LW 130.B Wheel Loader
Service Manual
6-73002

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Reprinted

NEW HOLLAND CONSTRUCTION, LLC.
245 E NORTH AVENUE
CAROL STREAM, IL 60188 U.S.A.

Bur 6-73022

Issued October, 2003 Revised September, 2004

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

Tube OD Hose ID	Thread Size	Pound-Inches	Newton metres
37 Degree Flare Fitting			
1/4 inch 6.4 mm	7/16-20	72 to 144	8 to 16
5/16 inch 7.9 mm	1/2-20	96 to 192	11 to 22
3/8 inch 9.5 mm	9/16-18	120 to 300	14 to 34
1/2 inch 12.7 mm	3/4-16	180 to 504	20 to 57
5/8 inch 15.9 mm	7/8-14	300 to 696	34 to 79
Tube OD Hose ID	Thread Size	Pound-Inches	Newton metres
3/4 inch 19.0 mm	1-1/16-12	40 to 80	54 to 108
7/8 inch 22.2 mm	1-3/16-12	60 to 100	81 to 135
1.0 inch 25.4 mm	1-5/16-12	75 to 117	102 to 158
1-1/4 inch 31.8 mm	1-5/8-12	125 to 165	169 to 223
1-1/2 inch 38.1 mm	1-7/8-12	210 to 250	285 to 338

Tube OD Hose ID	Thread Size	Pound-Inches	Newton metres
Straight Threads with O-ring			
1/4 inch 6.4 mm	7/16-20	144 to 228	16 to 26
5/16 inch 7.9 mm	1/2-20	192 to 300	22 to 34
3/8 inch 9.5 mm	9/16-18	300 to 480	34 to 54
1/2 inch 12.7 mm	3/4-16	540 to 804	57 to 91
Tube OD Hose ID	Thread Size	Pound-Inches	Newton metres
5/8 inch 15.9 mm	7/8-14	58 to 92	79 to 124
3/4 inch 19.0 mm	1-1/16-12	80 to 128	108 to 174
7/8 inch 22.2 mm	1-3/16-12	100 to 160	136 to 216
1.0 inch 25.4 mm	1-5/16-12	117 to 187	159 to 253
1-1/4 inch 31.8 mm	1-5/8-12	165 to 264	224 to 357
1-1/2 inch 38.1 mm	1-7/8-12	250 to 400	339 to 542

Split Flange Mounting Bolts		
Size	Pound-Inches	Newton metres
5/16-18	180 to 240	20 to 27
3/8-16	240 to 300	27 to 34
7/16-14	420 to 540	47 to 61
Size	Pound-Feet	Newton metres
1/2-13	55 to 65	74 to 88
5/8-11	140 to 150	190 to 203

Section
1003

METRIC CONVERSION CHART

CNH America LLC.
245 E NORTH AVENUE
CAROL STREAM, IL 60188 U.S.A.

Bur 6-49810

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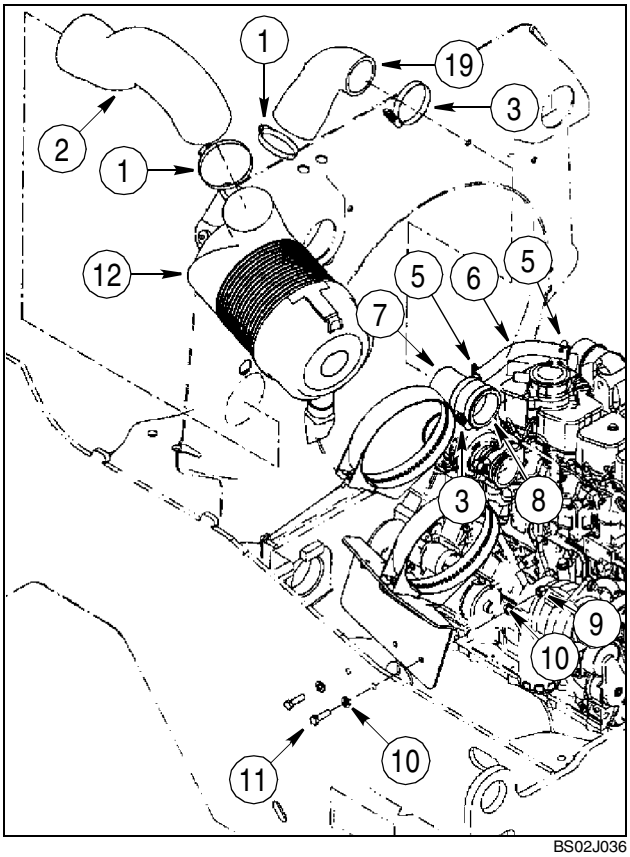
Issued January, 2004

STEP 18



BS02J036

1. CLAMP
2. INTAKE HOSE
3. CLAMP
4. HOSE
5. CLAMP
6. HOSE
7. TUBE
8. HOSE
9. LOCK NUT
10. WASHER
11. BOLT
12. AIR CLEANER

Loosen clamp (1) on air cleaner intake hose (2) and remove intake hose.

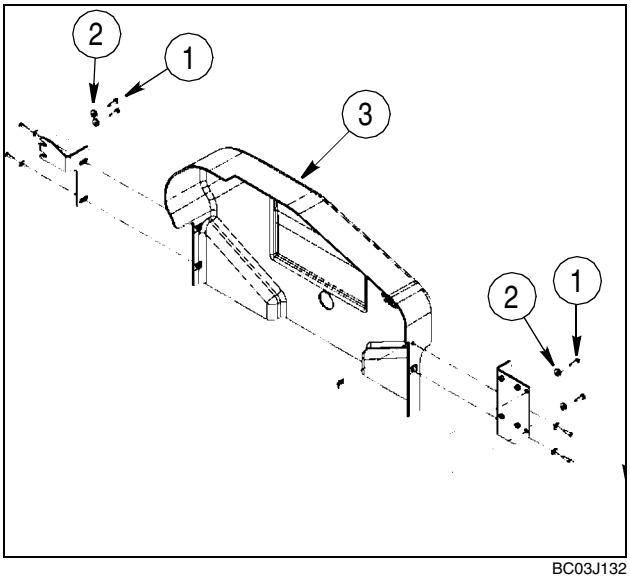
STEP 19

Loosen clamps (3 and 5) on crankcase hose (6) and turbocharger intake hose (8). Disconnect hose (6) from breather pipe. Disconnect hose (8) with tube (7) attached from turbocharger.

STEP 20

Support air cleaner assembly (12) and remove two lock nuts (9), bolts (11), four washers (10). Remove air cleaner (12) and associated parts as an assembly.

STEP 21

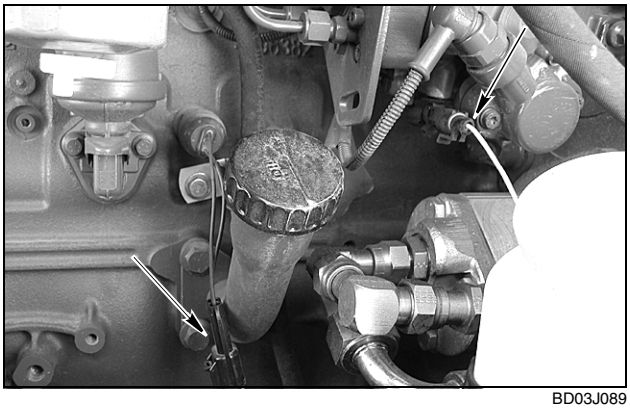


BC03J132

1. BOLT
2. WASHER
3. DRIVE BELT GUARD

Remove four bolts (1) and washers (2) securing drive belt guard (3) to the frame.

STEP 75



BD03J089

Connect injection pump fuel solenoid and oil pressure sending unit.

STEP 76

If equipped, connect connector to fuel filter temperature switch following tag installed during removal. Remove and discard tag.

STEP 77

If equipped, connect connector to fuel filter heater following tag installed during removal. Remove and discard tag.

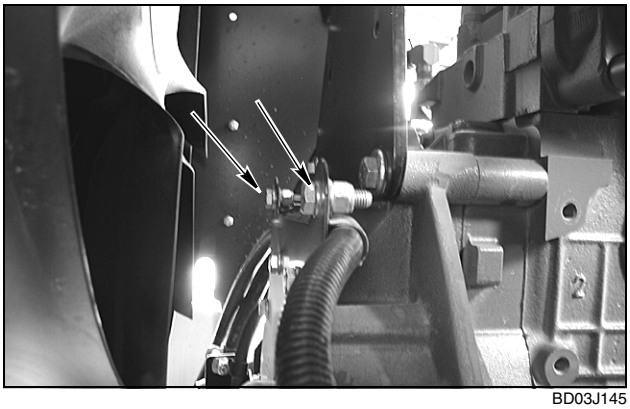
STEP 78

If equipped, connect wire to grid heater following tag installed during removal. Remove and discard tag.

STEP 79

Connect connector to engine coolant temperature sender following tag installed during removal. Remove and discard tag.

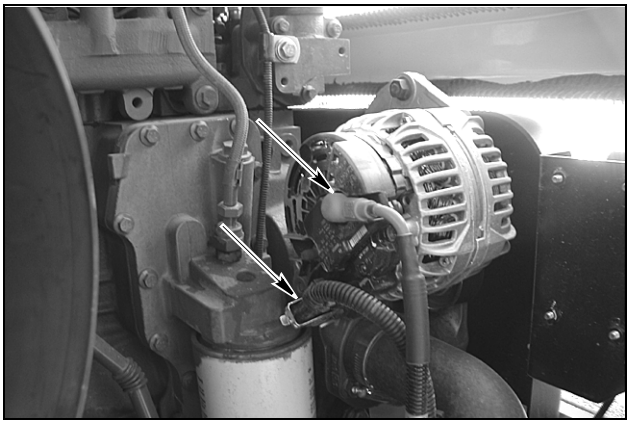
STEP 80



BD03J145

Position clamp holding engine harness on flywheel housing cover.

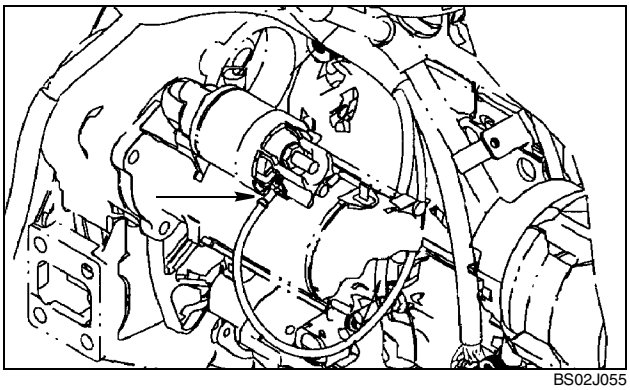
STEP 81



BD03J098

Connect wires to alternator.

STEP 82



BS02J055

Connect harness wire to starter solenoid terminal following tag installed during removal. Remove and discard tag.

2002

Section
2002

STALL TEST

NEW HOLLAND CONSTRUCTION, LLC.
245 E NORTH AVENUE
CAROL STREAM, IL 60188 U.S.A.

Bur 6-73081

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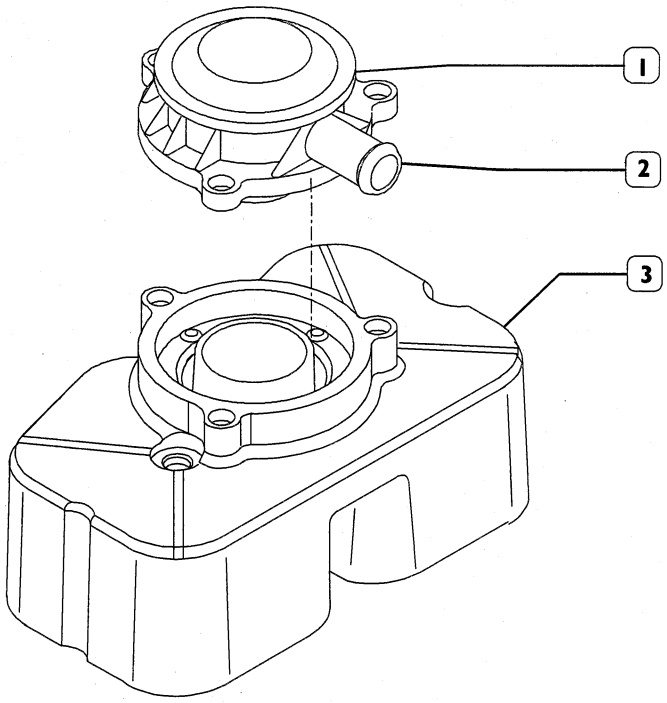
UPDATING

SECTION	DESCRIPTION	PAGE	DATE OF REVISION

OIL VAPOUR RECIRCULATING SYSTEM

Figure 3



1. Valve - 2. Breather pipe - 3. Tappet Cap

On the tappet cap (3) there is a valve (1) whose duty is to condense oil vapour inducing these to fall down because of gravity, to the Tappet cap underneath.

The remaining non-condensed vapours shall be properly conveyed through the breather pipe (2), by suction as an example (connection towards these vapours shall be designed by the Engineer).

FEED PUMP

VE 4 12 1150L rotary type pump is driven by a gear mating the camshaft's one.

Identification

V = Distribution rotary plunger

E = Pump dimensions

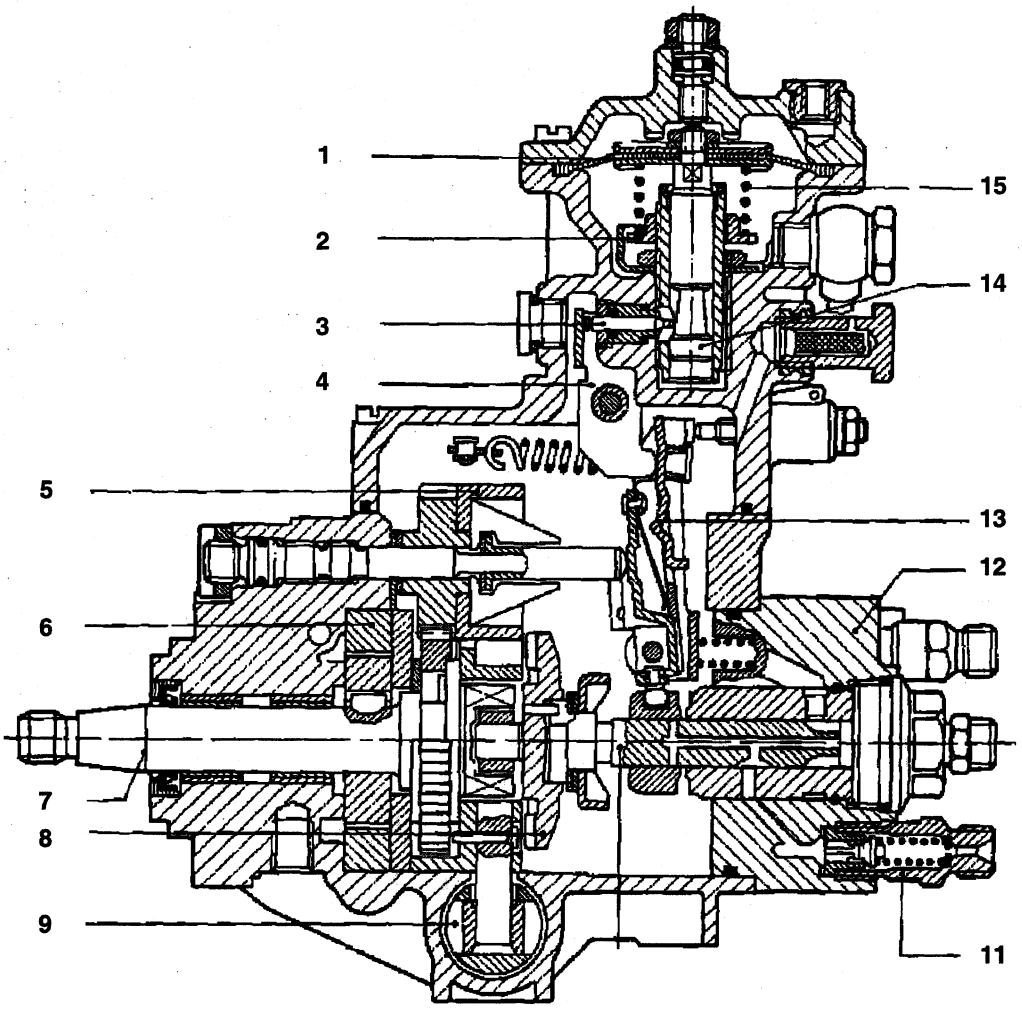
4 = 4 cylinders engine

12 = Distribution plunger in mm.

1150 = Number of pump revolutions per minute

LV = Left direction of rotation

Figura 3



30454

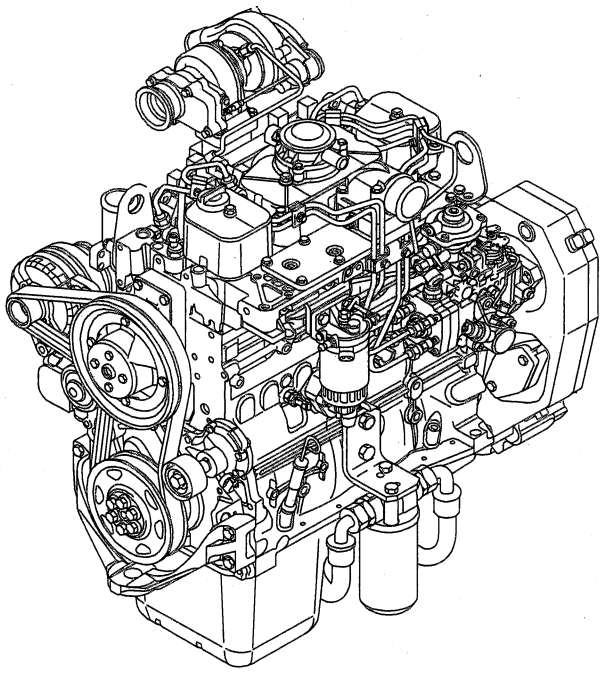
Injection pump longitudinal section

1. Diafram 2. Locking nut 3. Pivot 4. Drive lever 5. Speed gauge 6. Transfer pump 7. Drive shaft 8. Cam disk 9. Advance converter 10. Distribution plunger 11. Delivery pipe fitting 12. Hydraulic head 13. Drive plate 14. Gauge pin 15. Counteracting spring.

GENERAL INFORMATION

Version equipped with mechanical feed pump

Figure 1



03220t

F4BE0484 engines have been designed and developed specifically for transportation by land and farming equipment in general.

They are featured by 4 stroke diesel cycle having 4 cylinder boost with 2 valves per cylinder.

Feed is provided by rotary mechanical pump or on line according to the equipment application.

It differs from other applications because of the provision of different power, power take-off for the different collector configuration, priming pump, oil pan and boost turbine.

The picture shows application designed for 4 cylinders version, 2 valves per cylinder, having fuel feed mechanical pump.

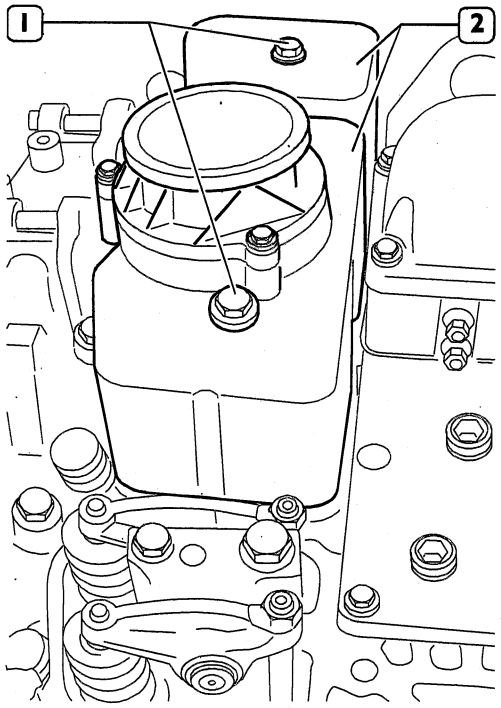
Data, technical specifications and performances granted shall be valid only if the Setter will follow and comply with all installation prescriptions.

