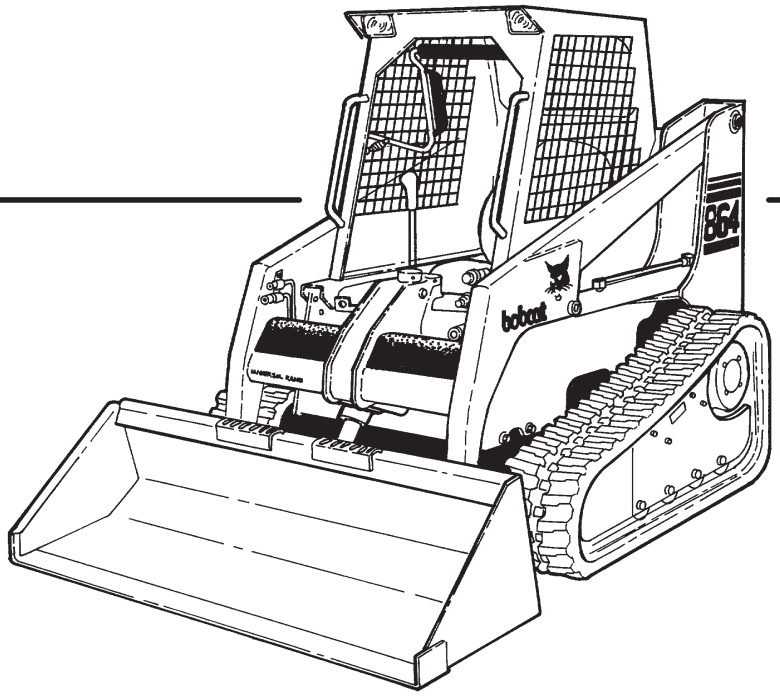
864

864

HIGH FLOW

Service Manual

S/N 516911001 & Above



EQUIPPED WITH BOBCAT INTERLOCK CONTROL SYSTEM (BICS™)

MELROE
INGERSOLL-RAND

6900627 (7–99)

bobcat®

SAFETY INSTRUCTIONS

⚠ WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W–2003–0299

The following publications provide information on the safe use and maintenance of the loader and attachments:

- The Delivery Report is used to assure that complete instructions have been given to the new owner and that the machine is in safe operating condition.
- The Operation & Maintenance Manual delivered with the loader gives operating information as well as routine maintenance and service procedures. It is a part of the loader and must stay with the machine when it is sold. Replacement Operation & Maintenance Manuals can be ordered from your Bobcat loader dealer.
- The loader has machine signs (decals) which instruct on the safe operation and care. The signs and their locations are shown in the Operation & Maintenance Manual. Replacement signs are available from your Bobcat loader dealer.
- The loader has a plastic Operator's Handbook fastened to the operator cab. Its brief instructions are convenient to the operator. The Handbook is available from your dealer in an English edition or one of many other languages. See your Bobcat dealer for more information on translated versions.
- The EMI Safety Manual (available in Spanish) delivered with the loader gives general safety information.
- The Service Manual and Parts Manual are available from your dealer for use by mechanics to do shop–type service and repair work.
- The Skid–Steer Loader Operator Training Course is available through your local dealer. This course is intended to provide rules and practices for correct operation of the Bobcat loader. The course is available in English and Spanish version.
- The Service Safety Training Course is available from your Bobcat dealer. This course provides information for safe and correct service procedures for Bobcat Skid–Steer loaders.
- The Bobcat Skid–Steer Loader Safety Video is available from your Bobcat Dealer.

⚠ WARNING

Warnings on the machine and in the manuals are for your safety. Failure to obey warnings can cause injury or death.

W–2044–1285

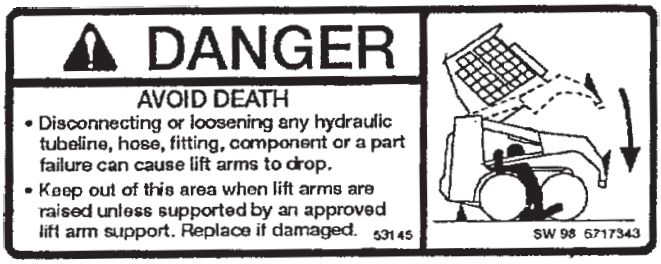
IMPORTANT

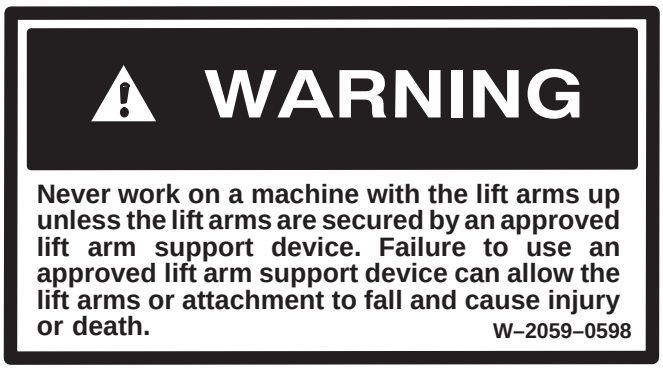
This notice identifies procedures which must be followed to avoid damage to the machine.

I–2019–0284

Safety Alert Symbol: This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.

Procedure (With Coupler)





Raise the operator cab. (See Page 1–1.)

Disengage the parking brake solenoid valve by pushing **IN** on the red Traction Lock By–Pass Knob (Item 1) **[A]** and turning it **1/4 TURN counterclockwise**. The knob will come out to release the solenoid valve.

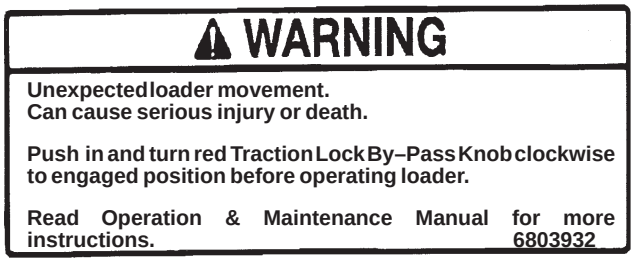
Connect a Port–a–Power to the coupler (Item 1) **[B]**.

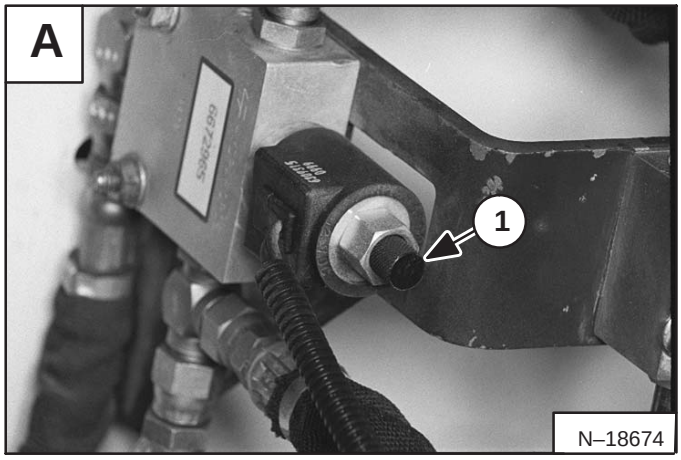
Operate the Port–a–Power to 400 PSI (2758 kPa) to release the brake **[C]**.

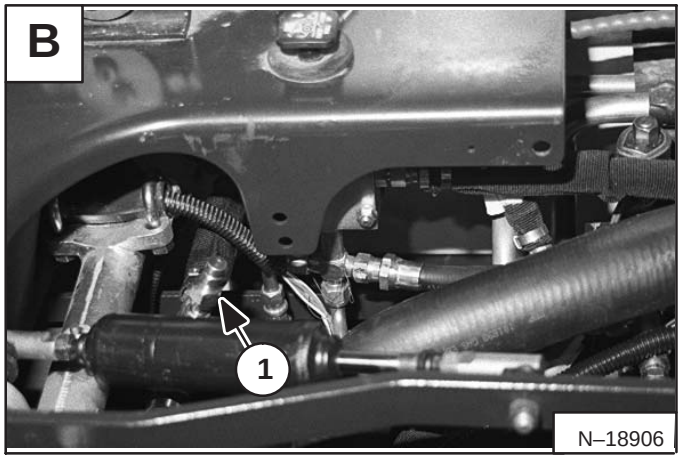
Lower the operator cab and tow the loader.

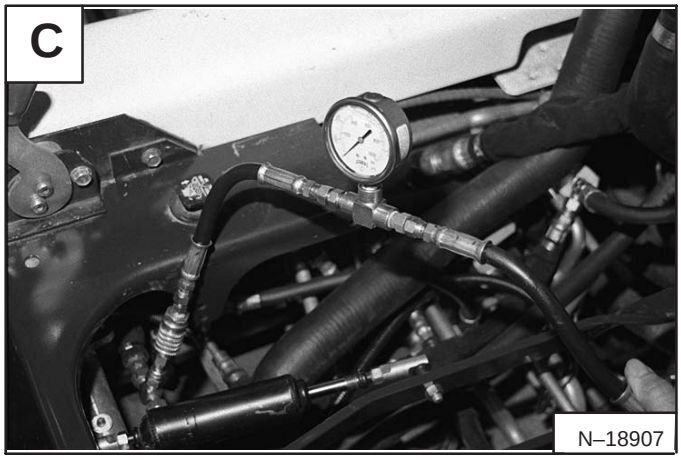
Before operating the loader again, disconnect the Port–a–Power.

Engage the parking brake solenoid valve, by pushing **IN** on the red Traction Lock By–Pass Knob (Item 1) **[A]** and turning it **1/4 TURN clockwise**.









ENGINE LUBRICATION SYSTEM

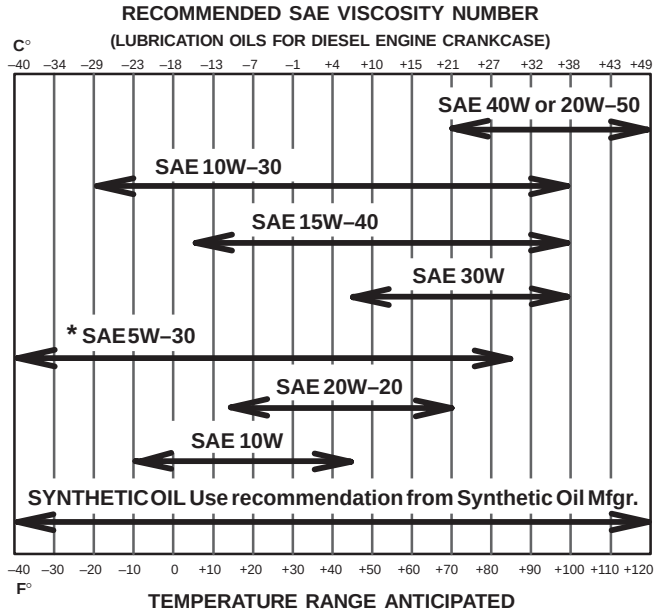
Checking Engine Oil

Check the engine oil level every day.

Before starting the engine for the work shift, open the rear door. Remove the dipstick (Item 1) **[A]**.

Keep the oil level between the marks on the dipstick.

Use a good quality motor oil that meets API Service Classification of CC, CD or CE.



***** Can be used **ONLY** when available with appropriate diesel rating.

Replacing The Oil And Filter

See the *SERVICE SCHEDULE*, Page 1–3 for the service interval for replacing the engine oil and filter.

Run the engine until it is at operating temperature. Stop the engine.

Open the rear door. Remove the drain plug (Item 2) **[A]**. Drain the oil into container.

Remove the oil filter (Item 1) **[B]**.

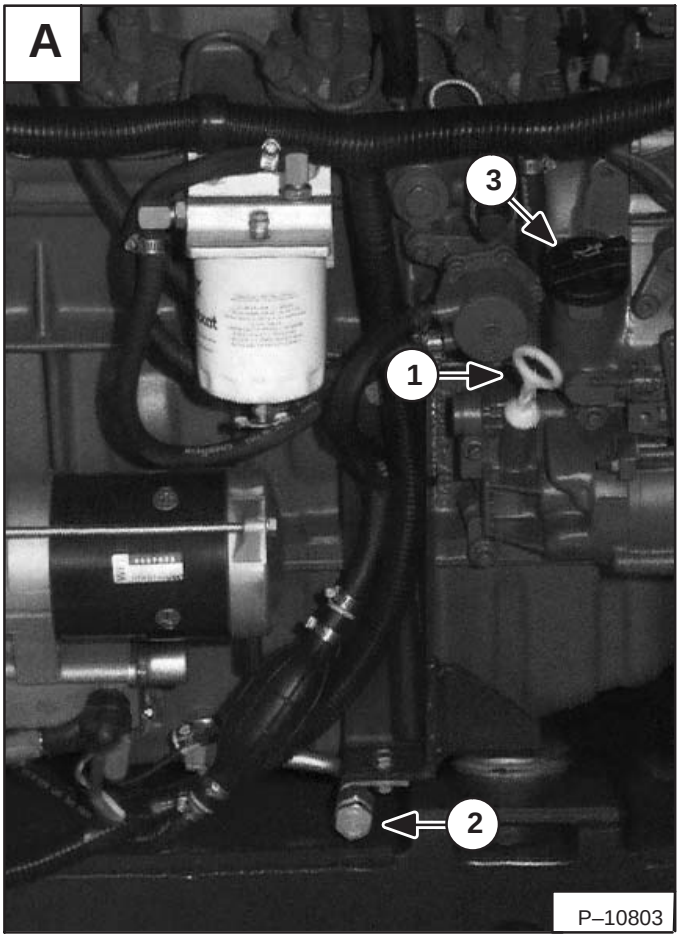
Clean the filter housing surface. Put clean oil on the new oil filter gasket. Install the filter and hand tighten only.

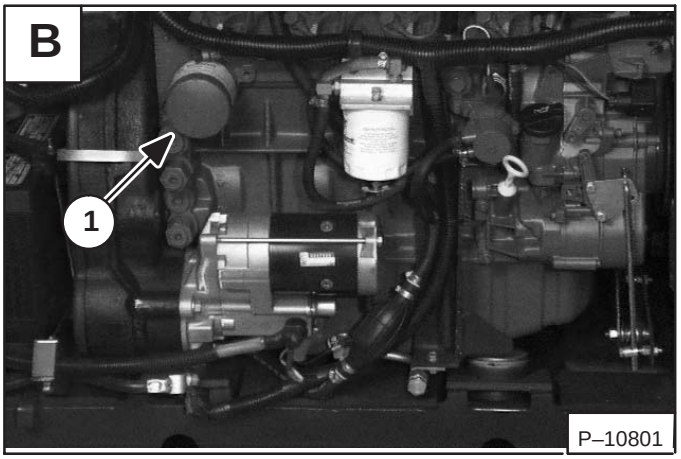
Install and tighten the drain plug.

Remove the filler cap (Item 3) **[A]**.

Put 10 qts. (9,5 L) of oil in the engine.

Start the engine and let it run for several minutes. Stop the engine. Check for leaks and check the oil level. Add oil as needed if it is not at the top mark on the dipstick.





⚠ WARNING

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire which can result in injury or death.

W–2103–1285

HYDRAULIC/HYDROSTATIC SCHEMATIC
864 (S/N 516911001 and Above) WITH HIGH FLOW OPTION

(Printed June 1999)
MC2549LE

LEGEND

(1) RESERVOIR:
Capacity . . . 16.0 Qts (15.1 L)
Screen Filter . . . . . 60 Mesh

(2) FILTER - CASE DRAIN (90 Micron)

(3) FILTER - HYDRAULIC (CANISTER)

(4) SPRING LOADED FILTER BYPASS VALVE: 45-55 PSI (311-379 kPa)

(5) ANTI-DRAIN BACK VALVE

(6) DIFFERENTIAL PRESSURE SWITCH:
36-44 PSI (248-303 kPa)
Without B.O.S.S.
(Normally Open - Shown)
With B.O.S.S.
(Normally Closed - NOT Shown)

(7) FLOW DIVIDER ADJUSTMENT VALVE

(8) CHECK VALVE - BUCKET POSITION VALVE

(9) FIXED CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC MOTOR

(10) PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - FLOW CONTROL SPOOL

(11) PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - UNLOADING SPOOL

(12) PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - TILT CONTROL

(13) PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - LIFT CONTROL

(14) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BICS CONTROL

(15) PULL BUTTON ACTIVATED DIRECTIONAL CONTROL VALVE - LIFT ARM BY PASS

(16) FILTER - BICS CONTROL VALVE (SCREEN)

(17) ONE WAY RESTRICTOR VALVE

(18) LOAD CHECK VALVE

(19) RELIEF VALVE - MAIN:
2950-3050 PSI (20340-21030 kPa)
at Front Quick Couplers

(20) RELIEF VALVE - PORT:
3500 PSI (24132 kPa)

(21) ANTICAVITATION VALVE

(22) RELIEF/ANTICAVITATION VALVE - PORT (TILT BASE END)
3500 PSI (24132 kPa)

(23) ONE WAY RESTRICTOR VALVE

(24) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - AUXILIARY

(25) RELIEF VALVE - PORT: . (Optional)
3500 PSI (24132 kPa)

(26) RELIEF/REPLENISHING VALVE - HIGH PRESSURE: 4712 PSI (32489 kPa)

(27) PRESSURE SWITCH

(28) RELIEF VALVE - CHARGE:
140°F. (62°C.) Fluid at Full RPM
Neutral . . . . 420 PSI
(2894 kPa)

(29) CHARGE PUMP . . . . 11.0 GPM
(41,6 L./Min.) at 2750 RPM

(30) HYDRAULIC PUMP . . . .Gear Type
PUMP CAPACITY:
18.0 GPM (68,1 L/min.)
HI FLOW CAPACITY: (Includes (31))
28.0 GPM (106,0 L/min.)
at 2750 RPM

(31) AUXILIARY HYDRAULIC PUMP:
PUMP CAPACITY:
10.0 GPM (37,8 L/min.)
at 2750 RPM

(32) DRIVE MOTOR SHUTTLE VALVE

(33) SHUTTLE RELIEF VALVE:
225 PSI (1551 kPa)

(34) CHECK VALVE

(35) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - HIGH FLOW

(36) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - DIVERTER

(37) RELIEF VALVE - MAIN (HIGH FLOW)
3000 PSI (20685 kPa)

(38) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE (TWO COIL)

(39) PILOT TO OPEN CHECK VALVE

(40) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BLEED OFF

(41) LOAD SHUTTLE VALVE

(42) RESTRICTION

(43) CHECK VALVE - AUXILIARY

(44) MUFFLER (If Equipped)

(45) VARIABLE CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC PUMP

(46) CHECK VALVE

(47) SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BRAKE

NOTE: Unless otherwise specified springs have NO significant pressure value.

Printed in U.S.A.

TILT CYLINDER (Cont'd)

Removal And Installation (Cont'd)

Remove the retainer bolt and nut (Item 1) **[A]** from the base end pivot pin.

Installation: Tighten the retainer nut and bolt to 18–20 ft.–lbs. (24–27 Nm) torque.

⚠ WARNING

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire which can result in injury or death.

W–2103–1285

Remove the base end pivot pin (Item 1) **[B]**.

Remove the tilt cylinder from the loader.

Rod End Seal

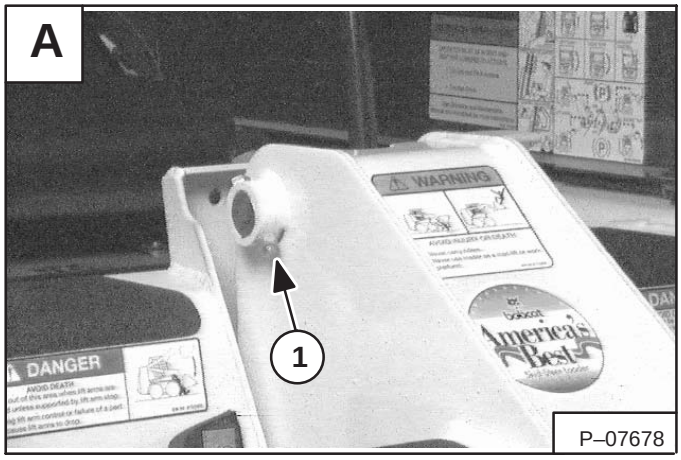
Remove the old seal (both sides) from the rod end of the tilt cylinder.

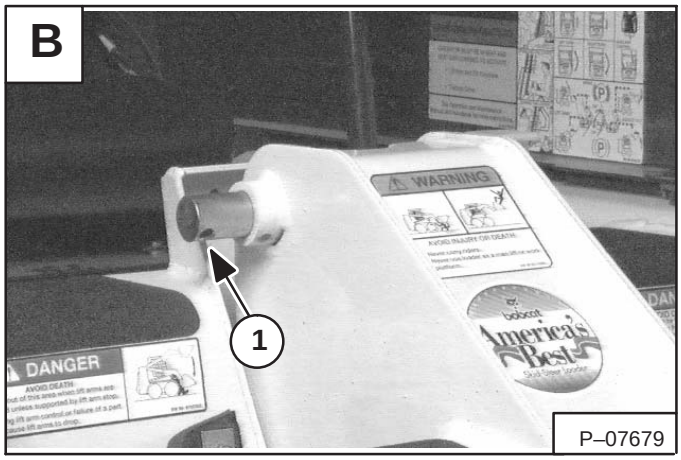
Install the new seals (Item 1) **[C]** with the lip facing out.

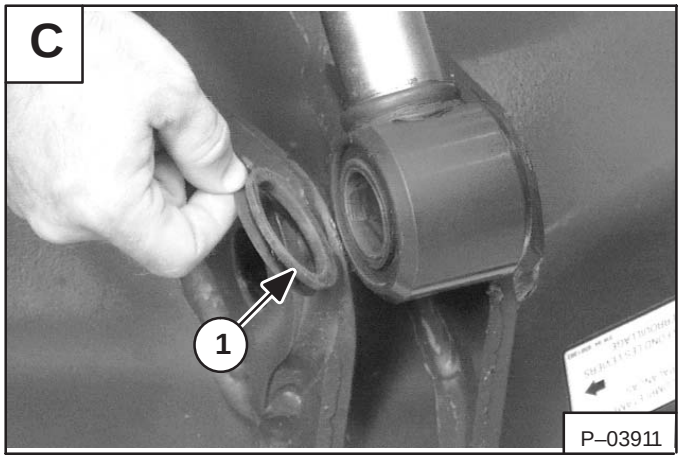
Using two pieces of shim stock, install the rod end of the tilt cylinder into the Bob–Tach **[D]**.

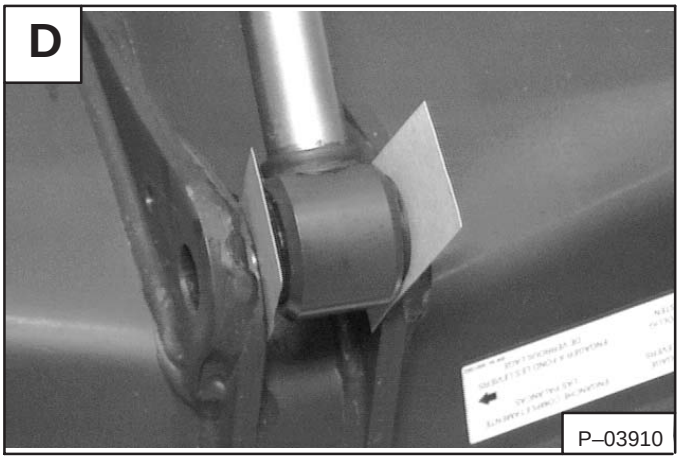
Be careful not to damage the new seals during installation.

Hold the rod end in position and remove the shim stock.









