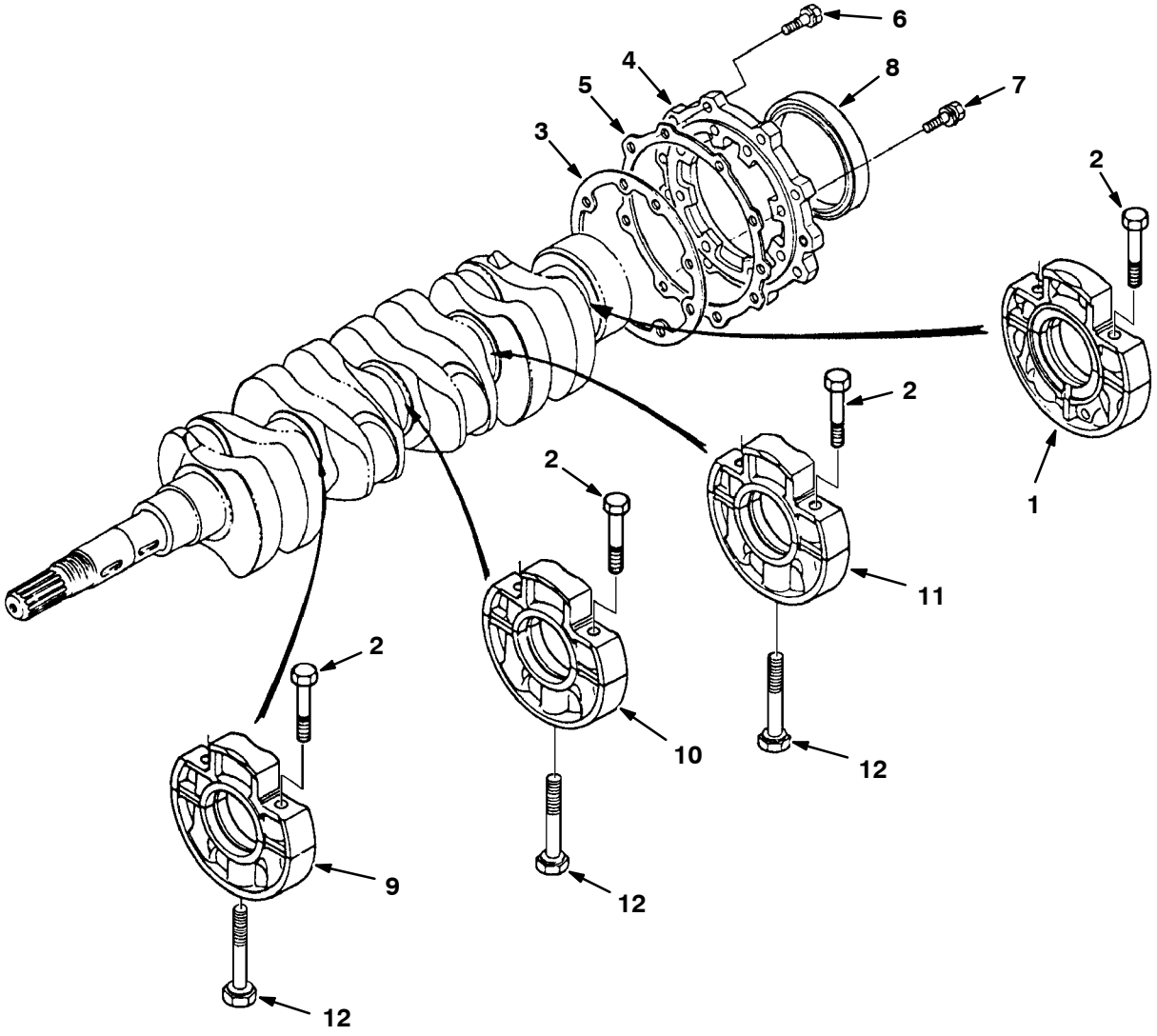

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Fig. 5 – Main Bearing Case Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	39123	19202–0404–0	(000000–)	Case Assembly	1
2	31329	15601–0454–0	(000000–)	Bolt	8
3	39126	15221–0436–0	(000000–)	Gasket	1
4	39127	19202–0481–0	(000000–)	Cover, Bearing	1
5	31336	15201–0482–0	(000000–)	Gasket, Cover	1
6	39128	01123–50825	(000000–)	Bolt	8
7	39129	01123–50828	(000000–)	Bolt	8
8	39130	19202–0446–0	(000000–)	Seal, Oil	1
9	31337	15521–0405–5	(000000–)	Case Assembly	1
10	31338	15521–0406–5	(000000–)	Case Assembly	1
11	41799	15411–0407–0	(000000–)	Case Assembly	1
12	31339	15601–0456–0	(000000–)	Bolt	3

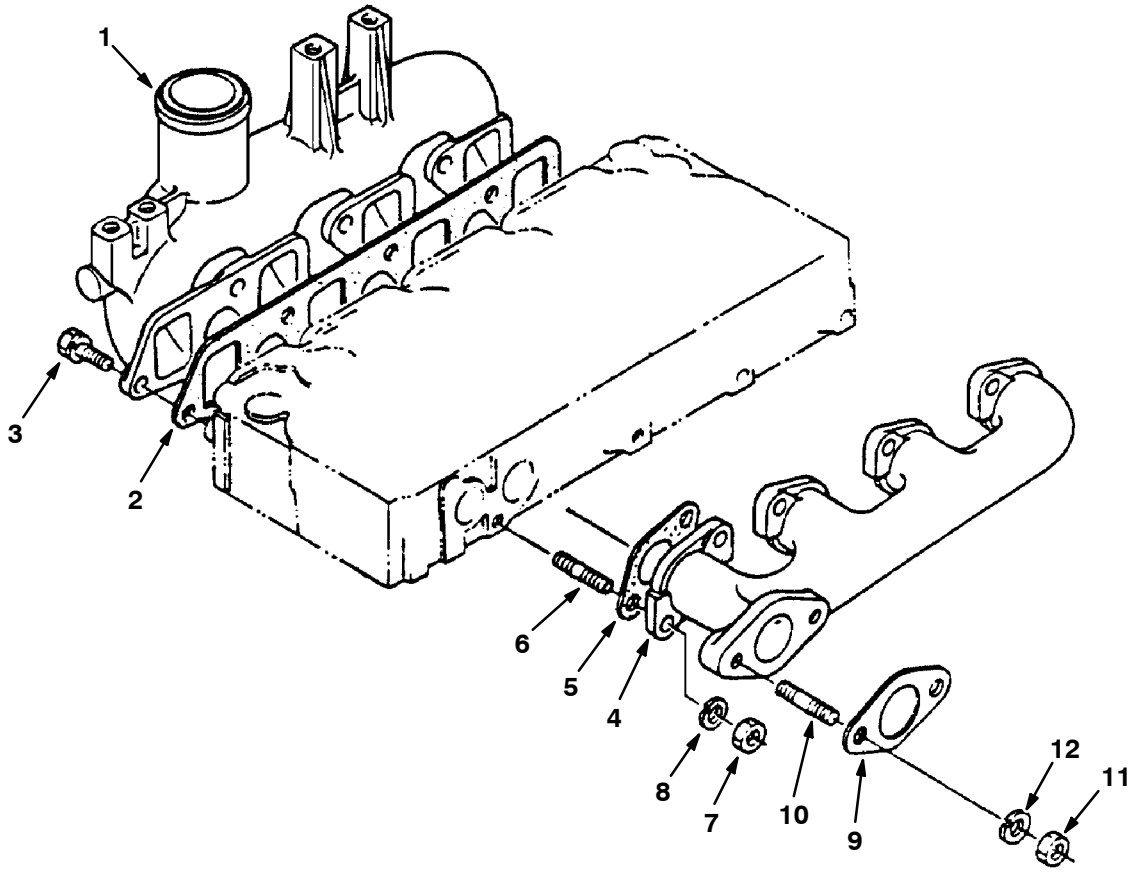

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Fig. 6 – Inlet Manifold Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	41800	15475–1176–0	(000000–)	Manifold, Inlet	1
2	41801	15471–1182–3	(000000–)	Gasket	1
3	39138	01123–50822	(000000–)	Bolt	7
4	41802	15401–1231–0	(000000–)	Manifold, Exhaust	1
5	10899	15521–1235–0	(000000–)	Gasket	4
6	39139	15221–9153–0	(000000–)	Stud	8
7	39096	02156–50080	(000000–)	Nut	8
8	39097	04512–50080	(000000–)	Washer, Spring	8
9	41803	15221–1237–0	(000000–)	Gasket, Muffler	1
10	41804	01517–51030	(000000–)	Stud	2
11	39481	02176–50100	(000000–)	Nut	2
12	39399	04512–50100	(000000–)	Washer, Spring	2