Furthermore, the expanders assembled by the Setter must always comply with couple, power and number of revolutions based on which the engine has been designed.

The section herein described is composed or four directories:

- directory of mechanical overhaul prescribed in accordance to the engine's specific duty, illustrating all necessary operations to remove and assembly the external components of the engine, including cylinder heads, gearbox of the timing system and of the front part cover;
- electrical directory, describing the connections of the different components, of the pre-post heating gearbox (only for some versions) and of the sensors assembled to the engine;
- troubleshooting directory;
- directory of preventive and regular maintenance operations, providing instructions for the execution of the main operations.

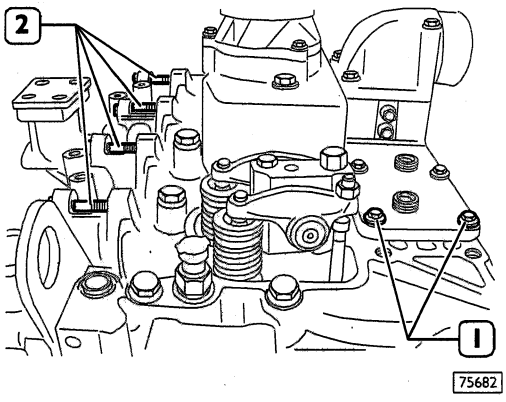
Figure 14



❑ Remove tappet caps:
Loosen the four fixing screws (1) and lift the caps (2); remove the gaskets.

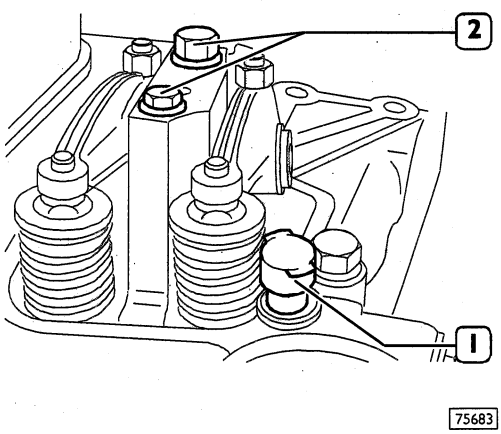
In the picture, the front cap has already been removed.
On the central cap there is a blow–by valve for the lubrication oil vapours.
All the gaskets shall always be replaced during assembly.

Figure 15



❑ Disassemble suction and exhaust manifolds: loosen the 8 screws (1) fixing the suction manifold plate to the cylinder head (two of them have already been screwed–out since fixing the pipe brackets to the injectors); from the exhaust manifold side; loosen the eight (2) fixing screws; remove the gaskets.

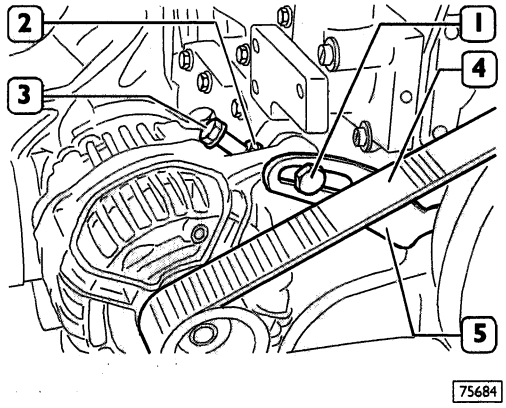
Figure 16



❑ Disassemble rocker arm bearings; loosen the two fixing screws (2) and remove the complete rocker arm bearing; withdraw tappet rods. Repeat the operation for all the remaining rocker arm bearings.

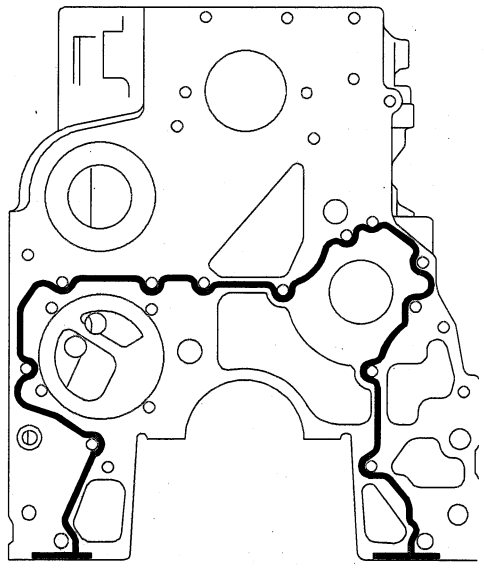
❑ Disassemble water temperature transmitter (1).

Figure 17



❑ Loosen the screw (1) on the alternator belt tensioning hanger and by loosening the lock nut, loosen the screw as well (3) in order to slack the belt (4) until enabling withdrawal of the driven and guide pulleys.
Disassemble alternator belt tensioning hanger (5).

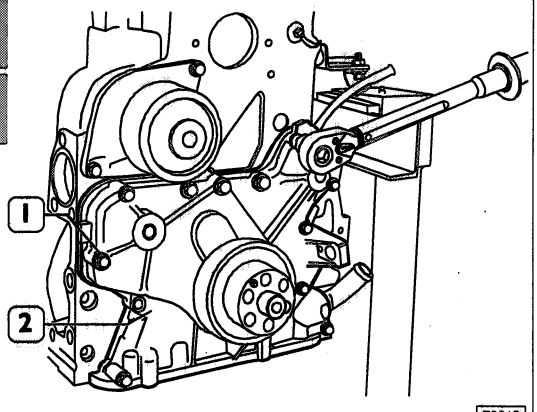
Figure 54



75710

❑ Accurately clean the contact surface of engine block and apply sealing LOCTITE 5205 on it in order to form a uniform and continuous kerbstone with no crumbs.

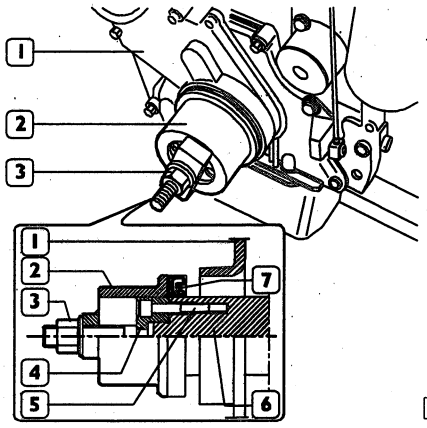
Figure 55



75812

❑ Assemble the front cover (2) to the block and tighten the screws (1) fixing them to the prescribed couple.

Figure 56

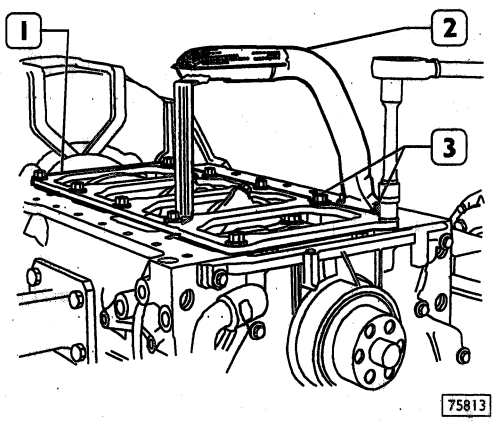


00902t

❑ Apply on engine drive shaft front tang (6) the detail (4) **of the tool 380000666, fix it with the screws (5) nd key** the new holding ring on it (7).

❑ Place the detail (2) on the detail (4), screw-up the threaded nut until carrying out the complete assembly of the holding ring (7) to the front cover.

Figure 57

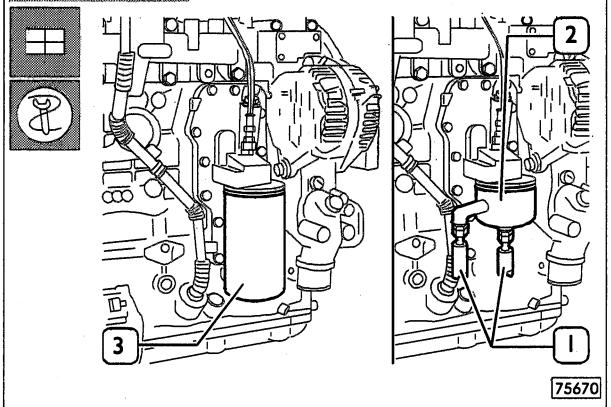


75813

❑ Assemble the plate (1), the rose pipe (2), tighten the fixing screws (3) and fix them to the prescribed couple.

Completion of the engine

Figure 90

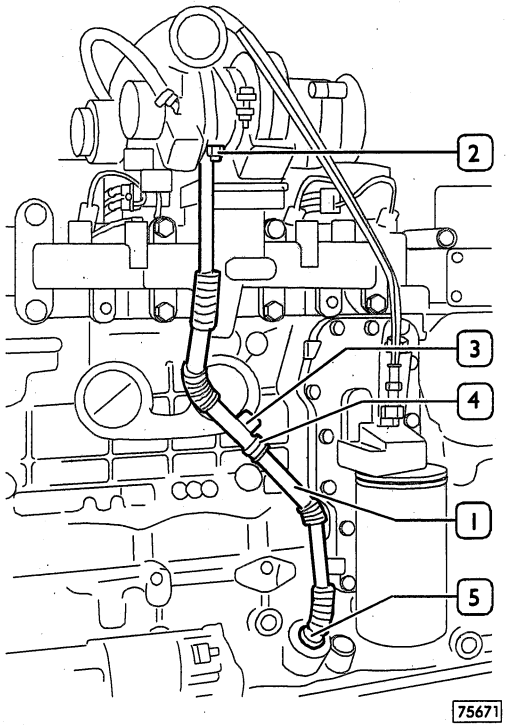


On the right hand side:

- ❑ reassemble the pipes (1) from the union (2) to the lubrication oil filter (placed on the opposite side): tighten the pipe rings (1) and connect them to the union

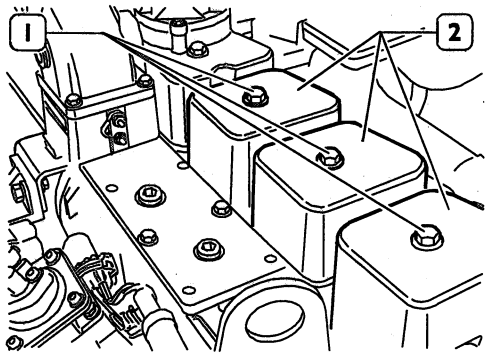
In some cases, the oil filter (3) is directly placed on the heat exchanger: in this case it shall be assembled using acceptable tools.

Figure 91



- ❑ Reassemble the lubrication oil exhaust pipeline (1) from the turbocharger: from underneath the turbocharger tighten the two screws (2); tighten the screw (3) fixing the pipeline to the block throughout the fixing collar (4) to the block; finally tighten the union (5) to the block.

Figure 119

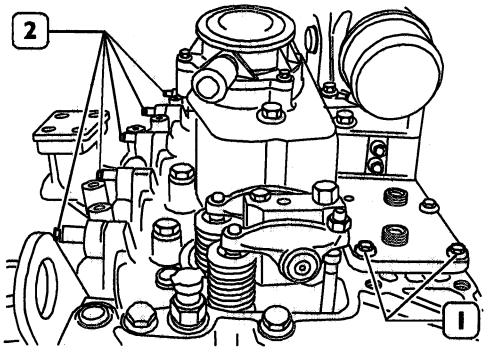


76149

❑ Remove tappet caps:
Loosen the fixing screws (1) and lift the caps (2); remove the gaskets.

On the central cap there is a blow-by valve for the lubrication oil vapours.
All the gaskets shall always be replaced during assembly.

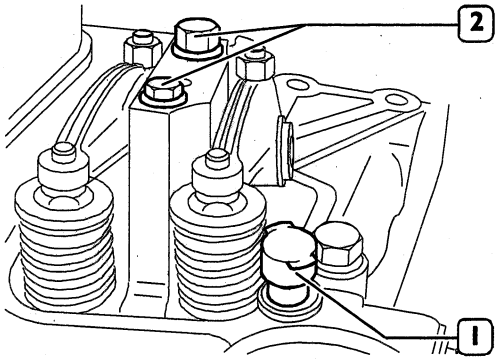
Figure 120



76151

❑ Disassemble suction and exhaust manifolds: loosen the screws (1) fixing the suction manifold plate to the cylinder head (some of them have already been screwed-out since fixing the pipe brackets to the injectors); from the exhaust manifold side loosen the eight (2) fixing screws; remove the gaskets.

Figure 121

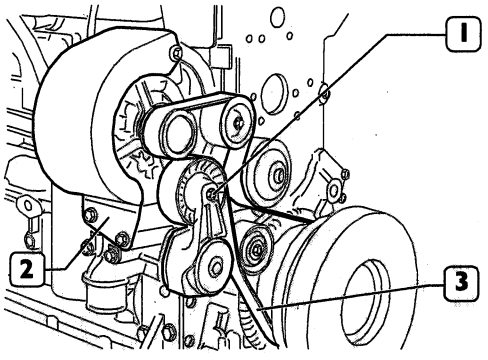


75683

❑ Disassemble rocker arm bearings; loosen the two fixing screws (2) and remove the complete rocker arm bearing; withdraw tappet rods. Repeat the operation for all the remaining rocker arm bearings.

❑ Disassemble water temperature transmitter (1).

Figure 122



74171

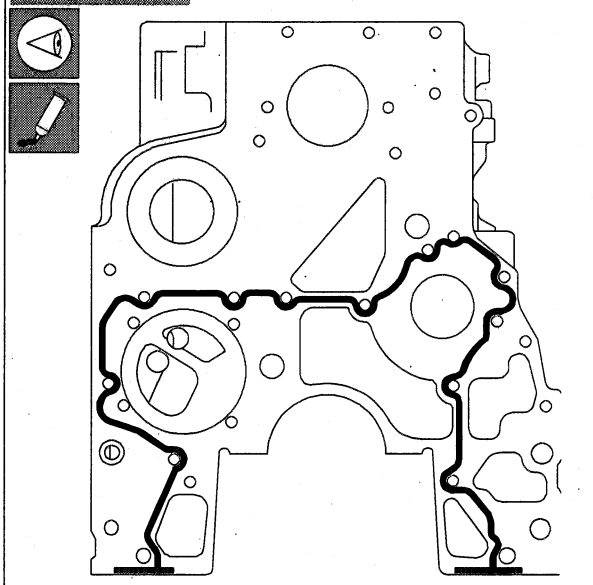
❑ Unloose the screws fixing the alternator's protection to the support and remove it.

❑ Workon the drive belt tensor (1) and extract the belt (3) from the belt pulleys, from the water pump ones and from the belt rebound pulleys.

❑ Disassemble the belt tensor.

❑ Unloose the screw fixing the alternator to the upper bracket.

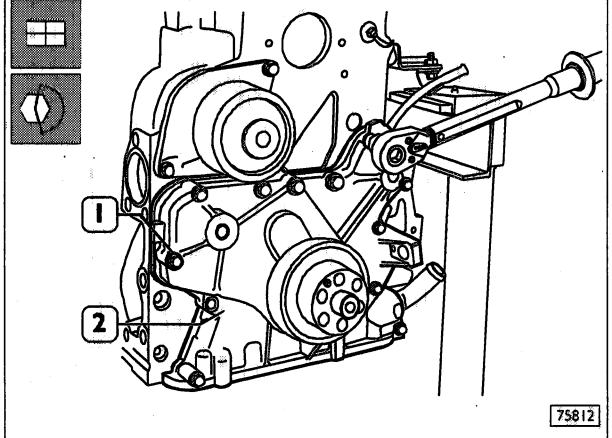
Figure 159



75710

❑ Accurately clean the contact surface of engine block and apply sealing LOCTITE 5205 on it in order to form a uniform and continuous kerbstone with no crumbs.

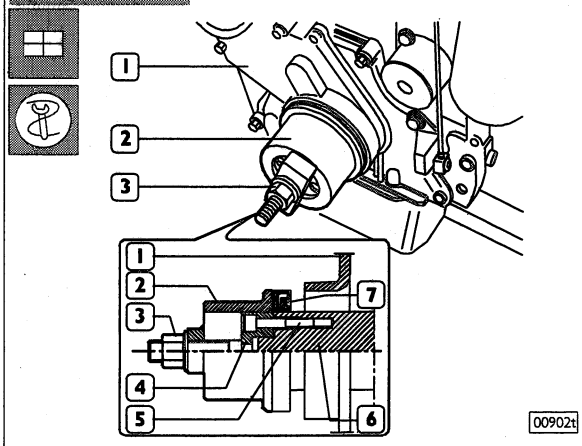
Figure 160



75812

❑ Assemble the front cover (2) to the block and tighten the screws (1) fixing them to the prescribed couple.

Figure 161

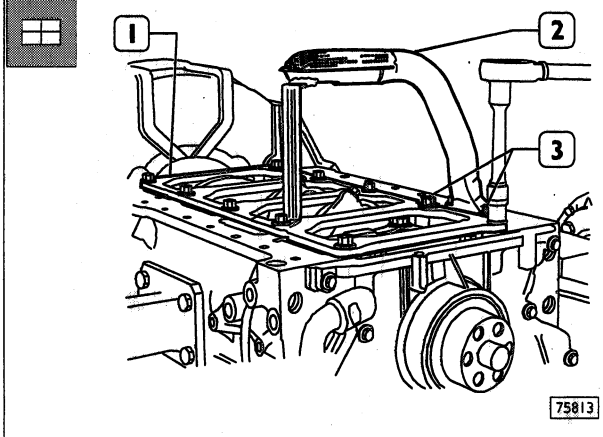


00902t

❑ Apply on engine drive shaft front tang (6) the detail (4) **of the tool 380000666, fix it with the screws (5) nd key** the new holding ring on it (7).

❑ Place the detail (2) on the detail (4), screw–up the threaded nut until carrying out the complete assembly of the holding ring (7) to the front cover.

Figure 162

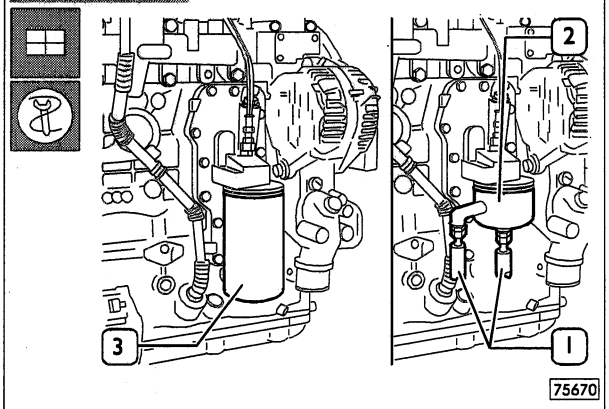


75813

❑ Assemble the plate (1), the rose pipe (2), tighten the fixing screws (3) and fix them to the prescribed couple.