MAIN RELIEF VALVE (Cont'd)

Removal And Installation

Raise the operator cab. (See Page 1–1.)

IMPORTANT

When repairing hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

I–2003–0888

The main relief valve (Item 1) **[A]** is located at the lower front of the control valve.

Clean the area around the control valve.

Loosen and remove the main relief valve (Item 1) **[B]**.

***Installation*:** Tighten the main relief valve to 35–40 ft.–lbs. (47–54 Nm) torque.

Remove the O–rings and back–up washers from the main relief valve **[C]**.

Clean the main relief valve in clean solvent. Use air pressure to dry the valve.

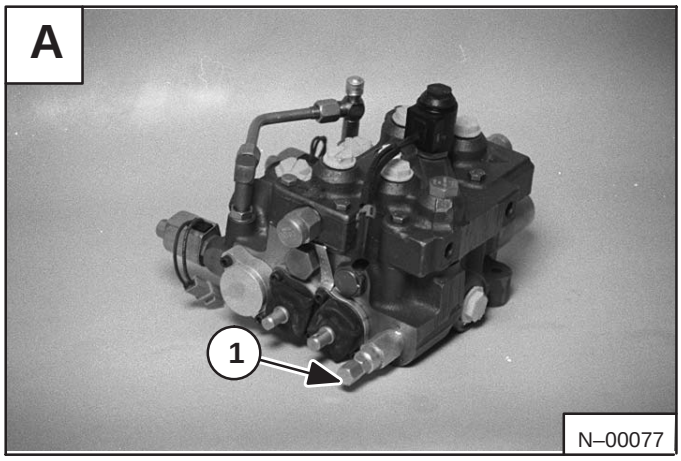
Install new O–rings (Item 1) **[A]** and back–up washers (Item 2) **[A]**. Install the main relief valve and tighten **[A]**. Check the pressure again. (See Page 2–21 or 2–22.)

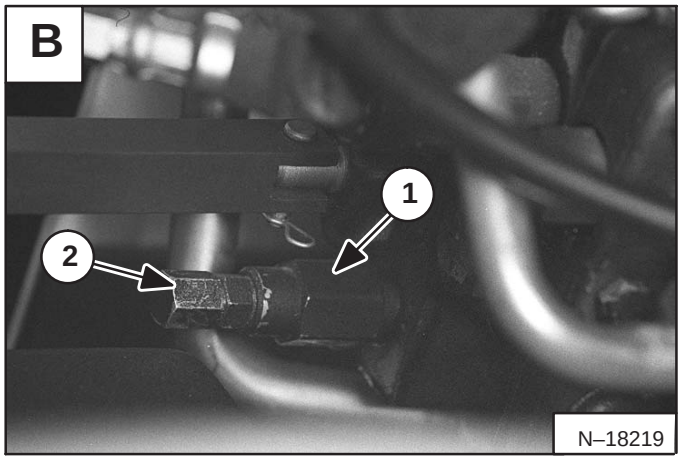
Adjustment

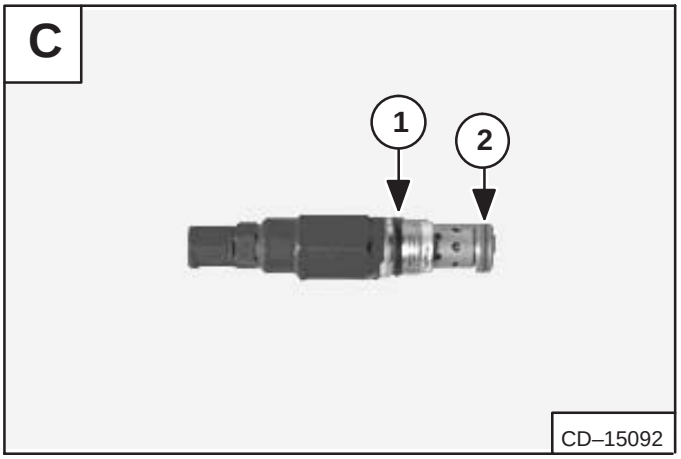
If the pressure is not correct, adjust the main relief valve. Remove the end cap (Item 2) **[B]**.

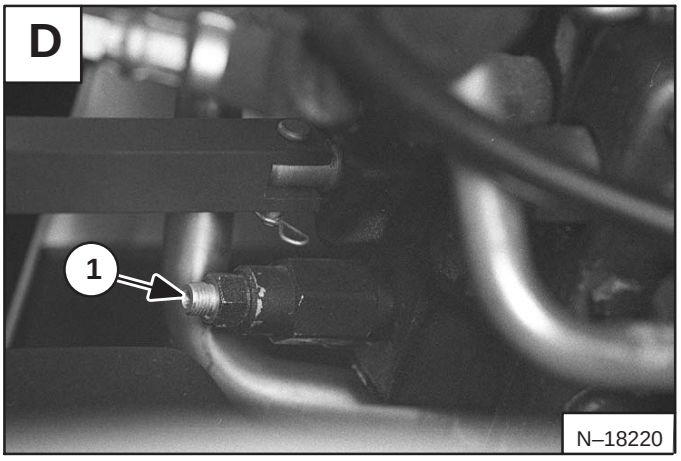
Turn the adjusting screw (Item 1) **[D]** in or out until the pressure is correct. Turning screw in will increase pressure.

NOTE: If the correct pressure can not be reached, replace the main relief valve. Check the pressure setting of the new relief valve.

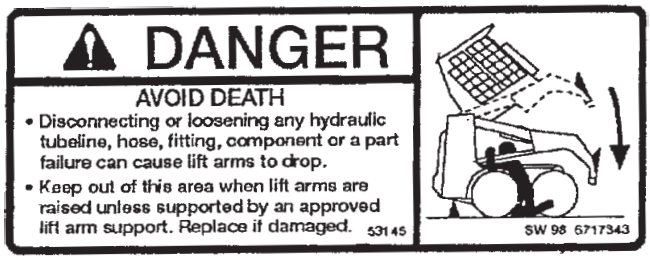








Removal And Installation



WARNING

Never work on a machine with the lift arms up unless the lift arms are secured by an approved lift arm support device. Failure to use an approved lift arm support device can allow the lift arms or attachment to fall and cause injury or death.

W–2059–0598

IMPORTANT

When repairing hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

I–2003–0888

Raise the lift arms and install an approved lift arm support device. (See Page 1–1.)

Stop the engine. Raise the seat bar.

Raise the operator cab. (See Page 1–1.)

Remove the control panel. (See Page 3–1.)

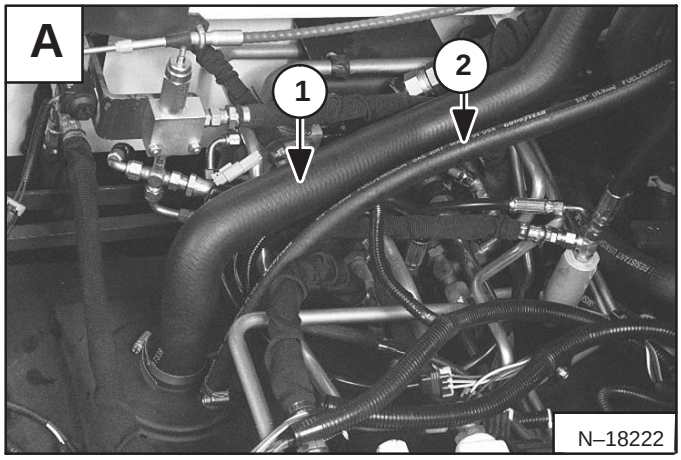
Clean the area around the control valve.

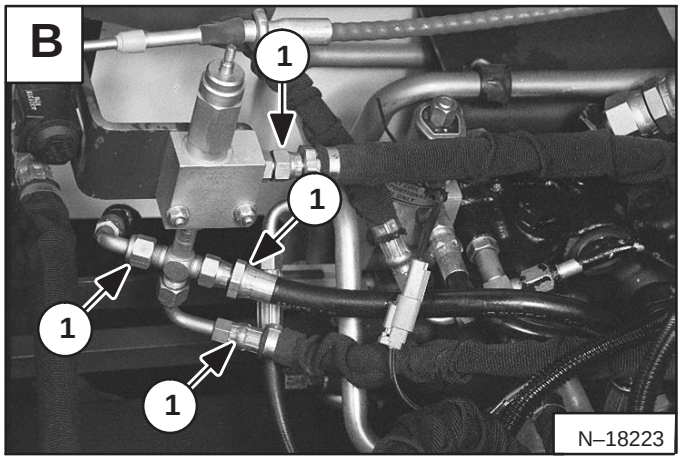
Remove the fuel lines (Item 1 & 2) **[A]** from the fuel tank and cap and plug the fuel tank.

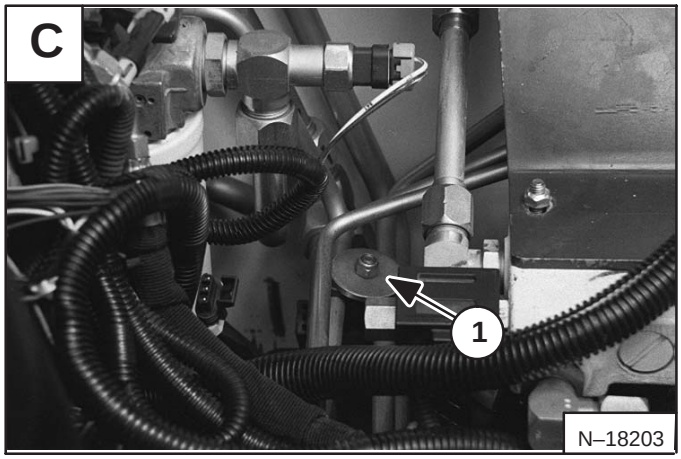
Remove the four hydraulic hoses (Item 1) **[B]** from the lift arm by–pass control valve.

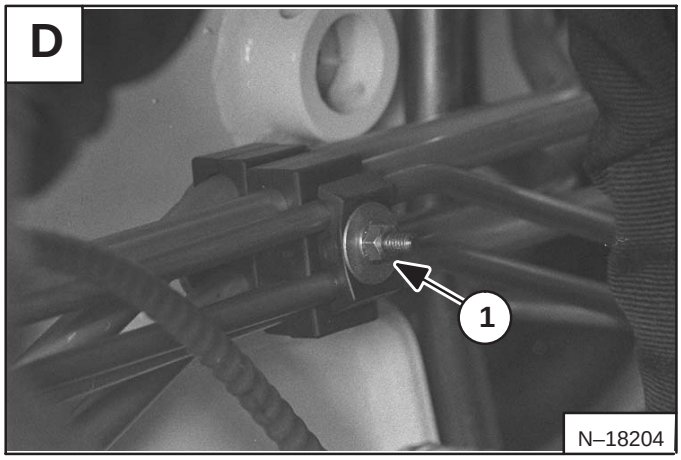
At the hydraulic filter remove the bolt and nut (Item 1) **[C]** and remove the tubeline clamp.

At the engine compartment remove the bolt and nut (Item 1) **[D]** and remove the tubeline clamp.









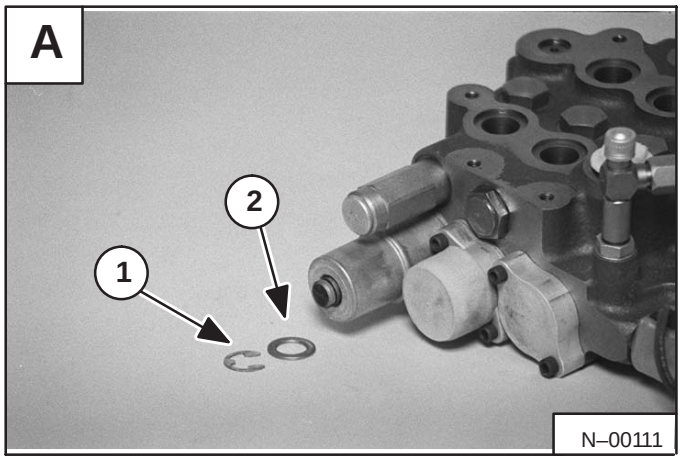
Lift Spool and Detent

The tool listed will be needed to do the following procedure:

MEL1278 – Detent Tool

Use a screwdriver to remove the snap ring (Item 1) **[A]**.

Remove the washer (Item 2) **[A]**.



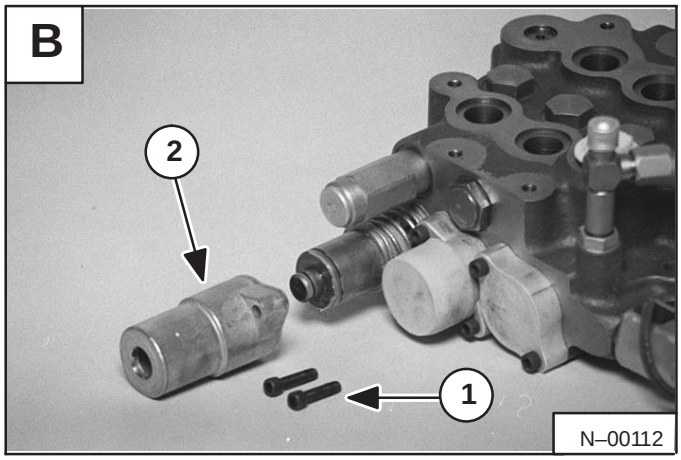
Remove the screws (Item 1) **[B]** from the detent sleeve.

Remove the detent sleeve (Item 2) **[B]**.

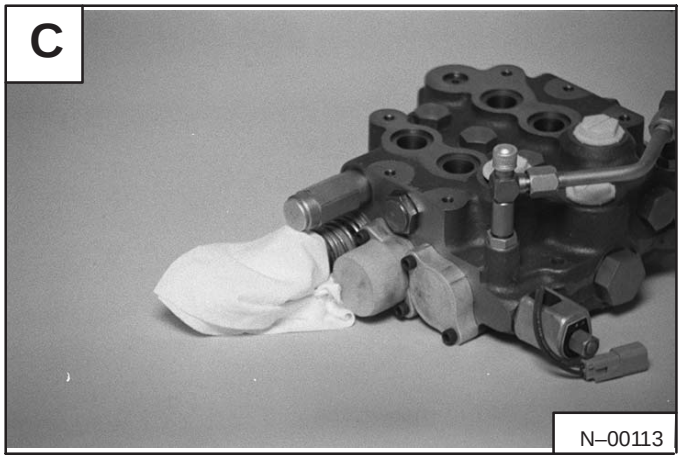
IMPORTANT

The detent assembly has small springs and balls. Do not lose these parts during disassembly and assembly.

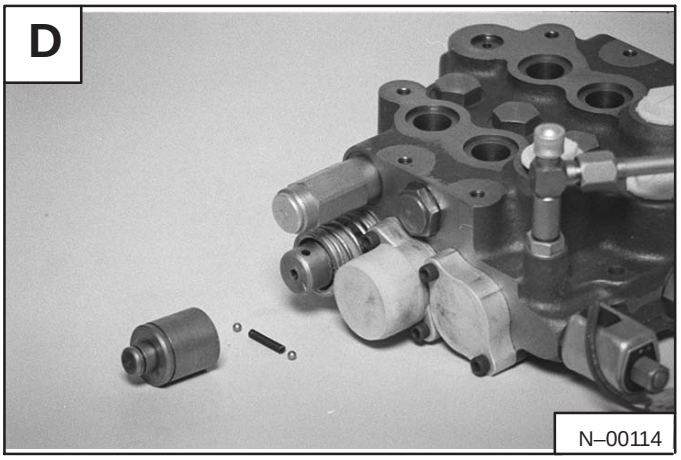
I–2012–0284



Put a rag around the detent assembly **[C]**. This will prevent the detent balls and spring from being lost when the detent sleeve is removed.



Remove the detent sleeve, detent balls and spring **[D]**.



LIFT ARM BY–PASS CONTROL VALVE MOUNT BRACKET

Removal And Installation

Remove the brake block. (See Page 4–1.)

Remove the two bolts (Item 1) **[A]** that mount the lift arm by–pass valve to the mounting bracket.

Remove the two bolts (Item 2) **[A]** from the mounting bracket.

Remove the mount bracket from the loader.

⚠ WARNING

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire which can result in injury or death.

W–2103–1285

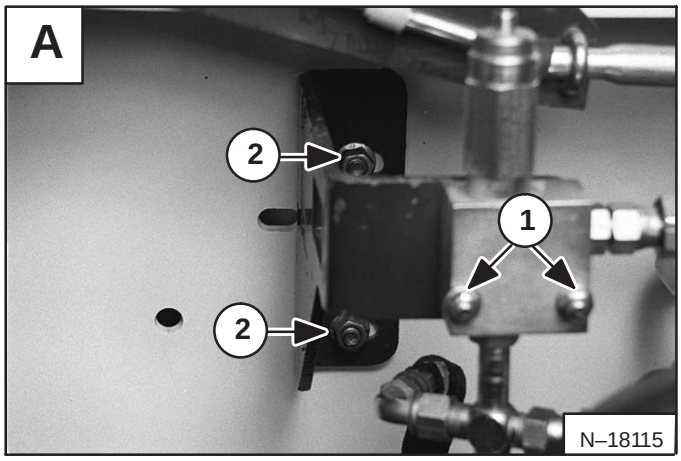
Disassembly And Assembly

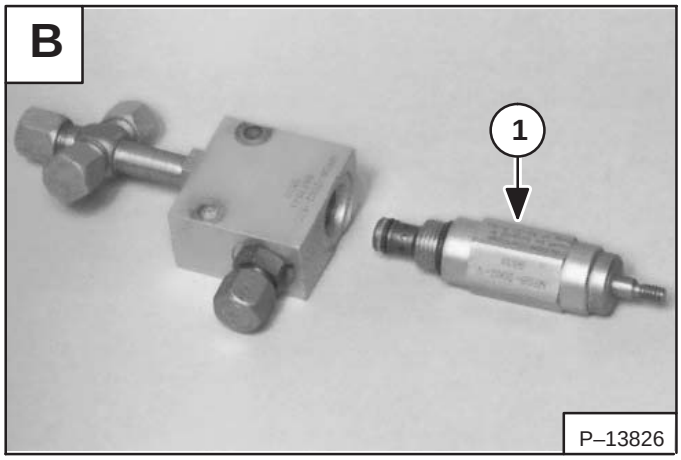
Remove the by–pass valve (Item 1) **[B]** from the valve block.

Inspect the hydraulic fittings on the valve block for damage and replace if necessary.

Check the by–pass valve O–rings and back–up washers for wear and replace as needed **[C]**.

Installation: Tighten the valve to 33–37 ft.–lbs. (45–50 Nm) torque.





Removal and Installation

IMPORTANT

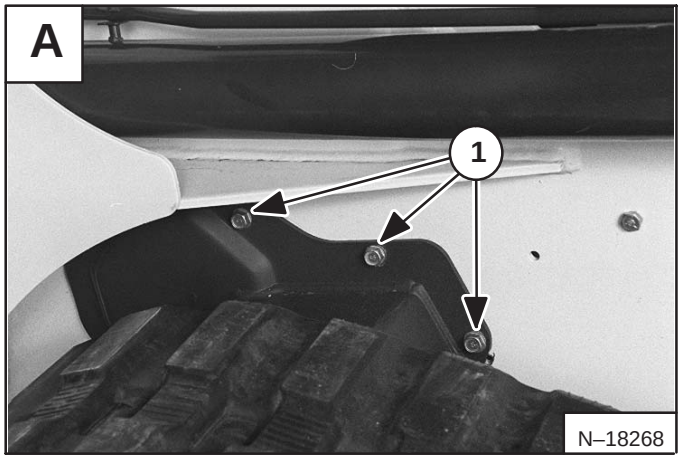
When repairing hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

I–2003–0888

Lift and block the loader. (See Page 1–1.)

Remove the right side track. (See Page 4–1.)

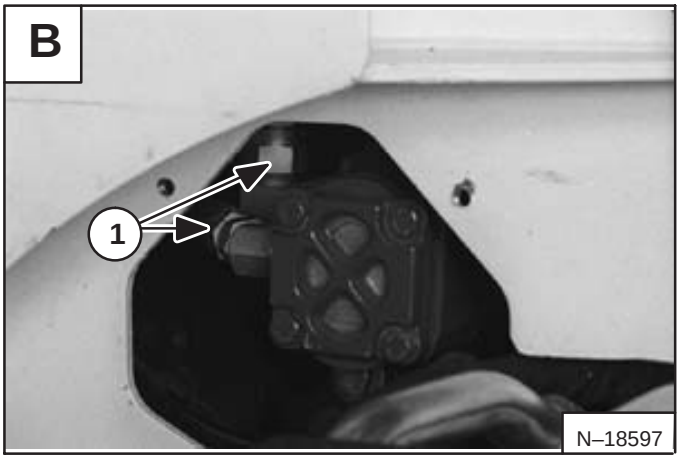
Remove the four bolts (Item 1) **[A]** and remove the cover from the loader.



Raise the operator cab. (See Page 1–1.)

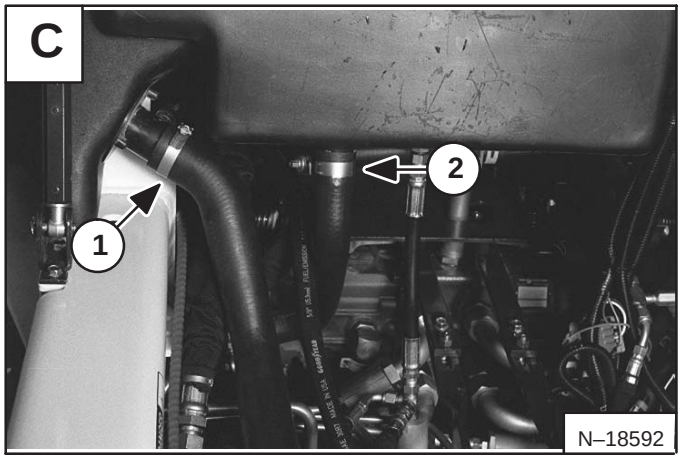
Drain the hydraulic reservoir. (See Page 2–1.)

Disconnect the hydraulic hoses (Item 1) **[B]** from pump.



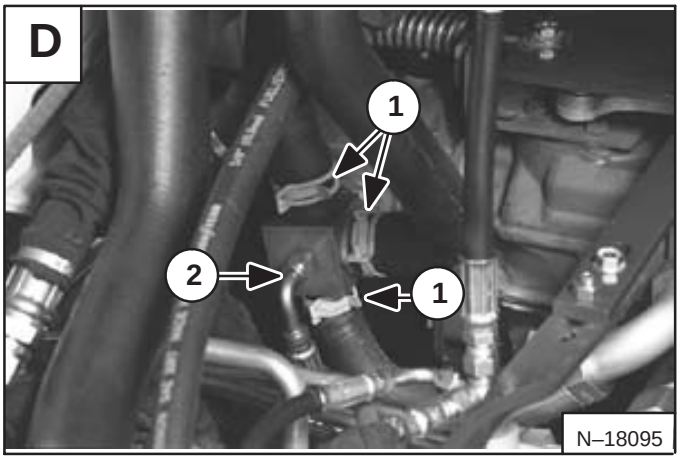
Loosen the clamp (Item 1) **[C]** and remove the fuel hose from fill neck. Position hose away from pump.

Loose the clamp and remove the pump inlet hose (Item 2) **[C]**.



Loosen the clamps (Item 1) **[D]** and disconnect the pump inlet hose.

Remove the hydraulic hose (Item 2) **[D]** from the pump inlet fitting.