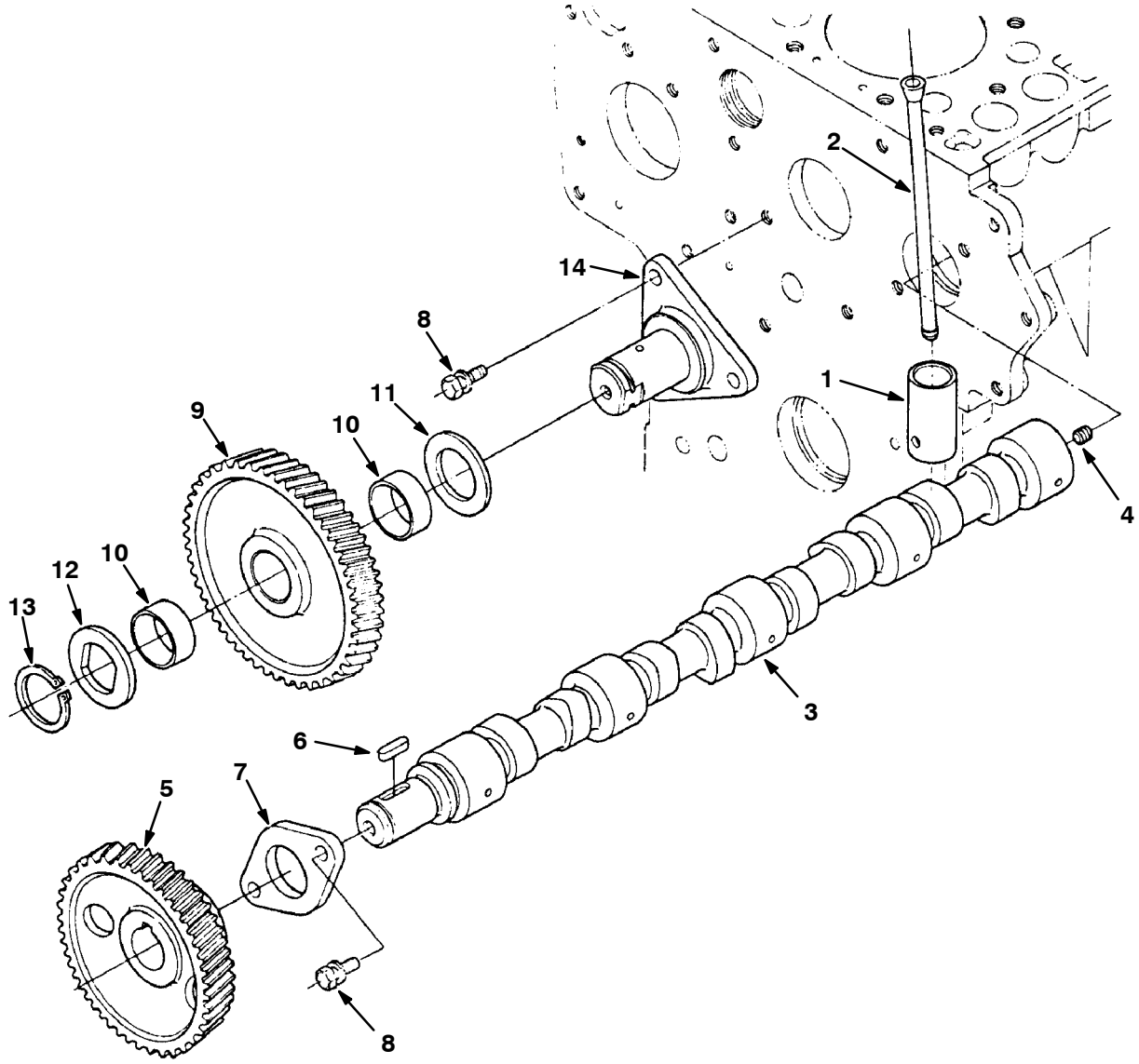

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Fig. 7 – Camshaft Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	39193	15221–1555–0	(000000–)	Tappet	8
2	39194	15221–1511–0	(000000–)	Rod, Push	8
	41809	15471–1601–0	(000000–)	Camshaft Assembly	1
3	41810	15471–1615–0	(000000–)	Camshaft	1
4	39197	15521–9361–0	(000000–)	Screw, Set	1
5	39198	15521–1651–0	(000000–)	Gear	1
6	39186	05712–00720	(000000–)	Key, Feather	1
7	39199	15221–1627–0	(000000–)	Stopper	1
8	39200	01123–50818	(000000–)	Bolt	5
9	39201	15221–2401–0	(000000–)	Gear Assembly	1
10	30076	15221–2498–0	(000000–)	Bushing, Idle Gear	2
11	39202	15521–2436–0	(000000–)	Collar	1
12	39203	15521–2437–0	(000000–)	Collar	1
13	39211	15221–2432–0	(000000–)	Cir–clip External	1
14	39212	15221–2425–0	(000000–)	Shaft	1

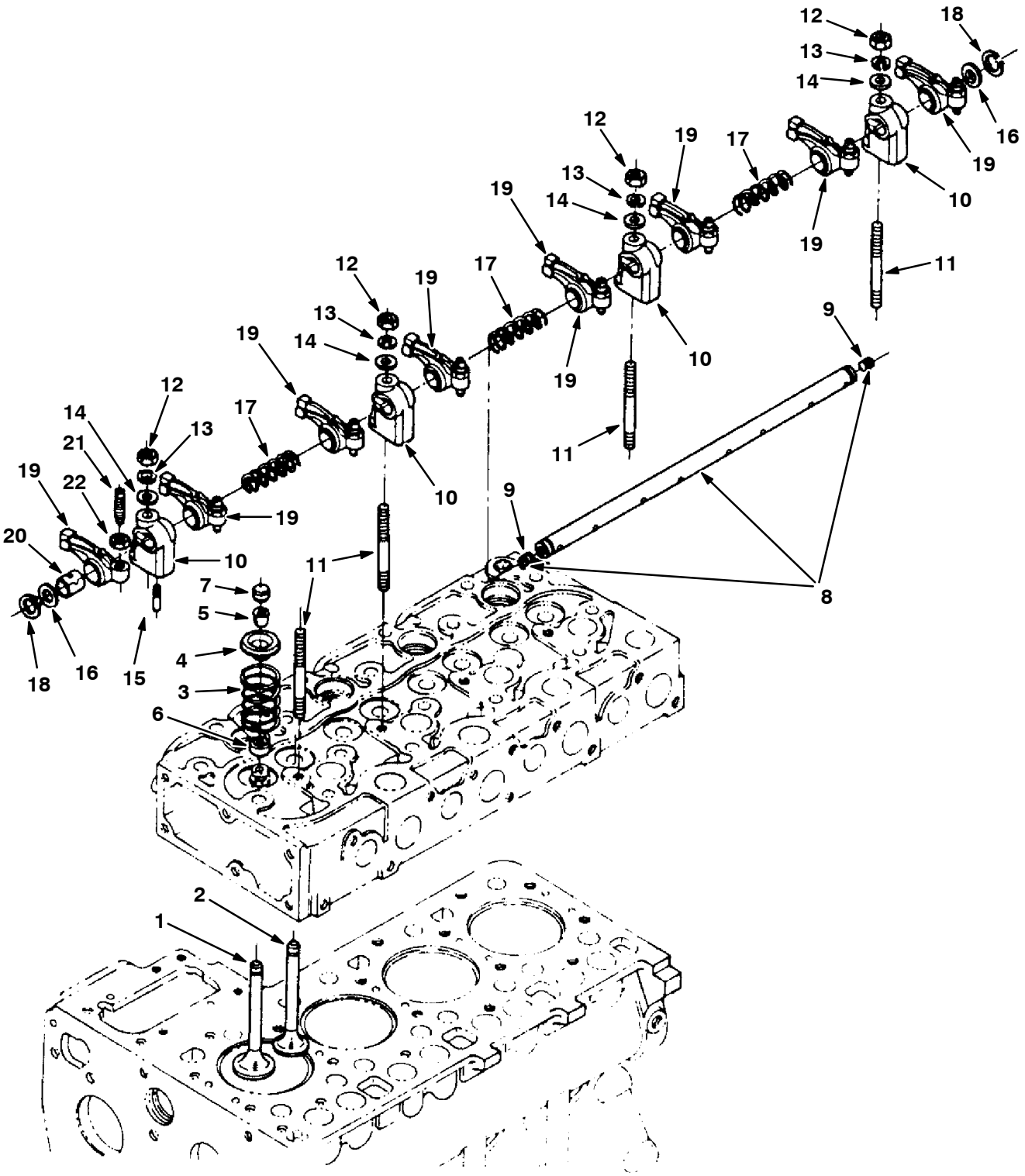

Fig. 8 – Valve Rocker Arm Group

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Fig. 8 -- Valve Rocker Arm Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	10898	15221–1311–0	(000000–)	Valve, Inlet	4
2	10897	15221–1312–0	(000000–)	Valve, Exhaust	4
3	10896	15221–1324–0	(000000–)	Spring, Valve	8
4	10894	15221–1333–0	(000000–)	Retainer	8
5	39141	15221–1336–0	(000000–)	Collet	16
6	39142	15221–1315–0	(000000–)	Seal, Stem	8
7	39143	15221–1328–0	(000000–)	Cap, Valve	8
8	41805	15401–1405–0	(000000–)	Shaft Assembly	1
9	41808	03410–50808	(000000–)	Screw, Set	2
10	39146	15221–1435–0	(000000–)	Bracket	4
11	39147	15521–9150–0	(000000–)	Stud	4
12	39096	02156–50080	(000000–)	Nut	4
13	39097	04512–50080	(000000–)	Washer, Spring	4
14	39148	04012–50080	(000000–)	Washer, Plain	4
15	39149	15221–1442–0	(000000–)	Screw, Set	1
16	39150	15221–1443–0	(000000–)	Washer	2
17	39151	15221–1431–0	(000000–)	Spring	3
18	39152	04612–00140	(000000–)	Cir–clip	2
19	39153	15601–1403–0	(000000–)	Arm Assembly	8
20	39154	15221–1418–0	(000000–)	Bushing	8
21	39155	15521–1423–0	(000000–)	Screw, Adjusting	8
22	39156	15021–1424–0	(000000–)	Nut	8