Completion of the engine

Figure 197

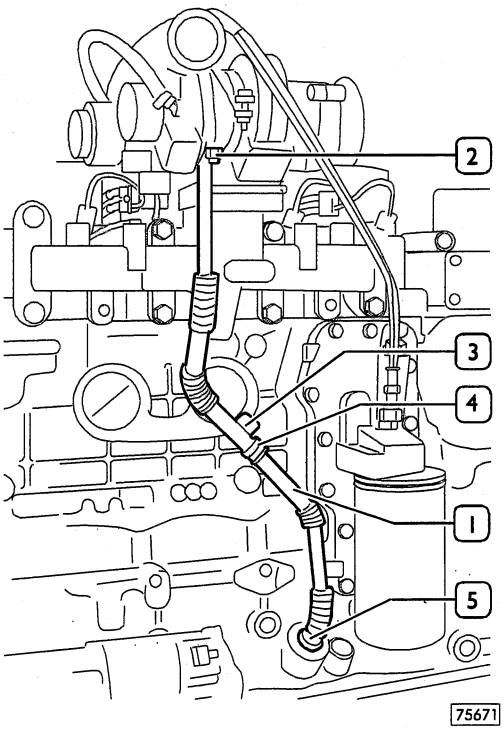


On the right hand side:

- reassemble the pipes (1) from the union (2) to the lubrication oil filter (placed on the opposite side): tighten the pipe rings (1) and connect them to the union

In some cases, the oil filter (3) is directly placed on the heat exchanger: in this case it shall be assembled using acceptable tools.

Figure 198



- Reassemble the lubrication oil exhaust pipeline (1) from the turbocharger: from underneath the turbocharger tighten the two screws (2); tighten the screw (3) fixing the pipeline to the block throughout the fixing collar (4) to the block; finally tighten the union (5) to the block.

PART TWO –
ELECTRICAL EQUIPMENT

PART THREE – TROUBLESHOOTING

MAINTENANCE PLANNING

Recovery

To ensure optimised working conditions, in the following pages we are providing instructions for the overhaul control interventions, checks and setting operations that must be performed on the engine at due planned dates.

The frequency of the maintenance operations is just an indication since the use of the engine is the main characteristic to determine and evaluate replacements and checks.

It is not only allowed but recommended that the staff in charge of the maintenance should also carry out the necessary maintenance and controlling operations even if not being included in the ones listed here below but that may be suggested by common sense and by the specific conditions in which the engine is run.

Planning of controls and periodical intervention

Controls and periodical intervention	Frequency (hours)
Visual check of engine	Daily
Check presence of water in fuel filter or pre–filter	Daily
Check of belt wear status	–
Check and setting of tappet clearance	4000
Replacement of engine's oil and filter	500
Replacement of fuel pre–filter	1000
Replacement of fuel filter	500
Replacement of belt	1500

The frequency of the maintenance operations is just an indication since the use of the engine is the main characteristic to determine and evaluate replacements and checks.

The maintenance operations are valid only if the setter fully complies with all the installation prescriptions.

Furthermore, the users assembled by the setter shall always be in conformance to couple, power and number of turns based on which the engine has been designed.

GENERAL SPECIFICATIONS

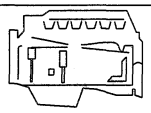
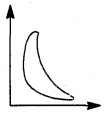
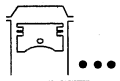
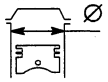
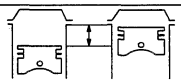
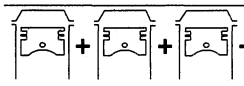
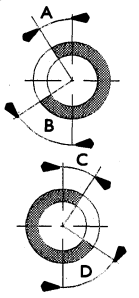
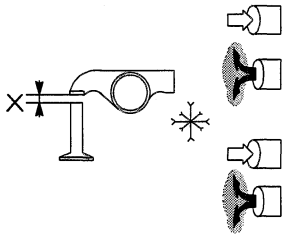
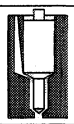
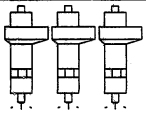
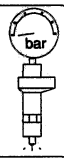
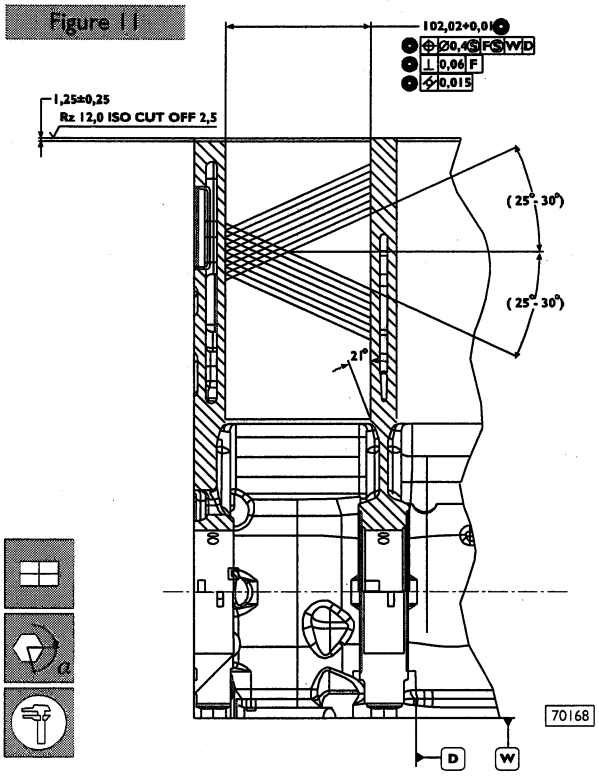
	Type		4 CYLINDERS	6 CYLINDERS
	Cycle		Four–stroke diesel engine	
	Power		Supercharged with intercooler	
	Injection		Direct	
	Number of cylinders		4 in–line	6 in–line
	Bore	mm	104	
	Stroke	mm	132	
	Total displacement	cm^3	4485	6728
	**TIMING**			
	start before T.D.C.	A	–	
	end after B.D.C.	B	–	
	start before B.D.C.	D	–	
	end after T.D.C.	C	–	
	Checking timing			
	X	mm	–	
		mm	–	
	Checking operation			
	X	mm	0.152 to 0.381	
		mm	0.318 to 0.762	
	FUEL FEED			
	Injection Type:	Bosch	VE 4/12F 1150LV	
	Nozzle type		Injectors DSLA 145 P	
	Injection sequence		1 –3 –4 –2	1 –5 –3 –6 –2 –4
	Injection pressure	bar	245 for F4GE0404A*D6 260 for others	

Figure 11



In case of regrinding, all barrels shall have the same oversize (0.5 mm).

Check main bearing housings as follows:

- ❑ fit the main bearings caps on the supports without bearings;
- ❑ tighten the fastening screws to the specified torque;
- ❑ use the proper internal gauge to check whether the housing diameter is falling within the specified value.

Replace if higher value is found.

Checking head supporting surface on cylinder unit

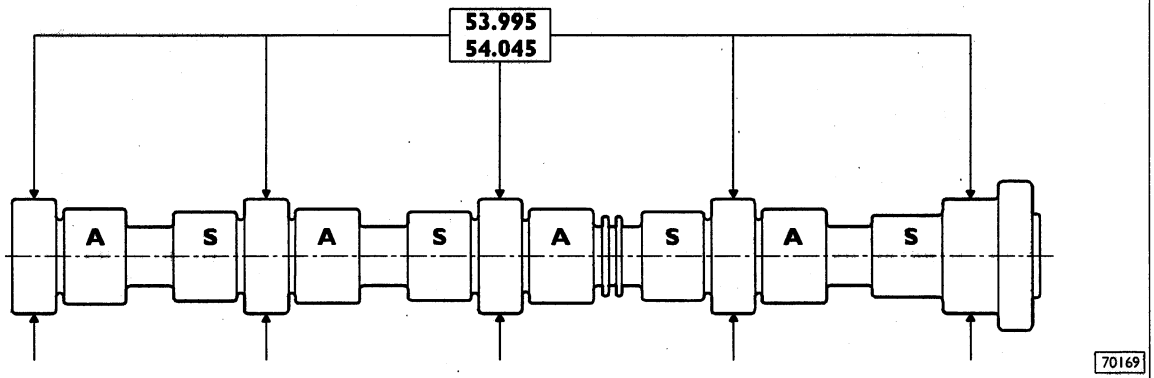
When finding the distortion areas, replace the cylinder unit.

Planarity error shall not exceed 0.075 mm.

Check cylinder unit operating plug conditions, replace them in case of uncertain seal or if rusted.

TIMING SYSTEM
Camshaft

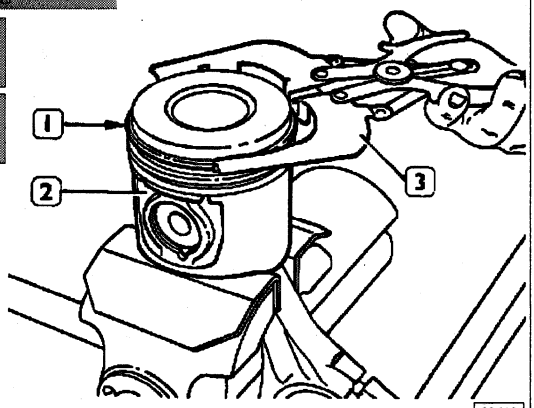
Figure 12



CAMSHAFT MAIN DATA (4 CYL.)
Specified data refer to pin standard diameter

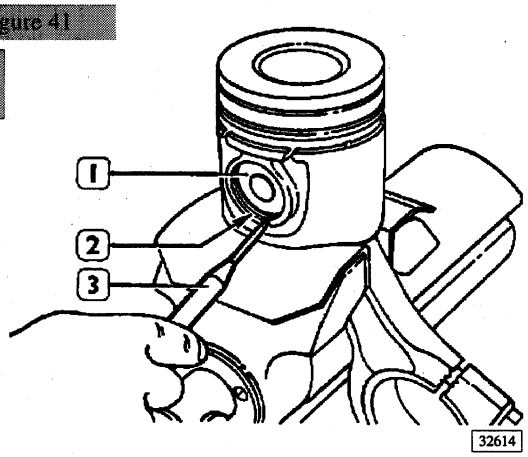
Pistons
Measuring piston diameter

Figure 40



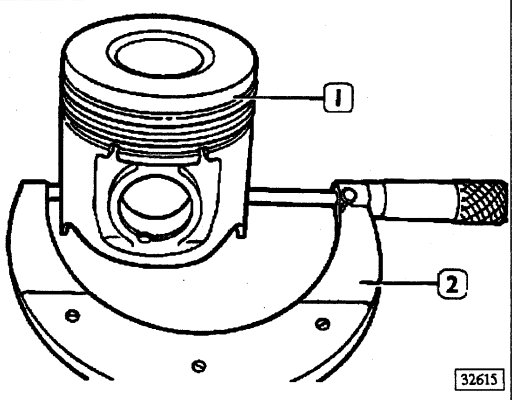
Remove split rings (1) from piston (2) using pliers 99360183 (3).

Figure 41



Piston pin (1) split rings (2) are removed using a scriber (3).

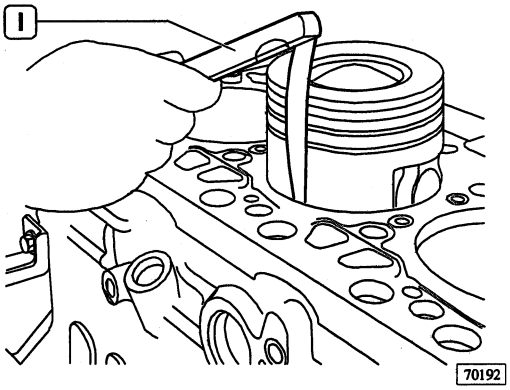
Figure 43



Using a micrometer (2), measure the diameter of the piston (1) to determine the assembly clearance.

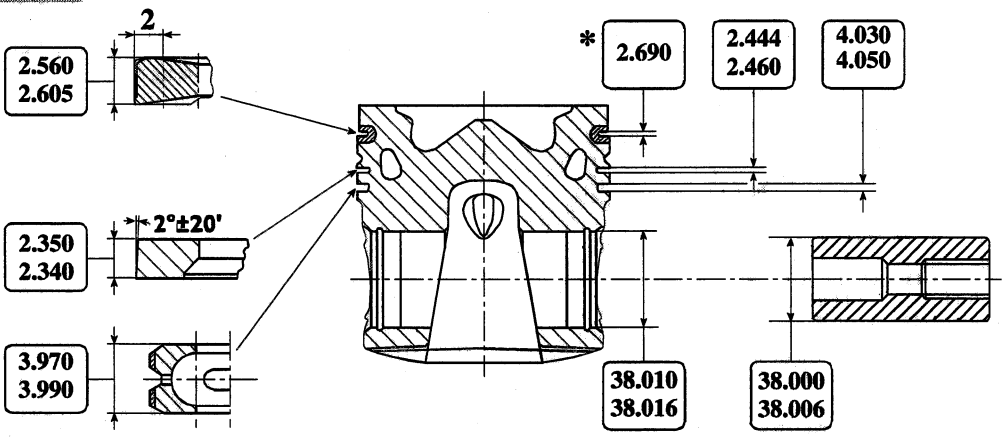
The diameter shall be measured at 12 mm from the piston skirt.

Figure 44



The clearance between the piston and the cylinder barrel can be checked also with a feeler gauge (1) as shown in the figure.

Figure 42

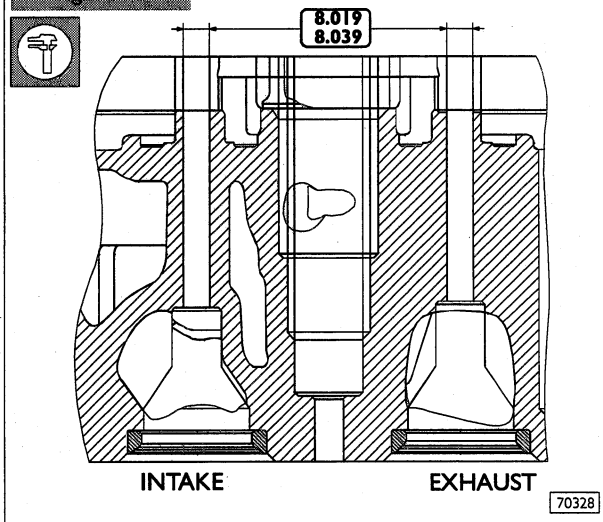


MAIN DATA CONCERNING KS. PISTON, PINS AND SPLIT RINGS

* Value measured on 58 mm diameter for 4 cylinder

VALVE GUIDE

Figure 78

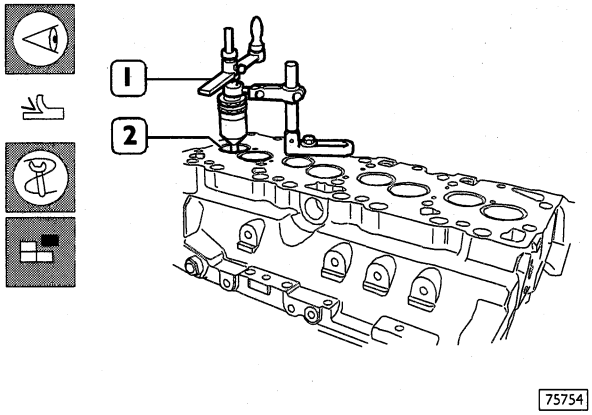


Use a bore dial gauge to measure the inside diameter of the valve guides, the read value shall comply with the value shown in the figure.

VALVE SEATS

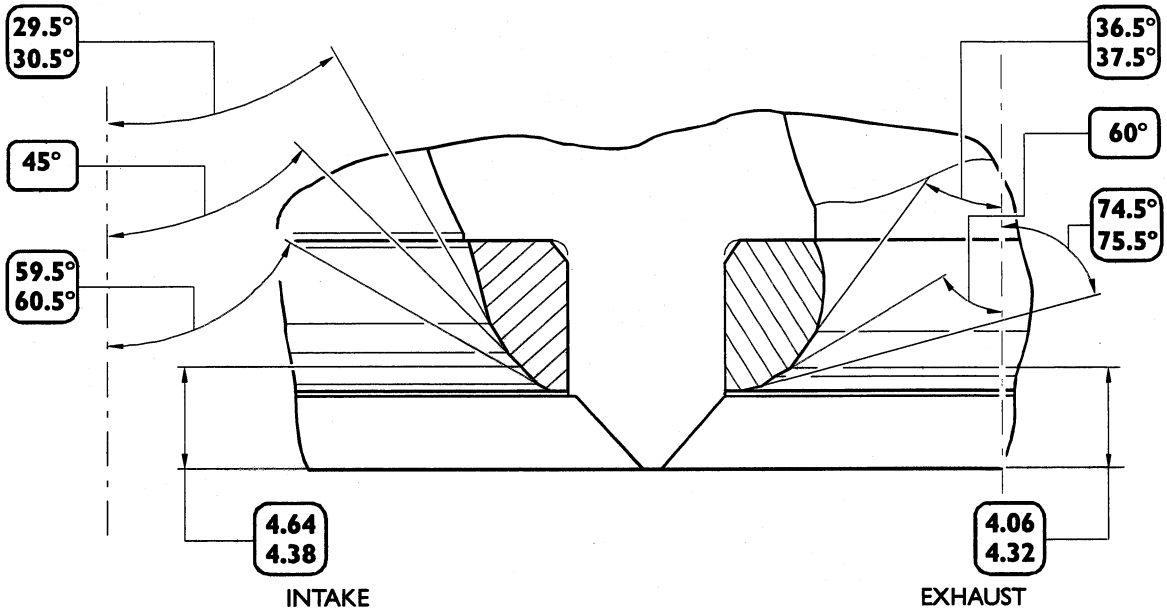
Regrinding – replacing the valve seats

Figure 79



Check the valve seats (2). If slight scoring or burnout is found, **regrind seats using acceptable tools (1) according to the angle** values shown in Figure 80.

Figure 80



VALVE SEAT MAIN DATA

Should valve seats be not reset just by regrinding, replace **them with the spare ones. Use acceptable tools (Figure 79)** remove as much material as possible from the valve seats (take care not to damage the cylinder head) until they can be extracted from the cylinder head using a punch.

Heat the cylinder head to 80° – 100°C and using the proper beater, fit the new valve seats, previously cooled, into the cylinder head.

Use acceptable tools to regrind the valve seats according to the values shown in Figure 80.

SAFETY PRESCRIPTIONS

Standard safety prescriptions

Particular attention shall be drawn on some precautions that must be followed absolutely in a standard working area and whose non fulfillment will make any other measure useless or not sufficient to ensure safety to the personnel in–charge of maintenance.

Be informed and inform personnel as well of the laws in force regulating safety, providing information documentation available for consultation.

- ❑ Keep working areas as clean as possible, ensuring adequate aeration.
- ❑ Ensure that working areas are provided with emergency boxes, that must be clearly visible and always provided with adequate sanitary equipment.
- ❑ Provide for adequate fire extinguishing means, properly indicated and always having free access. Their efficiency must be checked on regular basis and the personnel must be trained on intervention methods and priorities.
- ❑ Organize and displace specific exit points to evacuate the areas in case of emergency, providing for adequate indications of the emergency exit lines.
- ❑ Smoking in working areas subject to fire danger must be strictly prohibited.
- ❑ Provide Warnings throughout adequate boards signaling danger, prohibitions and indications to ensure easy comprehension of the instructions even in case of emergency.

Prevention of injury

- ❑ Do not wear unsuitable cloths for work, with fluttering ends, nor jewels such as rings and chains when working close to engines and equipment in motion.
- ❑ Wear safety gloves and goggles when performing the following operations:
  – filling inhibitors or anti–frost
  – lubrication oil topping or replacement
  – utilization of compressed air or liquids under pressure (pressure allowed: ≤ 2 bar)
- ❑ Wear safety helmet when working close to hanging loads or equipment working at head height level.
- ❑ Always wear safety shoes when and cloths adhering to the body, better if provided with elastics at the ends.
- ❑ Use protection cream for hands.
- ❑ Change wet cloths as soon as possible
- ❑ In presence of current tension exceeding 48–60 V verify efficiency of earth and mass electrical connections. Ensure that hands and feet are dry and execute working operations utilizing isolating foot–boards. Do not carry out working operations if not trained for.
- ❑ Do not smoke nor light up flames close to batteries and to any fuel material.
- ❑ Put the dirty rags with oil, diesel fuel or solvents in anti–fire specially provided containers.
- ❑ Do not execute any intervention if not provided with necessary instructions.
- ❑ Do not use any tool or equipment for any different operation from the ones they've been designed and provided for: serious injury may occur.
- ❑ In case of test or calibration operations requiring engine running, ensure that the area is sufficiently aerated or utilize specific vacuum equipment to eliminate exhaust gas. Danger: poisoning and death.