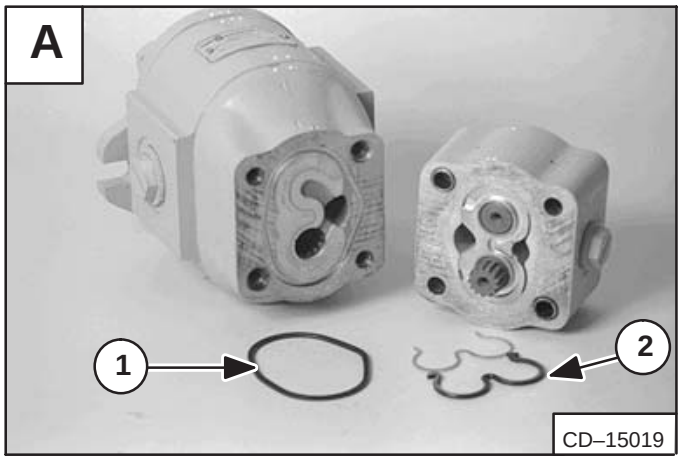
HYDRAULIC PUMP (Double Gear) (Cont'd)

Assembly (Cont'd)

Install the bearing housing/gears assembly into the pump housing **[A]**.

Install the large O–ring (Item 1) **[A]**.

Install the back–up seal/O–ring seal (Item 2) **[A]**.



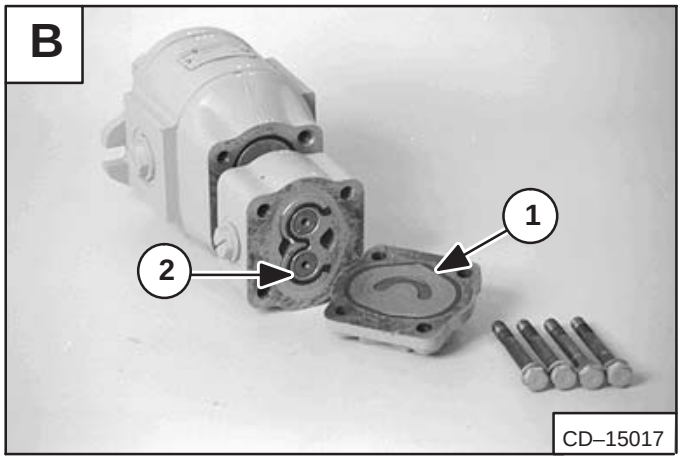
Install pump housing on the center housing **[B]**.

Install the large O–ring (Item 1) **[B]**.

Install the back–up seal/O–ring seal (Item 2) **[B]**.

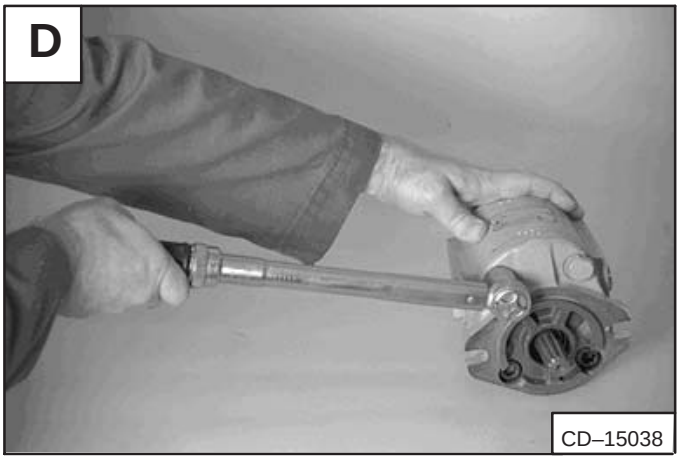
Install the end housing.

Install the four pump housing bolts.



Tighten the small pump housing bolts to 20–25 ft.–lbs. (27–34 Nm) torque **[C]**.

Tighten the large pump housing bolts (hex head & allen head) to 33–41 ft.–lbs. (45–56 Nm) torque **[D]**.



SELECT VALVE (864H) (Cont'd)

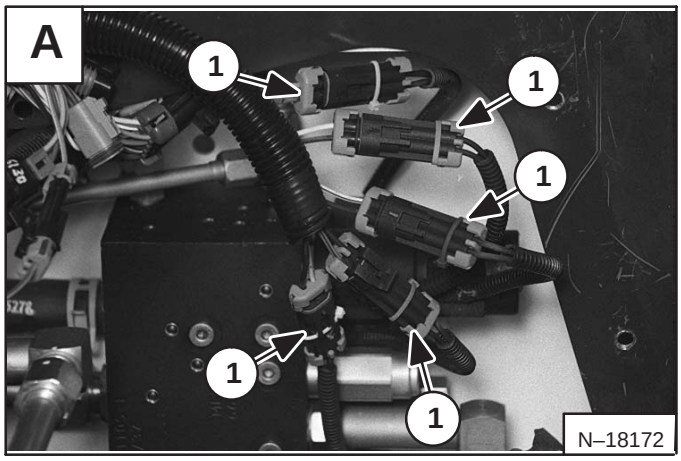
Removal And Installation

Raise the operator cab. (See Page 1–1.)

Remove the control panel. (See Page 3–1.)

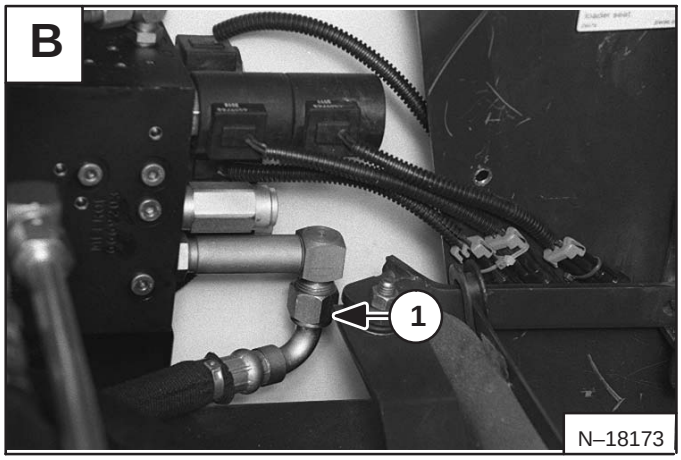
NOTE: Mark the electrical connectors for proper installation.

Disconnect the five electrical controls harness connectors (Item 1) **[A]** at the select valve.

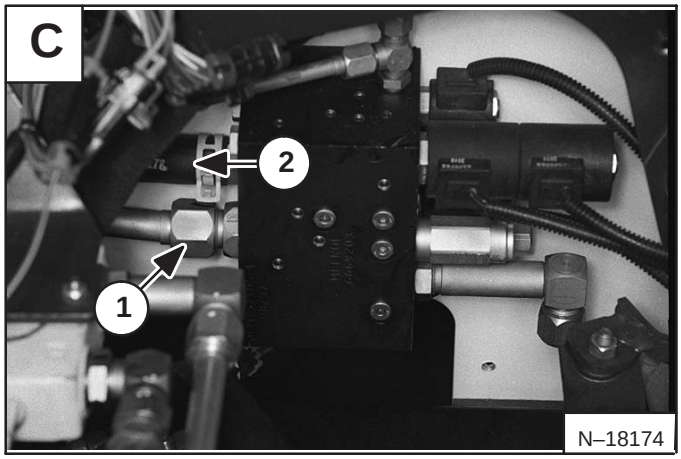


Drain the hydraulic reservoir. (See Page 1–1.)

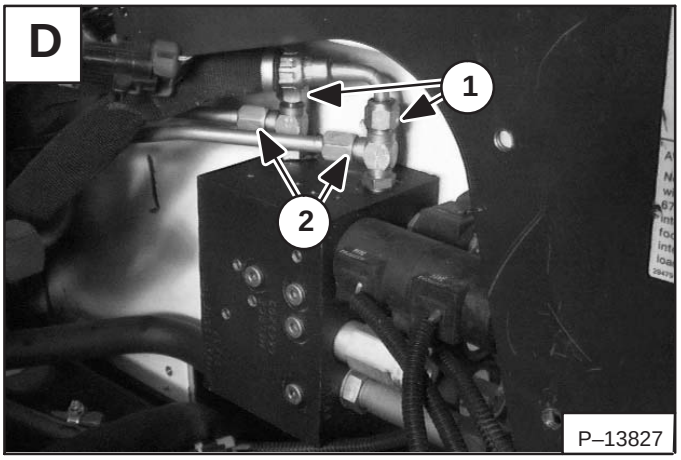
Disconnect the tubeline (Item 1) **[B]**.



Disconnect the tubeline (Item 1) **[C]**. Disconnect the hydraulic hose (Item 2) **[C]** from the valve.



Remove the two hydraulic hoses (Item 1) **[D]** from the valve. Disconnect the two hydraulic tubelines (Item 2) **[D]** from the select valve.



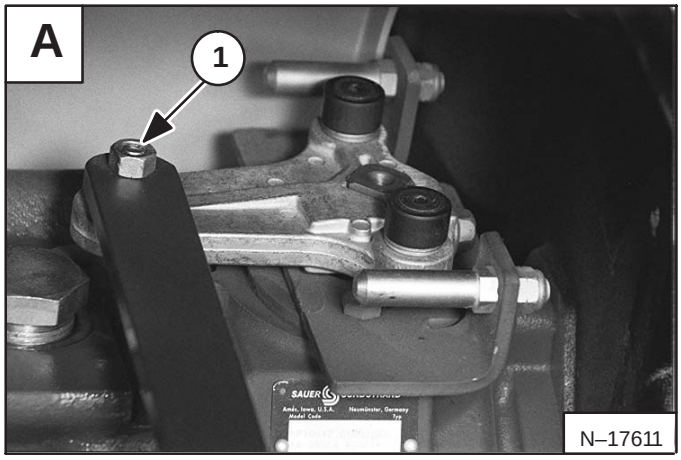
HYDROSTATIC SYSTEM

Removal and Installation (Cont'd)

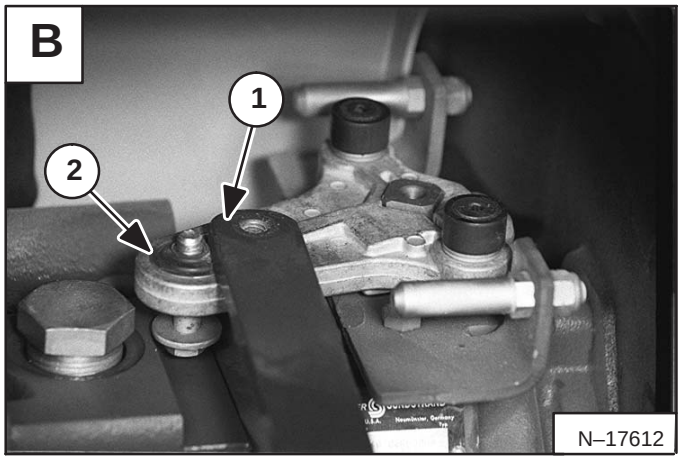
Remove the linkage bar nut (Item 1) **[A]** from the torsion bushing.

The bolt is threaded into the linkage bar, remove the bolt from underneath the pintle arm.

Installation: Tighten the bolt to 11–13 ft.–lbs. (21–25 Nm) torque, then tighten the nut (Item 2) **[C]** to 21–25 ft.–lbs. (28–33 Nm) torque.



Remove the linkage bar (Item 1) **[B]** from the pintle arm. remove the torsion bushing (Item 2) **[B]**.



Remove the nuts (Item 1) **[A]** from both shock absorber ball joint ends.

Installation: Tighten the nuts to 25–28 ft.–lbs. (34–38 Nm) torque.

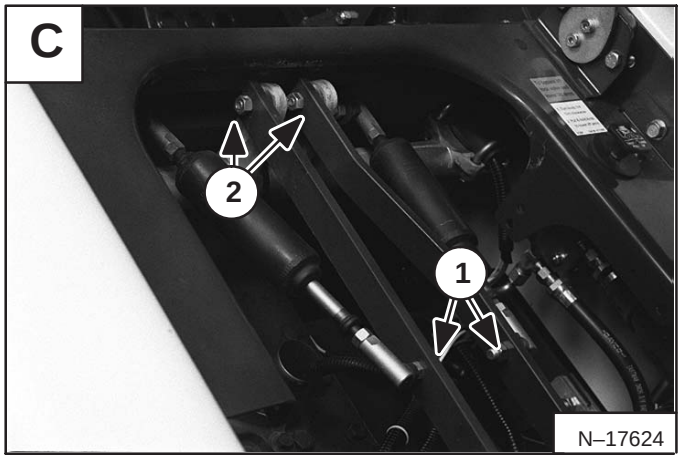
Disconnect the shock absorbers from the linkage bars.

Remove the nuts (Item 1) **[C]** from the linkage bar mounting bolt. The bolts are threaded into the linkage bars, remove the bolts.

Installation: Tighten the bolts to 11–13 ft.–lbs. (21–25 Nm) torque, then tighten the nuts to 21–25 ft.–lbs. (28–33 Nm) torque.

The torsion bushings can now be removed from the steering bell cranks.

The linkage and the centering plate must be readjusted for neutral after the components have been reassembled. See Page 3–22 for the neutral adjustment procedure.



Parts Identification (Cont'd)

Ref.	Description
1.	PLUG
2.	SHAFT
3	SEAL
4	BEARING
5	HOUSING
6	SEAL
7	BEARING
8	WASHER
9	RINGS
10	O–RING
11	NUT
12	STUD
13	SNAP RING
14	RETAINER
15	ROLLER
16	PISTON
17	CAM
18	BLOCK
19	DISTRIBUTOR
20	SPRING
21	SEAL
22	SEAL
23	SEAL
24	PLUG
25	O–RING
26	SPRING
27	SHIM
28	POPPET
29	PLUG
30	O–RING
31	SPRING
32.	SPOOL
33	WASHER
34	O–RING
35	PLUG
36	BOLT
37	PIN
38	O–RING
39	SEAL
40	O–RING
41	PLUG
42	O–RING
43	PLUG
44	HOUSING
45	HOUSING
46	SHAFT
47	SHIM
48	SHIM
49	DISC
50	DISC
51	O–RING
52	WASHER
53	BOLT
54	BUSHING
55	PISTON
56	SEAL
57	WASHER
58	GASKET
59	COVER
60	O–RING
61	PLUG
62	BOLT

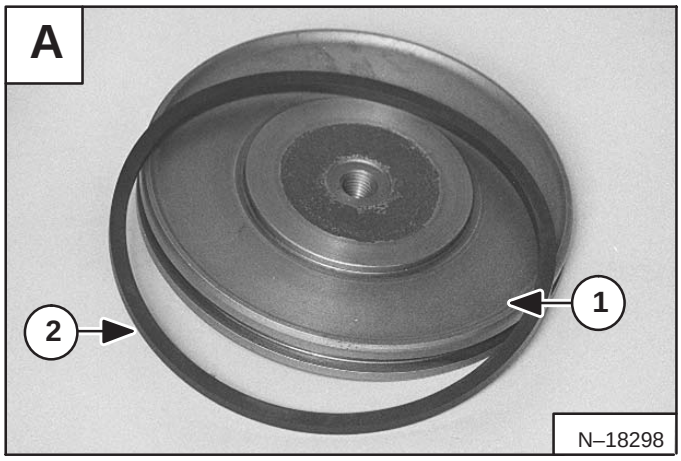
HYDRAULIC MOTOR (Cont'd)

Inspection

Clean all parts in clean solvent and use air pressure to dry them. Do Not use cloth or paper because small pieces of material can get into the system and cause damage.

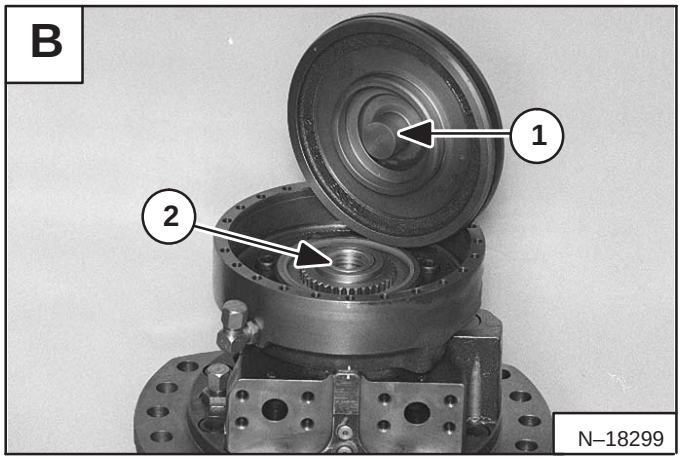
Before the motor is assembled, check the following items:

Check the brake piston (Item 1) **[A]** and seal (Item 2) **[A]** and replace as needed.

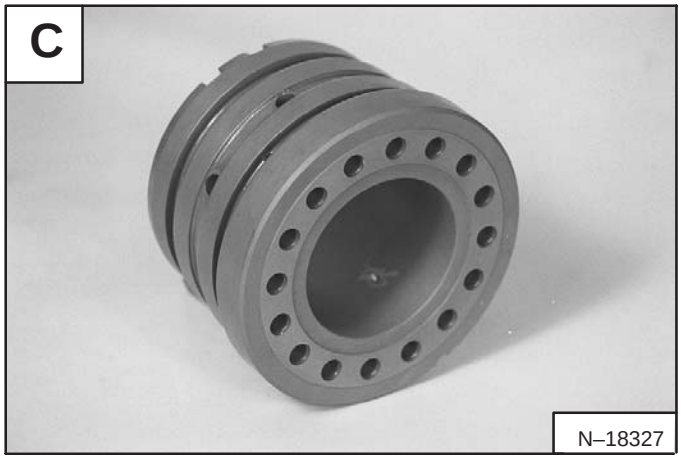


Check the piston surface (Item 1) **[B]** and the bushing surface (Item 2) **[B]** in the brake shaft.

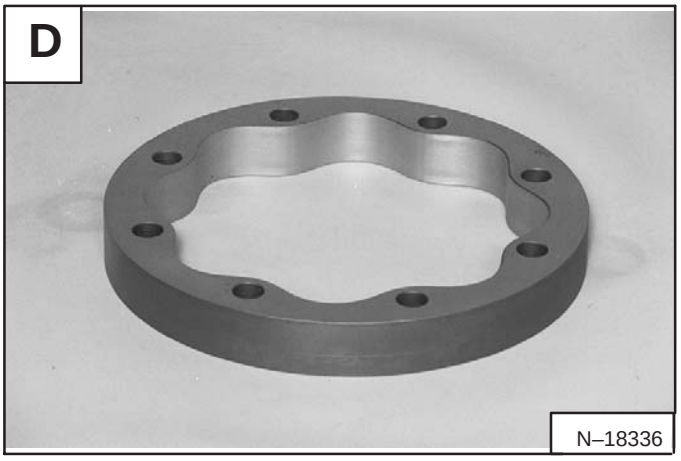
NOTE: The bushing (Item 2) [B] can be replaced in the brake shaft.



Check the distributor surfaces for scratches **[C]**.



Check the cam ring inside surface for wear and scratches **[D]**.

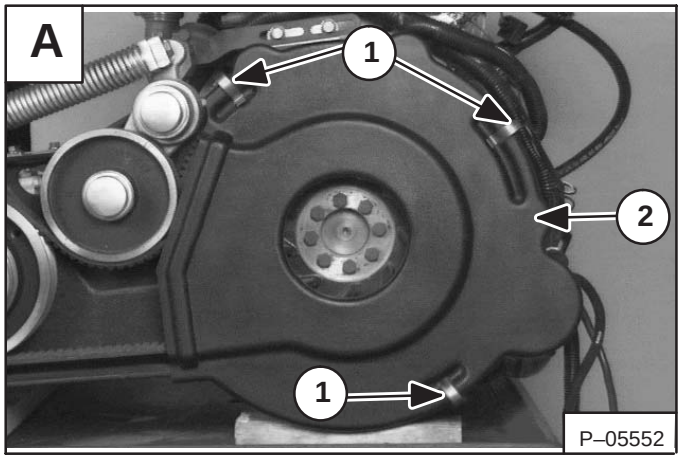


HYDROSTATIC PUMP

Removal And Installation

Remove the hydrostatic pump/engine assembly from the loader. (See Page 7–1.)

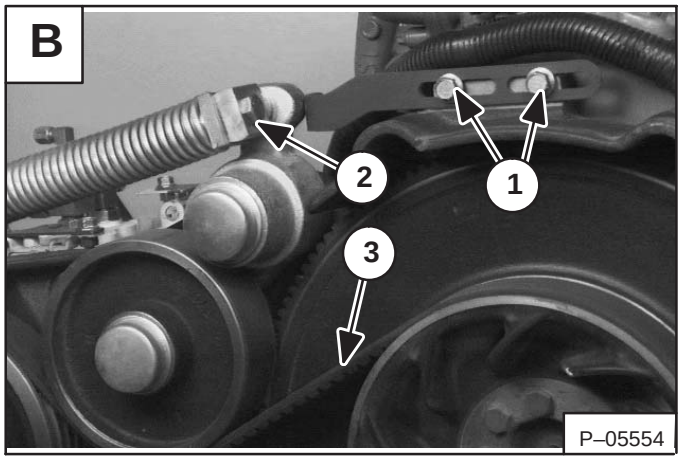
Remove the belt shield clips (Item 1) **[A]** and belt shield (Item 2) **[A]**.



Loosen the stop mounting bolts (Item 1) **[B]**.

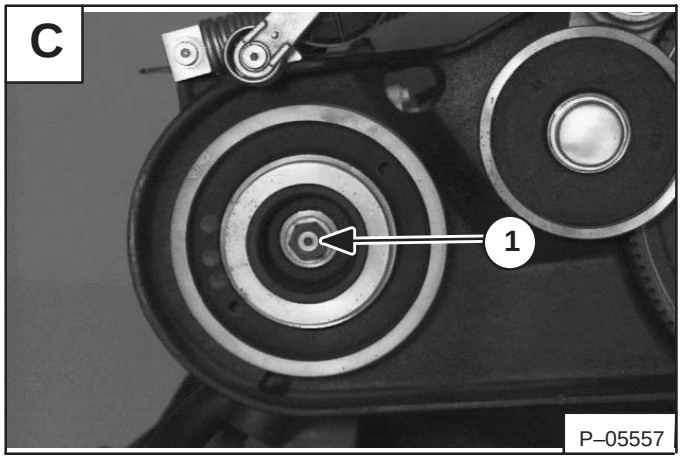
Loosen the spring tension bolt (Item 2) **[B]**.

Remove the drive belt (Item 3) **[B]**.



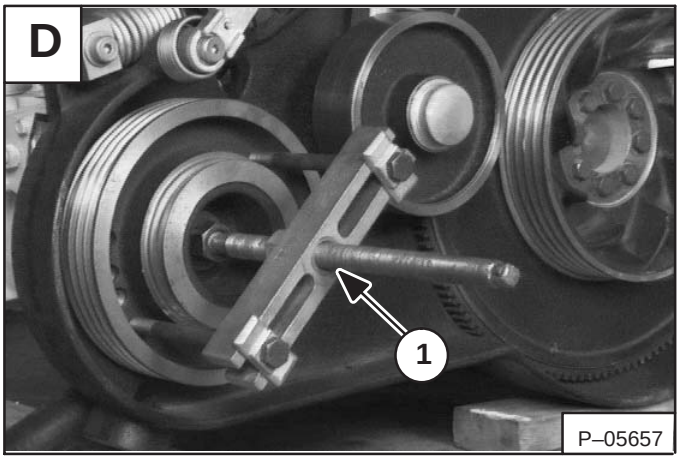
Remove the washer and nut (Item 1) **[C]** from the hydrostatic pump drive shaft.

Installation: Tighten the nut to 175–200 ft.–lbs. (237–271 Nm) torque.