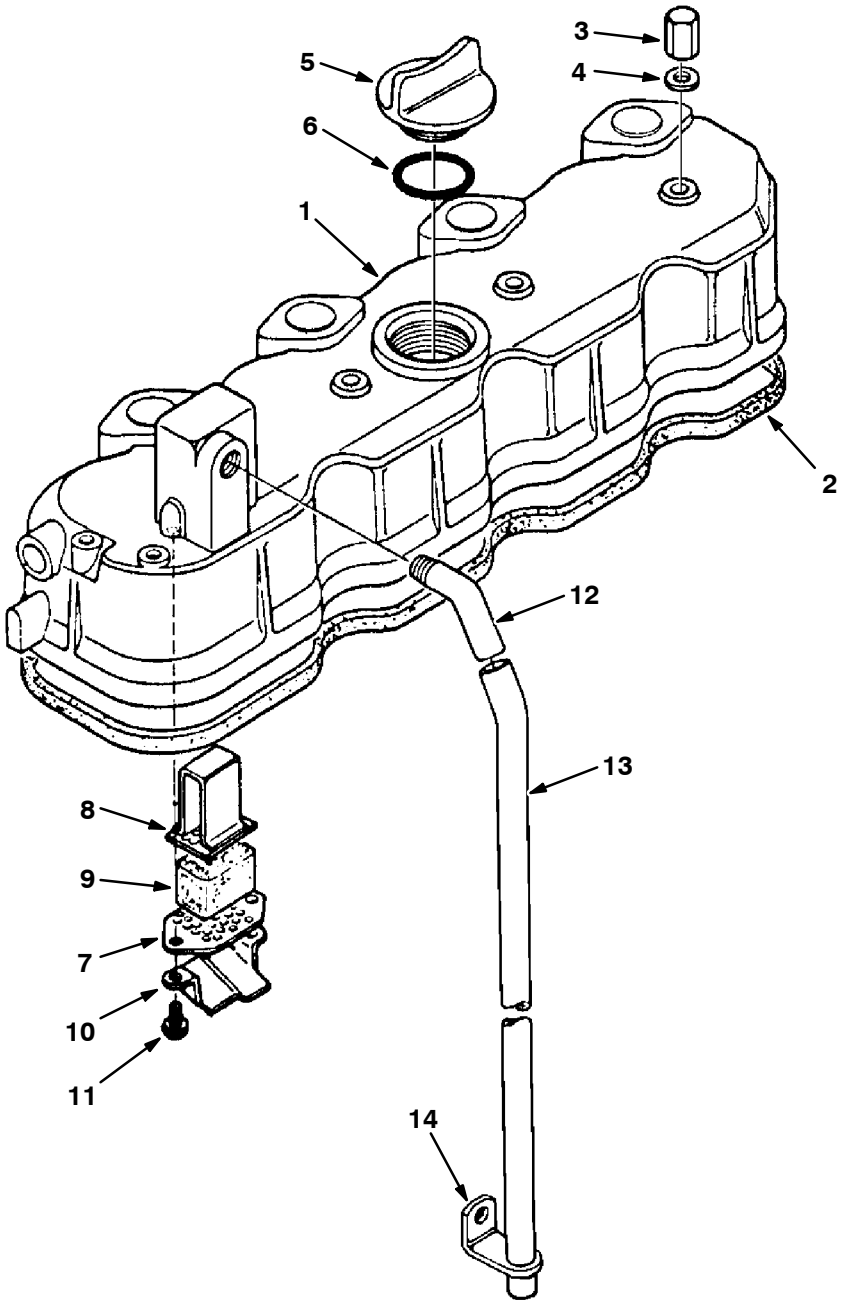

Fig. 9 -- Head Cover Group

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Fig. 9 -- Head Cover Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	41806	15434–1451–0	(000000–)	Cover, Cylinder	1
2	41807	15471–1452–0	(000000–)	Gasket	1
3	39158	15451–9233–0	(000000–)	Nut, Cap	4
4	10895	15021–3366–0	(000000–)	Gasket	4
5	39161	15221–3314–0	(000000–)	Plug	1
6	39162	04811–50300	(000000–)	O–ring	1
7	39170	15521–0514–0	(000000–)	Plate	1
8	39171	15521–0515–0	(000000–)	Plate	1
9	39172	15521–0567–0	(000000–)	Element	1
10	39173	15521–0537–0	(000000–)	Shield, Oil	1
11	39174	15521–9331–0	(000000–)	Screw	2
12	39175	15521–0555–0	(000000–)	Joint	1
13	39176	15521–0551–0	(000000–)	Pipe	1
14	39177	15401–0558–0	(000000–)	Clamp	1

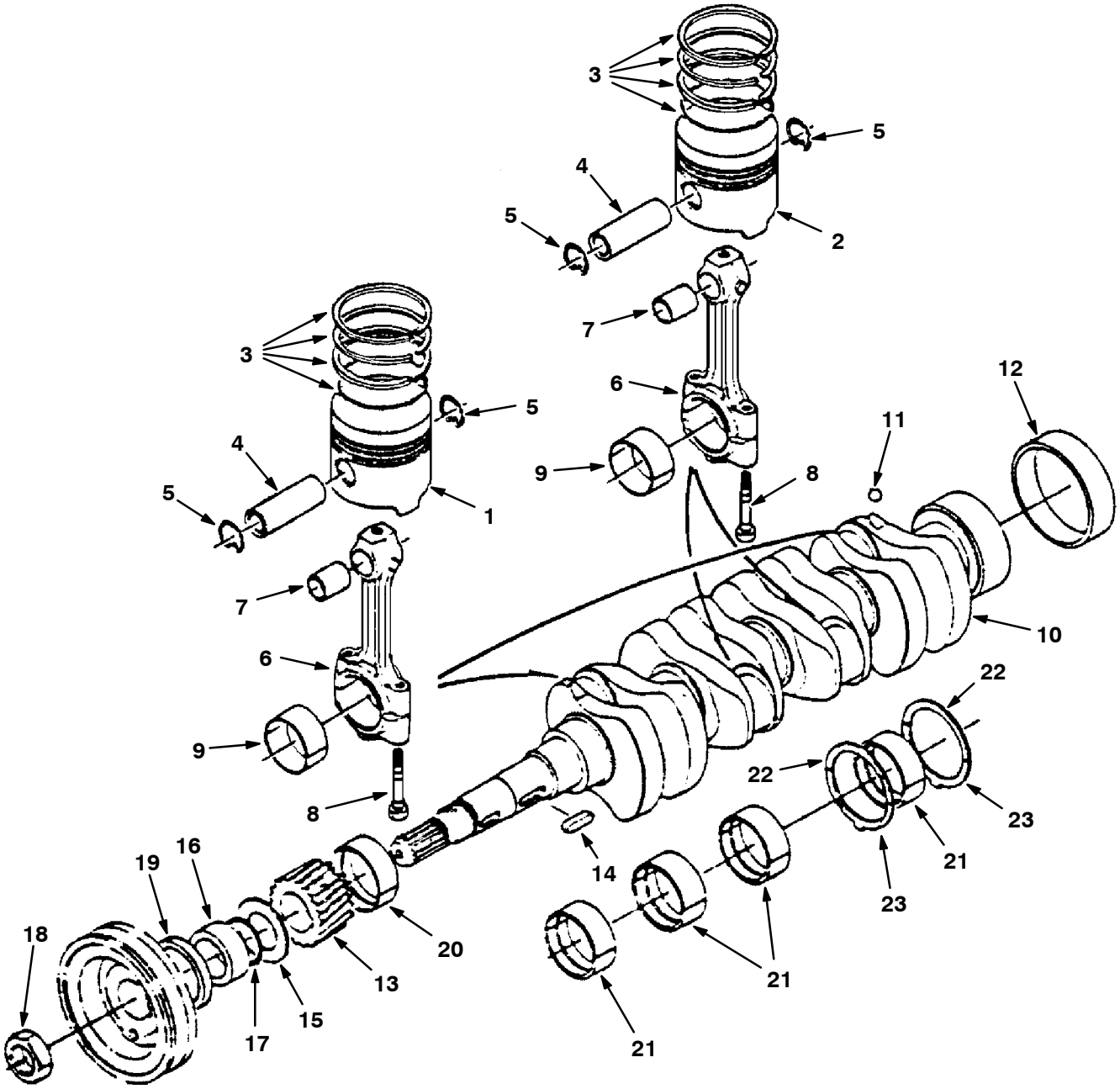

Fig. 10 – Piston Crankshaft Group

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Fig. 10 – Piston Crankshaft Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	10838	19274–2111–0	(000000–)	Piston, Standard 1 and 4	2
1	30020	19274–2191–0	(000000–)	Piston, Standard 1 and 4	2
2	30021	19439–2111–0	(000000–)	Piston, Standard 2 and 3	2
2	30091	19439–2191–0	(000000–)	Piston, Standard 2 and 3	2
3	30014	19274–2105–0	(000000–)	Ring Set, Piston, Standard	4
3	30099	19274–2109–2	(000000–)	Ring Set, Piston, Alternate	4
4	30089	15521–2131–0	(000000–)	Piston, Pin	4
5	30090	15221–2133–0	(000000–)	Cir–clip	8
6	39180	15471–2201–2	(000000–)	Rod Assembly	4
7	30088	15221–2198–0	(000000–)	Bushing	4
8	39181	15521–2214–0	(000000–)	Bolt	8
9	10841	15471–2231–0	(000000–)	Rod Bearing, Standard	8
9	30085	15471–2297–0	(000000–)	Rod Bearing, –.2mm	8
9	30087	15471–2298–0	(000000–)	Rod Bearing, –.4mm	8
10	41811	15478–2301–2	(000000–)	Crankshaft Assembly	1
11	30111	07715–03209	(000000–)	Ball	4
12	12798	19202–2328–0	(000000–)	Sleeve	1
13	41812	15471–2411–0	(000000–)	Gear, Crankshaft	1
14	39186	05712–00720	(000000–)	Key, Feather	1
15	41813	15471–2331–2	(000000–)	Oil Slinger	1
16	12797	19202–2325–0	(000000–)	Collar	1
17	39188	04811–10300	(000000–)	O–ring	1
18	39189	15221–2336–0	(000000–)	Nut, Crankshaft	1
19	30118	19202–0414–0	(000000–)	Seal, Oil	1
20	30112	17331–2347–0	(000000–)	Bearing, Main, Standard	1
20	30114	17331–2391–0	(000000–)	Bearing, Main	1
20	30116	17331–2392–0	(000000–)	Bearing, Main	1
21	30113	17331–2348–0	(000000–)	Bearing, Main, Standard	8
21	30115	17331–2393–0	(000000–)	Bearing, Main	8
21	30117	17331–2394–0	(000000–)	Bearing, Main	8
22	10844	15521–2353–0	(000000–)	Bearing, Thrust, Standard	2
22	30119	15221–2395–0	(000000–)	Bearing, Thrust	2
22	30120	15221–2396–0	(000000–)	Bearing, Thrust	2
23	10845	19202–2354–0	(000000–)	Bearing, Thrust, Standard	2
23	30121	19202–2397–0	(000000–)	Bearing, Thrust	2
23	30122	19202–2398–0	(000000–)	Bearing, Thrust	2