During maintenance

- ❑ Never open filler cap of cooling circuit when the engine is hot. Operating pressure would provoke high temperature with serious danger and risk of burn. Wait unit the temperature decreases under 50°C.
- ❑ Never top up an overheated engine with cooler and utilize only appropriate liquids.
- ❑ Always operate when the engine is turned off: whether particular circumstances require maintenance intervention on running engine, be aware of all risks involved with such operation.
- ❑ Be equipped with adequate and safe containers for drainage operation of engine liquids and exhaust oil.
- ❑ Keep the engine clean from oil tangles, diesel fuel and or chemical solvents.
- ❑ Use of solvents or detergents during maintenance may originate toxic vapors. Always keep working areas aerated. Whenever necessary wear safety mask.
- ❑ Do not leave rags impregnated with flammable substances close to the engine.
- ❑ Upon engine start after maintenance, undertake proper preventing actions to stop air suction in case of runaway speed rate.
- ❑ Do not utilize fast screw–tightening tools.
- ❑ Never disconnect batteries when the engine is running.
- ❑ Disconnect batteries before any intervention on the electrical system.
- ❑ Disconnect batteries from system aboard to load them with the battery loader.
- ❑ After every intervention, verify that battery clamp polarity is correct and that the clamps are tight and safe from accidental short circuit and oxidation.
- ❑ Do not disconnect and connect electrical connections in presence of electrical feed.
- ❑ Before proceeding with pipelines disassembly (pneumatic, hydraulic, fuel pipes) verify presence of liquid or air under pressure. Take all necessary precautions bleeding and draining residual pressure or closing dump valves. Always wear adequate safety mask or goggles. Non fulfillment of these prescriptions may cause serious injury and poisoning.

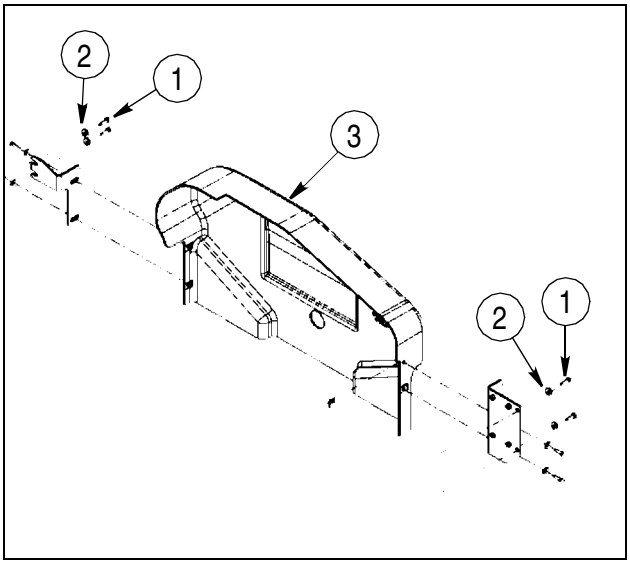
ALTERNATOR

Removal

STEP 13

Put master disconnect switch in OFF position.

STEP 14

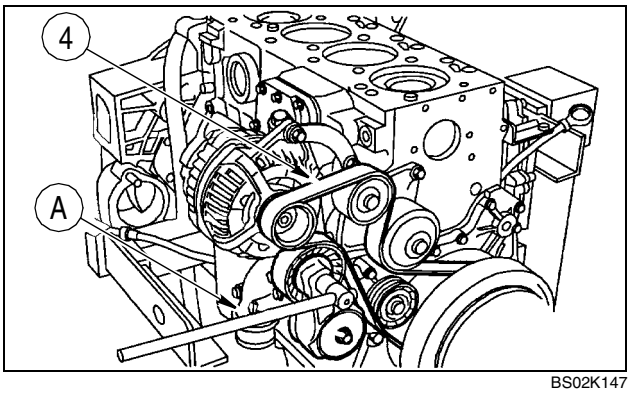


BC03J132

1. BOLT
2. WASHER
3. DRIVE BELT GUARD

Remove four bolts (1) and washers (2) securing drive belt guard to the frame.

STEP 15

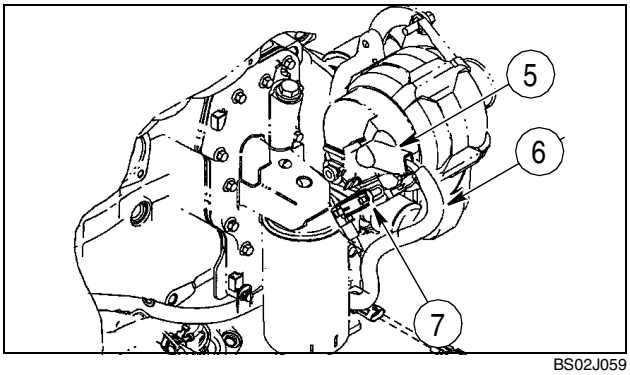


BS02K147

4. DRIVE BELT
A. BREAKER BAR

Put a 12.7 mm (1/2 inch) drive breaker bar or ratchet (A) in bracket for automatic belt tensioner. Push down on breaker bar or ratchet to release drive belt tension and remove drive belt (4) from alternator pulley.

STEP 16



BS02J059

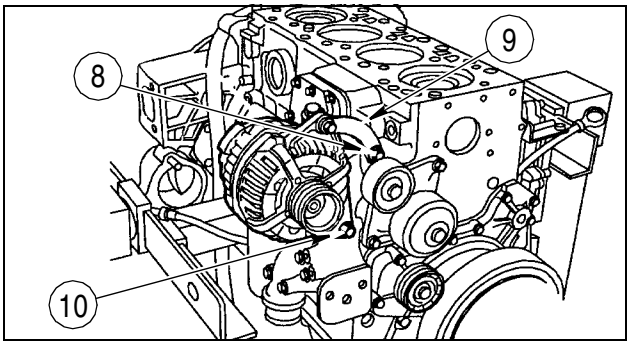
5. BOOT
6. WIRE
7. CONNECTOR

Pull boot (5) away from alternator stud. Identify, tag, and disconnect engine harness wire (6) from alternator stud.

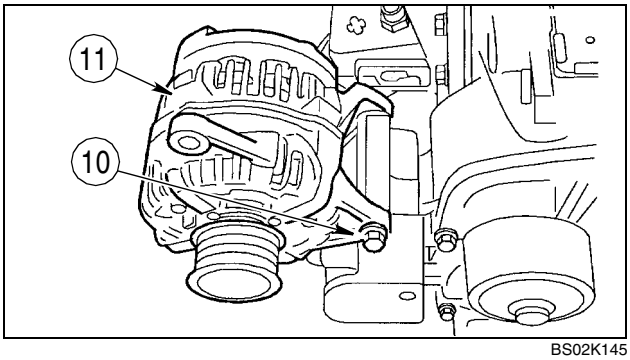
STEP 17

Identify, tag, and disconnect two connectors (7).

STEP 18



BS02K146



BS02K145

8. BOLT
9. BRACE
10. BOLT
11. ALTERNATOR

Remove bolt (8) securing brace (9) to engine. Loosen bolt (10) and move alternator then remove bolt (10) and associated hardware. Remove alternator.

Wire Identification Codes

21C RN - 1.0

Wire Size (mm^2)

0.8 mm	1.0 mm	2.0 mm	5.0 mm

Wire Color

N or SW= Black	BL or L= Blue	H = Grey	M = Brown	GN or V + Green
R or RT = Red	RN = Red /Black	B or WS = White	G or GE = Yellow	

Wire Name

Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size**	**Connector**	**Cavity**	**Connector**	**Cavity**
OOO-CGD	Backup Alarm GND	Grey-1.0	Backup Alarm	1	GND_G R_CHS F GND	1
OOO-CHB	2nd Filter Heat GND	Grey-2.5	XH2 2nd Filter Heater	A	GND_FH R_CHS Cold Start GND	1
OOO-CHC	1st Filter Hear GND	Grey-2.5	XH1 1st Filter Heater	A	GND_FH R_CHS Cold Start GND	1
OOO-CHD	Fuel Heat T GND	Grey-1.0	XT1 Filters Heating THSW	A	GND_FH R_CHS Cold Start GND	1
OOO-CS	Cold Start Control GND	Grey-1.0	CS85 Cold Start Relay	1	GND_FH R_CHS Cold Start GND	1
OOO-F	LH Turn LT GND	Grey-1.0	XTLF LH Front Turn LT	A	X003 LH FR Turn Light	1
OOO-G	RH FRT Turn LT GND	Grey-1.0	XTRF RH Front Turn LT	A	X009 RH FRT Turn Light	1
OOO-LTS	Second Steering Box GND	Grey-1.0	SSB-G Second Steering Box GND	1	LTSM LTS Box	5
000-LV	Second Steering Box GND	Grey-1.0	SSB-G Second Steering Box GND	1	LTS_V1 LTS Valve 1	2
OOO-P	Diode Module GND	Grey-1.0	DM1 Diode Module	86	DM1 Diode Module	85
OOO-PSM	TUV Light GND	Grey-1.0	PSM	3	GND_A_TUV TUV Light GND	1
OOO-PX	Out	Grey-1.0	PX1M Bucket Control PX	C	PX1 Bucket Control PX	B
OOO-R	Starter Relay GND	Grey-1.0	SR85 Starter Relay	1	DM1 Diode Module	85
OOO-S	Conditioning Relay GND	Grey-1.0	CNDM Conditioner CONN	B	SR85 Starter Relay	1
OOO-SS	Second Steering GND	Grey-1.0	XP2 Second Steering PRSW	B	SSB-G Second Steering Box GND	1
OOO-SSS	R_CHS Second Steering Solenoid GND	Grey-1.0	GND_SSS R_CHS Second Steering Solenoid GND	1	SSS Second Steering Solenoid Valve	2
OOO-T	Diode Module GND	Grey-1.0	XDF Rear TR/Rear TR	10	DM1 Diode Module	86
OOO-TUVL	TUV Light GND	Grey-1.0	PSF	3	TUVL	A
OOO-TUVR	TUV Light GND	Grey-1.0	PSF	3	TUVR	A
OOO-TUVR	TUV Light GND	Grey-1.0	TUVR1	A	TUVR2	A
102_A	Flasher PWR	White-1.0	X16M Rear Cab/Front Cab	5	X34F Relay Card	7
102_B	Flasher PWR	White-1.0	X5F Front Cab/Instr Clus	6	X26F Rear Cab/Front Cab	5

Wire Identification Codes

21C RN - 1.0

- 21C — Wire Name
- RN — Wire Color
- 1.0 — Wire Size (mm^2)

Wire Size (mm^2)				
0.8 mm	1.0 mm	2.0 mm	5.0 mm	

Wire Color				
N or SW= Black	BL or L= Blue	H = Grey	M = Brown	GN or V + Green
R or RT = Red	RN = Red /Black	B or WS = White	G or GE = Yellow	

Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size**	**Connector**	**Cavity**	**Connector**	**Cavity**
824_D_	Thermostat Switch Signal	White-1.0	X11M_A Rear Cab/Roof (Heater)	5	C Thermostat	1
824_HP	Ground	Grey-1.0	LPM A/C Relay A/C COMP	2	HP A/C High Pressure Switch	A
827_A	Cold Start Temperature Switch	Grey-1.0	XEF Cold Start	B	TR1 Cold Start TEMP Switch	A
827_C	Cold Start THSW Signal	White-0.5	X23F Rear Cab/Rear TR	3	X6F Grid Heater Controller	10
827_T	Cold Start Temperature Switch	Grey-1.0	XEM Cold Start	B	X23M Rear Cab/Rear TR	3
835_B	SEC Steering High Pressure	Grey-1.0	XP2 SEC Steering PR SW	A	LTSM LTS Box	6
835_D	Main Steering Low Pressure	Grey-1.0	X20M Rear Cab/Front TR	12	LTSF LTS Box	6
844_A	SEC Steering Low Pressure	Grey-1.0	XP2 SEC Steering PR SW	C	LTSM LTS Box	7
844_D	Emergency Steering Switch	Grey-1.0	X20M Rear Cab/Front TR	31	LTSF LTS Box	7
855_B	Fuel Heating Signal	Grey-1.0	XFHM Fuel Heating Signal	1	EF2B E Fuse Out 2	1
858_B	Combined Instrument PWR	White-1.0	X2C Combined Instrument	7	X2C Combined Instrument	3
858_C	Combined Instrument PWR	White-1.0	X5M Front Cab/INSTR CLUS	2	X2C Combined Instrument	3
858_D	Combined Instrument PWR	White-1.0	X15F Rear Cab/Front Cab	1	X5F Front Cab/INSTR CLUS	2
858_F	Combined Instrument PWR	White-1.0	X15M Rear Cab/Front Cab	1	XF2 Fuse Block Out	9
858_FA	Buzzer	White-1.0	XF2 Fuse Block Out	8	X14F Rear Cab/Front Cab	19
859_A	Pin Engage Return	Grey-1.0	X026F Pin Engage Solenoid	B	X20M Rear Cab/Front TR	26
859_B	Safety Valve Solenoid Signal	White-1.0	X12F Rear Cab/Side Cab	4	X20F Rear Cab/Front TR	26
859_C	Safety Valve Solenoid Signal	White-1.0	X12M Rear Cab/Side Cab	4	S11 Cut Off Switch	1
862_DF	Front Timer J Signal	White-1.0	X11W Wiper and Washer SW	4	X9W Front Wiper Timer	3
873_FW	Front Wiper Washer Fused PWR	White-1.0	X10W Front Wiper Motor	3	X9W Front Wiper Timer	6
875_A	Alternator 15	Grey-1.0	ALT Alternator	3	XDM Rear TR/Rear TR	14
875-F	Alternator 15	Grey-1.0	XDF Rear TR/Rear TR	14	EF5B E Fuse Out 5	1
876_A	Fan Reverse Signal	White-1.0	S14 Fan Reverse Switch	1	X12M Rear Cab/Side Cab	6
876_B	Fan Reverse SOL Signal	White-1.0	X12F Rear Cab/Side Cab	6	X22M Rear Cab/Rear TR	P
876_C	Fan Reverse Switch PWR	White-1.0	X22F Rear Cab/Rear TR	P	XDM Rear TR/Rear TR	15
876_E	Fan Reverse Switch Signal	Grey-1.0	XDF Rear TR/Rear TR	15	DM1 Diode Module	87A
876_F	Fan Reverse SOL	Grey-1.0	X015 Fan Reverse SOL	1	XDM Rear TR/Rear TR	9
876_H	Fan Reverse SOL Signal	Grey-1.0	XDF Rear TR/Rear TR	9	DM1 Diode Module	87A
879_C	Flasher +15	White-1.0	S1 Hazard Switch	8	X5M Front Cab/INSTR CLUS	5
879_D	Emergency Light Supply	White-1.0	S1 Hazard Switch	7	S1 Hazard Switch	8

Wire Identification Codes

21C RN - 1.0

Wire Size (mm^2)

0.8 mm	1.0 mm	2.0 mm	5.0 mm

Wire Color

N or SW= Black	BL or L= Blue	H = Grey	M = Brown	GN or V + Green
R or RT = Red	RN = Red /Black	B or WS = White	G or GE = Yellow	

Wire Name

Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size**	**Connector**	**Cavity**	**Connector**	**Cavity**
N_XM	Climate Relay Card GND	White-1.0	X2 GND Connector	12	X1 Climate Relay	1
N_XN	Climate Control Unit GND	White-1.0	X2 GND Connector	13	X19CL Climate Control Unit	12
N_XP	Blower Motor BND	White-1.5	X12B Blower	1	X2 GND Connector	14
N_XR	GND	White-1.0	A OPT Optional Connector	2	X2 GND Connector	15
RO	Push Button PO GND	Black-0.5	CN7 Display Push Buttons	4		
R	LCD Supply	White-1.0	SPL_LCDF_2 Display PWR		LCDF LCD Display	2
R1	Push Button P1 GND	Black-0.5	CN7 Display Push Buttons	2		
R2	Push Button P2 GND	Black-0.5	CN7 Display Push Buttons	8		
R3	Push Button P3 GND	Black-0.5	CN7 Display Push Buttons	6		
R153	Light Switch PWR	White-1.5	X8F Column	7	S6 Light Switch	2
R708	B+ Emergency Light	White-1.0	X15F Rear Cab/Front Cab	3	X5F Front Cab/INSTR CLUS	9
R923	High Beam 30 Relay	White-1.5	X33F Relay Card	6	XF4 Ruse Block Out	11
R924	Low Beam Relay	White-1.5	XF4 Fuse Block Out	10	X33F Relay Card	3
R153_C	Light Switch Signal	White-1.5	X15F Rear Cab/Front Cab	13	X8M Column	7
R441_A	Climate Light PWR	Grey-1.5	X11M Rear Cab/Roof	6	X5L Dome Light	1
R441_C	Supply	White-0.5	X19CL Climate Control Unit	16	X11M Rear Cab/Roof	6
RNA_R	Left Speaker Signal	Red/Blk-0.5	XR2 Radio	7	X10RF Radio Adaptor	1
RNB_R	Right Speaker Signal	Red/Blk-0.5	XR2 Radio	1	X10RF Radio Adaptor	3
RP	Right Speaker Signal	Red-0.75	X4 Right Speaker	1	X10Rm Radio Adaptor	1
RP_R	Radio Power	Red-1.0	XR1 Radio	7	X10RF Radio Adaptor	5
RT4	INT Speed Signal	Red-1.0	X10 INT Speed Sensor	1	X12F Cab/Transmission	Q
RXB_C	Serial Interface TX B	White-0.22	Brown Box Out	32	CN4F Brown Box Serial In	4
RXCA _A	SPI RX CK	Black-0.22	CN6 Display COM Interface	4	CN3M Brown Box Display	6
RXCA _B	Display	Black-0.22	CN2 Brown Box Out	37	CN3F Brown Box Display	6
RXCB _A	SPI RX CK	Blue-0.22	CN6 Display COM Interface	5	CN3M Brown Box Display	7
RXCB _B	SPI RX DATA	Blue-0.22	CN2 Brown Box Out	39	CN3F Brown Box Display	7
RXDA _A	SPI RX DATA	Red-0.22	CN3M Brown Box Display	2	CN6 Display COM Interface	2

4 – Alternator		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Between housing of alternator and ground	Continuity	Bad ground connection.
NOTE: *Put the master disconnect switch in the ON position.*		
Between the B+ terminal of alternator and ground	24 volts	Check circuit to positive post of left battery. Bad master disconnect switch.
Between terminal for wire 707_A and ground	24 volts	Bad wire 707_A.
NOTE: *Put the ignition switch in the ON position.*		
Terminal for wire 875_a to ground	24 volts	Check circuit 875_A. Bad fuse EF5. Check ignition switch (16).
NOTE: *If the readings are good repair or replace the alternator.*		

5 – Starter Motor		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Between housing of starter and ground	Continuity	Bad ground connection.
NOTE: *Put the master disconnect switch in the ON position.*		
Starter B+ stud to ground	24 volts	Check circuit to batteries.
NOTE: *Put the transmission in NEUTRAL. Have another person hold the ignition switch in the START position.*		
Terminal S to ground	24 volts	Bad starting relay (6). Also check circuit 888 between starter and starting relay (6).
NOTE: *If the readings are good, repair or replace the starter.*		

6 – Starting Relay		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Terminal for wire 000_S to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch in the ON position.*		
Terminal for wire 700_S to ground	24 volts	Check circuit to batteries.
NOTE: *Put the transmission in NEUTRAL. Have another person hold the ignition switch in the START position.*		
Terminal for wire 802_S to ground	24 volts	Check neutral start relay (15), also check circuit 802.
Terminal for wire 888_S to ground	24 volts	Bad starting relay.