Install the nut on the end of the pump drive shaft (without washer).

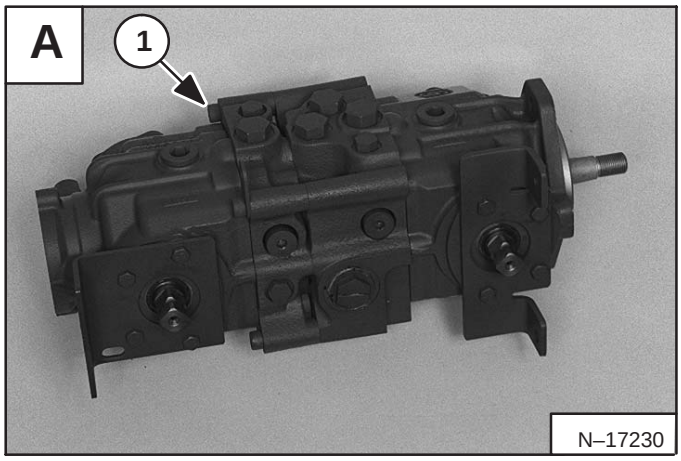
Use a puller (Item 1) **[D]** to remove the pulley from the pump drive shaft.

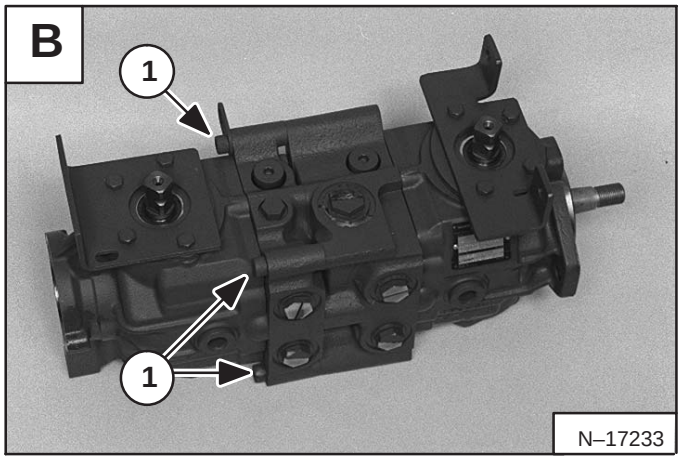


HYDROSTATIC PUMP (Cont'd)

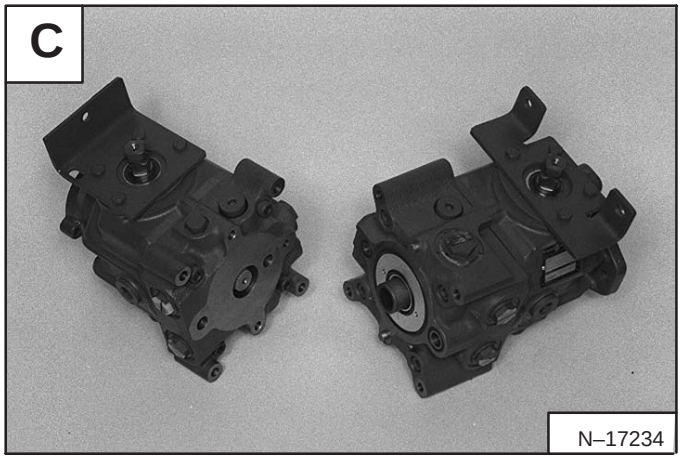
Disassembly

Remove the mounting bolts (Item 1) **[A]** & **[B]**.



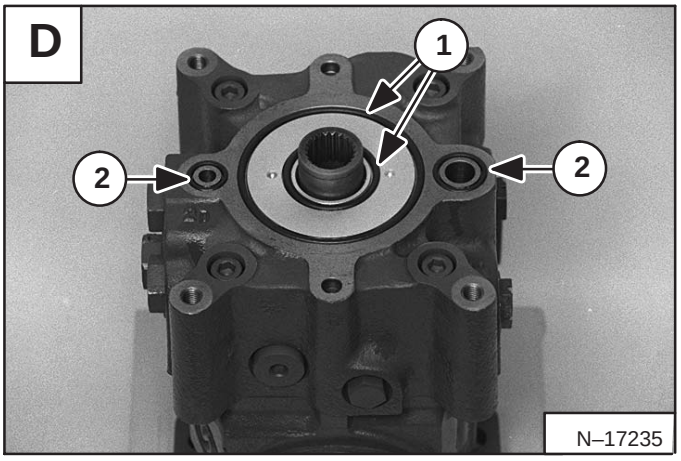


Separate the two hydrostatic pumps **[C]**.



Remove the two O–rings (Item 1) **[D]** from the groves in the gerotor spacer on the charge pump.

Remove the O–rings (Item 2) **[D]** from the charge pump housing end cap.

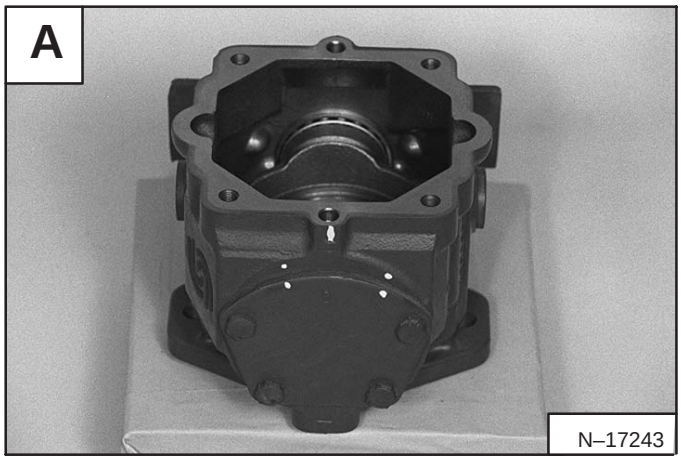


HYDROSTATIC PUMP (Cont'd)

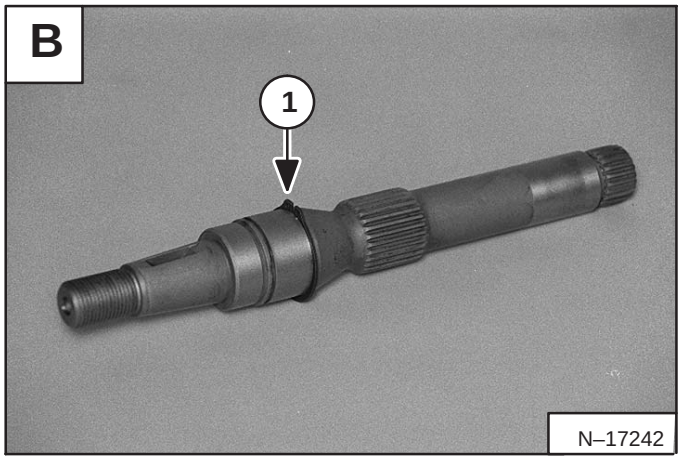
Assembly (Cont'd)

Align the marks on the lower trunnion cover and pump housing as shown in **[A]**.

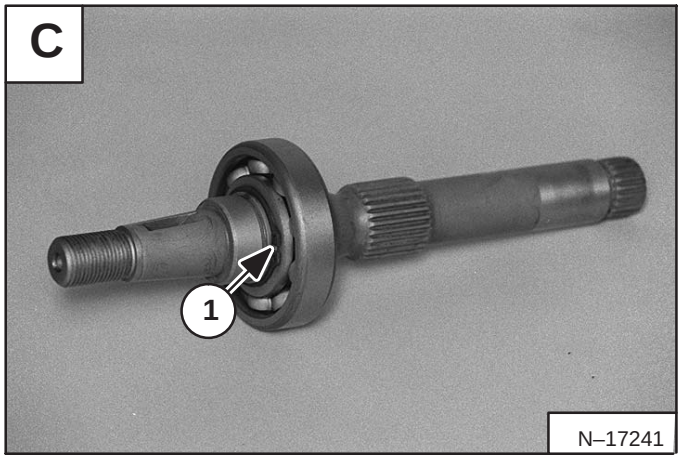
Install the four mounting bolts and tighten to 18–22 ft.–lbs. (24–30 Nm) torque.



Install the snap ring (Item 1) **[B]** on the pump shaft.

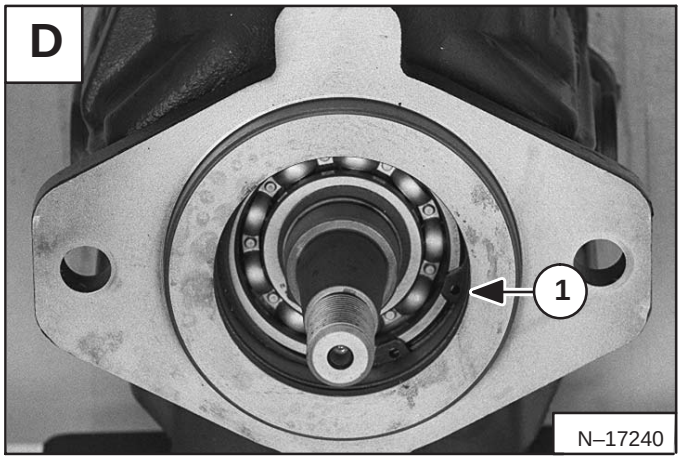


Install the bearing and snap ring (Item 1) **[C]** on the pump shaft.



Install the pump shaft into the pump housing **[D]**.

Install the snap ring (Item 1) **[D]**.

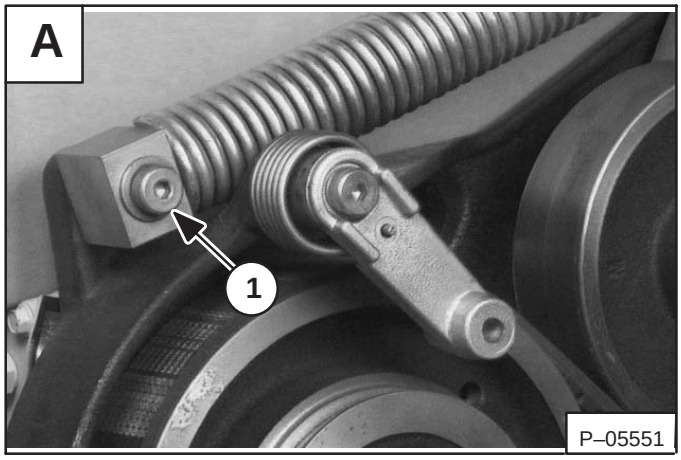


DRIVE BELT TENSIONER PULLEY (Cont'd)

Tension Spring

Remove the base end bolt (Item 1) **[A]** from the spring block.

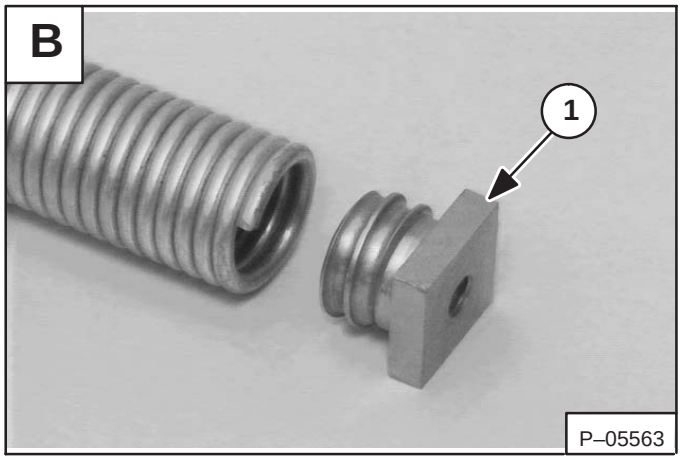
Remove the tension spring from the engine housing.



Remove the end block (Item 1) **[B]** (both ends) from the spring.

Check the spring for wear and etc. Replace the spring as needed.

Check the spring end blocks for wear and replace as needed.

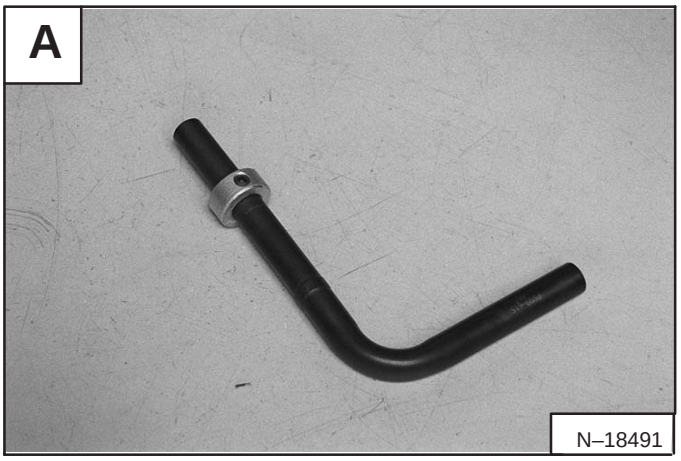


TRACK (Cont'd)

Removal And Installation

The tool listed will be needed to do the following procedure:

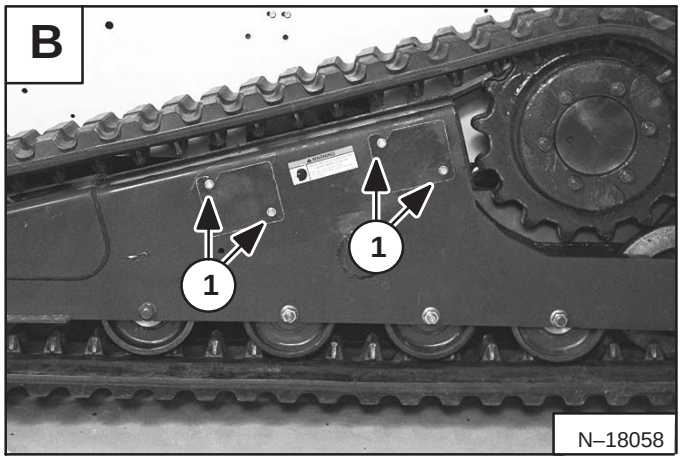
MEL 1560– Bleed Tool **[A].**



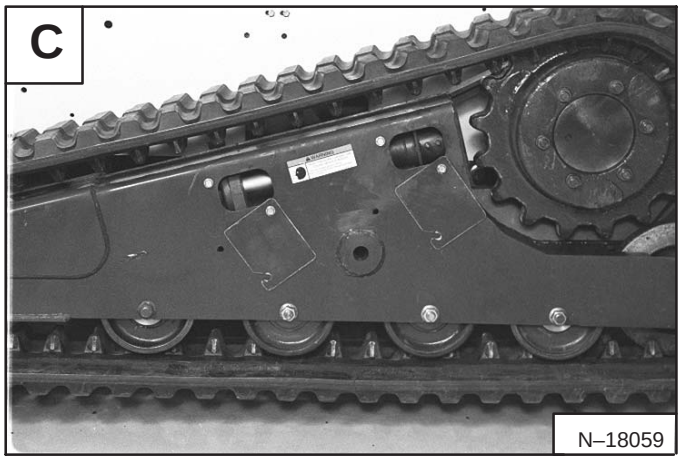
Lift and block the loader. (See Page 1–1.)

NOTE: When the loader is on jack stands be sure the bottom of the track clears the floor by at least 3 inches (76 mm).

Loosen the four mount bolts (Item 1) **[B]** from the covers.



Pivot the covers downward **[C]**.



TRACK IDLER (Rear)

Removal And Installation

Remove the track. (See Page 4–9.)

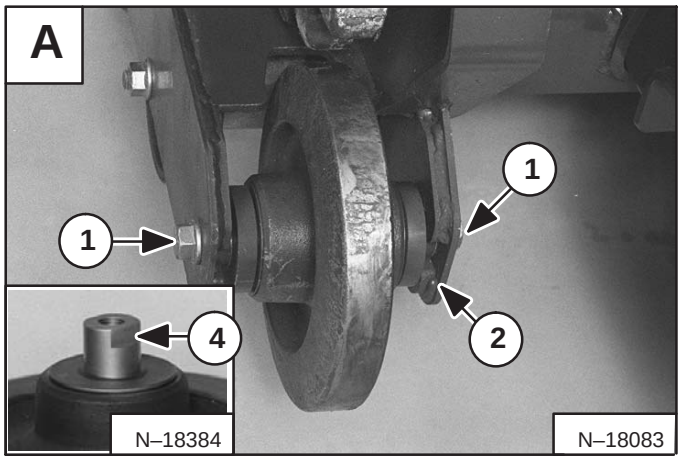
Remove the two mount bolts (Item 1) [A].

Remove the rear idler from the loader.

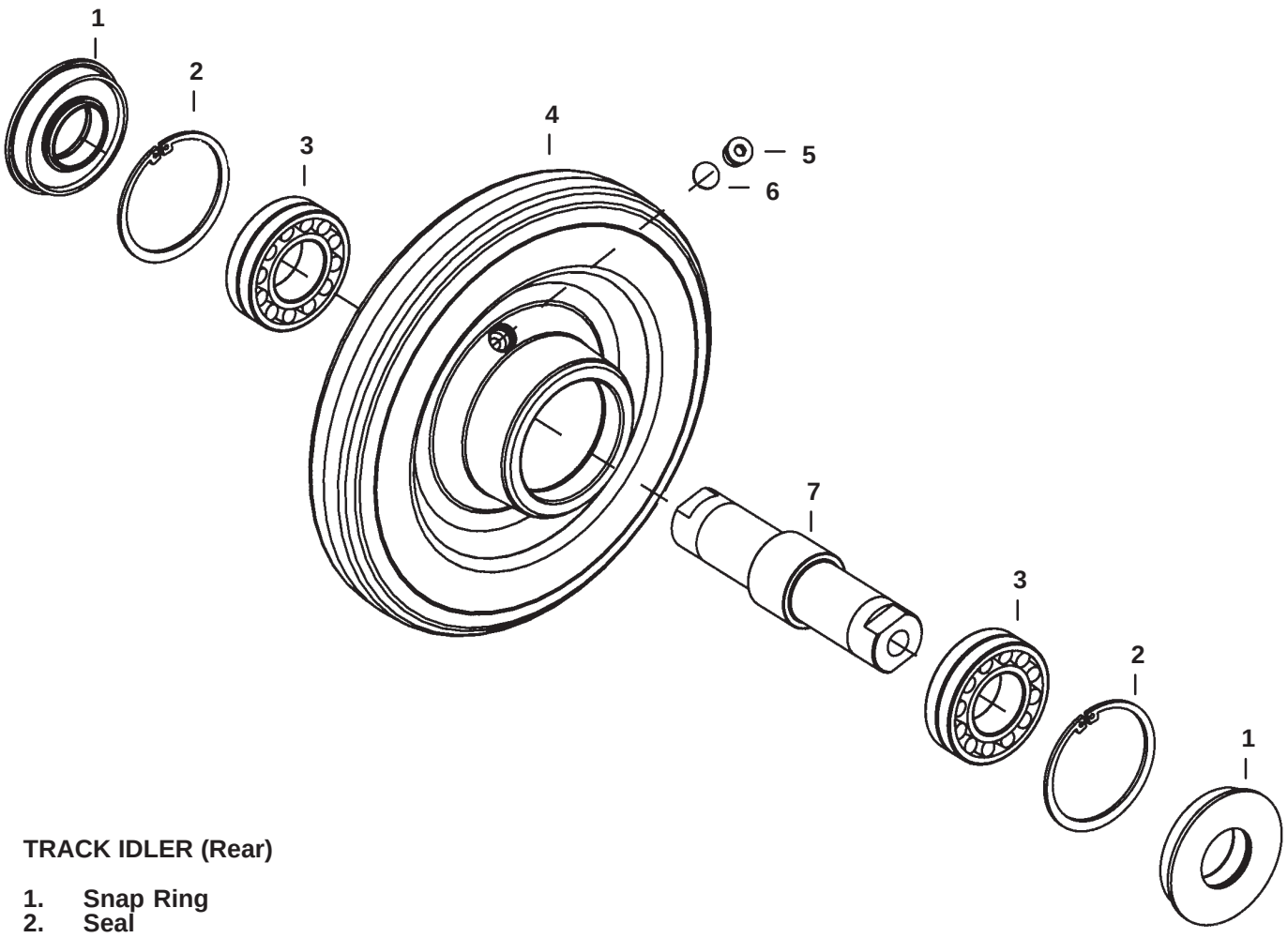
Installation: Align the square sides of the idler shaft (Item 4) **[A]** with the notches in the track housing (Item 2) [A].

Align the holes in the frame with the holes in the shaft.

Install the bolts and tighten to 190 ft.–lbs. (257,6 Nm) torque.



Parts Identification



TRACK IDLER (Rear)

1. **Snap Ring**
2. **Seal**
3. **Bearing**
4. **Idler**
5. **Plug**
6. **O–ring**
7. **Axle**

TRACK DAMAGE IDENTIFICATION

Cutting Of Steel Cords

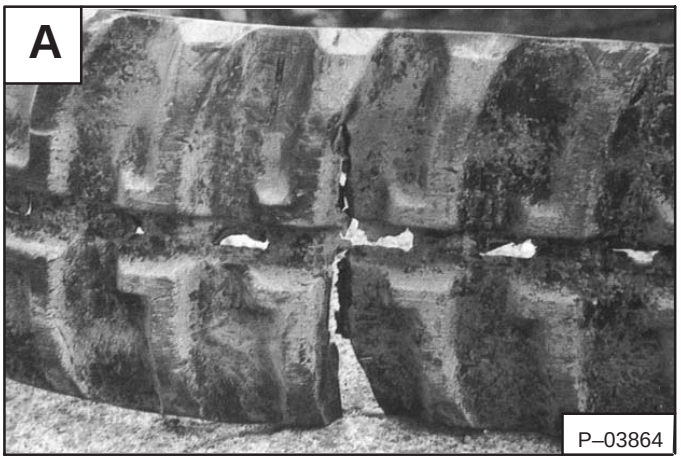
The following pages show photos and illustrations of track damage and the probable cause of the damage. It is intended to be used for identifying the reason for track damage and how to avoid future track damage.

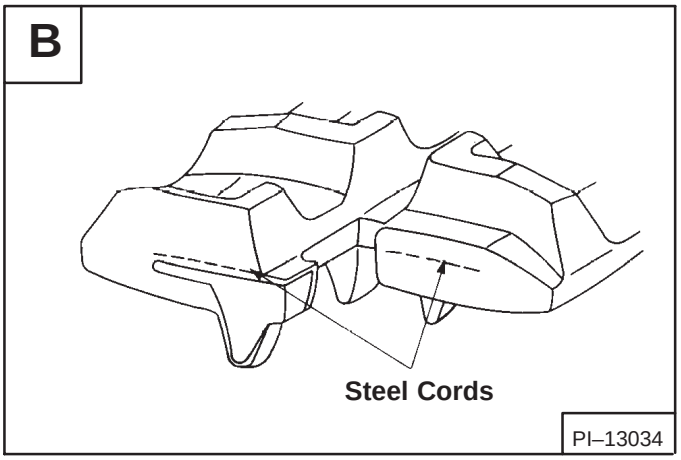
Damage:

Embedded steel cords are cut off **[A]** & **[B]**.

Replacement:

Replacement is required **[A]** & **[B]**.