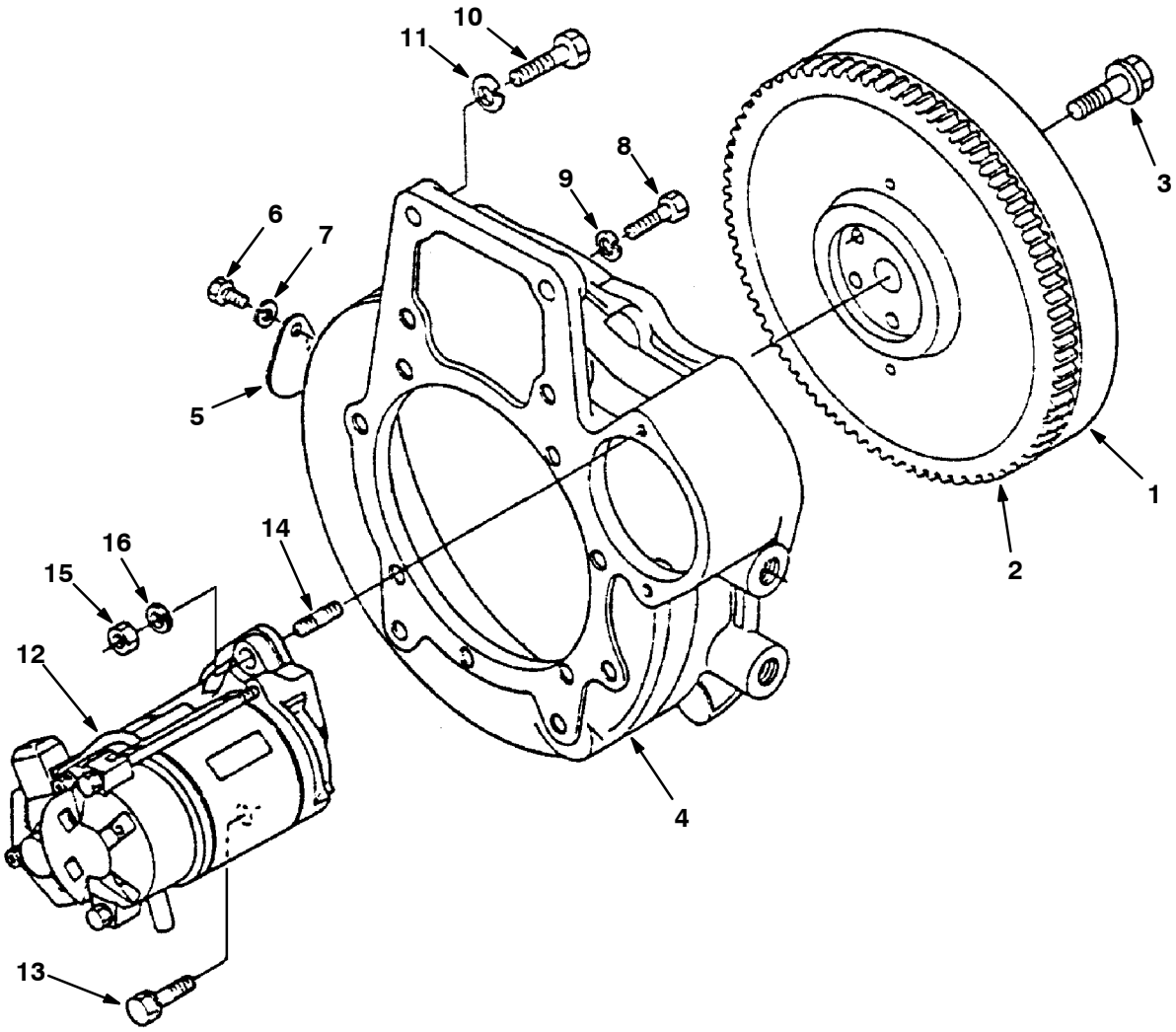

Fig. 11 – Flywheel Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	41814	19629–2501–2	(000000–)	Flywheel	1
2	30105	15221–6382–0	(000000–)	Gear, Ring	1
3	39223	15321–2516–3	(000000–)	Bolt	6
4	30123	15331–0461–0	(000000–)	Housing Assembly	1
5	39387	31220–1417–0	(000000–)	Cover	1
6	39388	01153–50812	(000000–)	Bolt	1
7	39097	04512–50080	(000000–)	Washer, Spring	1
8	39389	01073–51030	(000000–)	Bolt	11
9	39399	04512–50100	(000000–)	Washer, Spring	11
10	39400	01073–51240	(000000–)	Bolt	2
11	39401	04512–50120	(000000–)	Washer, Spring	2
12	38957	15461–63011	(000000–)	Starter Assembly	1
13	39458	01133–51030	(000000–)	Bolt	1
14	39480	01517–51028	(000000–)	Stud	1
15	39481	02176–50100	(000000–)	Nut	1
16	39399	04512–50100	(000000–)	Washer, Spring	1

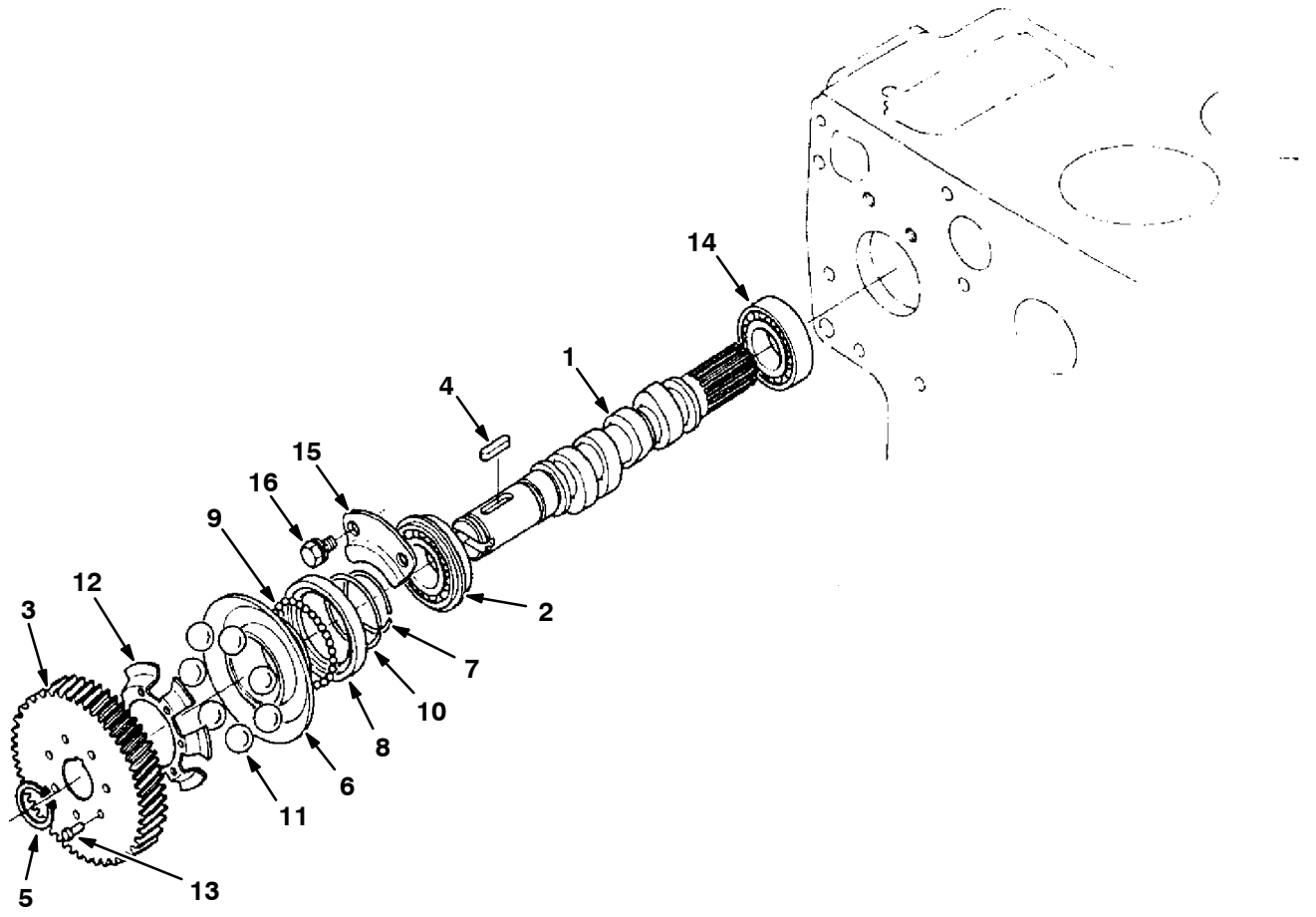

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Fig. 12 -- Fuel Camshaft Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
	41886	15471-1602-0	(000000-)	Camshaft Assembly	1
1	41926	15471-1617-0	(000000-)	Camshaft, Fuel	1
2	10846	08153-06205	(000000-)	Bearing, Ball	1
3	39517	15401-5115-0	(000000-)	Gear, Injection Pump	1
4	39518	05712-00525	(000000-)	Key, Feather	1
5	39519	04612-00240	(000000-)	Cir-clip, External	1
6	39520	15221-5545-0	(000000-)	Sleeve	1
7	39521	15221-5547-0	(000000-)	Cir-clip, Sleeve	1
8	39522	15221-5569-0	(000000-)	Case, Ball	1
9	39523	07715-03205	(000000-)	Ball	39
10	39524	15221-5574-0	(000000-)	Cir-clip	1
11	39633	07715-00805	(000000-)	Ball	7
12	39635	15521-5565-0	(000000-)	Guide, Ball	1
13	39645	05611-10310	(000000-)	Rivet	7
14	41951	08240-00001	(000000-)	Bearing, Ball	1
15	39713	15221-1632-0	(000000-)	Stopper, Fuel	1
16	39073	01123-50814	(000000-)	Bolt	2