51 – Fan Reversing Solenoid (Option)

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect wiring harness connector X015 from fan reversing solenoid.*		
Between pins 1and 2 of fan reversing solenoid	36 to 42 ohms	Bad fan reversing solenoid.
Pin 2 of wiring harness connector X015 to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch and the ignition switch in the ON position. Put fan reversing switch in ON position (hold rocker in momentary position).*		
Pin 1 of wiring harness connector X015 to ground	24 volts	Bad fan reversing switch. Also check circuit 876.

52 – Detent Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Put the master disconnect switch and the ignition switch in the ON position.*		
Terminal for wire 982_C to ground	24 volts	Check circuit 982.
NOTE: *Put the detent switch in the ON position.*		
Terminal for wire 980_B to ground	24 volts	Bad detent switch.

53 – Bucket Control Valve Electromagnetic Detents

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect the wiring harness connector from the control valve electromagnetic detents connector.*		
Electromagnetic detent connector, between pins A and B for Y9	65 to 71 ohms	Bad boom maximum lift detent electromagnet.
Electromagnetic detent connector, between pins A and B for Y10	65 to 71 ohms	Bad bucket control detent electromagnet.
Electromagnetic detent connector, between pins A and B for Y11	65 to 71 ohms	Bad boom floating control detent electromagnet.

54 – Boom Control Switch

Check Points	Reading	Possible Cause of Bad Reading
Terminal for wire 042 to ground	Continuity	Bad ground circuit.
NOTE: *Disconnect the wiring harness connector from the boom control switch. Put the boom control switch in the on position.*		
Between switch terminals A and C	Continuity	Bad boom control switch.
NOTE: *Put the master disconnect switch and ignition switch in ON position.*		
Pin C of connector PX2 to ground	24 volts	Bad fuse F3C. Also check circuit 995.

88 – A/C Compressor Clutch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Put master disconnect switch and ignition switch in ON position. Put blower switch to HIGH and thermostat switch to COLD, place A/C switch in ON position.*		
Terminals for wire 890_CL to ground	24 volts	Check the compressor clutch relay (87), also check circuit 890.
NOTE: *If all readings are correct, replace A/C compressor clutch.*		

89 – A/C Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Put master disconnect switch and ignition switch in ON position. Put blower switch to HIGH and place A/C switch in ON position.*		
Terminals for wire 784 to ground	24 volts	Bad blower switch (82), also check wire 784.
Terminals for wire 827 to ground	24 volts	Bad A/C switch.

90 – Cab Heater Control Unit

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Put the master disconnect switch in the ON position and the ignition switch in the ON position.*		
Terminal for wire 809_C to ground.	24 volts	Bad fuse F6A.
Terminal for wire N_CT to ground.	Continuity	Bad ground circuit.
NOTE: *If all tests are good, replace heater control unit.*		

91 – Heater Circuit Control Switch (Option)

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Put master disconnect switch and ignition switch in ON position. Put thermostat knob in high heat position.*		
Terminals for wire 712_A to ground	24 volts	Bad heater control unit (90), also check wire 712.
NOTE: *Place circuit control switch in on position.*		
Terminals for wire 713_B to ground	24 volts	Bad control switch.

118 – Front Work Lamp Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Put master disconnect switch in ON position and ignition switch in the ON position.*		
Terminal for wire 167_A to ground	24 volts	Check fuse F5C, also check circuit 167.
NOTE: *Turn front work lamp switch to the ON position.*		
Terminal for wire 229_A to ground	24 volts	Bad front work lamp switch

119 – LH Front Work Lamp

Check Points	Reading	Possible Cause of Bad Reading
Lamp connector pin X8L to pin X8LA	Continuity	Bad lamp bulb.
Terminal for wire N_XD to ground	Continuity	Bad ground circuit.
NOTE: *Put master disconnect switch in ON position. Put front work lamp switch (118) in the ON position.*		
Terminal for wire 229_E to ground	24 volts	Check fuse F5C and front work lamp switch (118).

120 – RH Front Work Lamp

Check Points	Reading	Possible Cause of Bad Reading
Lamp connector pin X6L to pin X6LA	Continuity	Bad lamp bulb.
Terminal for wire N_XF to ground	Continuity	Bad ground circuit.
NOTE: *Put master disconnect switch in ON position. Put front work lamp switch (118) in the ON position.*		
Terminal for wire 229_D to ground	24 volts	Check fuse F5C and front work lamp switch (118).

121 – Main Lamp Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Put the master disconnect switch in the ON position and ignition switch in the ON position.*		
Terminal for wire 149_A to ground	24 volts	Check fuse F1C.
Terminal for wire R153 to ground	24 volts	Check fuse F12B.
NOTE: *Put the main lamp switch in the ON position.*		
Terminal for wire 118_A to ground	24 volts	Bad main lamp switch.
Terminal for wire 166_A to ground	24 volts	Bad five position rotary lamp switch.

CONNECTOR S4 - REAR WASHER SWITCH

CAV	WIRE IDENT	CIRCUIT
1	889_B	Rear Wiper Signal
5	886_B	Switch Timed Power
5	886_C	Switch Timed Power
9	886_B	Backlight
10	N_EF	GND
10	N_EG	GND

CONNECTOR S5 - BEACON SWITCH

CAV	WIRE IDENT	CIRCUIT
1	110_B	Switch Beacon Supply
1	110_C	Switch Beacon Supply
2	110_C	Switch Beacon Supply
5	121_A	F Beacon Power
5	121_B	F Beacon Power
6	121_d	R Beacon Power
9	121_A	Switch Backlight
10	N_EG	GND

CONNECTOR S6 - LIGHT SWITCH

CAV	WIRE IDENT	CIRCUIT
1	118_A	D-F Switch Supply
2	R153	Light Switch Power
3	149_A	Light Switch Accessory Power
6	166_A	Light Fuse Supply
6	166_B	Light Fuse Supply
9	166_B	Backlight
9	166_D	Backlight
10	N_EC	GND
10	N_ED	GND

CONNECTOR S7 - FRONT WORK LIGHT SWITCH

CAV	WIRE IDENT	CIRCUIT
1	167_A	Front Work Light Signal
5	229_A	Switch Power
5	229_B	Switch Power
9	229_B	Backlight
10	N_EB	GND
10	N_EC	GND

CONNECTOR S8 - REAR WORK LIGHT SWITCH

CAV	WIRE IDENT	CIRCUIT
1	168_B	Rear Work Light Signal
5	225_A	Switch Power
5	225_B	Switch Power
9	225_B	Backlight
10	N_EA	GND
10	N_EB	GND

CONNECTOR S9 - LIGHT SWITCH

CAV	WIRE IDENT	CIRCUIT
1	N_JE	Light Switch Signal
2	955_B	Light Switch Power
3	953_A	GND
4	169_FC	Lights Power
4	169_FD	Lights Power
5	N_JC	GND
5	N_JE	GND
6	956_C	Light Switch Signal
9	921_E	Backlight
9	921_FB	Backlight
10	N_H	GND
10	N_JA	GND

CONNECTOR S10 - DETENT SWITCH

CAV	WIRE IDENT	CIRCUIT
1	980_B	Boom Proximity Switch Out
3	982_C	Boom Proximity Switch Out
5	N_GL	GND
5	N_H	GND
9	921_E	Backlight
9	921_GN	Backlight
10	N_GL	GND
10	N_GN	GND

CONNECTOR X14V - MOTOR VALVE

CAV	WIRE IDENT	CIRCUIT
4	CLIMATE 13	GND
6	CLIMATRE 02	Water Valve Signal

CONNECTOR X14W - WARM/COLD MOTOR

CAV	WIRE IDENT	CIRCUIT
1	717	Stop Cock Position 1
2	716	Stop Cock Position 2
3	718	Stop Cock Position 3
4	720	Stop Cock Position 4
6	721	Stop Cock Position 6

CONNECTOR X015 - FAN REVERSE SOLENOID

CAV	WIRE IDENT	CIRCUIT
1	876_F	Fan Reverse Solenoid
2	000_CGA	GND

CONNECTOR X15F - REAR CAB/FRONT CAB

CAV	WIRE IDENT	CIRCUIT
1	858_D	Combined Instrument Cluster
2	450_D	Instrument Lighting
3	R708	B+ Emergency Light
4	879_G	Hazard Switch Power
5	880_A	Front Wiper Fused Power
5	880_DF	Front Wiper Fused Power
6	112_D	Flasher Switch Power
7	ZF45_M	Transmission Control Power
8	587	Park Brake Switch Power
9	889_A	Rear Wiper Fused Power
9	889_D	Rear Wiper Fused Power
10	110_A	Rotary Beacon Switch Power
11	149_C	Light Switch Signal
12	166_C	Light Switch Signal
13	R153_C	Light Switch Signal
14	167_C	Front Work Light Signal
15	168_C	Rear Work Light Signal
16	115_D	High Beam Signal
17	951_A	LCD Power
18	921_J	Park Brake Switch Lighting
18	921_K	Park Brake Switch Lighting

CONNECTOR X15M - REAR CAB/FRONT CAB

CAV	WIRE IDENT	CIRCUIT
1	858_F	Combined Instrument Cluster
2	450_F	Instrument Lighting
3	708_FA	B+ Emergency Light
4	879_F	Hazard Switch Power
5	880_F	Front Wiper Fused Power
6	112_F	Flasher Switch Power
7	ZF45_FE	Transmission Control Power
8	587_F	Park Brake Switch Power
9	889_F	Rear Wiper Fused Power
10	110_F	Rotary Beacon Switch Power
11	149_F	Light Switch Signal
12	166_FA	Light Switch Signal
13	153_FA	Light Switch Signal
14	167_F	Front Work Light Signal
15	168_F	Rear Work Light Signal
16	115_E	High Beam Signal
17	951_F	LCD Power
18	921_F	Park Brake Switch Lighting

CONNECTOR X16 - FILTERS MAINTENANCE PRSW

CAV	WIRE IDENT	CIRCUIT
A	480	Filter Maintenance Signal
B	484	Filter Maintenance Return

CONNECTOR XR2 - RADIO

CAV	WIRE IDENT	CIRCUIT
1	RNB_R	Right Speaker Signal
2	NB_R	Right Speaker Ground
7	RNA_R	Left Speaker Signal
8	NA_R	Left Speaker Ground

CONNECTOR XT - ENGINE TEMPERAUTRE UNIT

CAV	WIRE IDENT	CIRCUIT
A	552_B	Engine Temperature Signal
B	528_B	Engine High temperature Signal

CONNECTOR XT1 - FILTERS HEATER THERMAL SWITCH

CAV	WIRE IDENT	CIRCUIT
A	000_CHD	GND
B	894_HC	Fuel Heater Power

CONNECTOR XTLF - LEFT HAND FRON T TURN LIGHT

CAV	WIRE IDENT	CIRCUIT
A	000_F	GND
B	109_F	Turn Light Power

CONNECTOR XTLM - LEFT HAND FRON T TURN LIGHT

CAV	WIRE IDENT	CIRCUIT
A	000_CCC	GND
B	109_E	Turn Light Power

CONNECTOR XTRF - RIGHT HAND FRON T TURN LIGHT

CAV	WIRE IDENT	CIRCUIT
A	000_G	GND
B	103_F	Turn Light Power

CONNECTOR XTRM - RIGHT HAND FRON T TURN LIGHT

CAV	WIRE IDENT	CIRCUIT
A	000_CCD	GND
B	103_E	Turn Light Power

CONNECTOR Y12F - DIODE

CAV	WIRE IDENT	CIRCUIT
1	171_J	Y10 Bucket Detent Signal
2	171_B	GND
3	981_A	Y11 Boom Max Lift Signal
4	N_JF	GND
5	982_E	Y9 Boom Float Signal
6	171_H	GND

SAFETY RULES

WARNING: *Never try to charge the battery if the electrolyte in the battery is frozen.*

47-83A

WARNING: *Never cause sparks to occur or smoke near batteries that are charging or have been recently charged.*

13-8A

WARNING: *Disconnect the ground cable first when the battery cables are disconnected from the battery.*

Connect the ground cable last when the battery cables are connected to the battery.

47-55A

WARNING: *Some batteries have a ventilation tube. If there is battery acid in the ventilation tube, this battery acid can be released when the battery is turned upside down. If you turn the battery upside down, make sure that the end of the ventilation tube is away from you and away from any other people in the area. Battery acid can cause severe burns.*

48-57B

WARNING: *Battery acid causes severe burns. Batteries contain sulfuric acid. Avoid contact with skin, eyes, or clothing. Antidote: EXTERNAL-Flush with water. INTERNAL-Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately. Eyes: Flush with water for 15 minutes and get prompt medical attention.*

Batteries produce explosive gases. Keep sparks, flame, and cigarettes away. Ventilate when charging or using in enclosed area. Always shield eyes when working near batteries.

Keep out of reach of children.

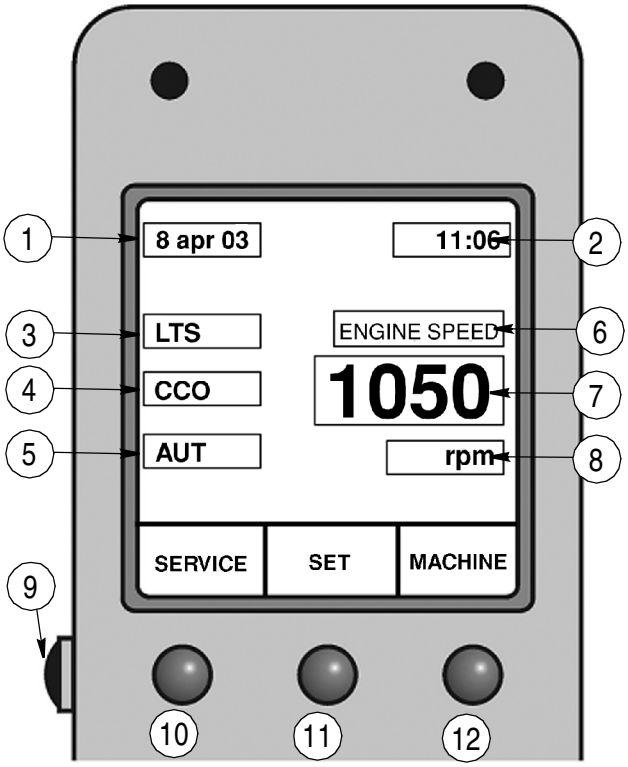
D-47-53A

SPECIAL TOOLS

B795328

The CAS10147 tester is used to do the Capacity (Load) Test. This tool is first used on Page 6.

DIGITAL DISPLAY



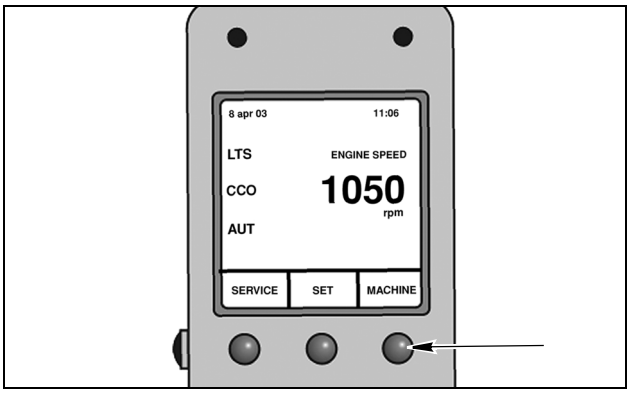
BC03H181

1. CURRENT DATE
2. CURRENT HOUR
3. LTS ENGAGED
4. TRANSMISSION CUTOFF
5. TRANSMISSION MODE
6. PARAMETER VISIBLE
7. VALUE OF PARAMETER
8. UNIT OF MEASURE
9. P0 SET-UP
10. P1 HOME/SERVICE
11. P2 SELECTION/ENTER
12. P3 MENU

1. Current date can be set up by entering through the menu “SET” button 11.
2. Current time can be set up by entering through the menu “SET” button 11.
3. LTS indicator engaged is shown when the system is activated.
4. Transmission cut off engaged indicator is shown when the function is selected.
5. Transmission use mode, automatic or manual.
6. Shows parameter being measured.
7. Value of the parameter shown.
8. Unit of measure of the parameter.
9. To be used with button number 11 for initial set of of the machine.
10. To be used to perform the efficiency tests on the parking brake, emergency steering, and the calibration of the transmission clutch packs.
11. Used to enter the setting utilities of the monitor.
12. Provides entry into submenus for the engine, transmission, brake, and electrical systems.

Engine

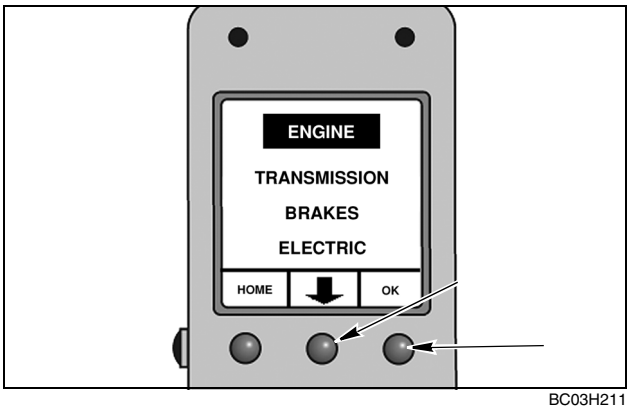
STEP 1



BC03H182

Press button P3 to enter menu.

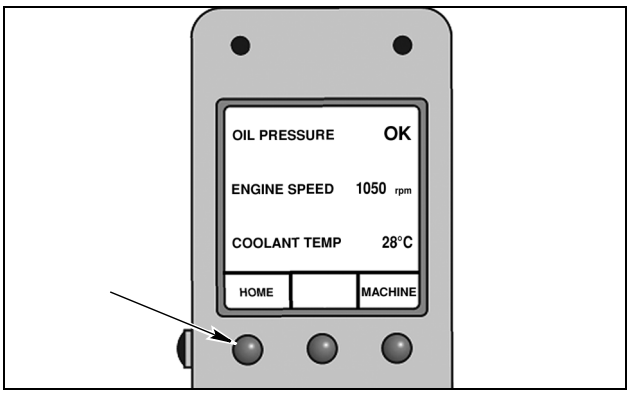
STEP 2



BC03H211

Select engine by pressing button P2, confirm the selection by pressing button P3.

STEP 3

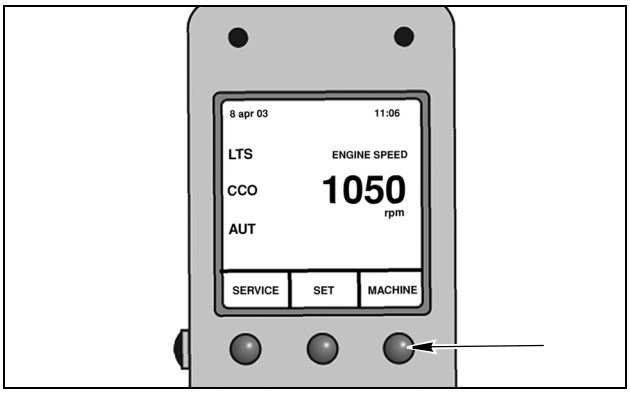


BC03H212

Return to home page by pressing button P1.