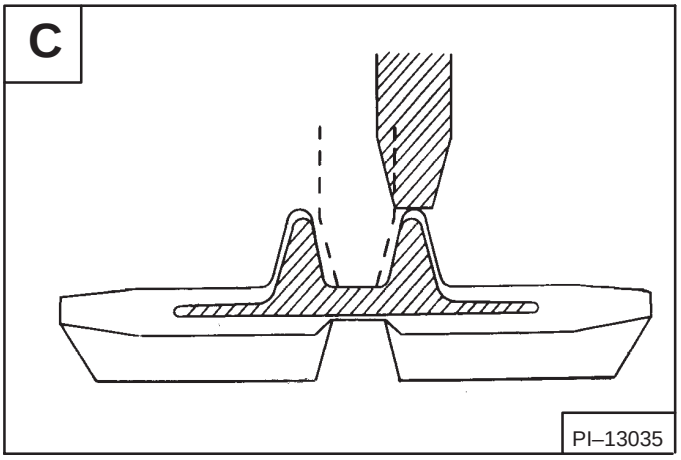
Causes of the damage:

When applied to rubber tracks under the following circumstances, tension in excess of the breaking strength of the embedded steel cords causes steel cords to be cut:

When the rubber track is detracting, the idler or sprocket rides on the projections of the embedded metal **[C]**.

When the rubber track is detracted, projections of rubber tracks get stuck between the frame of the undercarriage.

The rubber track is clogged with stones or foreign obstacles.



Furthermore, when moisture invades through a cut on the lug side rubber surface, the embedded steel cords will corrode. The deterioration of the design strength may lead to the breaking off of the steel cords.

Prevention:

The following preventions should be taken to minimize the risk of this damage:

Periodical checking on site of the recommended track tension. (See Page 4–7.)

Avoiding quick turns on bumpy and rocky fields.

Drive carefully to avoid having stones and other articles clog the rubber tracks.

Driving over sharp objects should be avoided. If this is impossible, do not make turns while driving over sharp objects.

MAIN FRAME

OPERATOR SEAT

Removal And Installation

Use the following procedure to remove the operator seat from the operator cab:

Raise the operator cab. (See Page 1–1.)

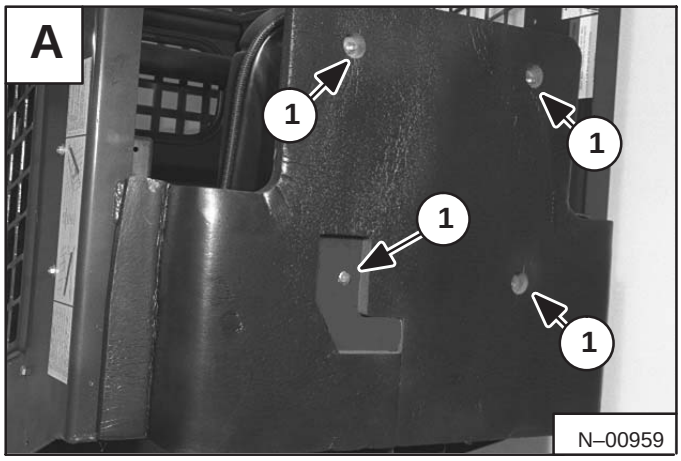
Remove the four seat mounting nuts (Item 1) **[A]** and washers from the operator seat mounting studs.

Lower the operator cab and remove the operator seat from the cab.

Inspect the seat adjustment track.

Remove the mounting bolt from each end of the track and replace the adjustment track if necessary.

Reverse the removal procedure to install the operator seat.



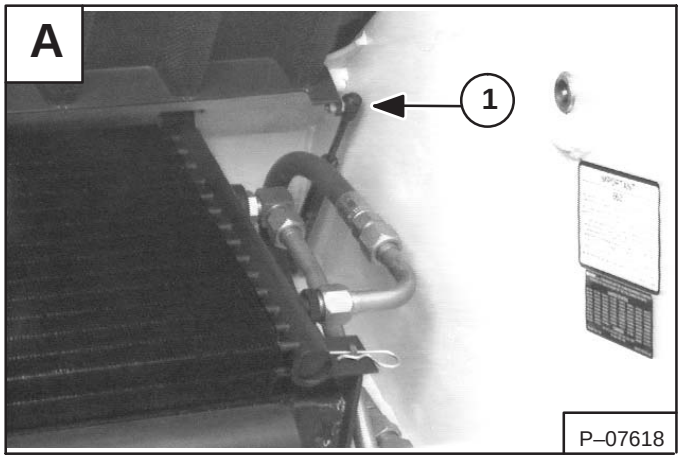
REAR GRILL

Removal And Installation

Raise the rear grill.

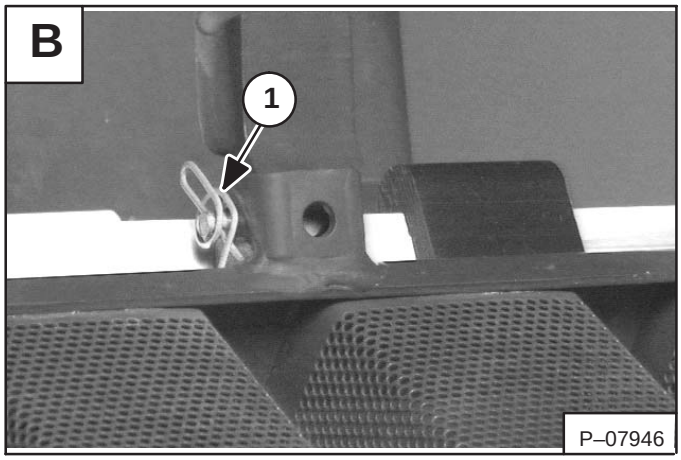
Support the rear grill.

Remove the nut (Item 1) **[A]** to disconnect the gas cylinder from the rear grill.

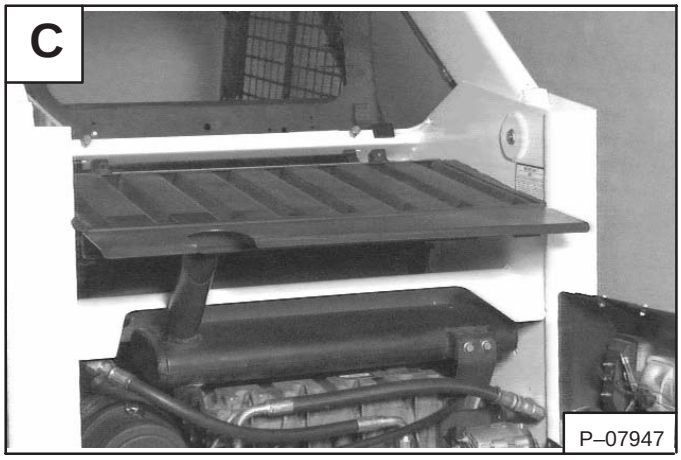


Lower the rear grill.

Remove the cotter pin and the pivot pin (Item 1) **[B]** (both sides).



Remove the rear grill from the loader **[C]**.



864 WITHOUT BOSS - WIRING SCHEMATIC

S/N 516911001 AND ABOVE
(Printed June 1999)
MC2550

CONTROLS HARNESS - 6712669

BICS CONTROLLER HARNESS - 6713932

MAINFRAME CONTROLLER HARNESS - 6712523

BRAKE ADAPTER HARNESS - 6716789

FILTER HARNESS (WITHOUT BOSS) - 6716642

CAB HARNESS (WITHOUT BOSS) - 6711767

REAR LIGHT HARNESS - 6714350

ENGINE HARNESS (WITHOUT BOSS) - 6718070

FUSE BLOCK

FUSE 1	BICS 10A	15A ENGINE	FUSE 5
FUSE 2	BOSS 10A	25A PWM	FUSE 6
FUSE 3	LIGHT 25A	25A BRAKE	FUSE 7
FUSE 4	ACCESSORY 25A	25A ACCESSORY	FUSE 8

WIRES CONNECT BY LETTER ACROSS CONNECTORS

SOME CONNECTOR BODIES NOT SHOWN FOR DRAWING CLARITY

RED = RED
RNG = ORANGE
BLK = BLACK
LBL = LIGHT BLUE
DBL = DARK BLUE
LGN = LIGHT GREEN
DGN = DARK GREEN
YEL = YELLOW
PNK = PINK
WHT = WHITE
BRN = BROWN
TAN = TAN
PUR = PURPLE
GRY = GREY

WIRING SCHEMATICS
864

DOMESTIC

864 WITHOUT BOSS - WIRING SCHEMATIC
S/N 516911001 AND ABOVE
(Printed June 1999)
MC2550

864 WITHOUT BOSS - WIRING SCHEMATIC
WITH HIGH FLOW OPTION
S/N 516911001 AND ABOVE
(Printed June 1999)
MC2552

864 BOSS - WIRING SCHEMATIC
S/N 516911001 AND ABOVE
(Printed June 1999)
MC2551

864 BOSS - WIRING SCHEMATIC
WITH HIGH FLOW OPTION
S/N 516911001 AND ABOVE
(Printed June 1999)
MC2553

OPTIONS

864 - WIRING SCHEMATIC
ATTACHMENT CONTROL OPTION
S/N 516911001 AND ABOVE
(Printed June 1999)
MC2558

864 - WIRING SCHEMATIC
OPTIONS
S/N 516911001 AND ABOVE
(Printed June 1999)
MC2559

REFER TO SECTION 10 FOR ADVANCED HAND CONTROL OPTIONS WIRING SCHEMATICS

ALTERNATOR (Cont'd)

Removal And Installation

IMPORTANT

Damage to the alternator can occur if:

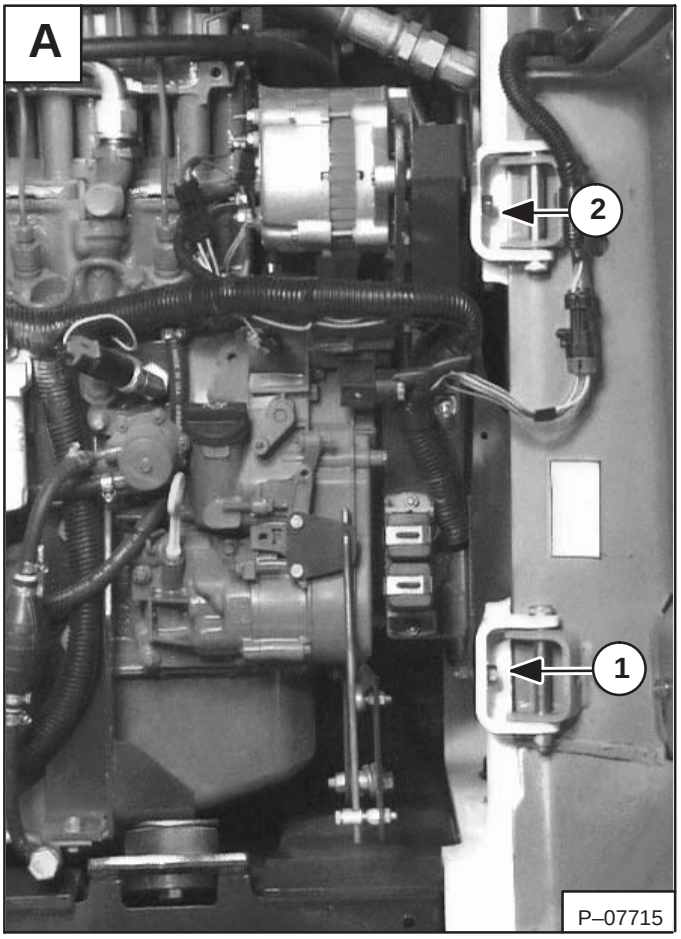
- **Engine is operated with battery cables disconnected.**
- **Battery cables are connected when using a fast charger or when welding on the loader (Remove both cables from the battery).**
- **Extra battery cables (booster cables) are connected wrong.**

I–2023–1285

Open the rear door.

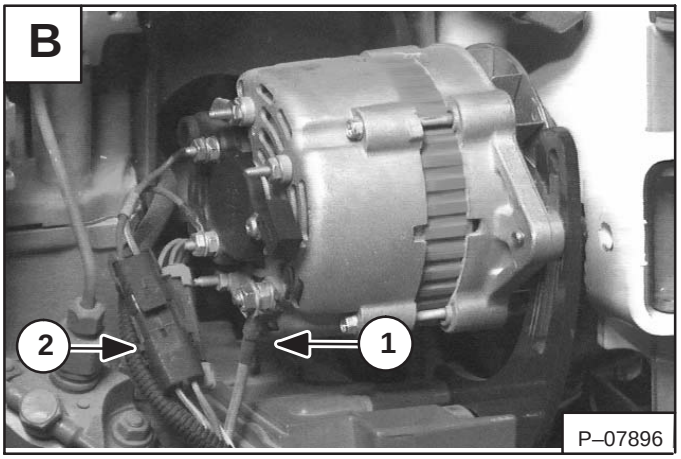
Disconnect the negative (–) cable at the battery.

If So Equipped: Remove the bolts (Item 1) **[A]** and nuts from the alternator belt shield (Item 2) **[A]**. Remove the belt shield.



Disconnect the red wire (Item 1) **[B]** at the alternator.

Disconnect the wiring harness connectors (Item 2) **[B]**.



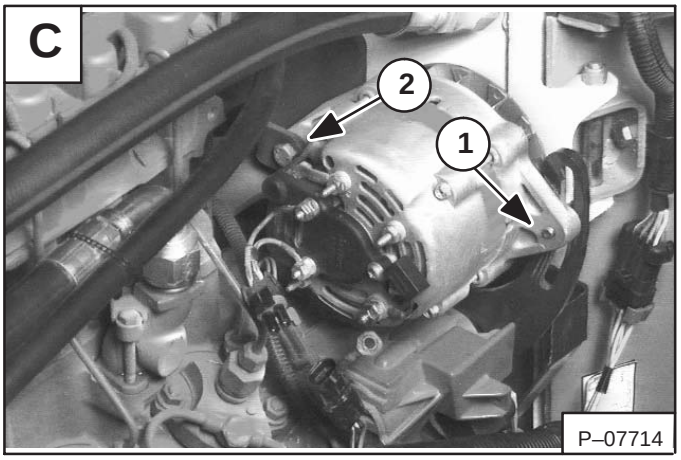
Loosen the adjustment bolt (Item 1) **[C]**.

Remove the alternator belt.

Remove the adjustment bolt (Item 1) **[C]**.

Remove the mounting bolt (Item 2) **[C]** and nut.

Remove the alternator.

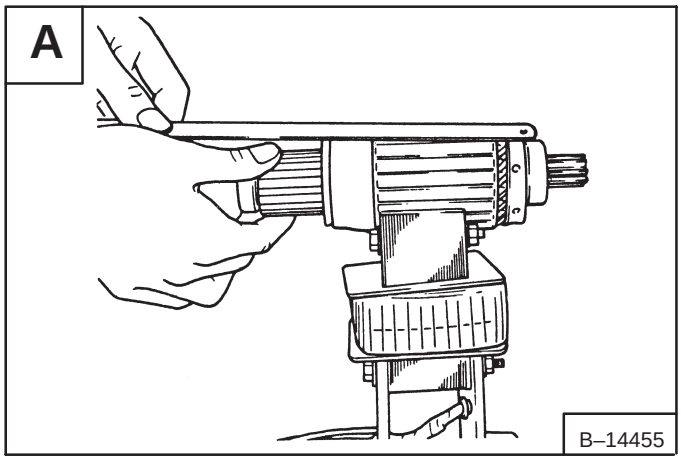


STARTER (Cont'd)

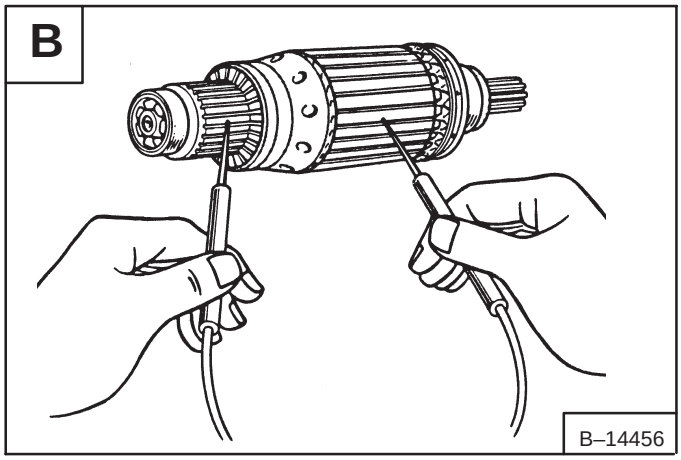
Inspection And Repair

ARMATURE:

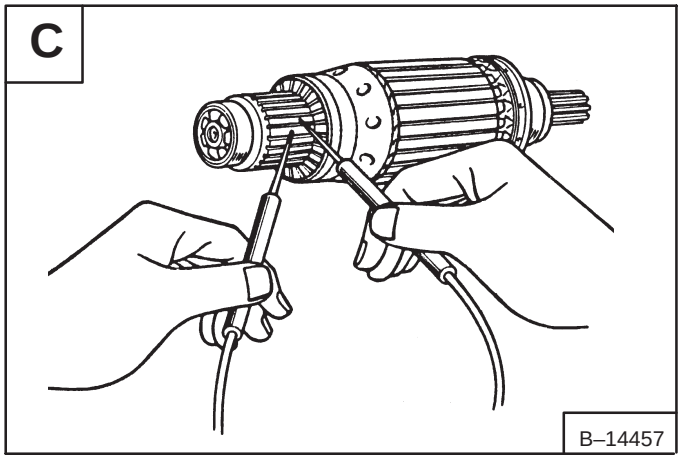
Armature Short–Circuit Test: Use a growler tester, put the armature on the growler and hold a hack saw blade against the armature core while slowly rotating the armature **[A]**. A short circuited armature causes the blade to vibrate and be attracted to the core. An armature which is short–circuited must be replaced.



Armature Winding Ground Test: Use a circuit tester, touch one probe to a commutator segment and the other probe to the armature core **[B]**. There should be no continuity. If there is continuity, the armature is grounded and must be replaced.



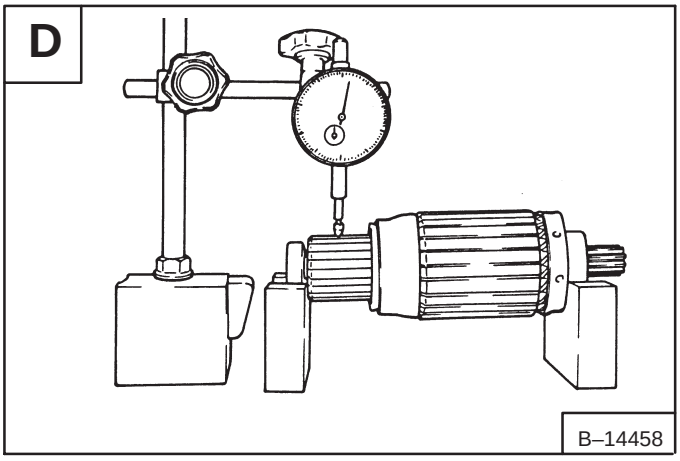
Armature Winding Continuity Test: Use a circuit tester, touch the probes to two commutator segments **[C]**. There should be continuity at any point. If there is no continuity, the winding is open–circuited, replace the armature.



Commutator Run–Out Test: Check the commutator run–out as shown in **[D]**.

Service Limit – 0.02 inches (0,5 mm)

If the commutator exceeds the service limit, repair as needed.



TROUBLESHOOTING
Chart

The following troubleshooting chart is provided for assistance in locating and correcting problems which are most common. Many of the recommended procedures must be done by authorized Bobcat Service Personnel only.

PROBLEM	CAUSE
Slow cranking speed.	1, 2, 3, 4
Engine will not start.	2, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 19, 27, 28, 29
Difficult to start.	5, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 25, 27, 28, 29
No power for engine.	8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 27, 28, 29
Engine is mis–firing.	8, 9, 11, 12, 13, 15, 16, 17, 21, 22, 24, 25, 26, 28
Too much fuel consumption.	10, 12, 13, 15, 16, 17, 19, 20, 21, 23, 24, 25, 27, 28, 29
Black exhaust.	10, 12, 13, 15, 16, 17, 19, 20, 21, 23, 24, 25, 27, 28, 29
Blue/white exhaust.	4, 10, 15, 16, 17, 21, 23, 27, 29, 30, 47, 46
Low oil pressure.	4, 31, 32, 33, 34, 35, 37, 39, 48
Engine knocking.	13, 15, 16, 19, 22, 24, 25, 27, 29, 31, 40, 41, 49
Engine running rough.	7, 8, 9, 10, 11, 12, 13, 17, 18, 22, 24, 25, 26, 29, 40, 49
Vibration.	2, 13, 17, 21, 22, 25, 26, 29, 40, 42, 43
High oil pressure warning.	4, 33, 36
Overheating.	10, 12, 13, 15, 16, 20, 21, 32, 40, 44, 47
Too much crankcase pressure.	22, 27, 29, 46
Poor compression.	10, 16, 21, 24, 25, 27, 28, 29, 30, 41, 49
Start and stop.	9, 10, 11

KEY TO CORRECT THE CAUSE

1. Battery capacity low.
2. Bad electrical connections.
3. Faulty starter motor.
4. Incorrect grade of oil.
5. Low cranking speed.
6. Fuel tank empty.
7. Faulty stop control operation.
8. Plugged fuel line.
9. Plugged fuel filter.
10. Restriction in the air cleaner.
11. Air in the fuel system.
12. Faulty fuel injection pump.
13. Faulty fuel injectors.
14. Broken injection pump drive.
15. Incorrect injection pump timing.
16. Incorrect valve timing.
17. Poor compression.
18. Plugged fuel tank vent.
19. Incorrect grade of fuel.
20. Exhaust pipe restriction.
21. Cylinder head gasket leaking.
22. Overheating.
23. Cold running.
24. Incorrect tappet adjustment.
25. Sticking valves.
26. Incorrect high pressure fuel pipes.
27. Worn cylinder bores.
28. Worn valve and seats.
29. Broken, worn or sticking piston rings.
30. Worn valve stems or guides.
31. Worn or damaged bearings.
32. Not enough oil in the oil pan.
33. Switch/sensor is defective.
34. Oil pump worn.
35. Pressure relief valve is sticking open.
36. Pressure relief valve is sticking closed.
37. Broken relief valve spring.
38. Faulty suction pipe.
39. Plugged oil filter.
40. Piston seizure.
41. Incorrect piston height.
42. Faulty engine mounting.
43. Incorrect alignment of flywheel.
44. Faulty thermostat.
45. Plugged oil cooler
46. Plugged PCV system.
47. Damaged valve stem oil deflectors.
48. Plugged oil pump pipe strainer.
49. Broken valve spring.

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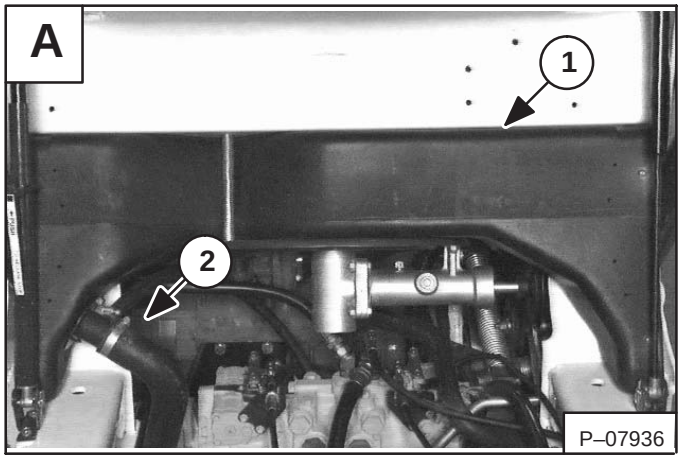
Gearbox/Blower Housing, Removal And Installation (Cont'd)

Remove the sealant from the blower housing and loader frame (Item 1) **[A]**.