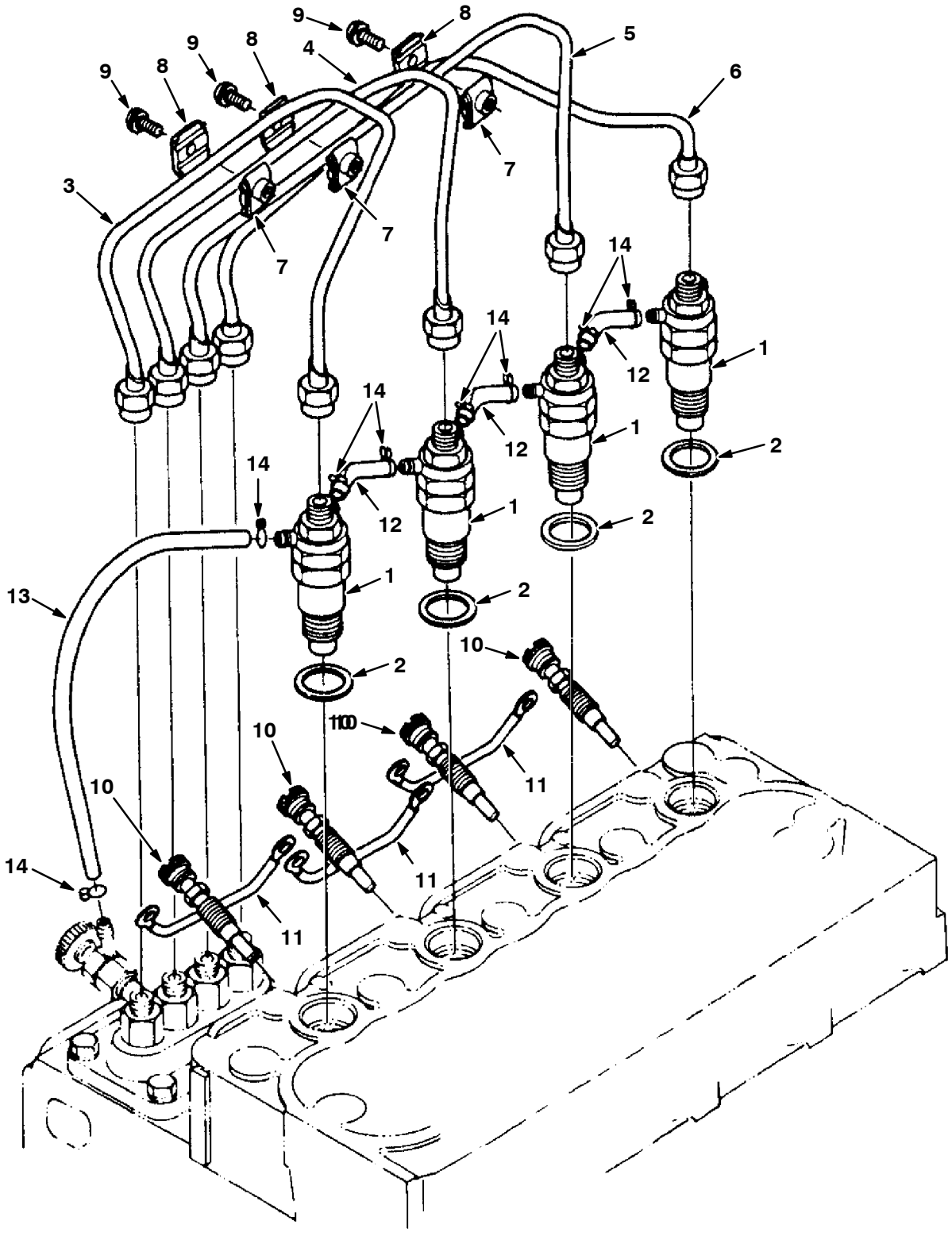

Fig. 13 – Nozzle Holder Group

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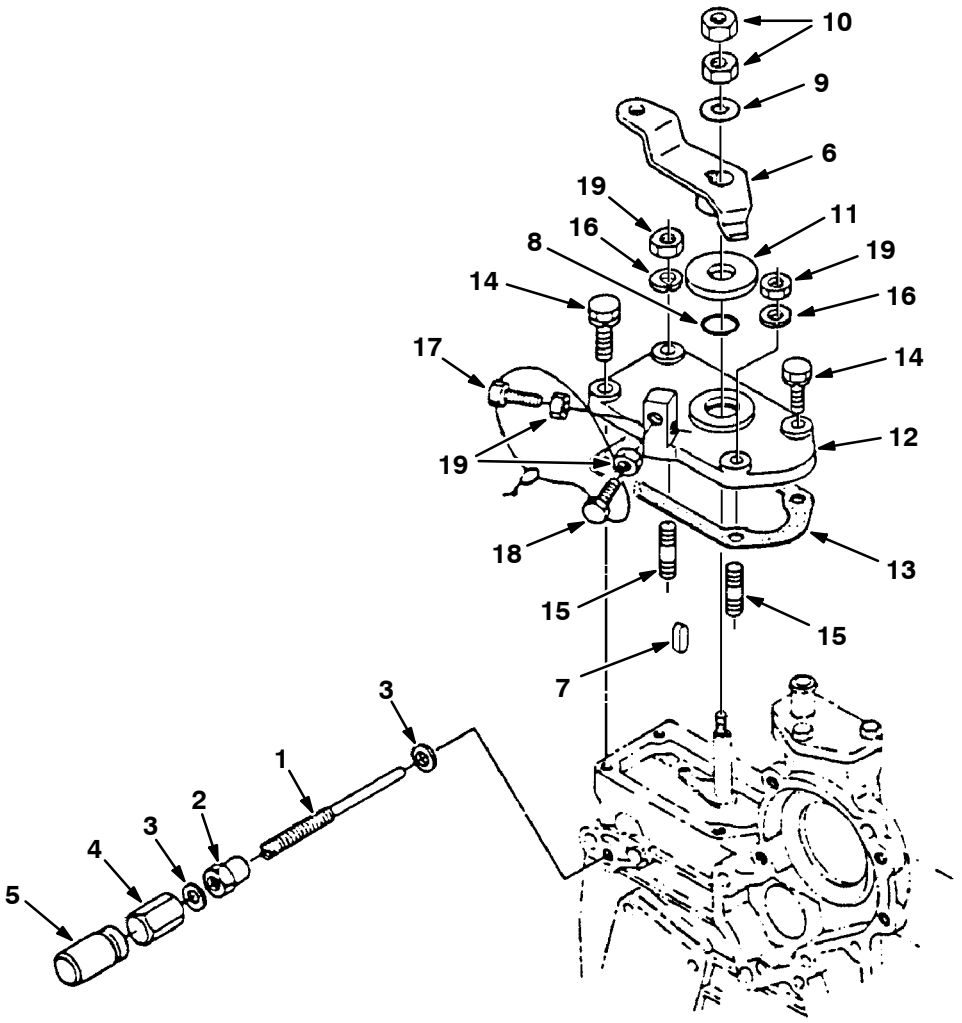
Fig. 13 -- Nozzle Holder Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	39502	15271-5302-0	(000000-)	Nozzle Assembly	4
2	12892	17011-5362-0	(000000-)	Gasket	4
3	30129	15469-5371-0	(000000-)	Pipe, Injection 1	1
4	30130	15469-5372-0	(000000-)	Pipe, Injection 2	1
5	41815	15469-5373-0	(000000-)	Pipe, Injection 3	1
6	41854	15469-5374-0	(000000-)	Pipe, Injection 4	1
7	30131	15841-5385-0	(000000-)	Clamp, Pipe	3
8	30132	15841-5386-0	(000000-)	Clamp, Pipe	3
9	39508	03024-50520	(000000-)	Screw	3
10	30048	15521-6551-0	(000000-)	Plug, Glow	4
11	39509	15401-6556-0	(000000-)	Cord, Glowplug	3
12	30133	09661-40095	(000000-)	Pipe, Fuel	3
13	41857	15471-4252-0	(000000-)	Pipe, Fuel	1
14	30134	10244-4232-0	(000000-)	Clip, Pipe	8



05659

Fig. 14 – Speed Control Plate Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	40159	15601–5412–0	(000000–)	Bolt, Adjusting	1
2	40165	15601–9201–0	(000000–)	Nut	1
3	40166	15601–9665–0	(000000–)	Gasket	2
4	30135	15841–1462–0	(000000–)	Nut, Cap	1
5	30136	16241–5442–0	(000000–)	Cap	1
6	41955	15471–5715–0	(000000–)	Lever, Control	1
7	40203	05712–00408	(000000–)	Key, Feather	1
8	40204	04811–00120	(000000–)	O–ring	1
9	40231	04013–50080	(000000–)	Washer, Plain	1
10	40233	02112–50080	(000000–)	Nut	2
11	41977	17011–5738–4	(000000–)	Collar	1
12	12794	15521–5711–4	(000000–)	Plate, Speed Control	1
13	41978	17331–5721–0	(000000–)	Gasket	1
14	39119	01023–50620	(000000–)	Bolt	2
15	39120	15221–8821–0	(000000–)	Stud	2
16	39065	04512–50060	(000000–)	Washer, Spring	2
17	40290	15108–5728–0	(000000–)	Stopper	1
18	41979	19202–9101–0	(000000–)	Bolt	1
19	39121	02056–50060	(000000–)	Nut	4

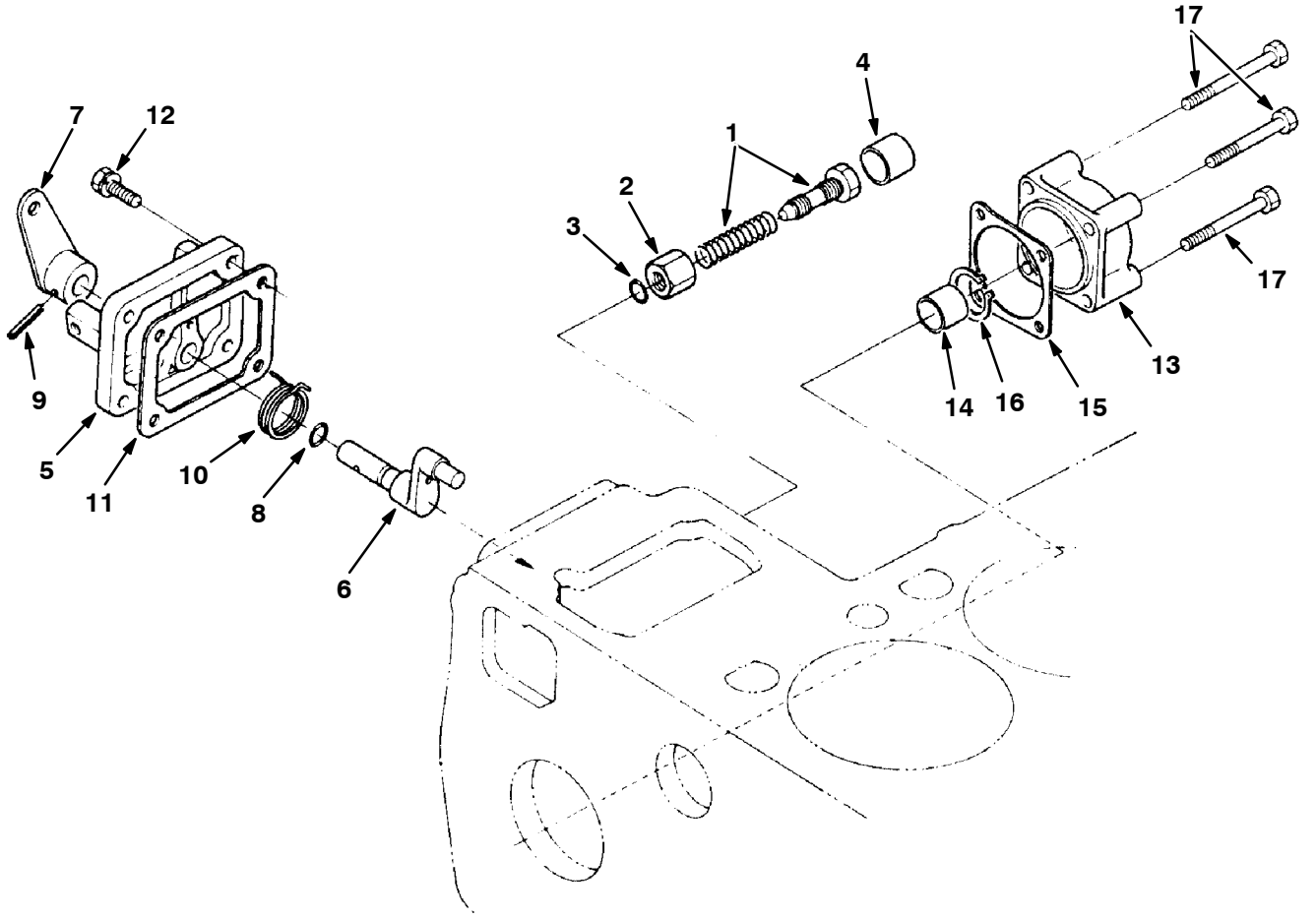
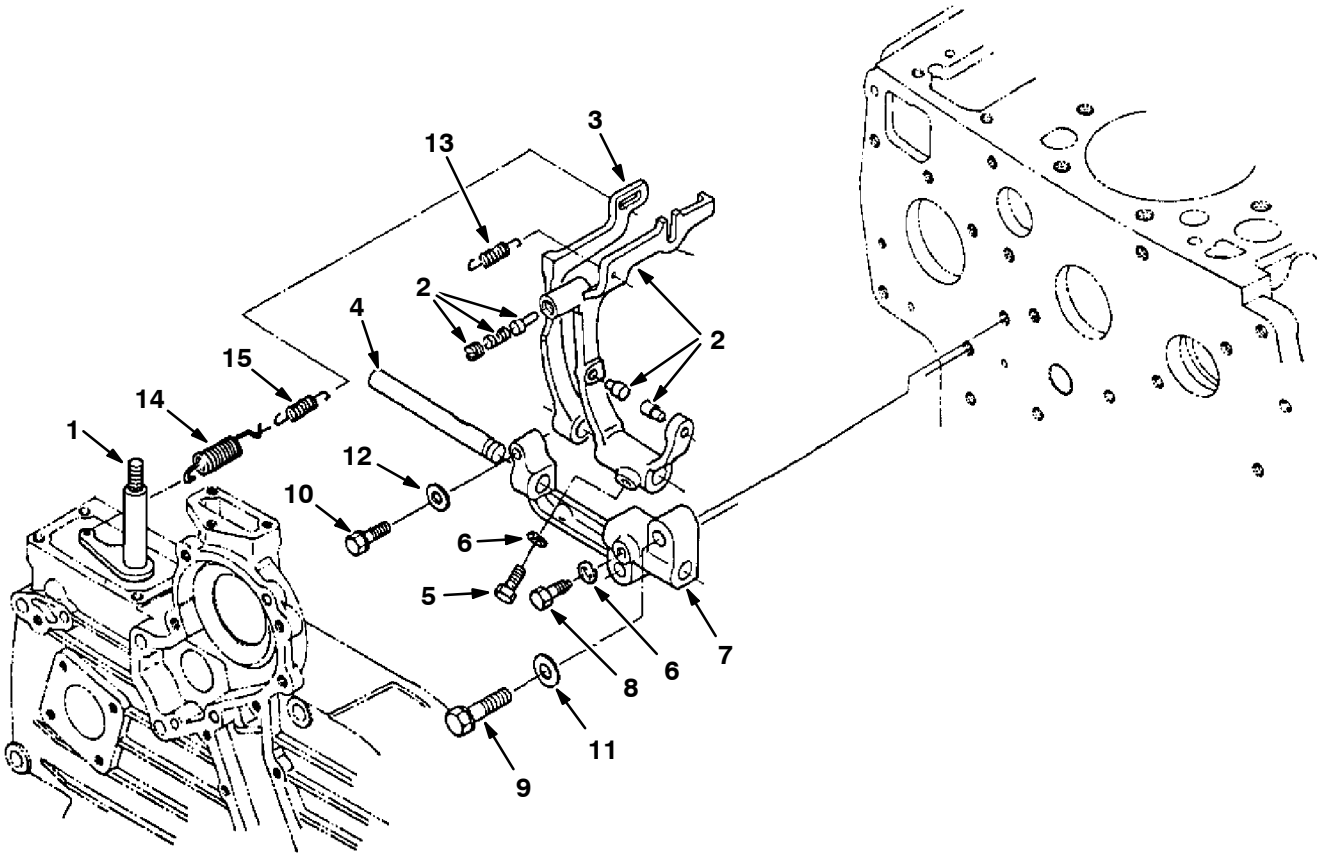