Transmission

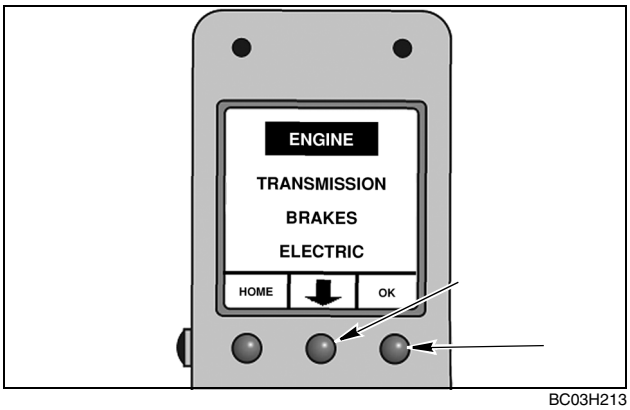
STEP 1



BC03H182

Press button P3 to enter menu.

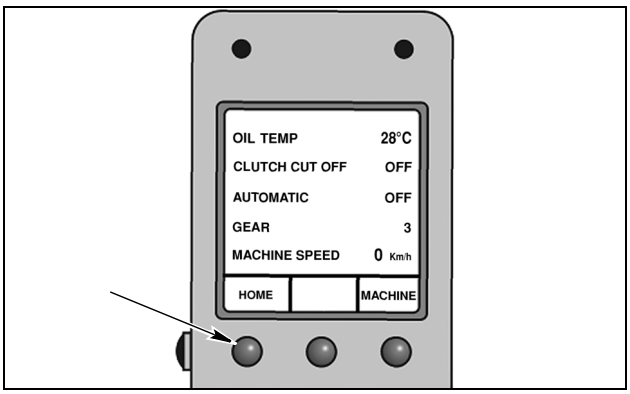
STEP 2



BC03H213

Select transmission by pressing button P2, confirm the selection by pressing button P3.

STEP 3



BC03H214

Return to home page by pressing button P1.

NOTES

5002

Section
5002

STEERING SPECIFICATIONS, PRESSURE CHECKS, AND TROUBLESHOOTING

NEW HOLLAND CONSTRUCTION, LLC.
245 E NORTH AVENUE
CAROL STREAM, IL 60188 U.S.A.

Bur 6-73200

Section
5003

5003

STEERING CONTROL VALVE

NEW HOLLAND CONSTRUCTION, LLC.
245 E NORTH AVENUE
CAROL STREAM, IL 60188 U.S.A.

Bur 6-73210

STEERING PRIORITY VALVE

Disassembly

STEP 1

Put the steering priority valve in a soft jawed vise.

STEP 2

Remove adapter (1). Remove and discard O-ring (2) from adapter.

STEP 3

Remove relief valve (3). Remove and discard O-ring (4) from relief valve.

STEP 4

Remove plug (5). Remove and discard O-ring (6) from plug.

STEP 5

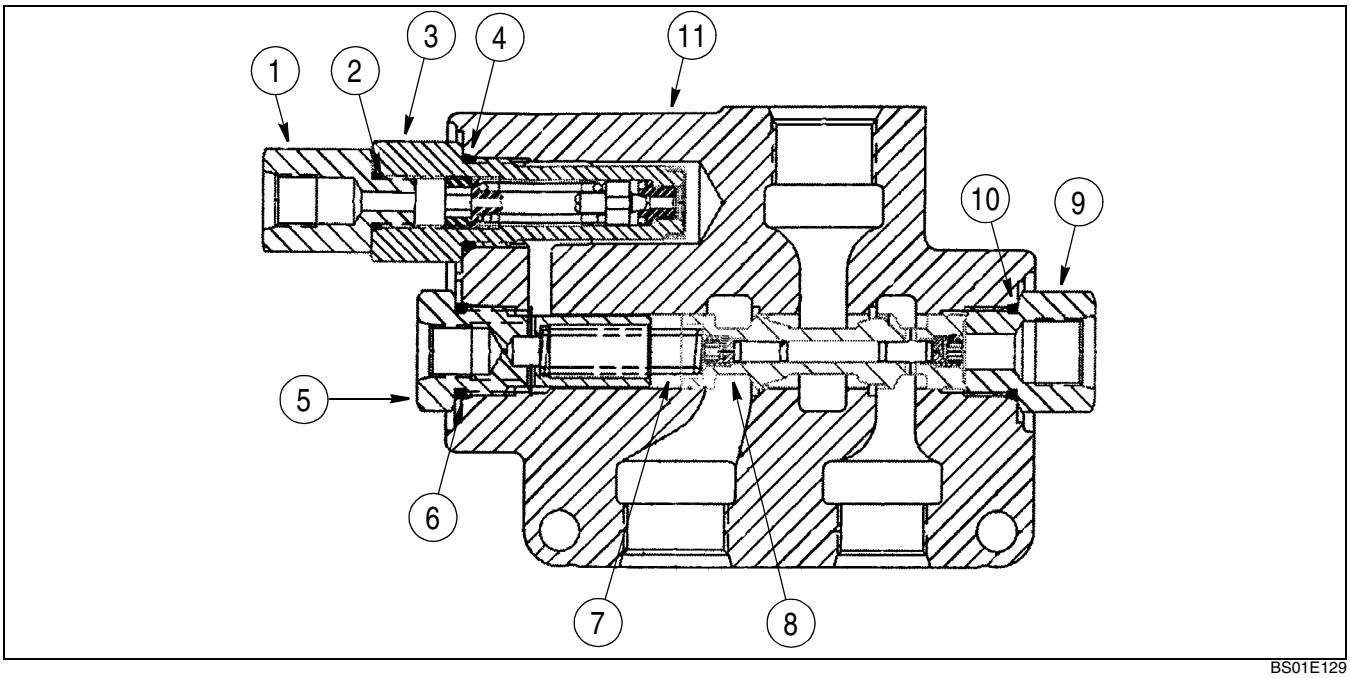
Remove spring (7).

STEP 6

Remove spool (8).

STEP 7

Remove plug (9). Remove and discard O-ring (10) from plug.



BS01E129

1. ADAPTER
2. O-RING
3. RELIEF VALVE
4. O-RING
5. PLUG
6. O-RING
7. SPRING
8. SPOOL
9. PLUG
10. O-RING
11. HOUSING

SPECIFICATIONS

SPECIAL TORQUES

M16 bolt for upper pivot pin	220 to 250 Nm (162 to 184 pound-feet)
M12 bolts for the lower pin plate	124 Nm (91 pound-feet)
M12 bolts screws for the lower pin plate	128 to 136 Nm (94 to 100 pound-feet)
Ferry head screws for the drive shaft	61 to 81 Nm (45 to 60 pound-feet)

LUBRICANT

Pivot bearings and seals	Molydisulfide grease
Steering cylinder rod eyes	Molydisulfide grease

FLUIDS

Hydraulic system reservoir	MS-1209, Hy-Tran® Ultra

SPECIAL TOOLS

CAS10219	Hand pump (hydraulic ram)
CAS10512	10 ton ram (long)
CAS10592	Puller set, includes 24827 leg ends
CAS10600	Bearing cup and seal puller, includes 24850 adapter
CAS10193	Vacuum pump (12 volt)
CAS1960	*Top bearing driver, bottom bearing driver and plate * (Requires screw, two nuts, and two washers from CAS10592)

SPECIFICATIONS

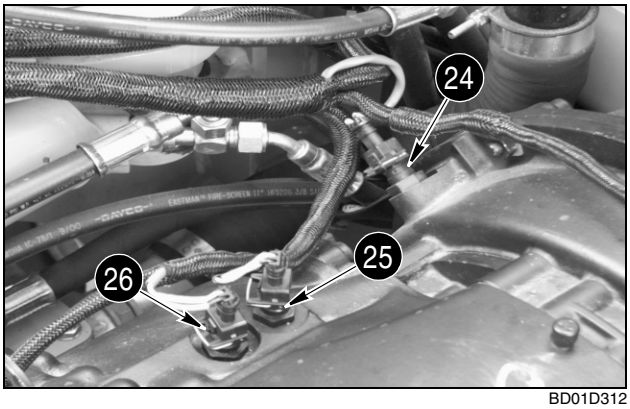
Auxiliary steering motor

Maximum amperes	30 amperes
Minimum armature speed	6950 r/min (rpm)
Motor	24 volts

Auxiliary steering pump

Minimum flow	24.6 L/min at 104 bar at 315 amperes (6.5 U.S. gpm at 1500 psi at 315 amperes)

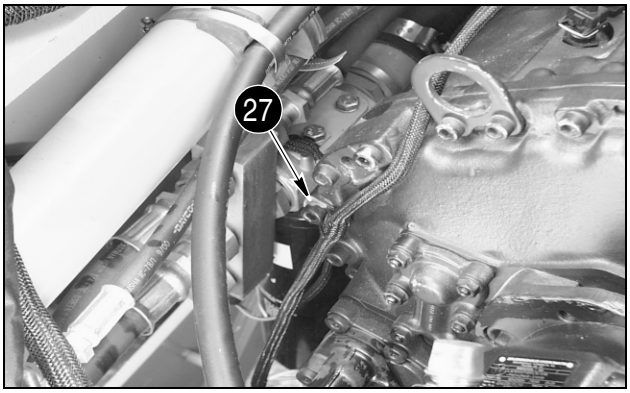
STEP 11



BD01D312

Identify, tag, and disconnect transmission wiring harness connectors from engine speed sensor (24), intermediate speed sensor (25), and turbine speed sensor (26). Move transmission wiring harness away from transmission.

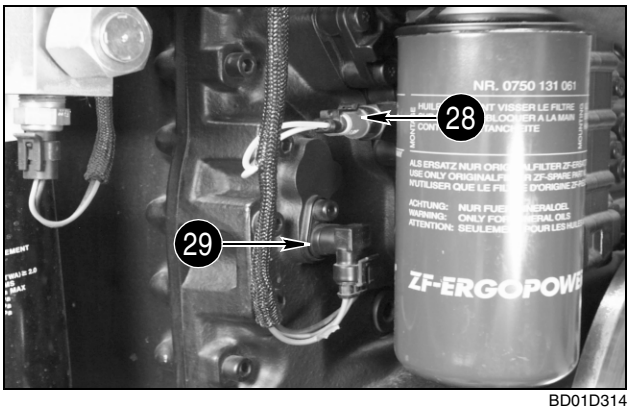
STEP 12



BD01D316

Remove socket head bolt securing wiring harness clamp (27). Move wiring harness away from transmission.

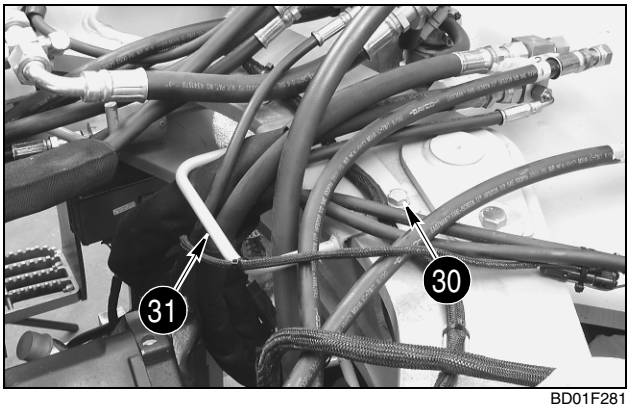
STEP 13



BD01D314

Identify, tag, and disconnect transmission wiring harness connectors from filter maintenance switch (28) and output speed sensor (29). Move transmission wiring harness away from transmission.

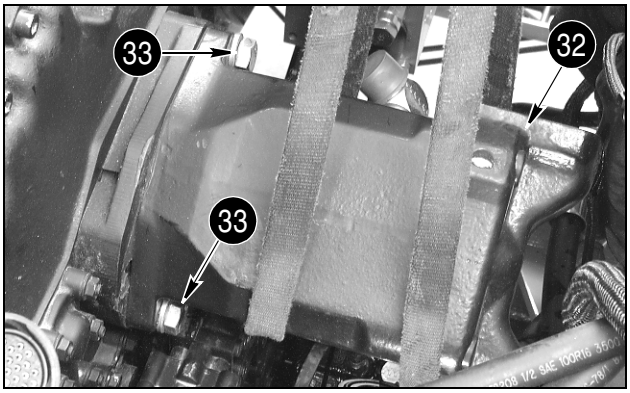
STEP 14



BD01F281

Remove two bolts (30) and washers securing hose retainer (31) to front of rear chassis. Move hose retainer towards front of machine.

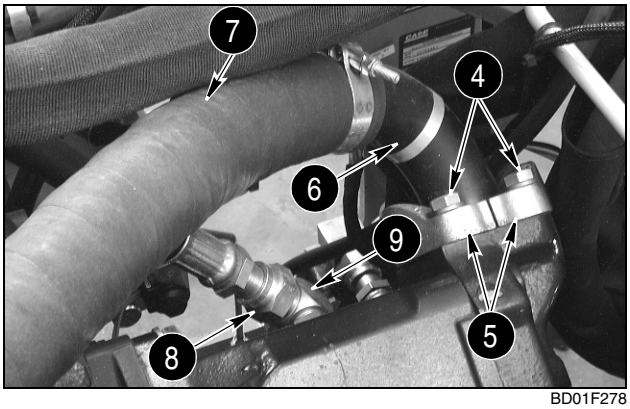
STEP 15



BD01F286

Connect lifting equipment to hydraulic pump (32). Take up all slack in lifting equipment. Remove two bolts (33) and washers securing pump to transmission. Pull hydraulic pump from transmission and remove from loader. Remove and discard O-ring from pump.

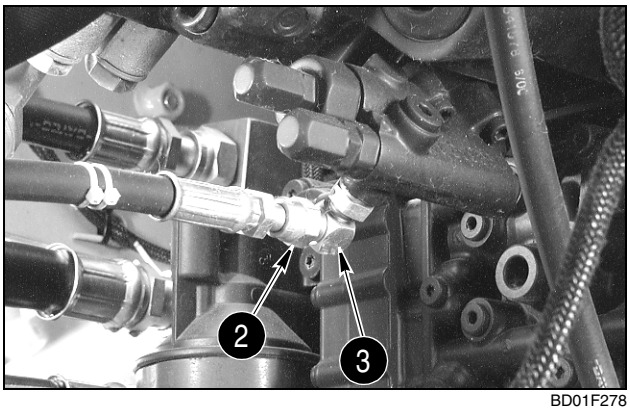
STEP 56



BD01F278

At hydraulic pump, remove plug from hose (8), tube assembly (6), and pump port and cap from fitting (9). Install new O-ring face seal in fitting (9). Connect pump case drain hose (8) to fitting (9) following tag installed during removal. Install new O-ring face seal in flange head of tube assembly (6). Position tube assembly (6) with hose (7) on hydraulic pump port. Install two split flanges (5) and secure using four washers and bolts (4).

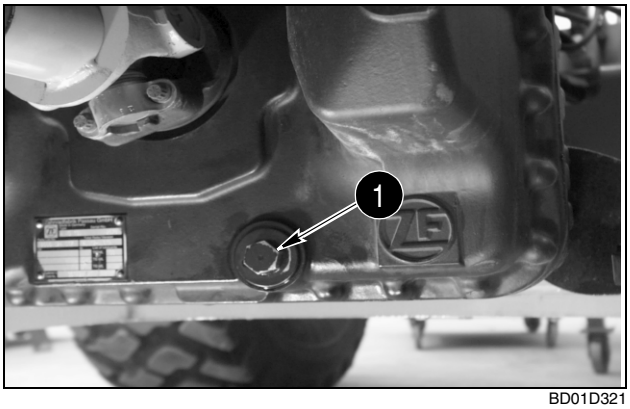
STEP 57



BD01F278

Remove cap from fitting (3) and plug from hose (2). Instal a new O-ring face seal on fitting (3). Connect hose to fitting following tag installed during removal. Remove and discard tag from hose.

STEP 58



BD01D321

Check that transmission drain plug (1) is tight.

STEP 59

BS00M474A

Fill transmission with oil until level is up to the arrow, see section 1002 for specifications.

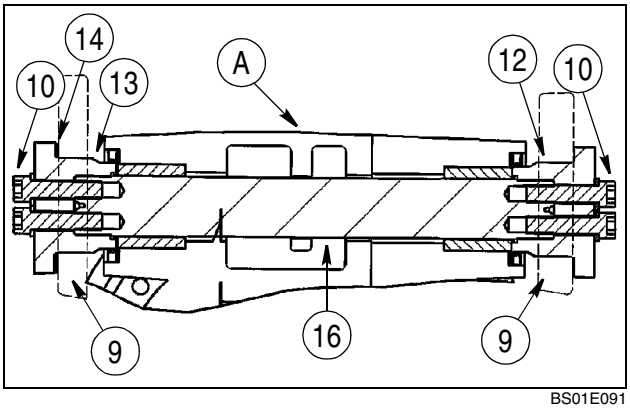
STEP 60

Refer to Section 9007 and install ROPS cab or ROPS canopy.

STEP 61

Start and run engine at idle speed with transmission in neutral. If transmission oil level is at or below bottom of crosshatch region, put articulation lock in LOCKED position and add oil until oil level is up to crosshatch region. Shut down engine and put articulation lock in OPERATING position.

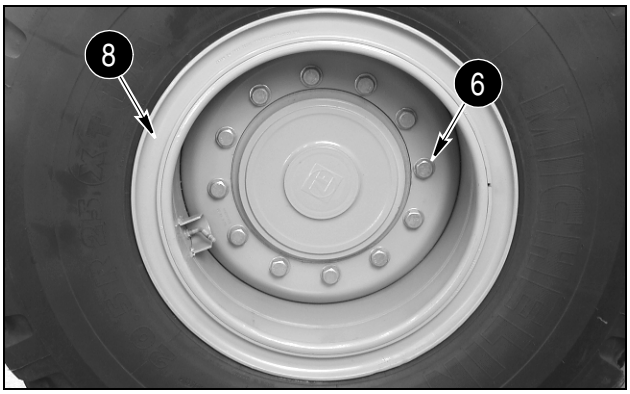
STEP 102



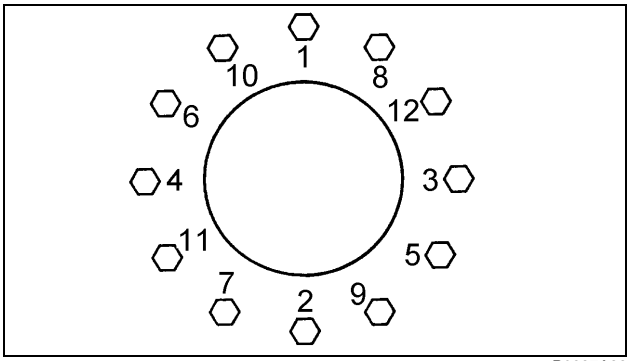
BS01E091

Lubricate pivot pin (16) using Molydisulfide Grease. At rear of trunnion (9), install pivot pin into trunnion and axle (A). Install shim pack (14), rear cap (13) with O-ring installed, and two washers and bolts (10). At front of trunnion install front cap (12) with O-ring installed, and two washers and bolts (10). Tighten bolts (10) to a torque of 251 to 280 Nm (185 to 205 lb-ft).

STEP 103



BD01F295



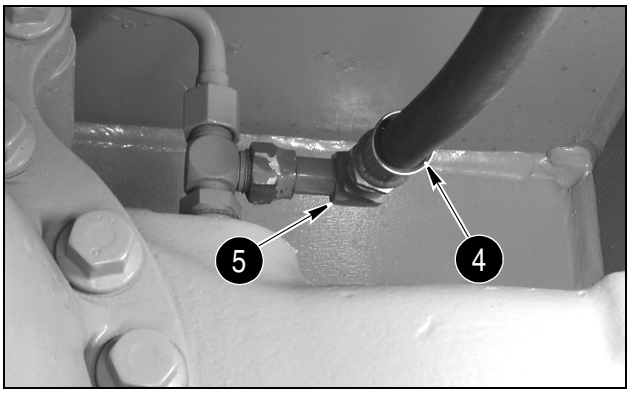
B0987A88

Install both wheels (8) on front axle and secure using 12 washers and bolts (6). Tighten bolts to a preliminary torque of 203 Nm (150 lb-ft) in sequence indicated; then tighten to a torque of 640 to 720 Nm (475 to 530 lb-ft) in same sequence.