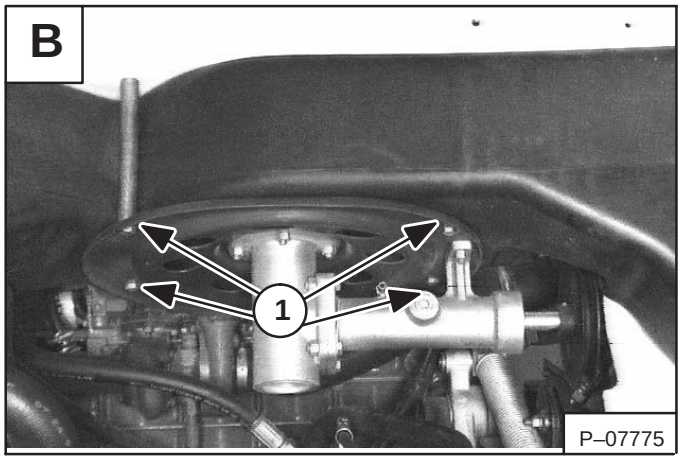
Remove fuel fill hose (Item 2) **[A]** and the fuel vent hose.



Remove the four mounting bolts (Item 1) **[B]** and spacer tubes (two outside housing and two inside housing).

NOTE: Remove the two rear mounting bolts first.

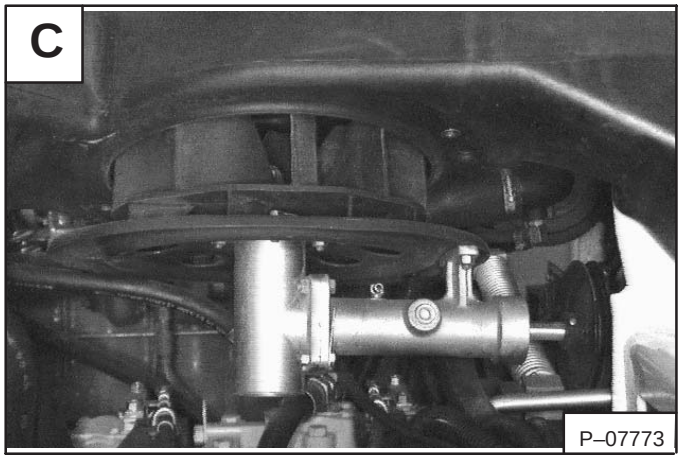
Installation: Use sealant on each end of the inside spacer tubes to prevent the tubes from falling out of the housing during installation. Tighten the mounting bolts to 25–28 ft.–lbs. (34–38 Nm) torque.



Slide the blower housing forward and remove the fan/fan gearbox assembly. Remove the blower housing **[C]**.

Installation: Use R.T.V. sealant to re–seal the blower housing to the loader frame (Item 1) **[A]**.

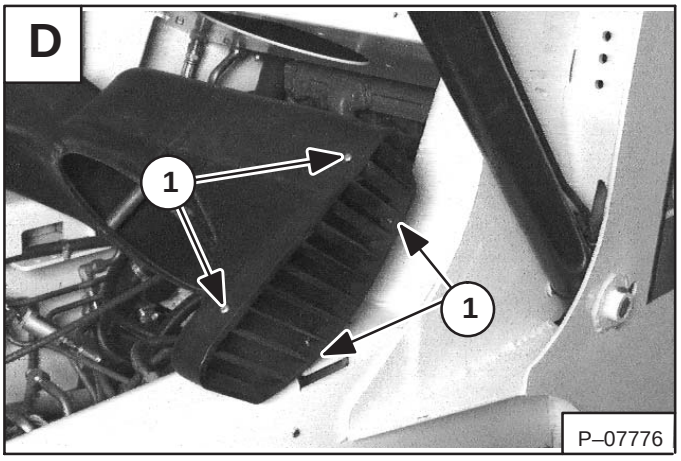
See Page 7–16 for Disassembly of the Fan Gearbox.



The blower housing must be moved away from the loader frame if the side grills need to be replaced **[D]**.

To replace the side grill, remove the four mounting screws (Item 1) **[D]** from the blower housing.

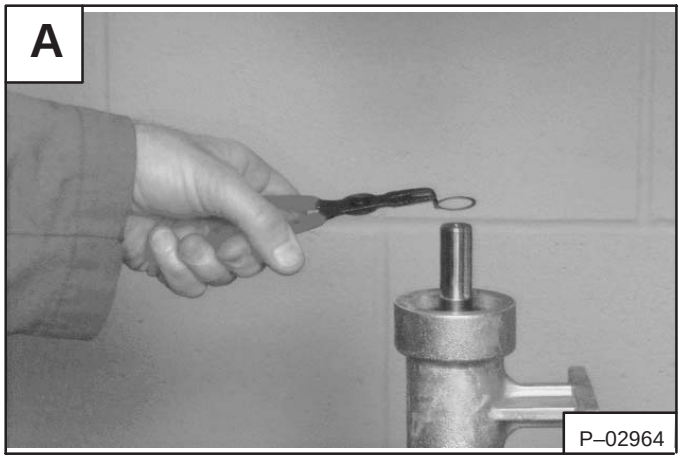
Install the new grill and replace the screws.



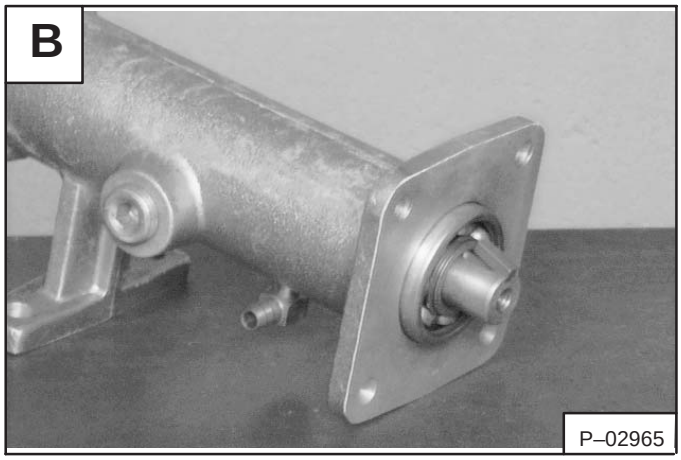
COOLING FAN (Cont'd)

Gearbox, Assembly (Cont'd)

Install the small snap ring in the groove above the shims **[A]**.



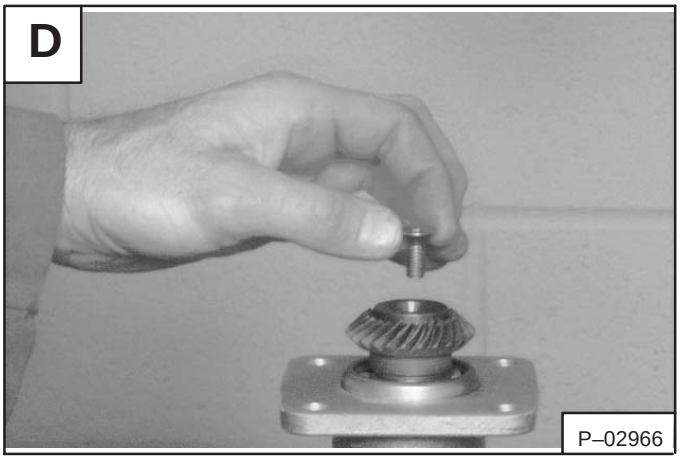
Install the gear key in the flange end of the shaft **[B]**.



Align the key and gear. While supporting the bearing on the other end, press the gear on the shaft until it seats against the bearing **[C]**.

Install the washer **[D]**.

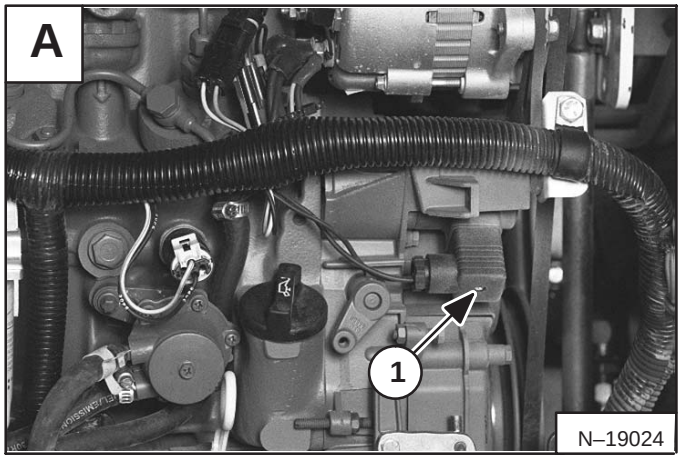
Put liquid adhesive (LOCTITE #242) on the screw threads. Install and tighten the screw **[D]**.



Fuel Shut–Off Solenoid, Checking

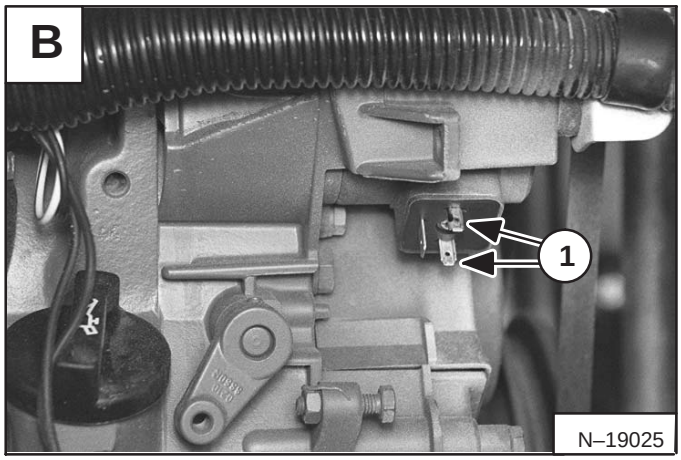
Remove the screw (Item 1) **[A]** from the electrical connection on the fuel shut off solenoid.

Disconnect the electrical connector from the solenoid.



Use a test meter to measure the resistance of the fuel shut–off solenoid.

Connect the test meter leads to the terminals (Item 1) **[B]** & **[C]**.

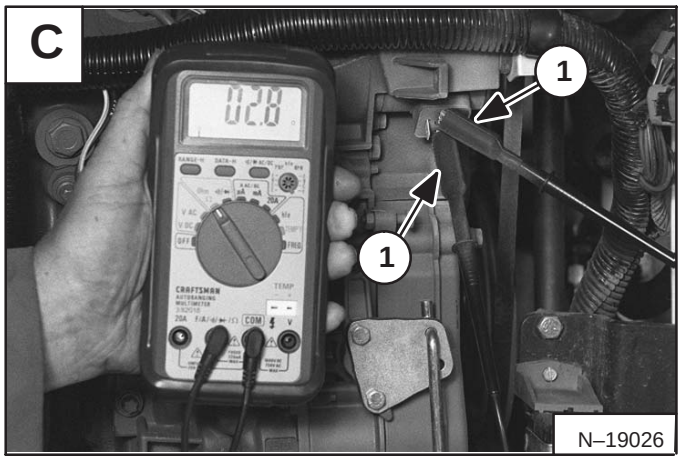


The reading must be approximately 02.8 ohms.

If the resistance is zero ohms the solenoid has a short circuit.

If the resistance is infinite, the coil in the solenoid is broken.

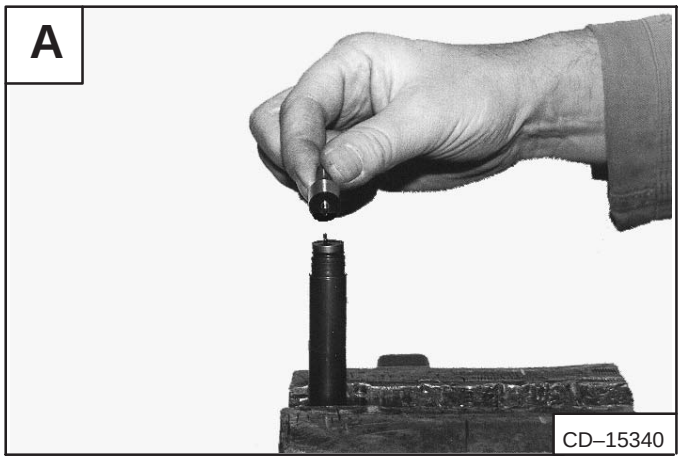
Replace the solenoid if needed. (See Page 7–42.)



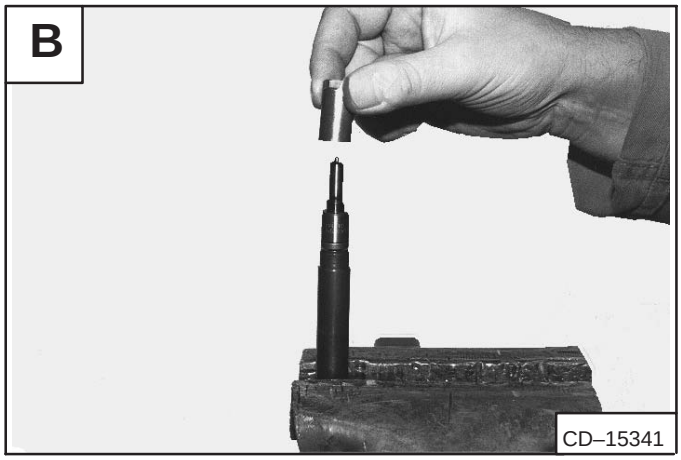
Fuel Injector Assembly (Cont'd)

Install the injector nozzle, make sure the center bore fits over the centering pins of the adapter **[A]**.

NOTE: Be careful that the nozzle needle does not fall out of the nozzle body.

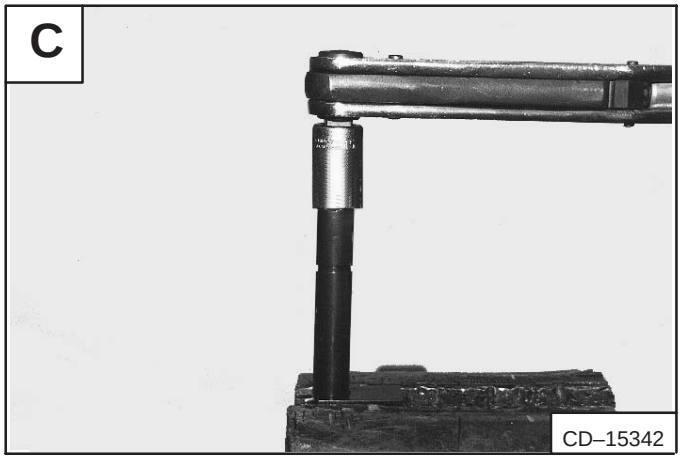


Install the nozzle cap nut **[B]**.



Tighten the cap nut to 35 ft.–lbs. (47 Nm) torque **[C]**.

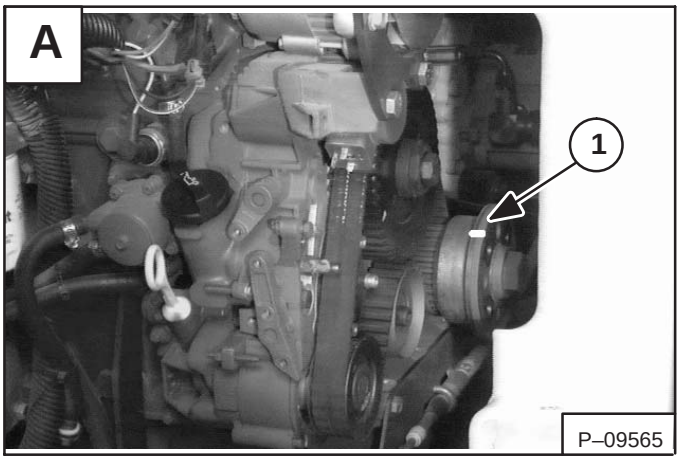
Check the injector nozzle on the nozzle tester before installation. (See Page 7–49.)



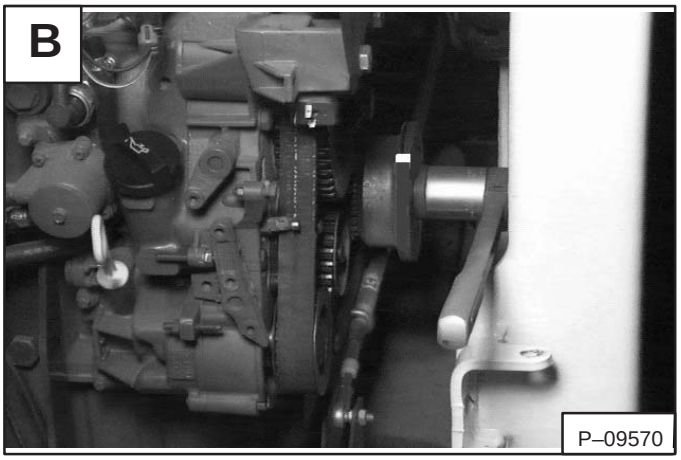
Timing Belt Replacement In the Loader (Cont'd)

Remove the camshaft and crankshaft timing tools (Item 1) **[A]** & **[C]**; Page 7–54).

Mark the crankshaft pulley hub (Item 1) **[A]**.



Make four complete crankshaft revolutions in the direction of engine rotation. Bring the mark on the crankshaft pulley back to the same position as before **[B]**.



Install the belt tension tool. Check the belt tension reading. It should be 6.5–9.5.

NOTE: If the specified scale reading is not obtained, repeat the procedure.

Remove the belt tension tool.

- ***For Broken Belt Replacement Only***
- Install the push rods and rocker arms/brackets. Replace all damaged parts. (See Page 7–107.)
- Set the valve clearance. (See Page 7–43.)
- Install the valve cover and gasket. Tighten the bolts to 75 in.–lbs. (8,5 Nm) torque.

Install the crankshaft and camshaft access plugs.

Install the belt covers and four mounting bolts.

Install the throttle linkage and bolts.

Install the crankshaft pulley and bolts. Tighten the bolts to 30–36 ft.–lbs. (41–49 Nm) torque.

Install the alternator belt. Adjust the belt tension.

Install the belt shield and bolts.

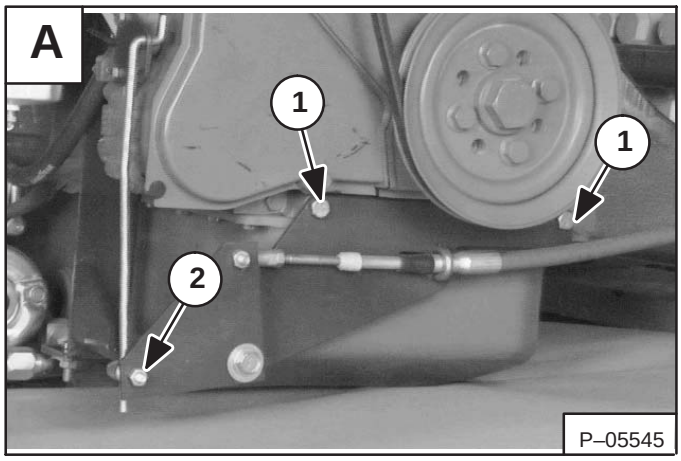
Plug in the fuel solenoid connector and tighten the screw.

Reconnect the negative (–) battery cable.

Removal And Installation (Cont'd)

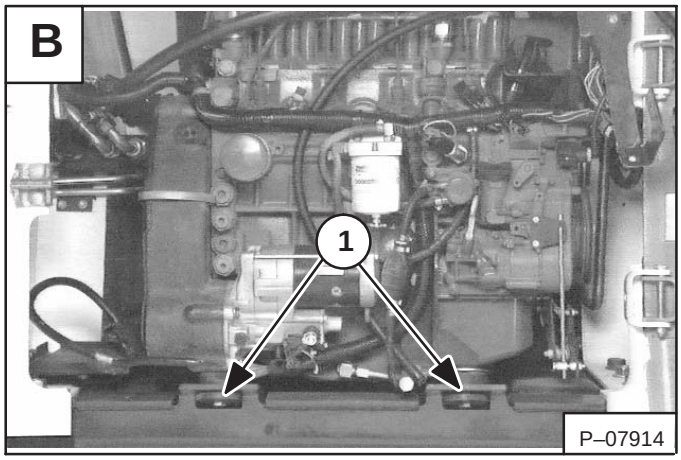
Remove the alternator belt shield.
At the right side of the engine, remove the two throttle bracket mount bolts (Item 1) **[A]**.

Disconnect the throttle rod connector (Item 2) **[A]**.



Remove the left and right rear engine mounting bolts (Item 1) **[B]** and nuts.

Installation: Tighten the bolts and nuts to 61–69 ft.–lbs. (83–94 Nm) torque.

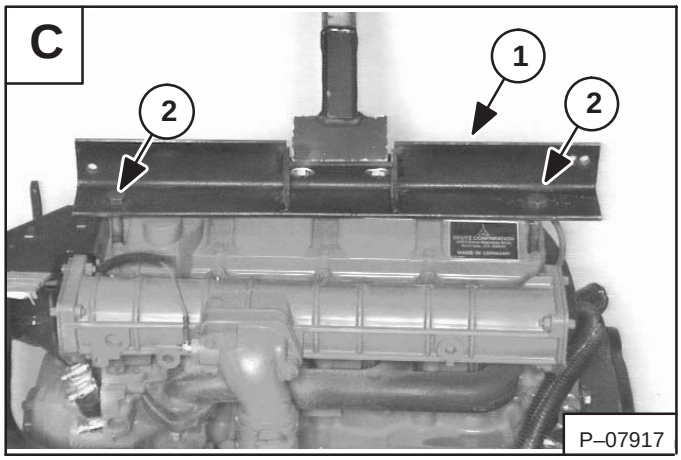


Use the dimensions from (Figure (**[A]** Page 7–34) to make engine removal and installation brackets.

Install the lift bracket (Item 1) **[C]** on the engine.

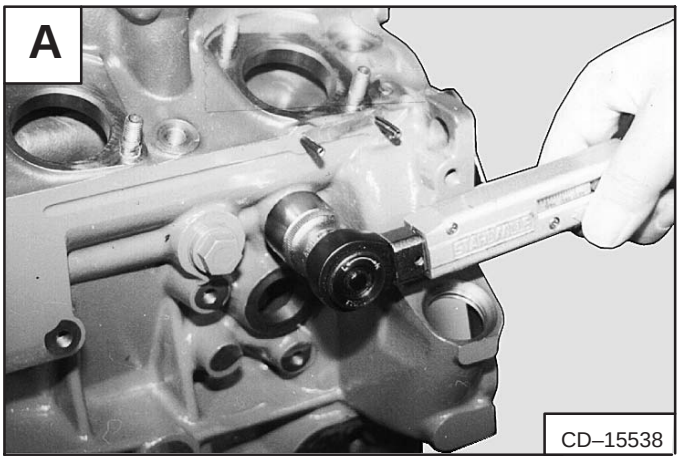
Tighten the bolts (Item 2) **[C]** until the lift bracket is held firmly against the valve cover.

NOTE: Bolts required are two 12x80 mm x 1.75 thread.