Fig. 15 -- Engine Stop Lever Group

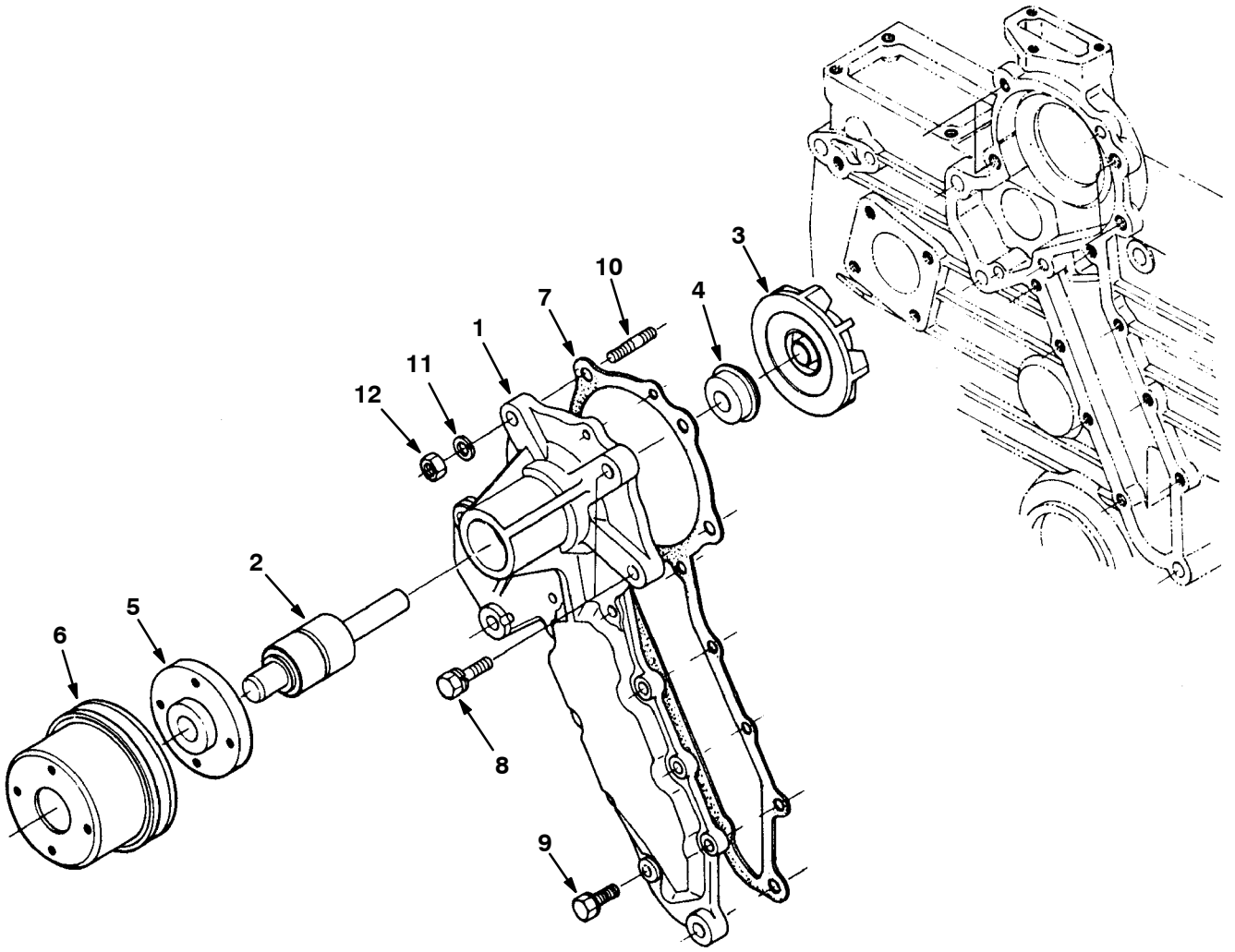
Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
	41956	15471-5409-0	(000000-)	Idle Set Assembly	1
1	41957	15471-5410-0	(000000-)	Adjusting Bolt Assembly	1
2	41960	15471-9201-0	(000000-)	Nut	1
3	41961	04811-00060	(000000-)	O-ring	1
4	40400	15521-5427-0	(000000-)	Cap	1
	40401	15521-5770-3	(000000-)	Engine Stop Lever Assembly	1
5	40402	15521-5165-3	(000000-)	Cover, Injection pump	1
6	40403	15611-5774-0	(000000-)	Shaft, Lever	1
7	40404	15611-5772-0	(000000-)	Lever, Stop	1
8	40405	04811-10070	(000000-)	O-ring	1
9	40407	05411-00420	(000000-)	Pin, Spring	1
10	40408	15611-5751-0	(000000-)	Spring	1
11	10847	15221-5166-0	(000000-)	Gasket, Pump	1
12	40409	01023-50618	(000000-)	Bolt	4
13	41962	15469-8315-0	(000000-)	Cover, Fuel	1
14	41963	19222-1619-0	(000000-)	Collar	1
15	41964	15469-8311-0	(000000-)	Gasket	1
16	41965	15471-9536-0	(000000-)	Cir-clip, External	1
17	41966	01133-51050	(000000-)	Bolt	4



05658

Fig. 16 -- Governor Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	40021	15601-5602-0	(000000-)	Governor Lever Assembly	1
	41952	15471-5605-0	(000000-)	Fork Lever Assembly	1
2	41953	15471-5604-0	(000000-)	Lever Assembly, Fork	1
3	41954	15471-5613-0	(000000-)	Lever, Fork	1
4	40032	15221-5615-0	(000000-)	Shaft, Lever	1
5	40033	15021-5624-0	(000000-)	Bolt, Lever	1
6	39065	04512-50060	(000000-)	Washer, Spring	2
7	40040	15221-5623-0	(000000-)	Holder, Lever	1
8	39169	15221-6641-0	(000000-)	Bolt	1
9	40079	01123-50832	(000000-)	Bolt	2
10	40080	01023-50628	(000000-)	Bolt	1
11	39148	04012-50080	(000000-)	Washer, Plain	2
12	40083	04012-50060	(000000-)	Washer, Plain	1
13	40111	15601-5648-0	(000000-)	Spring, Start	1
14	40112	15521-5641-0	(000000-)	Spring, Governor	1
15	40113	15521-5642-0	(000000-)	Spring, Governor	1



05661

Fig. 17 -- Water Pump Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	10853	15521–7303–0	(000000–)	Water Pump Assembly	1
2	10854	15521–7355–0	(000000–)	Bearing	1
3	40420	15521–7351–0	(000000–)	Impeller	1
4	40421	19202–7305–0	(000000–)	Seal Set	1
5	10892	15521–7352–0	(000000–)	Flange	1
6	41967	15471–7425–0	(000000–)	Pulley, Fan	1
7	10893	15521–7343–0	(000000–)	Gasket	1
8	39129	01123–50828	(000000–)	Bolt	2
9	40409	01023–50618	(000000–)	Bolt	8
10	41958	15521–9151–0	(000000–)	Stud	2
11	39097	04512–50080	(000000–)	Washer, Spring	2
12	39096	02156–50080	(000000–)	Nut	2