STEP 104

Remove hydraulic jack supporting rear axle and jack stands supporting loader.

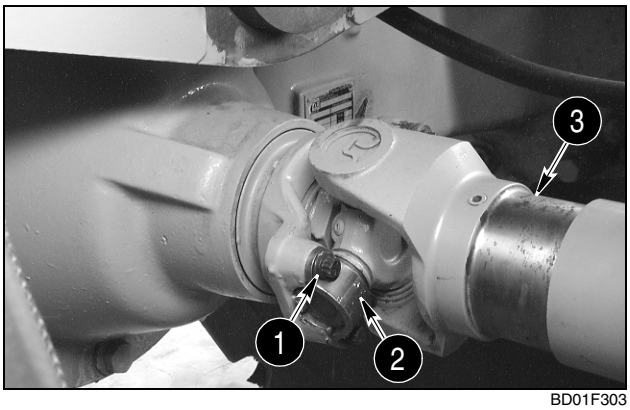
STEP 105



BD01F301

Install a new O-ring face seal in elbow (5). Connect brake hose (4) to elbow.

STEP 106



BD01F303

Connect rear drive shaft (3) to rear axle. Install two straps (2) and four bolts (1). Tighten bolts to a torque of 61 to 81 Nm (45 to 60 lb-ft).

STEP 107

If necessary, fill axle with gear lubricant specified in Section 1002.

STEP 108

Refer to Section 7002 and bleed brakes.

STEP 109

Put articulation lock in OPERATING position.

TRANSMISSION OPERATION

General

The transmissions is equipped with a Transmission ECM (Electronic Control Module). This module controls modulation and shifting that were normally associated with hydraulically modulated transmissions, providing smoother shifts and enhanced clutch life.

The Transmission ECM relies on signals from several solenoids that are incorporated into the design. These solenoids measure the speed of several components, as well as other sensors that measure temperature. These solenoids and sensors are further defined in the following paragraphs.

In addition, the transmission incorporates a two-piece transmission case for ease of transmission maintenance, helical cut gears that help reduce noise, and all external hoses have been eliminated (all oil passages are internal).

Transmission ECM

Modulation and shifting are controlled by the Transmission Electronic Control Module (Transmission ECM). This module replaces the oil and springs that are found in hydraulically modulated transmissions.

The Transmission ECM controls the clutch engagement, providing smoother shifts and enhanced clutch life, whether the transmission is set to the automatic or manual shift mode.

The Transmission ECM also informs the Information Center, by the use of diagnostic codes, of any transmission error and the hours of operation that the error occurred.

Electrical Shift Solenoids

Electrical Shift Solenoids control the modulation of the clutches, eliminating the need for a modulation valve, and providing a smooth shift while maintaining constant control over clutch engagement as follows:

A. A temperature sensor relays the oil temperature to the Transmission ECM.

B. The Transmission ECM times the rate the solenoid energizes and de-energizes.

C. As the transmission changes gears, there is reduced hesitation from one gear to the next.

Transmission ECM Tasks

The Transmission ECM performs a variety of tasks in the overall system. The Transmission ECM:

A. Determines which clutches to engage in the transmission.

B. Protects the engine and transmission turbine from overspeed conditions during downloading.

C. Receives speed information from the engine speed sensor, the turbine speed sensor, the intermediate clutch speed sensor and the transmission output speed sensor. These speed sensors are checked to determine if normal sensor operation is present. The data is also used to control modulation during shifting and to determine the appropriate shift patterns.

D. Detects system failures and determines the appropriate alternative actions.

E. Provides various diagnostic messages to the Information Center.

F. Provides other information to the information center, which in turn displays engine speed, wheel speed, gear shift selection, and actual gear selection.

G. Provides a method to calibrate the transmission clutch control.

H. Establishes clutch modulation pressure during transmission shifts.

Transmission Sensor Data Collection.

The Transmission ECM collects and uses information from four sensors to accurately shift the transmission and determine if any clutches are slipping. These sensors are:

Engine (Speed) Sensor - monitors engine speed to determine the load on the engine for shift points and sends the engine rpm to the Transmission ECM, which sends the information to the tachometer in the Information Center.

Turbine (Speed) Sensor - assists the engine speed sensor in determining the load going into the transmission and helps determine shift points.

Intermediate (Shaft Speed) Sensor - determines differential gear speed in the transmission to check for clutch slippage.

Output (Speed) Sensor - monitors transmission output shaft speed to help determine the load on the transmission and to assist in determining shift points. Sends output shaft speed to Transmission ECM which sends the information to the speedometer in the Information Center.

TRANSMISSION OVERHEATING

1. Operate machine in normal operating conditions and observe:
   A. Verify actual oil temperature at test point. Normal operating temperature can be 56°C (100°F) above the ambient temperatures.
   B. Use a stop watch to establish the exact length of time required to reach the overheating condition.
   C. Observe engine temperature, does the engine overheat? Which overheats first - engine or transmission?
2. When the transmission reaches overheated condition, shift to Neutral and maintain engine RPM at a fast idle (1250 to 1450 RPM).
   A. Oil temperature returns to Normal - establish length of time.
      1. Check oil level, type and grade is correct (See Section 1002).
      2. Check operator's gear selection is correct for conditions.
      3. Make sure brakes are fully released.
      4. Check the engine full throttle and stall speeds are correct as specified (See Section 2002).
   B. Oil temperature remains overheated.
      1. Check for dirty radiator - airflow restricted.
      2. Check for engine overheating problem.
      3. Check for faulty oil temperature gauge and sender or switch (See Section 4002).
3. Perform all the pressure and flow tests.
4. Compare the pressure and flow test results to the specifications in this section to determine if any circuits are not within specifications.
5. Refer to Pressure Test Results to determine possible cause of any test results not within specifications.

TRANSMISSION SHIFTER LOGIC INFORMATION

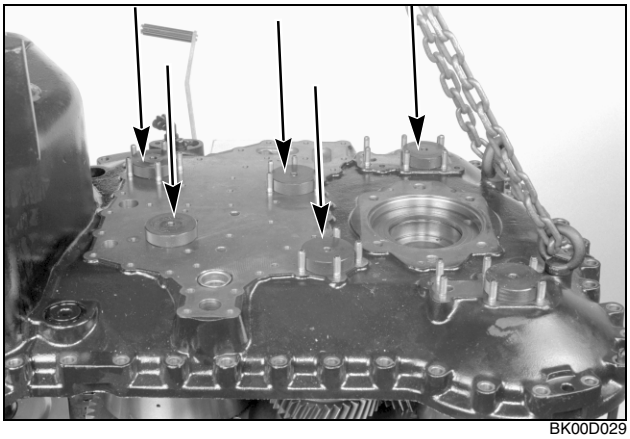
Function	Shifter	Shifter Wire Color	Shifter X6 Connector	Shifter X7 Connector	Harness Wire #	Connector/ pin #	Trans. ECM #
power	B+	red/black	-	A	ZF45_M	X15/7	45
forward	V	yellow	-	B	ZF43_M	X16/15	43
reverse	R	pink	-	C	ZF64_M	X16/16	64
neutral	N	gray	-	D	ZF67_M	X16/17	67
gear2(3-4)	B2	green	B	-	ZF65_M	X16/13	65
gear1(1-2)	B1	blue	C	-	ZF63_M	X16/14	63
horn	H	purple	D	-	595_M	X16/11	

NOTE: *Power is supplied through the fuse F6C to the transmission shifter via ZF45_M wire. This is 24 Volt. Within the shifter are limit switches to transfer the signal voltages to the outputs. In forward V is high. In reverse R is high. In neutral N is high. In first gear, B1 is high and B2 is low. In second gear, B1 and B2 are low. In third gear, B1 is low and B2 is high. In fourth gear, B1 and B2 are high.*

RELATIONSHIP BETWEEN TRANSMISSION ECM, VALVES, AND CLUTCHES

ECM Function	X19 Pin #	ZF Wire # at ECM	X21 Pin #	X21F to X12 Wire #	X12 Pin #	Transmission Valve	Clutch #
A1P1	56	56	A	430	1	Y1	K4
A1P2	10	10	B	434	2	Y2	KR
A1P3	32	32	C	438	3	Y3	K1
A1P4	55	55	D	442	4	Y4	K3
A1P5	9	9	E	446	5	Y5	KV
A1P6	51	51	F	450	6	Y6	K2
VPSI	12,13	12,12_A	G	454	7	all Y	all K
TEMP	39	39	J	458	8	TEMP	none
TEMP	46	46	L	462	9	TEMP	none

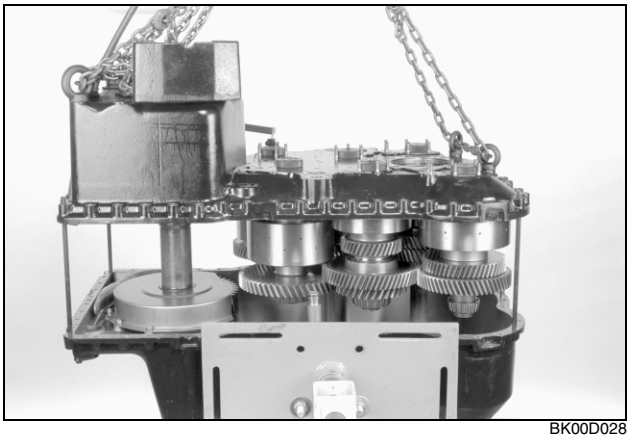
STEP 27



BK00D029

Install CAS2800 clutch assembly holding knob set. With knobs installed on all clutches in housing cover, install CAS2797 lifting eyebolt set and lifting device to transmission cover.

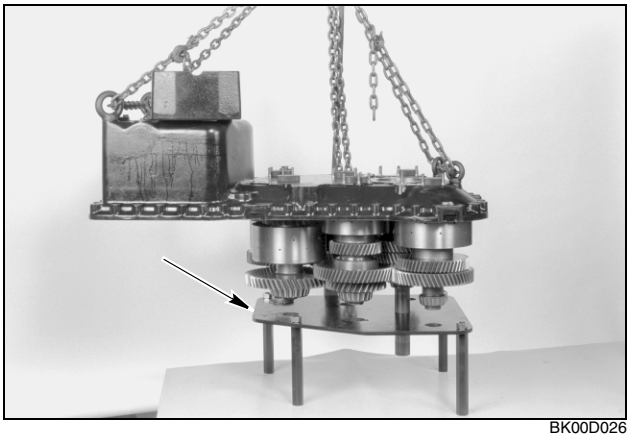
STEP 28



BK00D028

Separate the cover along with clutches from the transmission housing, using lifting device.

STEP 29



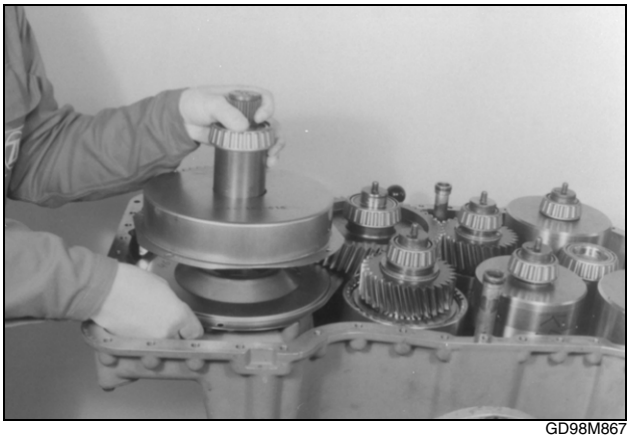
BK00D026

Place clutch disc carriers onto CAS2796 nesting plate.

STEP 30

Remove CAS2800 clutch assembly holding knob set and lift cover free.

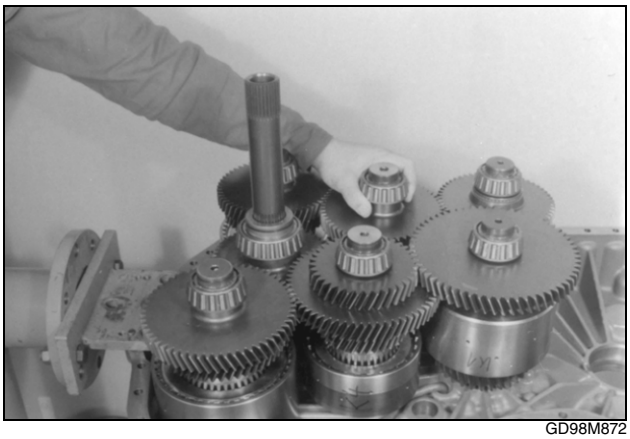
STEP 31



GD98M867

Remove the socket head screws and remove the output shaft and both oil baffle plates.

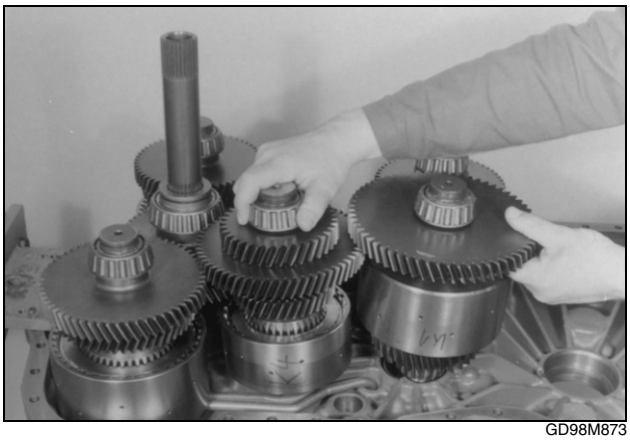
STEP 32



GD98M872

Remove clutch K2.

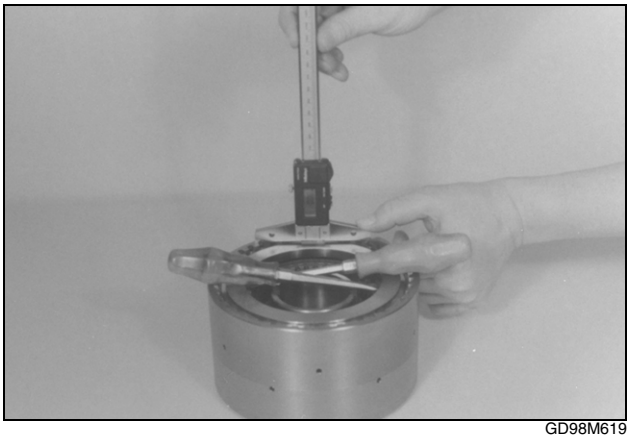
STEP 33



GD98M873

Remove clutch K1 while lifting clutch K4.

STEP 81



GD98M619

Use tools to lift the end shim against snap ring (upward) until contact is obtained. Measure and record dimension (B) from carrier face to end shim using depth gauge as shown. Subtract this measurement from the measurement of Step 80. The difference is the running clearance.

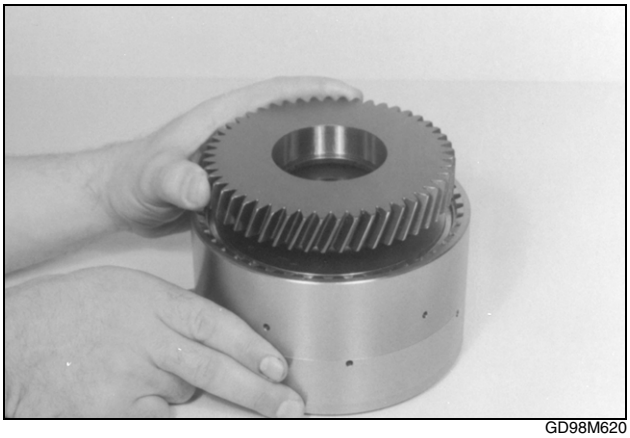
Example
Dimension A . . . . . 7.25 mm (0.29 in)
Dimension B . . . . . 4.75 mm (0.19 in)
Difference = Running Clearance . . . . . 2.50 mm (0.10 in)

Required running clearance is 2.5 to 2.7 mm (0.098 to 0.106 in). Use snap ring(s) of different thickness as necessary to obtain correct running clearance.

STEP 82

Remove clutch disc pack, apply oil to discs, and install clutch disc pack, end shim, and snap ring as determined in Step 81.

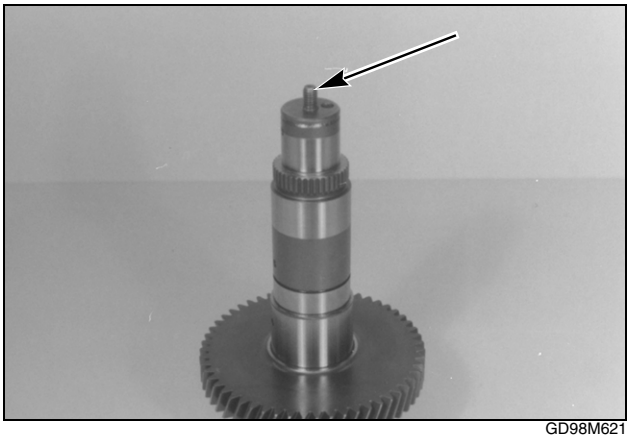
STEP 83



GD98M620

Install idler gear to align and engage all inner discs, then remove idler gear.

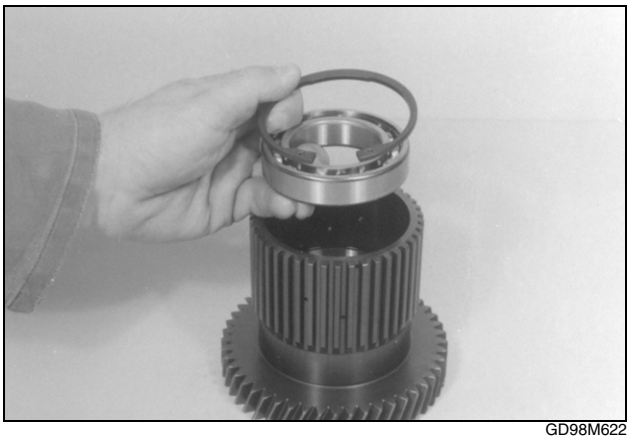
STEP 84



GD98M621

Apply Loctite 243 to stud. Tighten stud to a torque of 17 Nm (150 lb-in).

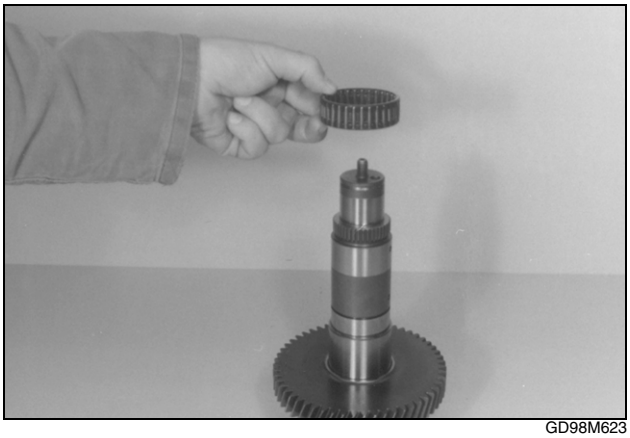
STEP 85



GD98M622

Install ball bearing until contact is obtained. Secure using snap ring.

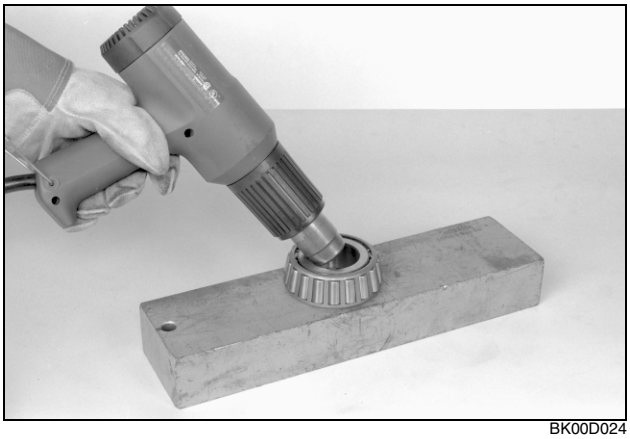
STEP 86



GD98M623

Install needle bearing.