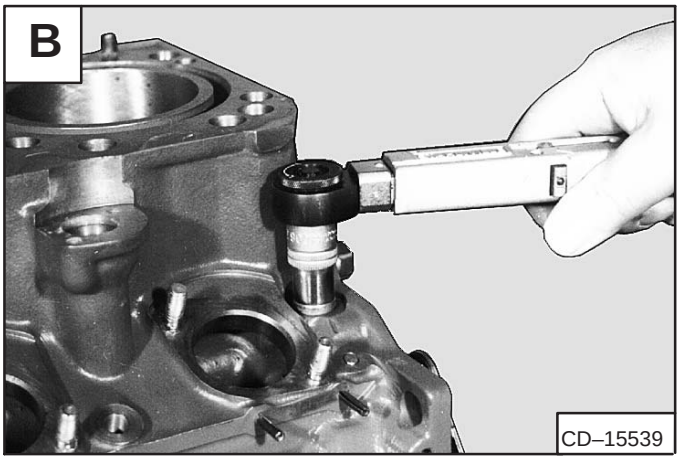


Assembly (Cont'd)

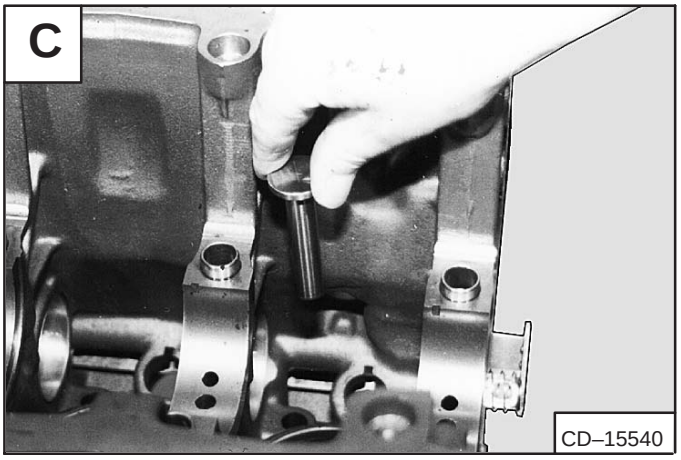
Install the oil pressure switch and tighten to 115 in.–lbs. (13 Nm) torque **[A]**.



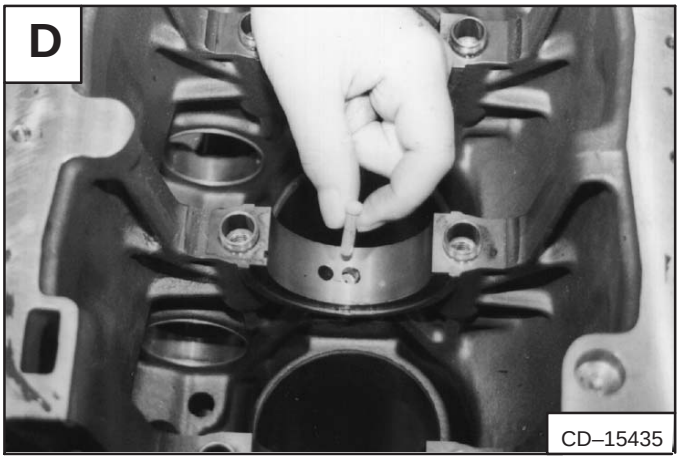
Install a new seal on the plug and install in the block. Tighten the plug to 21 ft.–lbs. (28 Nm) torque **[B]**.



Install the tappets **[C]**.

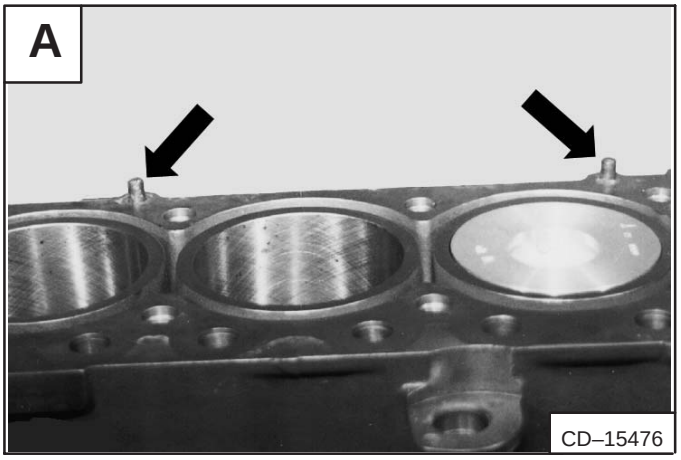


Before installing the new piston cooling oil nozzle, check that the bores in the block are clean and free of oil. Press in the piston cooling nozzle as far as it will go **[D]**.



Assembly (Cont'd)

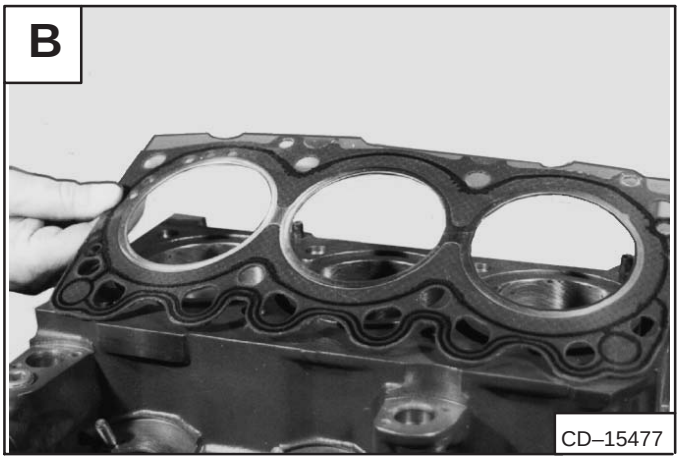
Make sure the dowel pins are installed in the engine block **[A]**.



Install the cylinder head gasket **[B]**. Gasket is marked TOP.

Make sure the sealing surfaces of the cylinder head gasket is free of oil.

Install the cylinder head.

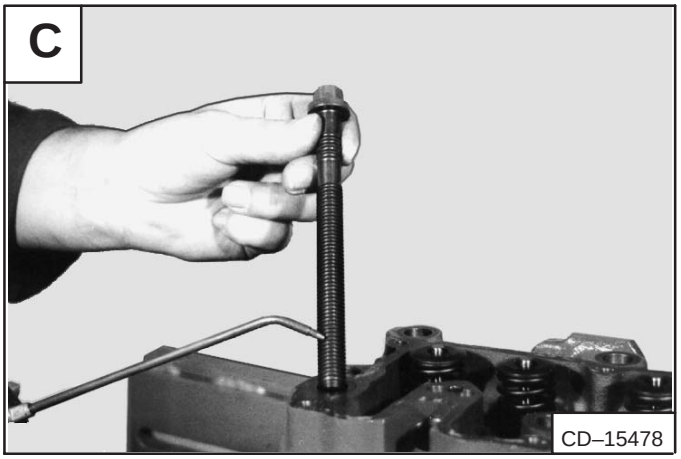


Measure the cylinder head bolts.

Std. Length . . . . . 5.90 ± 0.03 inch (150±0,8 mm)

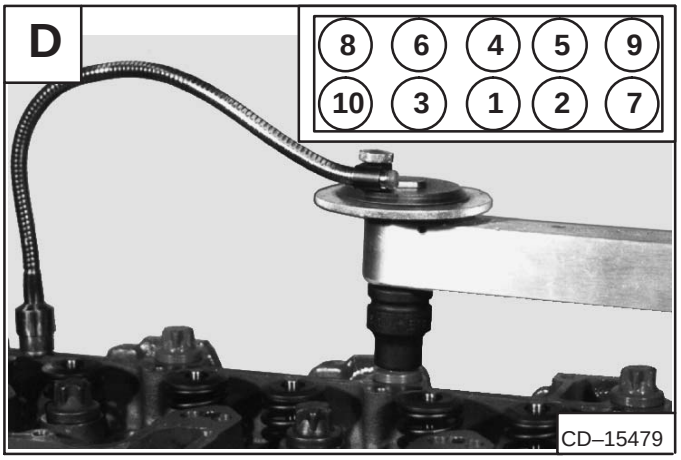
Put a light coat of oil on the head bolts **[C]**.

Install the head bolts.



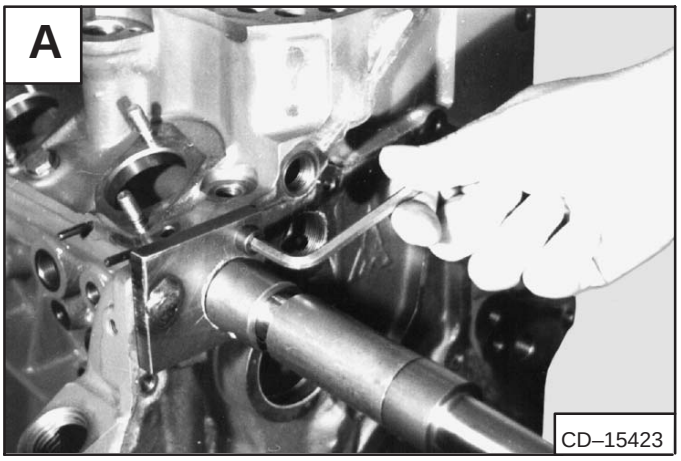
Tighten the cylinder head bolts to the correct torque in the correct sequence **[D]**.

Initial Torque . . . . . 22 ft.–lbs. (30 Nm)
1st Stage Torque . . . . . 59 ft.–lbs. (80 Nm)
2nd Stage Torque . . . . . 118 ft.–lbs. (160 Nm)
3rd Stage Torque . . . . . 90°

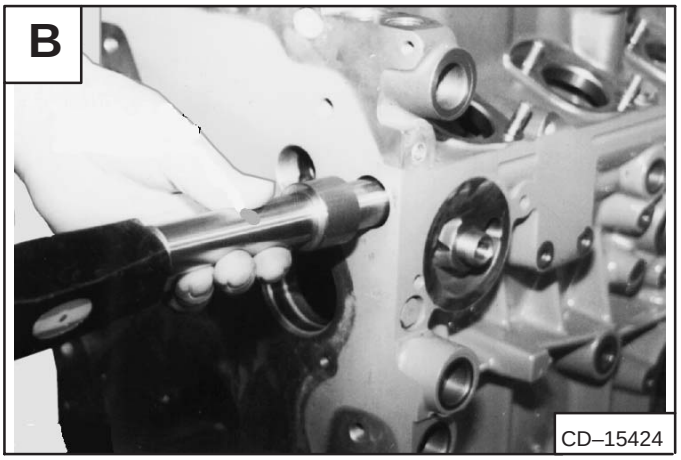


Control Rod Guide Bushing, Installation (Cont'd)

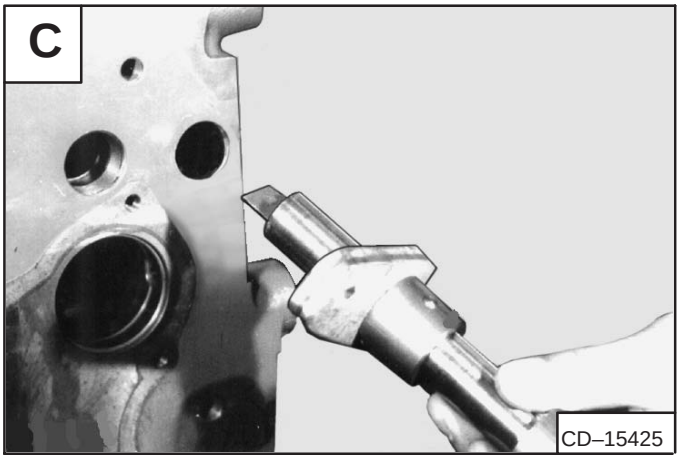
Remove the arbor assembly **[A]**.



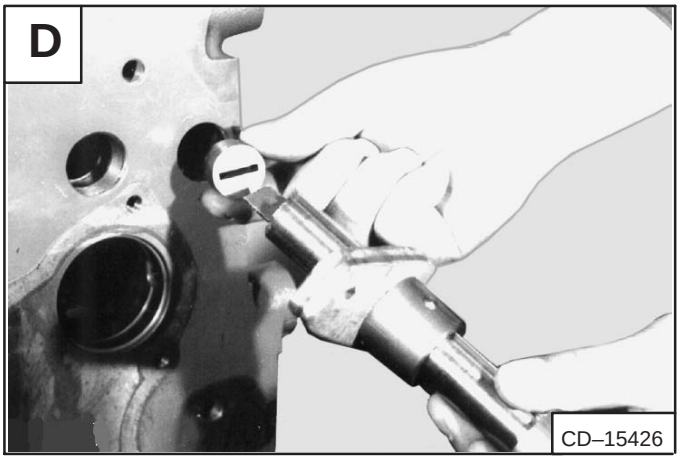
Remove the guide bushing at the flywheel end of the engine block **[B]**.



Assemble the arbor without the spacer **[C]**.

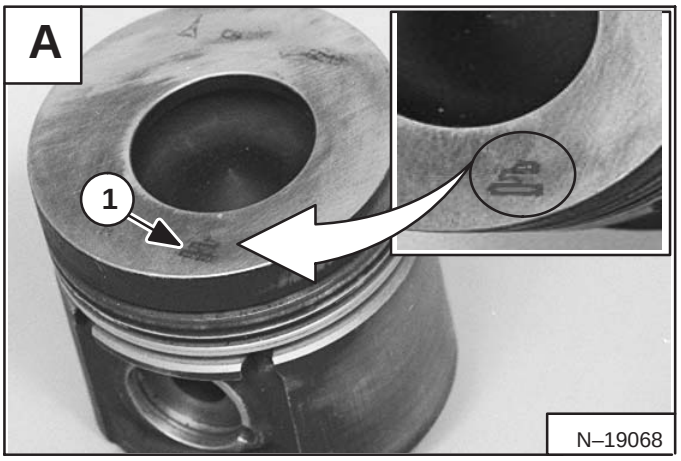


Install the guide bushing on the arbor assembly with the chamfer pointing toward the crankcase **[D]**.

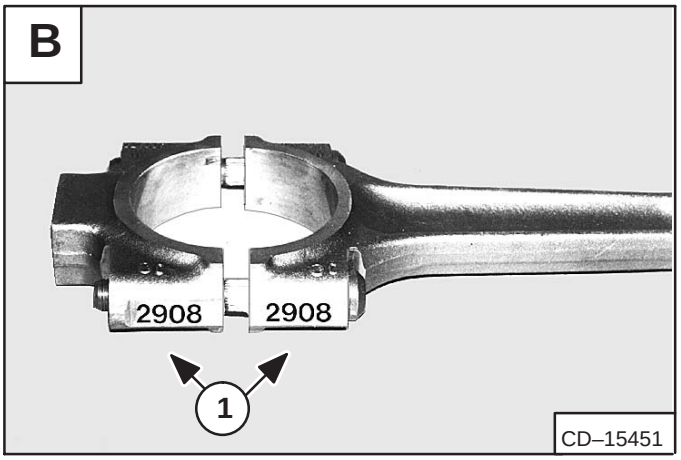


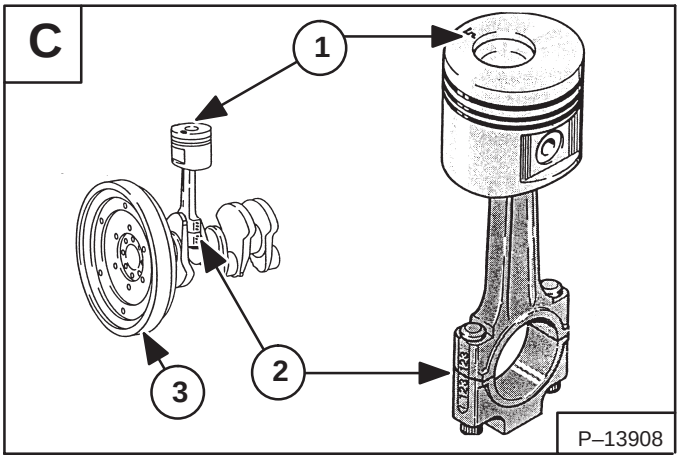
Piston Installation On the Connecting Rod (Cont'd)

The flywheel symbol (Item 1) **[A&C]** on the piston must point toward the flywheel (Item 3) **[C]**, when properly installed on the connecting rod.

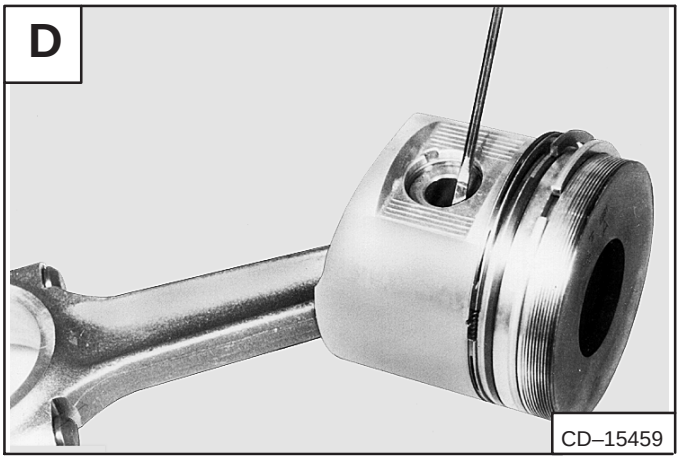


The numbers on the connecting rod and cap (Item 1) **[B]** & (Item 2) **[C]** point toward the camshaft side of the engine when being install in the engine block.





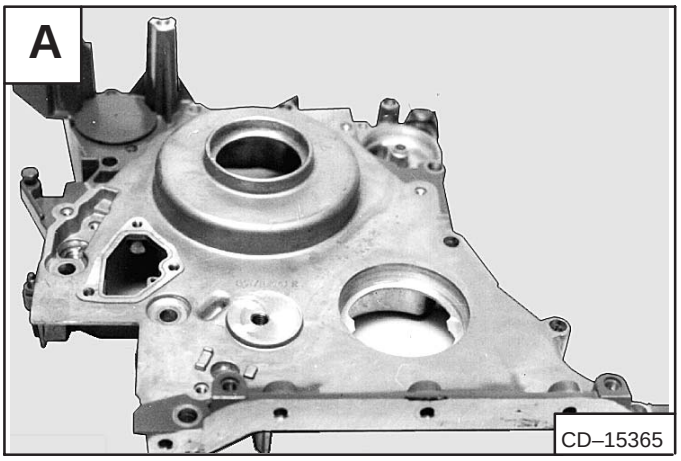
Install the other side snap ring **[D]**.



Front Cover, Assembly

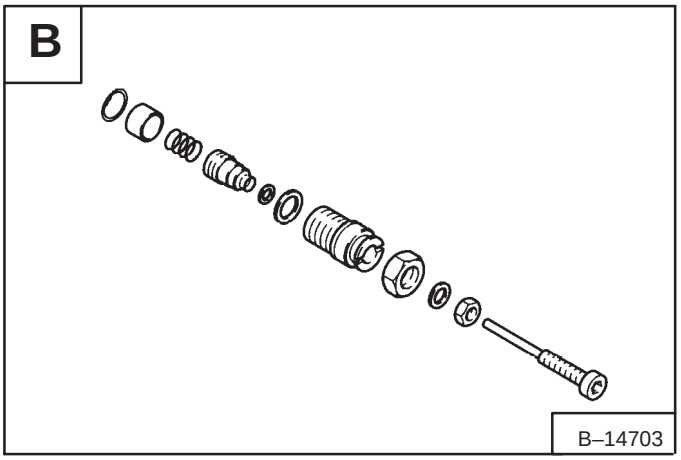
Inspect the front cover for damage **[A]**.

Replace the front cover as needed.



Inspect the individual parts of the torque control assembly **[B]**.

Replace the parts as needed.



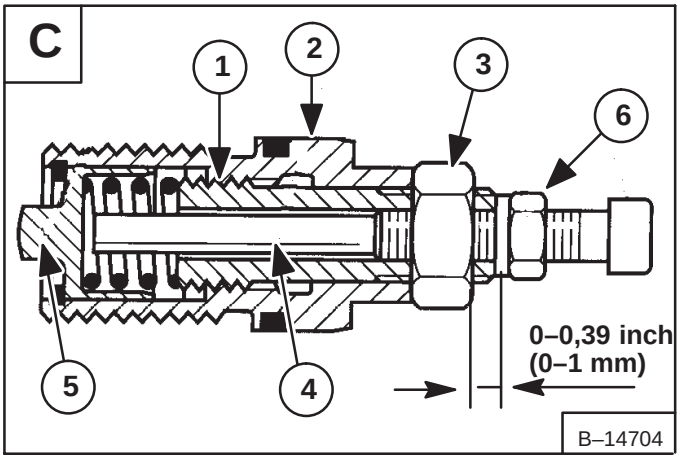
If the torque control was disassemble, do the following procedure to assemble:

Turn (Item 1) **[C]** into (Item 2) **[C]** to leave a protrusion of 0–0.039 inch (0–1 mm).

Tighten the lock nut (Item 3) **[C]** to 12 ft.–lbs. (16 Nm) torque.

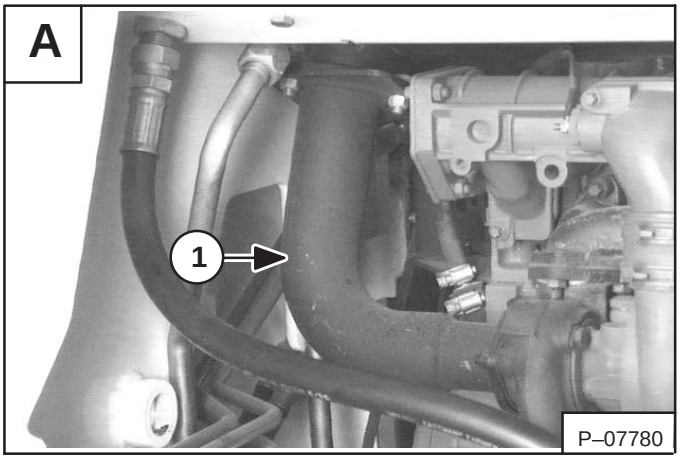
Turn (Item 4) **[C]** as far as it will go into (Item 5) **[C]**. Turn back one full turn.

Tighten the lock nut (Item 6) **[C]** to 53 in.–lbs. (6 Nm) torque.



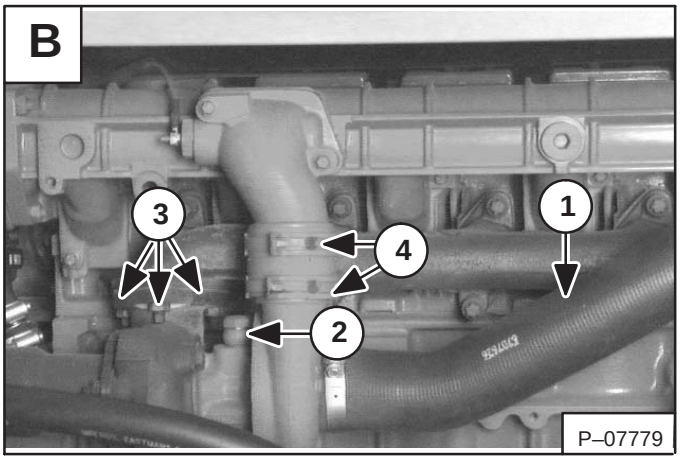
Turbo Charger, Removal and Installation

Remove the exhaust pipe (Item 1) **[A]**.



Disconnect the air cleaner hose (Item 1) **[B]**.

Disconnect the oil tubeline (Item 2) **[B]**.