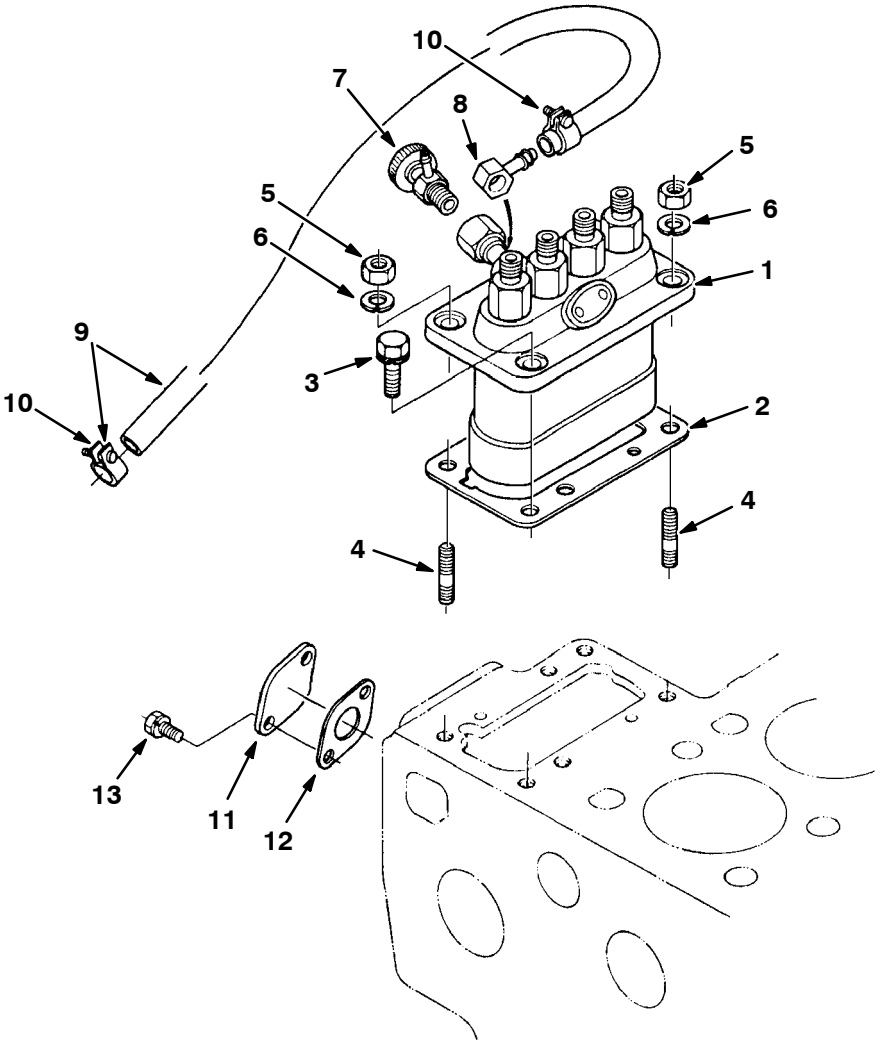


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Fig. 18 -- Injection Pump Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	41968	15461–5101–0	(000000–)	Injection Pump Assembly	1
2	41969	15401–5211–0	(000000–)	Shim, Injection	3
2	41970	15471–5211–0	(000000–)	Shim, Injection	1
3	39138	01123–50822	(000000–)	Bolt	4
4	39139	15221–9153–0	(000000–)	Stud	2
5	39096	02156–50080	(000000–)	Nut	2
6	39097	04512–50080	(000000–)	Washer, Spring	2
7	39513	14311–6050–4	(000000–)	Cock Assembly	1
8	41974	15401–9569–0	(000000–)	Joint, Eye	1
9	41975	14681–4201–0	(000000–)	Pipe Assembly	1
10	41976	14301–4275–0	(000000–)	Clip, Pipe	2
11	41971	15426–5285–0	(000000–)	Cover	1
12	41972	15241–5214–0	(000000–)	Gasket, Pump	1
13	41973	01023–50616	(000000–)	Bolt	2

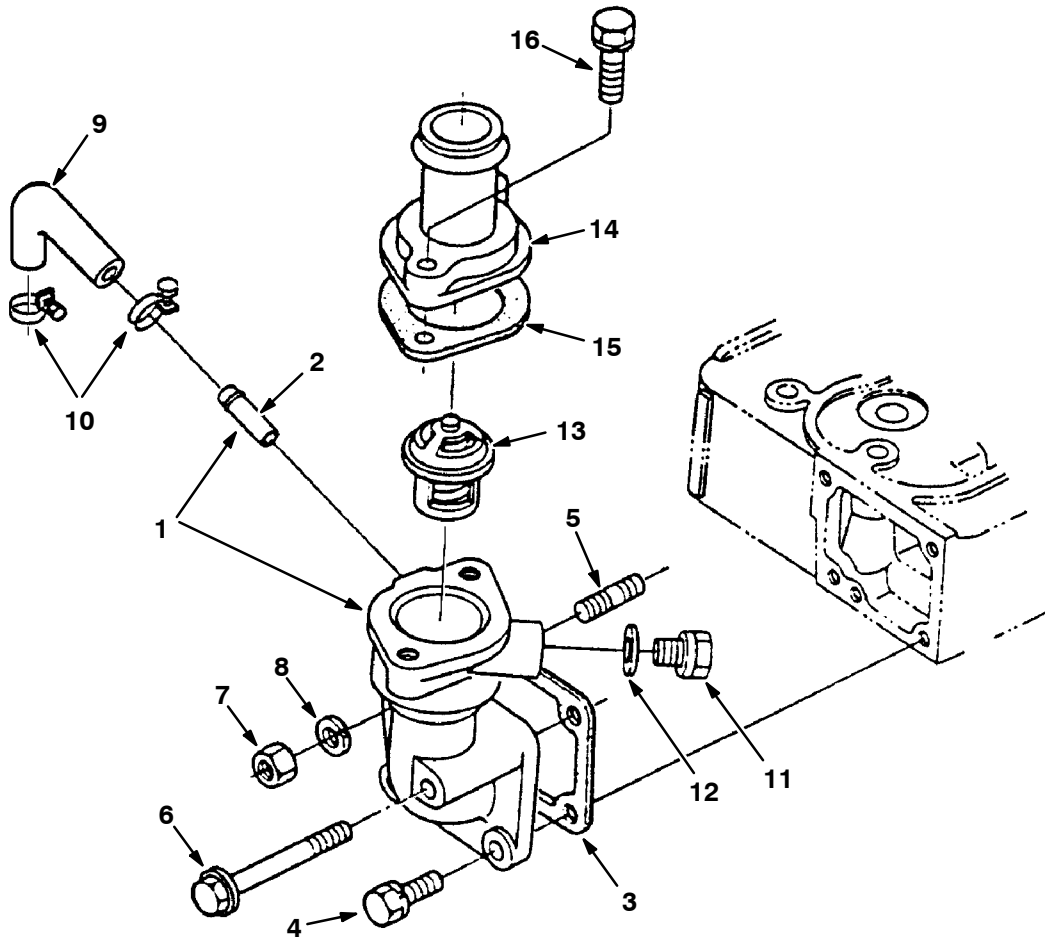

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Fig. 19 – Water Flange Group

Key	TENNANT Part No.	Kubota Part Number	Engine Serial Number	Description	Qty.
1	30124	19202–7270–0	(000000–)	Flange, Water	1
2	30125	17331–7334–0	(000000–)	Pipe, Water	1
3	10850	15521–7292–0	(000000–)	Gasket	1
4	39138	01123–50822	(000000–)	Bolt	2
5	39512	01513–50822	(000000–)	Stud	1
6	41959	01123–50865	(000000–)	Bolt	1
7	39096	02156–50080	(000000–)	Nut	1
8	39097	04512–50080	(000000–)	Washer, Spring	2
9	12795	15521–7334–0	(000000–)	Pipe, Water	1
10	40416	15109–7336–0	(000000–)	Band, Pipe	2
11	30126	15512–9601–0	(000000–)	Plug	1
12	30127	04717–02150	(000000–)	Washer with Rubber	1
13	10852	15321–7301–0	(000000–)	Thermostat	1
14	10849	15321–7326–0	(000000–)	Cover, Thermostat	1
15	10851	15321–7327–0	(000000–)	Gasket, Thermostat	1
16	40418	01123–50835	(000000–)	Bolt	2

SECTION 10

CONTENTS

PART NUMBER TO PAGE NUMBER CROSS REFERENCE LIST

Part Number	Page Number
13909	8-10
13959	7-9
13962	5-27
13962	5-27
14131	5-41
14138A	5-13
14138A	6-7
14242	5-27
14242	5-31
14301–4275–0 . . .	9-18
14311–6050–4 . . .	9-18
14330	5-23
14330	5-27
14331	5-23
14331	5-27
14432	5-35
14432	7-33
14601	5-38
14681–4201–0 . . .	9-18
14854	5-23
15000–3608–0 . . .	9-7
15021–1424–0 . . .	9-5
15021–3366–0 . . .	9-5
15021–3366–0 . . .	9-7
15021–5624–0 . . .	9-16
15066	7-11
15066	7-13
15108–5728–0 . . .	9-14
15109–7336–0 . . .	9-19
15121	7-11
15201–0482–0 . . .	9-1
15221–0175–0 . . .	9-7
15221–0337–0 . . .	9-7
15221–0338–0 . . .	9-5
15221–0339–0 . . .	9-5
15221–0349–0 . . .	9-7
15221–0436–0 . . .	9-1
15221–1237–0 . . .	9-2
15221–1311–0 . . .	9-5
15221–1312–0 . . .	9-5
15221–1315–0 . . .	9-5
15221–1324–0 . . .	9-5
15221–1328–0 . . .	9-5
15221–1333–0 . . .	9-5
15221–1336–0 . . .	9-5
15221–1358–0 . . .	9-7
15221–1418–0 . . .	9-5
15221–1431–0 . . .	9-5
15221–1435–0 . . .	9-5
15221–1442–0 . . .	9-5
15221–1443–0 . . .	9-5
15221–1511–0 . . .	9-3
15221–1555–0 . . .	9-3
15221–1627–0 . . .	9-3
15221–1632–0 . . .	9-11
15221–2133–0 . . .	9-9
15221–2198–0 . . .	9-9
15221–2336–0 . . .	9-9
15221–2395–0 . . .	9-9
15221–2396–0 . . .	9-9
15221–2401–0 . . .	9-3
15221–2425–0 . . .	9-3

Part Number	Page Number
15221–2432–0 . . .	9-3
15221–2498–0 . . .	9-3
15221–3314–0 . . .	9-7
15221–3361–0 . . .	9-5
15221–3365–0 . . .	9-5
15221–3370–0 . . .	9-5
15221–3375–0 . . .	9-10
15221–3515–0 . . .	9-5
15221–3568–2 . . .	9-5
15221–5166–0 . . .	9-15
15221–5545–0 . . .	9-11
15221–5547–0 . . .	9-11
15221–5569–0 . . .	9-11
15221–5574–0 . . .	9-11
15221–5615–0 . . .	9-16
15221–5623–0 . . .	9-16
15221–5628–0 . . .	9-9
15221–6382–0 . . .	9-10
15221–6641–0 . . .	9-16
15221–8813–0 . . .	9-9
15221–8821–0 . . .	9-14
15221–8821–0 . . .	9-9
15221–9153–0 . . .	9-18
15221–9153–0 . . .	9-2
15223–8334–0 . . .	9-9
15241–3695–0 . . .	9-9
15241–5214–0 . . .	9-18
15261–9601–0 . . .	9-7
15261–9602–0 . . .	9-9
15271–5302–0 . . .	9-13
15291–7316–0 . . .	9-5
15321–2516–3 . . .	9-10
15321–7301–0 . . .	9-19
15321–7326–0 . . .	9-19
15321–7327–0 . . .	9-19
15331–0461–0 . . .	9-10
15401–0558–0 . . .	9-7
15401–1231–0 . . .	9-2
15401–1405–0 . . .	9-5
15401–5115–0 . . .	9-11
15401–5211–0 . . .	9-18
15401–6556–0 . . .	9-13
15401–9569–0 . . .	9-18
15411–0407–0 . . .	9-1
15426–5285–0 . . .	9-18
15434–0161–0 . . .	9-10
15434–1451–0 . . .	9-7
15451–9233–0 . . .	9-7
15461–5101–0 . . .	9-18
15461–63011	9-10
15469–0162–0 . . .	9-10
15469–5371–0 . . .	9-13
15469–5372–0 . . .	9-13
15469–5373–0 . . .	9-13
15469–5374–0 . . .	9-13
15469–8311–0 . . .	9-15
15469–8315–0 . . .	9-15

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number	Page Number

Part Number **Page Number**

Part Number **Page Number**

Part Number	Page Number

Part Number	Page Number

Part Number **Page Number**

Part Number **Page Number**

Part Number	Page Number

Part Number	Page Number

SECTION 11

CONTENTS

TENNANT COMPANY LIMITED WARRANTY

NEW MACHINES

Tennant Company warrants to the original purchaser for the period stated below that goods manufactured by it will be free from defects of workmanship and material, provided such goods are installed, operated, and maintained in accordance with Tennant Company's written manuals or other instructions. No warranty is made with respect to items supplied by Tennant Company on special order of purchaser. Tennant Company's sole obligation under this Warranty will be to repair and replace, at Tennant Company's option, parts that do not conform to this Warranty.

SIX–MONTH LABOR COVERAGE (U.S.A. AND CANADA ONLY)

For six (6) months in the U.S.A. or Canada, thirty (30) days elsewhere, from date of installation, Tennant Company will, at its option, provide labor for repair, pay for outside repair service, or pay the customer straight time in accordance with Tennant Company's flat rate schedule for particular warranty repairs. After six (6) months, Tennant Company's sole obligation shall be limited to the repair or replacement, at Tennant Company's option, of parts that do not conform to this Warranty according to the schedule below.

BATTERIES AND TIRES

Batteries and tires will be replaced if failure occurs due to defective material or workmanship within ninety (90) days from date of purchase. Thereafter, a pro rata adjustment from date of purchase to twelve (12) months will be made. The pro rata adjustment price of the replacement battery and/or tire will be the Tennant Company current price as of the adjustment request less 1/12th of that price for each month remaining in the twelve (12) month period. This Warranty applies only to batteries and tires purchased from Tennant Company and installed in vehicles used in normal service.

BRUSHES

Brushes that fail due to defective material or workmanship will be replaced on a pro rata basis within the first twelve (12) months of purchase. The replacement price will be calculated by multiplying the current Tennant Company price by the percentage of usable bristle remaining at the time of adjustment.

MACHINE WARRANTY PERIOD

Tennant Company warrants its equipment for a set number of months or for a set number of hours of use, whichever comes first. The warranty periods and hours of use vary depending upon the machine model. The warranty periods for Tennant Company's various machines are:

SCARIFIERS

Machine Model	Warranty Period	Machine Model	Warranty Period
G	12 months/500 hours	L2	12 months/500 hours
K4	12 months/500 hours	RS/TLR	12 months/500 hours
KDC	12 months/500 hours		

SCRUBBERS

Machine Model	Warranty Period	Machine Model	Warranty Period
465/480/490	24 months/750 hours	† 530E	24 months/2000 hours
1465/1480/1490	24 months/750 hours	550	12 months/1500 hours
†510E	24 months/2000 hours	550E	12 months/1500 hours
* 528	24 months/2000 hours		

SWEEPERS

Machine Model	Warranty Period	Machine Model	Warranty Period
95AA/95 GR	24 months/2000 hours	235	24 months/1250 hours (except Duramer™ hopper 5 years/5000 hours)
97	24 months/2000 hours		
140/140E	12 months/500 hours		
141	18 months/500 hours	* 255	24 months/1500 hours
186/1186	18 months/500 hours	* 275	24 months/2000 hours
215	18 months/750 hours	* 285	24 months/2000 hours
242E	24 months/1750 hours	* 365	24 months/2000 hours

*Ford engines installed as original equipment on TENNANT Model 255, 275, 285, 365, and 528 carry a 5 year/3000 hour parts only warranty. General maintenance items such as spark plugs, fan belts, carburetors, fuel pumps, and alternator assemblies are excluded.

†Except Duramer™ solution and recovery tanks, and optional Pre-Sweep™ hopper 5 years/5000 hours.

RECONDITIONED MACHINES

Tennant Company warrants to the purchaser of reconditioned equipment, purchased from Tennant Company, for the period of ninety (90) days from the date of delivery that the purchased equipment will be free from defects of workmanship and material, provided such equipment is operated and maintained according to Tennant Company written manuals or instructions. Tennant Company's sole obligation under this Warranty will be to repair and replace, at Tennant Company's option, parts that do not conform to this Warranty.

No warranty of any kind is extended to equipment that is sold for salvage.

LABOR COVERAGE

For thirty (30) days from date of delivery Tennant Company will, at its option, provide labor for repair, pay outside repair service, or pay the customer straight time in accordance with Tennant Company flat rate schedule for particular warranty repair. After thirty (30) days, Tennant Company's sole obligation shall be limited to the repair or replacement, at Tennant Company's option, of parts that do not conform to this Warranty.

DEMONSTRATOR MACHINES

Demonstrator machines purchased from Tennant Company shall carry one of the following limited warranties:

1. Demonstrator machines purchased **without** a demonstrator discount carries the same warranty as new machines;
2. Demonstrator machines purchased **with** a demonstrator discount carries one-half the amount of warranty as new machines.

REPAIR PARTS

Repair parts supplied by Tennant Company are warranted against defects for the period stated below. Tennant Company's obligation is limited to the replacement of the warranted part, and Tennant Company shall not be obligated to provide labor (except certain engines also stated below) in installing such part.

ENGINES, SHORT BLOCKS, AND LONG BLOCKS

Manufacturer	Warranty Period	Manufacturer	Warranty Period
Continental	1 year or 1500 hours parts & labor	Perkins	1 year or 1500 hours parts & labor
Kohler	1 year or 1500 hours parts & labor (except Kohler Model K181S – 500 hours)	Kubota	1 year or 1500 hours parts & labor
Briggs & Stratton	90 days or 200 hours parts &labor	Wisconsin	1 year or 500 hours parts & labor
Onan	1 year or 1500 hours parts & labor	Ford	1 year or 1500 hours parts only

- Engine part replacements such as water pumps, carburetors, and alternators are warranted for thirty (30) days parts only, no labor.
- Labor is to include only the time it takes to repair an engine. It does not include removal and replacement nor does it include travel time.

MAJOR HYDRAULIC COMPONENTS (PUMPS, MOTORS, CYLINDERS, AND CONTROL VALVES)

Manufacturer	Warranty Period	Manufacturer	Warranty Period
Cessna	1 year parts only	Oilgear	1 year parts only
Char–Lynn	1 year parts only	Gresen	90 days parts only
Victor (Dukes)	1 year parts only	MTE	90 days parts only
Ross	1 year parts only	Barnes	90 days parts only
Vickers	1 year parts only		

- Replacement parts are warranted for thirty (30) days parts only.

MAJOR ELECTRIC MOTORS

Manufacturer	Warranty Period	Manufacturer	Warranty Period
Baldor	1 year parts only	Ohio Electric	1 year parts only
General Electric	1 year parts only	HK Porter	1 year parts only

- All other repair parts are warranted for thirty (30) days only.

SERVICE LABOR

Labor performed by a Tennant Company service representative shall be warranted for thirty (30) days from the date the repairs are completed. This policy does not cover work performed by any service company, other than Tennant Company, and is restricted to the specific repair operation or component for which a claim is made.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER EXPRESSED OR IMPLIED WARRANTIES INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS AND OF ALL OTHER OBLIGATIONS AND LIABILITIES ON THE PART OF TENNANT COMPANY, INCLUDING LIABILITIES FOR DIRECT, IMMEDIATE, SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE FAILURE OF ANY MACHINE OR PART OF IT TO OPERATE PROPERLY, INCLUDING THE COST OR EXPENSE OF PROVIDING SUBSTITUTE EQUIPMENT OR SERVICE DURING PERIODS OF MALFUNCTION OR NON–USE.

This Warranty cannot be extended, changed, or modified by any representative of Tennant Company.

TENNANT COMPANY, TENNANT COMPANY SUBSIDIARIES, AND MAJOR PARTS AND SERVICE LOCATIONS DIRECTORY

LOCATION

NORTH AMERICA

U.S.A.

CALIFORNIA
Los Angeles Parts and Service Center
2861 East La Palma
P. O. Box 66066
Anaheim, CA 92806
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FAX: (714) 630–6934

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Atlanta Parts and Service Center
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Norcross, GA 30092
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630 Supreme Drive
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Bensenville, IL 60106
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FAX: (609) 665–4894

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SOUTH AMERICA

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This is a listing of *major* Tennant Company parts and service centers. Parts and service are also available at many other Tennant Company centers or distributors located around the world. To determine your nearest Tennant Company representative, phone or write the Tennant Company World Headquarters.

TENNANT SERVICE LITERATURE AVAILABLE...

A variety of information is available to you in forms to suit your needs. The following is a list of those publications that relate to the Model 97 family of machines:

Machine Model	Publication	Form	TENNANT Part No.
97	Operation, Maintenance, and Parts Manual	Printed	MM282
97	Operation, Maintenance, and Parts Manual	Microfiche	85282
97	Operator Handbook	Printed	MM263
97	Kubota Diesel Engines Workshop Manual	Printed	33074

Keep your manuals in a safe, convenient location for your future reference in order to operate, maintain, and order repair parts for your machine. Everyone who operates, maintains, or purchases parts for the machine should have easy access to a copy of the manual.

To get pricing information or to order copies of these publications, contact your nearest TENNANT parts warehouse, distributor, or sales representative.