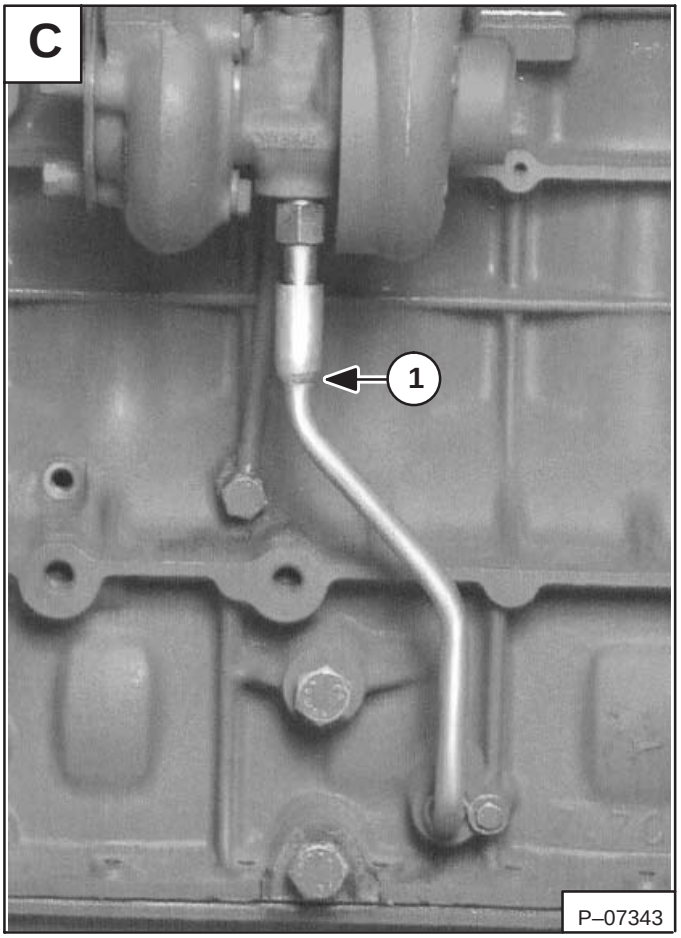
Disconnect the oil tubeline (Item 1) **[C]**.

Remove the exhaust manifold nuts (Item 3) **[B]**.

Installation: Tighten the nuts to 22 ft.–lbs. (30 Nm) torque.

Remove the hose clamps (Item 4) **[B]**.

Remove the turbocharger from the intake manifold hose.



SEAT BAR SENSOR

Troubleshooting Guide

The following troubleshooting guide is provided for assistance in locating and correcting BICS system problems. It is recommended that these procedures be done by authorized Bobcat Service Personnel only.

⚠ WARNING

Check for correct function after adjustments, repairs or service. Failure to make correct repairs or adjustments can cause injury or death.

W–2004–1285

PROBLEM	SOLUTION#
Indicator light does not come ON when seat bar is lowered.	1, 2, 3, 4, 5, 6

SOLUTION SUGGESTIONS

1. Check controller power indicator light. It must be ON.
2. Check sensor wire connection.
3. Use the BICS sensor tester MEL1428 to check sensor and controller.
4. Check for loose hardware.
5. Check keyed bushing to make sure magnet collar rotates with seat bar.
6. Check magnet collar magnets for contamination such as metal particles.

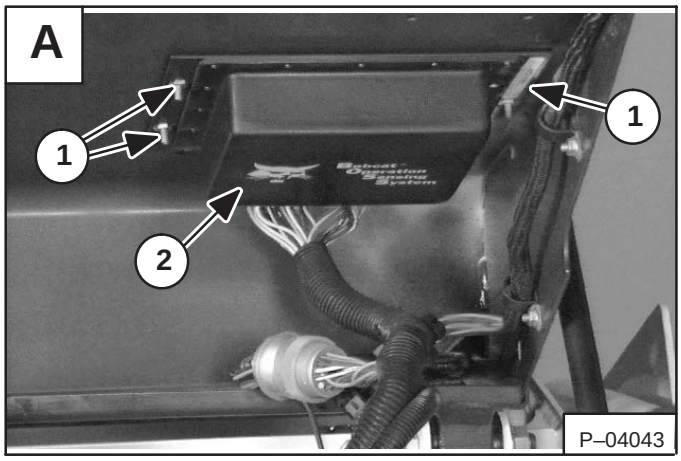
BOSS® UNIT

Removal And Installation

Raise the operator cab. (See Page 1–1.)

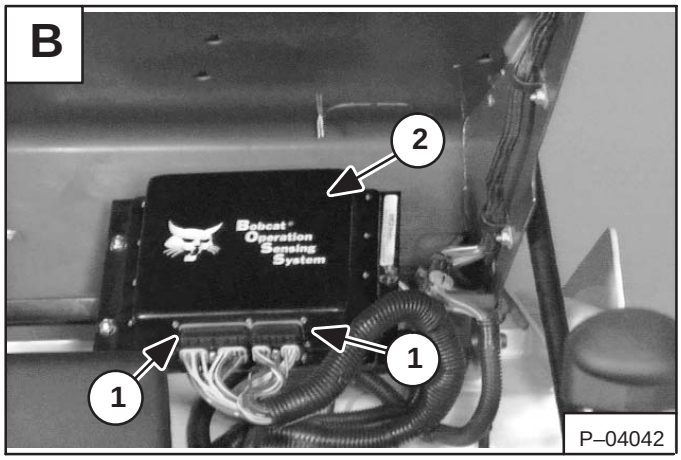
Loosen the nuts (Item 1) **[A]** from the sensing system unit (Item 2) **[A]**.

Slide the unit forward in the mounting slots and remove it from the operator cab.



Use a screwdriver and remove the two connectors (Item 1) **[B]** from the sensing system unit (Item 2) **[B]**.

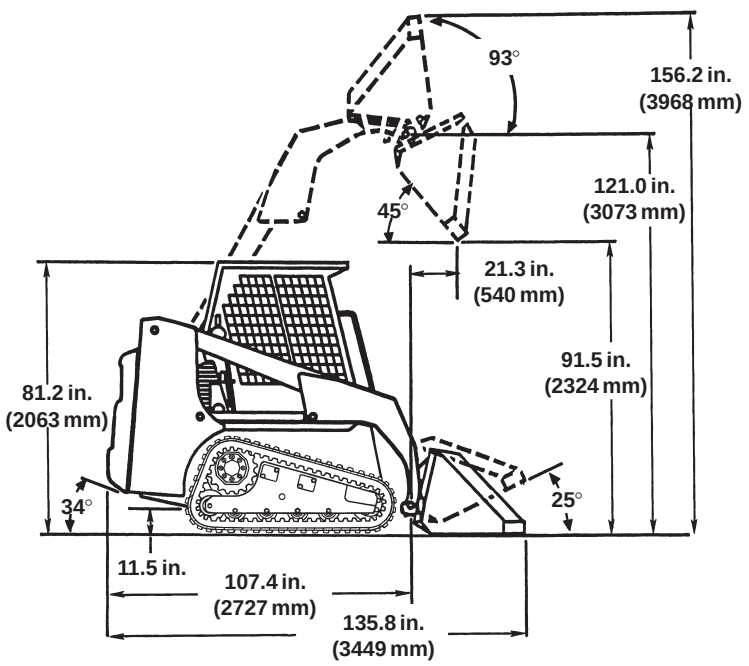
Installation: Put the heads of the mounting bolts into the slots of the operator cab and slide the unit back into place. Tighten the three mounting nuts to 80–90 in.–lbs. (9–10 Nm) torque.

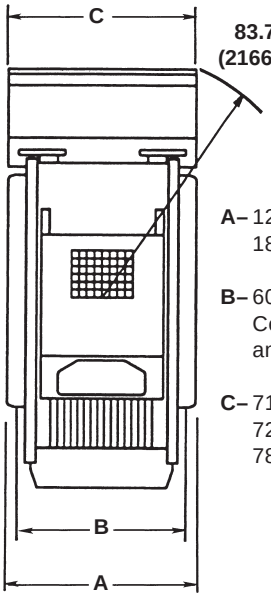


LOADER SPECIFICATIONS

LOADER DIMENSIONS

- Dimensions are given for loader equipped with dirt bucket and may vary with other bucket types. All dimensions are shown in inches. Respective metric dimensions are given in millimeters enclosed by parentheses.
- Where applicable, specification conform to SAE or ISO standards and are subject to change without notice.





A– 12 in. Tracks– 72.8 in. (11849 mm)
18 in. Tracks – 77.1 in. (1958 mm)

B– 60 in. (1524mm) Track–
Centerine is used for both 12 in. and 18 in. wide tracks.

C– 71 in. C/I Bucket – 74.0 in. (1879 mm)
72 in. L/P Bucket – 74.0 (1879 mm)
78 in. L/P Bucket – 79.5 in. (2019 mm)

Changes of structure or weight distribution of the loader can cause changes in control and steering response and can cause failure of the loader parts.

	864	864H OPTION
PERFORMANCE		
Rated Operating Capacity (SAE)	2000 lbs. (907 kg)	
Tipping Load (SAE Rating)	5661 lbs. (2568 kg)	
Operating Weight	8170 lbs. (3705 kg)	8220 lbs. (3729 kg)
SAE Breakout Force –Lift	5400 lbs. (24019 N)	
–Tilt	4850 lbs. (21573 N)	
Travel Speed	0–6.7 MPH (10,8 km/hr.)	
CONTROLS		
Vehicle Steering	Direction and Speed controlled by two hand levers.	
Loader Hydraulics		
Lift and Tilt	Controlled by separate foot pedals or optional hand controls.	
Front Auxiliary (Option)	Proportional Controls Controlled by electrical switch on RH steering lever.	
Rear Auxiliary (Option)	Controlled by electrical switch on LH steering lever.	
Engine	Hand lever throttle: Key–type starter switch and shutdown.	
Starting Aid	Glow plug– Rocker Switch operated. BOSS activated glow plug (If so equipped).	
Service Brake	Two independent hydrostatic systems controlled by two hand operated steering levers.	
Secondary Brake	One of the hydrostatic transmissions	
Parking Brake	Mechanical Disc, foot operated pedal.	
ENGINE		
Make/Model	Deutz/BF4M1011F Turbo–Charged	
Fuel/Cooling	Diesel/Oil	
Horsepower (SAE Net)	73.5 HP (55 kW)	
Maximum Governed RPM	2350 RPM	
Torque @ 1800 RPM (SAE Net)	176 ft.–lbs. (239 Nm)	
Number of Cylinders	Four	
Displacement	178 cu. in. (2,92 L)	
Bore/Stroke	3.58/4.41 (91/112)	
Lubrication	Pressure System W/Filter	
Crankcase Ventilation	Closed	
Air Cleaner	Dry replaceable cartridge w/safety element	
Ignition	Diesel–Compression	

TORQUE SPECIFICATIONS FOR LOADER

Specifications

Item	Ft.–Lbs.	Nm
Air Cleaner Mounting Bolts	25–28	34–38
Alternator Pulley Nut	50	68
Axle Hub Mounting Bolt	175–190	240–260
Axle Sprocket Bolt	475–525	645–710
BICS™ Control Valve Mounting Bolts	15–16	20–22
Bob–Tach Lever Pivot Bolt	25–28	34–38
Control Pedal Linkage Bolts	21–25	28–34
Control Valve Mounting Bolts & Nuts	15–16	20–22
Engine Mounting Bolts	65–70	88–95
Exhaust Pipe to Exhaust Manifold	20–35	27–47
Filter Housing Mounting Bolts	25	34
Front Panel Bolts	16–20	22–27
Hydraulic Pump Bolts	45–50	61–68
Hydraulic Pump Mounting Bolts	25–27	34–37
Hydraulic Reservoir Strap Bolts	16–20	22–27
Hydrostatic Motor Mounting Bolts	210–230	285–310
Hydrostatic Pump Mounting Bolts	65–70	88–95
Hydrostatic Pump Pulley Bolt	175–200	237–271
Lift Arm By–Pass Control Valve Mounting Bolts	15–16	20–22
Main Frame to Chaincase Bolts	300–330	410–450
Main Relief Valve	35–40	47–54
Motor Carrier Bolts	330	447
Operator Cab Fastening Nuts	40–50	54–68
Operator Cab Pivot Bolts & Nuts	25–35	34–47
Pedal Lock Linkage to Main Frame Bolts	7–8	9,5–10,8
Pedal Lock Linkage Tab Bolt	25	34
Pivot Pins Lock Bolt & Nut	18–20	24–27
Seat Belt Fastening Bolts	40–45	54–61
Seat Mounting Bolts	9–11	12,2–15
Seat Bar Pivot Bolts	25–28	34–38
Wheel Nuts	105–115	142–156

WIRING SCHEMATICS - WITH ADVANCED HAND CONTROL OPTIONS
864

DOMESTIC

864 WITHOUT BOSS - WIRING SCHEMATIC
WITH ADVANCED HAND CONTROL OPTION
S/N 516911001 AND ABOVE
(Printed June 1999)
MC2554

864 WITHOUT BOSS - WIRING SCHEMATIC
WITH HIGH FLOW AND ADVANCED HAND CONTROL OPTION
S/N 516911001 AND ABOVE
(Printed June 1999)
MC2556

864 BOSS - WIRING SCHEMATIC
WITH ADVANCED HAND CONTROL OPTION
S/N 516911001 AND ABOVE
(Printed June 1999)
MC2555

864 BOSS - WIRING SCHEMATIC
WITH HIGH FLOW AND ADVANCED HAND CONTROL OPTION
S/N 516911001 AND ABOVE
(Printed June 1999)
MC2557

REFER TO SECTION 6 FOR ADDITIONAL WIRING SCHEMATICS

HANDLE CONTROL UNIT TEST (Cont'd)

Procedure (Cont'd)

Right Handle (Tilt) Full Stroke Voltage Test

1. Turn the key to the ON position with engine OFF.
2. Check the Sensor Supply Voltage. (See Page 10–10.)
3. Move right AHC handle out or toward the side screen, hold and take a voltage reading. The voltage should be 0.13 or greater. If the voltage is less than 0.13 volts change the handle controller.
4. Allow the handle to go to neutral. Take a voltage reading. The voltage should be 1.7 to 2.1 volts. If the voltage reading is either higher or lower, check for loose mounting hardware, or a bad handle controller.
5. Move the right AHC handle in toward the center of the cab to full stroke. Hold in position and take a voltage reading. The voltage reading should be 4.17 volts or less. If the voltage reading is higher, change the handle controller unit. (See Page 10–19.)
6. Release the handle and allow it to go to neutral. Take a voltage reading. The voltage should be 1.7 to 2.1 volts. If the voltage is either higher or lower, check for loose mounting hardware, or a bad handle controller.

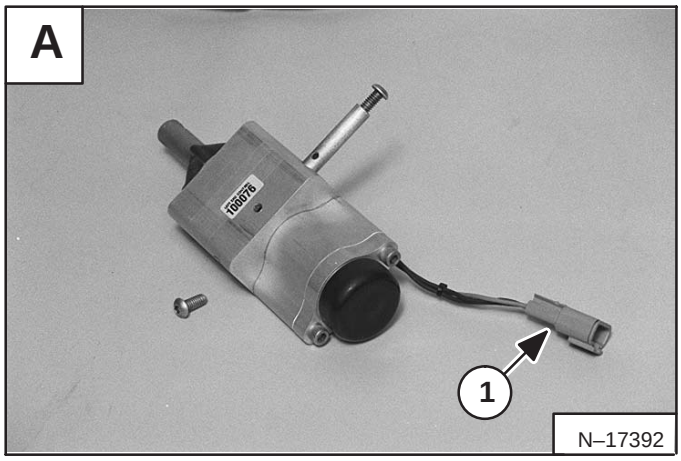
Left Handle (Lift) Full Stroke Voltage Test

1. Turn the key to the ON position with engine OFF.
2. Check the Sensor Supply Voltage. (See Page 10–10.)
3. Move left AHC handle out or toward the side screen, hold and take a voltage reading. The voltage should be 0.13 or greater. If the voltage is less than 0.13 volts change the handle controller.
4. Allow the handle to go to neutral. Take a voltage reading. The voltage should be 1.7 to 2.1 volts. If the voltage reading is either higher or lower, check for loose mounting hardware, or a bad handle controller.
5. Move the left AHC handle in toward the center of the cab to float and take a voltage reading. The voltage reading should be 3.2 volts or less. If the voltage reading is higher, change the handle controller unit. (See Page 10–19.)
6. Release the control handle and allow it to go to neutral from the float position. Take a voltage reading. The voltage should be 1.7 to 2.1 volts. If the voltage is either higher or lower, check for loose mounting hardware, or a bad handle controller.

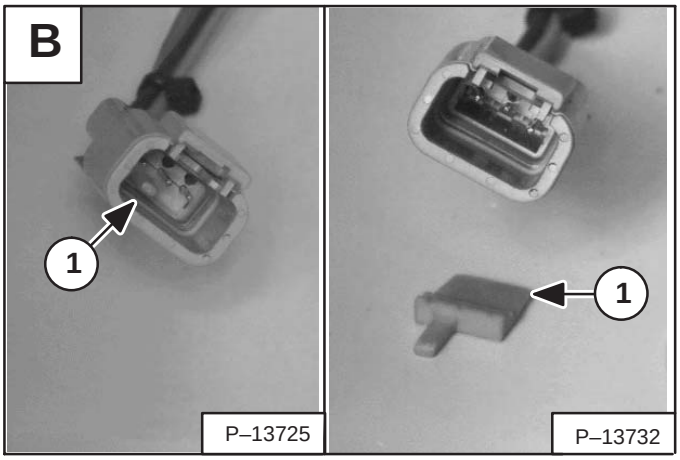
HANDLE CONTROL UNIT (Cont'd)

Control Unit Connector

The wire connector (Item 1) **[A]** can be removed from the handle control unit wires, use the following procedure.



Remove the wedge (Item 1) **[B]** from the connector.



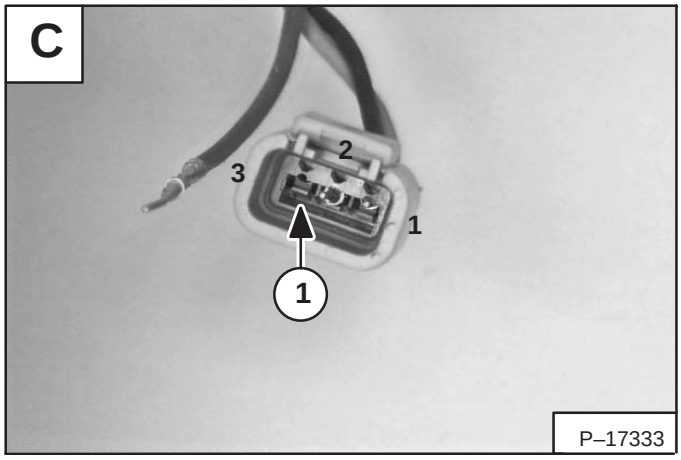
With a pointed tool, lift the tab (Item 1) **[C]** and pull the wire from the connector.

Assembly: Install the wires into the connector as listed below **[C]**:

1–Terminal – Red

2–Terminal – Black

3–Terminal – Green



BICS™ VALVE

Lift Arm By–Pass Orifice

To remove, replace or check the orifice for the lift arm by–pass function, use the following procedure.

IMPORTANT

When repairing hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

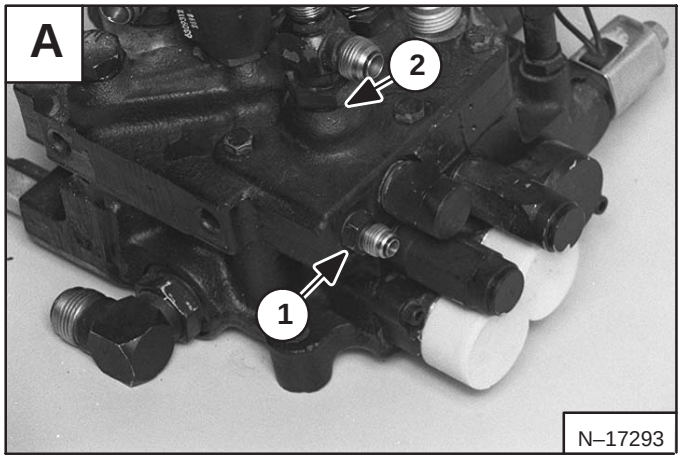
I–2003–0888

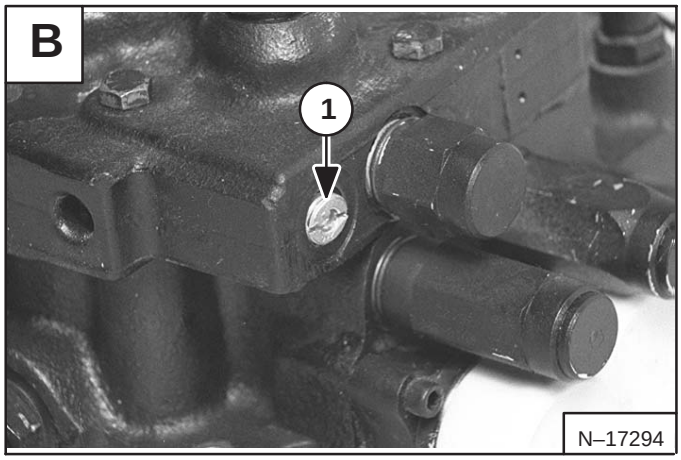
Remove the fitting (Item 1) **[A]** from the BICS valve.

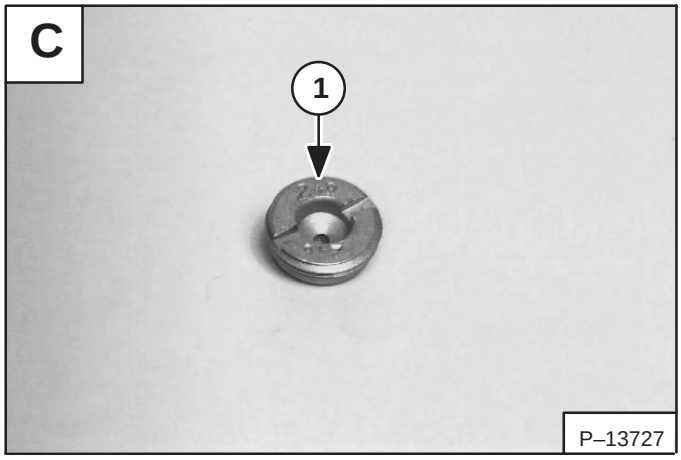
The orifice (Item 1) **[B]** is slotted so a flat blade screwdriver can be used to remove it.

Remove the orifice from the valve.

Clean and inspect the orifice (Item 1) **[C]**. Replace as needed.





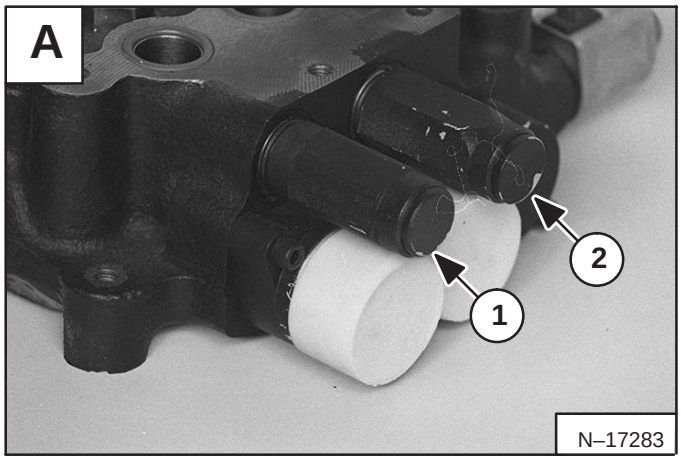


HYDRAULIC CONTROL VALVE (Cont'd)

Port Relief Valve (Lift)

Loosen the port relief valve (Item 1) **[A]** *(Port E1)*.

Installation: Tighten port relief to 35–40 ft.–lbs. (47–54 Nm) torque.



Remove the port relief valve from the control valve **[B]**.

Remove the O–rings and back–up washer from the port relief valve.

Installation: Always use new O–rings and back–up washers.

Anti–Cavitation/Port Relief Valve

Loosen the anti–cavitation valve/port relief (Item 2) **[A]** *(Port E2)*.

Installation: Tighten cartridge to 35–40 ft.–lbs. (47–54 Nm) torque.

Remove the anti–cavitation valve/port relief from the control valve **[C]**.

Remove the O–rings and back–up washer from the anti–cavitation/port relief.

Installation: Always use new O–rings and back–up washers.