STEP 134



BK00D024

Heat bearing.

STEP 135

WARNING: *Always wear heat protective gloves to prevent burning your hand when handling heated parts.*

SM121A

BK00D025

Install heated bearing on the shaft shoulder.

STEP 136

Repeat Steps 134 and 135 to install bearing on opposite end of shaft.

STEP 137

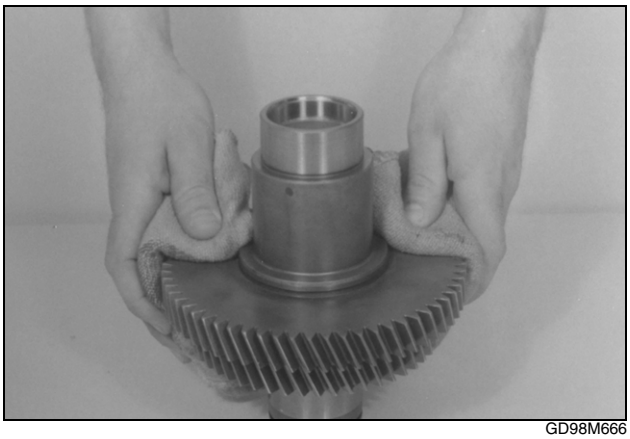
Check operation of the clutch using compressed air.

NOTE: *The following steps are for the reassembly of the input shaft.*

STEP 138

WARNING: *Always wear heat protective gloves to prevent burning your hand when handling heated parts.*

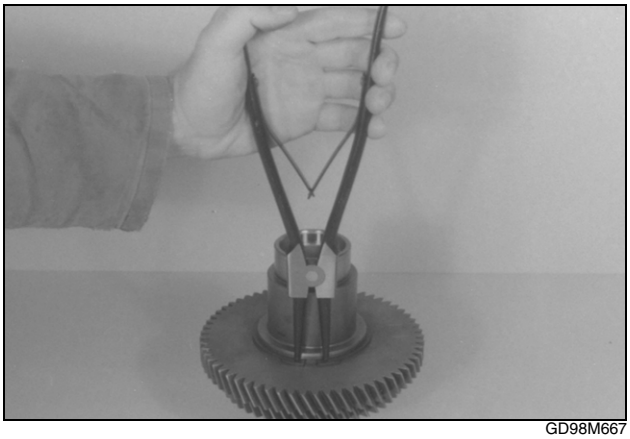
SM121A



GD98M666

Heat gear to about 120° C (248° F) and install on input shaft until contact is obtained.

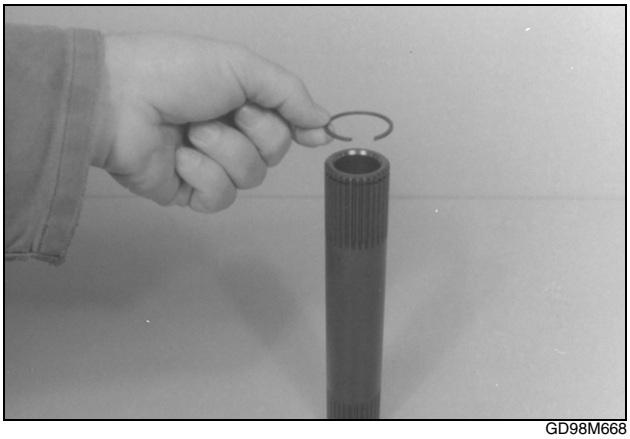
STEP 139



GD98M667

Secure gear with snap ring.

STEP 140



GD98M668

Install snap ring into recess of turbine shaft.

Section
6004

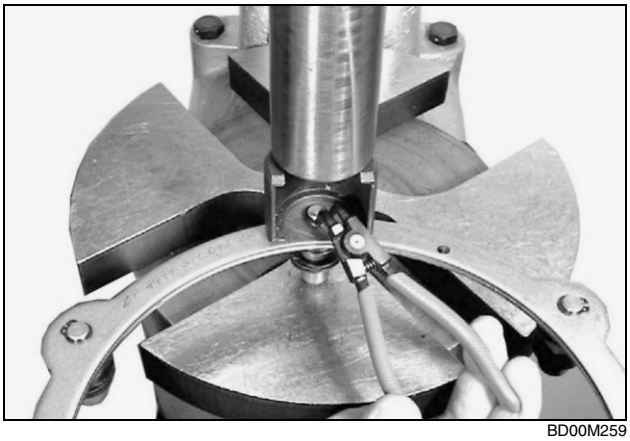
FRONT AXLE

6004

NEW HOLLAND CONSTRUCTION, LLC.
245 E NORTH AVENUE
CAROL STREAM, IL 60188 U.S.A.

Bur 6-73300

STEP 24



BD00M259

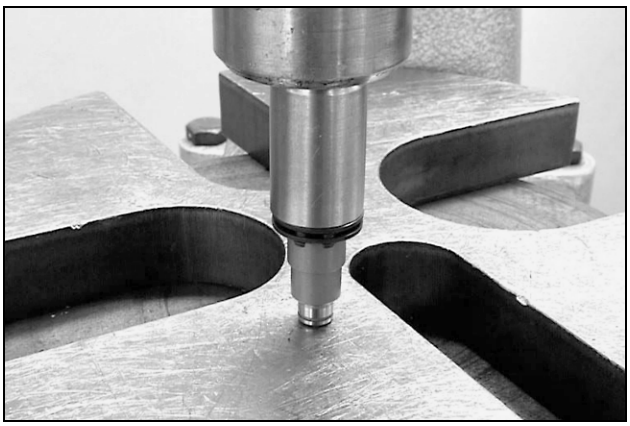
Put support shim in a press and compress Belleville washers. Remove retaining ring and pull pin with Belleville washers and rings installed from support shim. Repeat this step to remove the remaining five retaining rings and pins from support shim.

STEP 25

BD00M260

Remove seven Belleville washers from each pin.

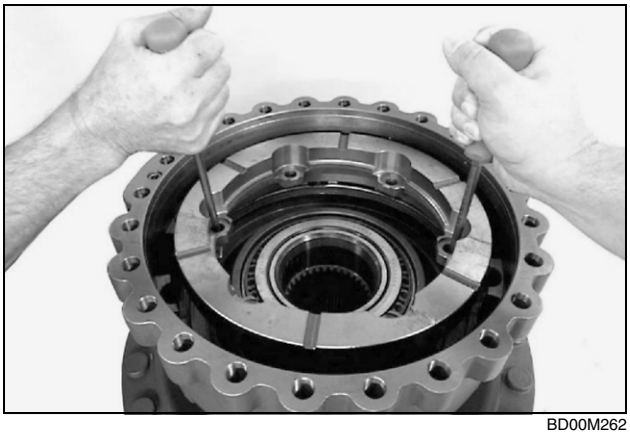
STEP 26



BD00M261

Using a press, remove four gripping rings from each pin.

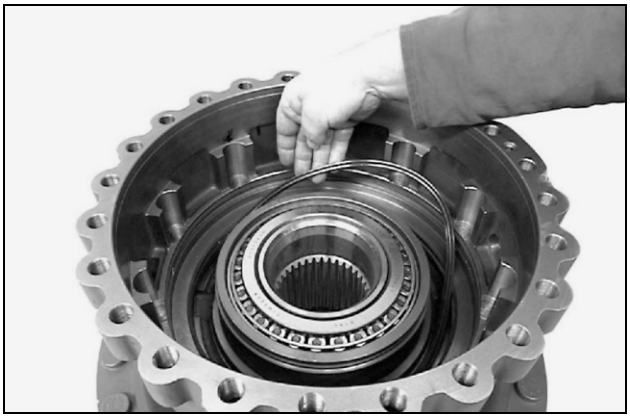
STEP 27



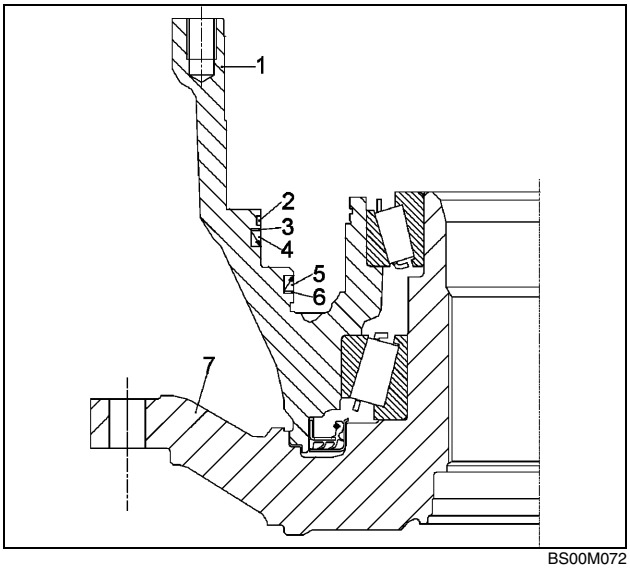
BD00M262

Lift and remove the piston from the brake housing.

STEP 28



BD00M263

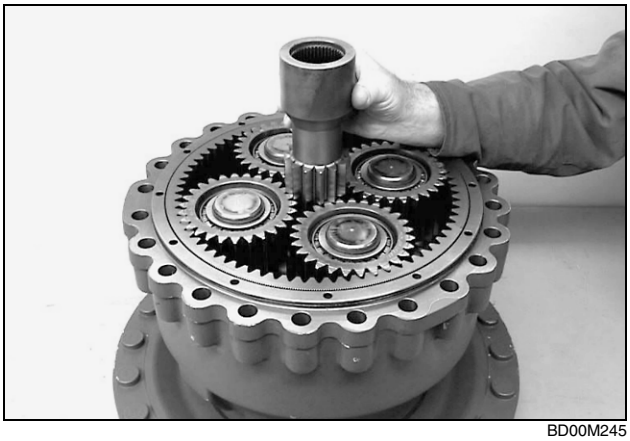


BS00M072

1. BRAKE HOUSING
2. GUIDE RING
3. SUPPORT RING
4. U-RING
5. U-RING
6. SUPPORT RING
7. WHEEL END SHAFT

Remove the guide ring (2), support rings (3 and 6), and U-rings (4 and 5) from the grooves of the brake housing.

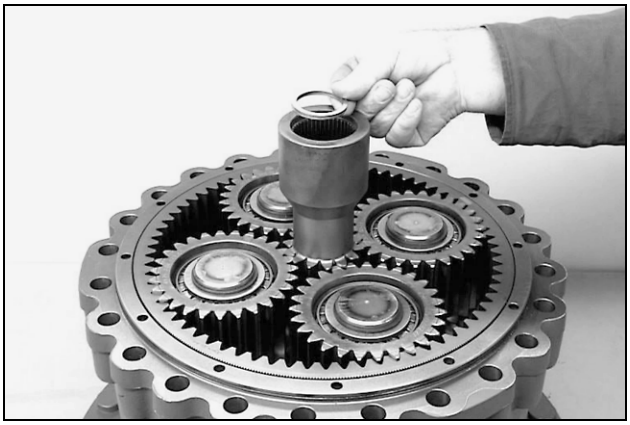
STEP 72



BD00M245

Install the sun gear shaft in the planet carrier.

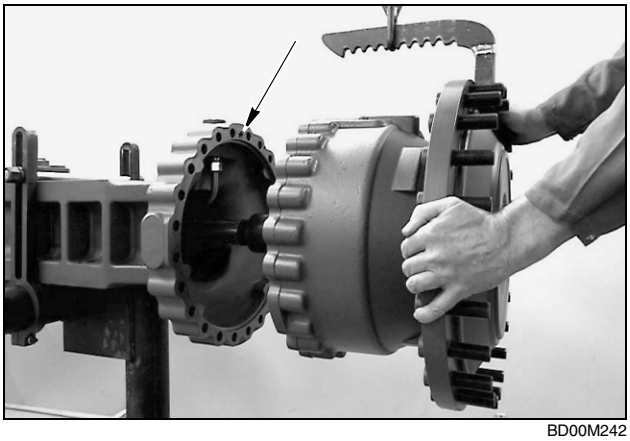
STEP 73



BD00M244

Install the shim set (size as determined in Step 71 above) into the sun gear shaft with grease.

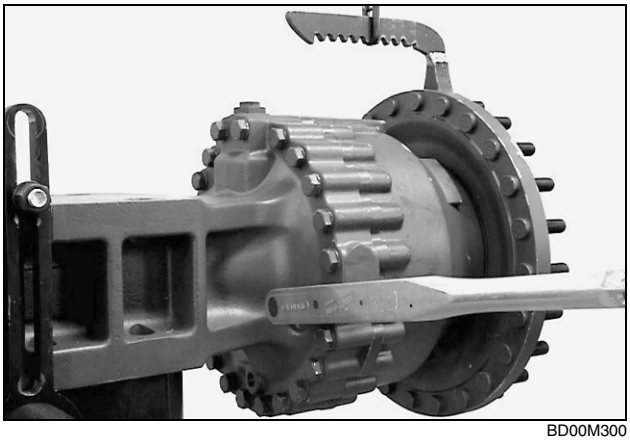
STEP 74



BD00M242

Apply grease to a new O-ring and install O-ring in brake port. Use acceptable lifting equipment and install the assembled wheel end onto the axle housing.

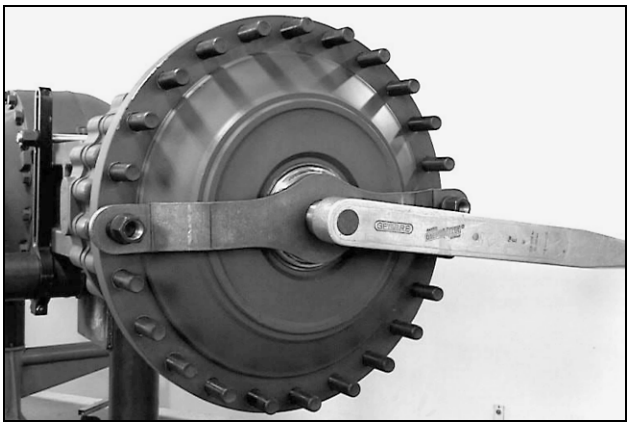
STEP 75



BD00M300

Install the washers and bolts to secure the wheel end to the axle housing. Tighten the bolts to a torque of 390 Nm (288 lb-ft).

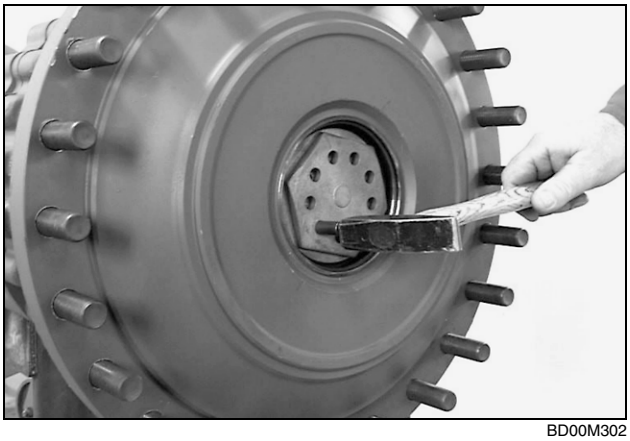
STEP 76



BD00M301

Install the lock nut by hand and tighten using CAS2883 support bracket and CAS2876 locknut socket and nuts. Tighten the lock nut to a torque of 700 to 1000 Nm (516 to 737 lb-ft).

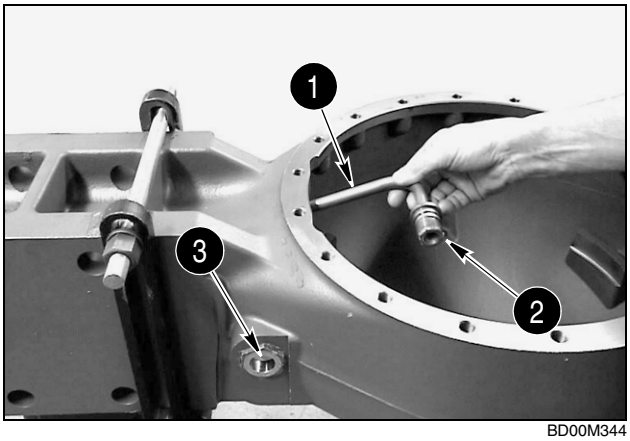
STEP 77



BD00M302

Install the slotted pin into the wheel end lock nut.

STEP 121

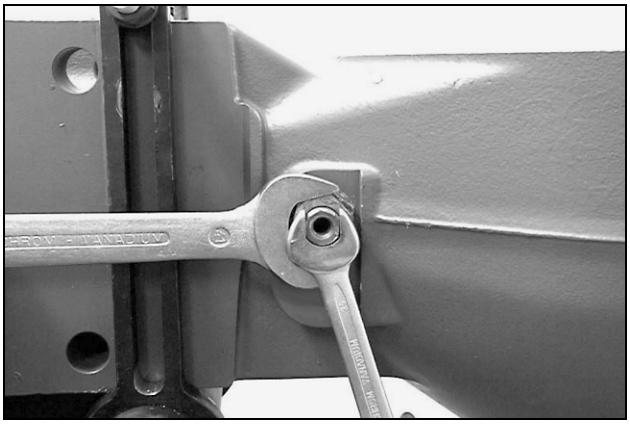


BD00M344

1. BRAKE TUBE
2. FITTING
3. CONNECTOR

Install the brake tube (1) in the axle housing, inserting the fitting (2) through the connector (3).

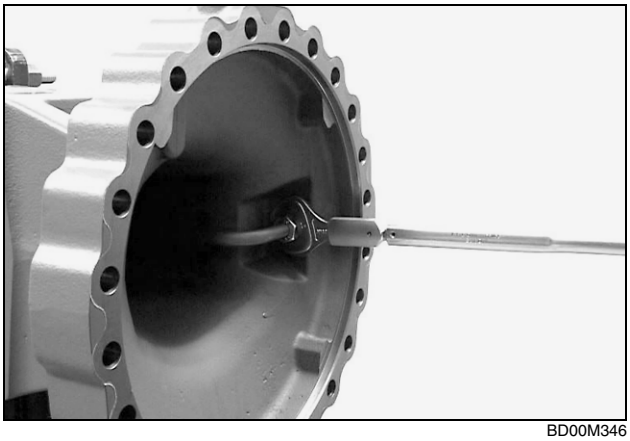
STEP 122



BD00M345

Install the nut to secure the brake tube fitting. Tighten the nut to a torque of 70 Nm (52 lb-ft).

STEP 123

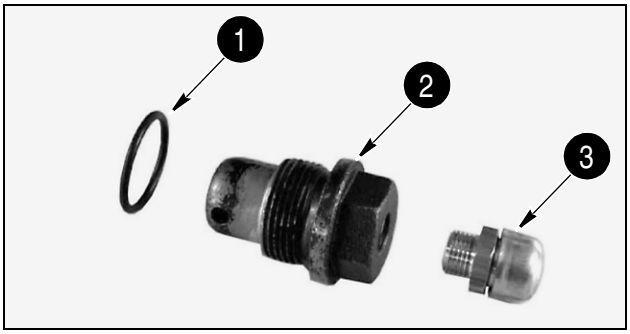


BD00M346

Connect fitting on opposite end of brake tube to fitting installed in wheel end. Tightening brake tube fitting to a torque of 80 Nm (60 lb-ft).

NOTE: *Do Steps 117 to 123 on other wheel end.*

STEP 124

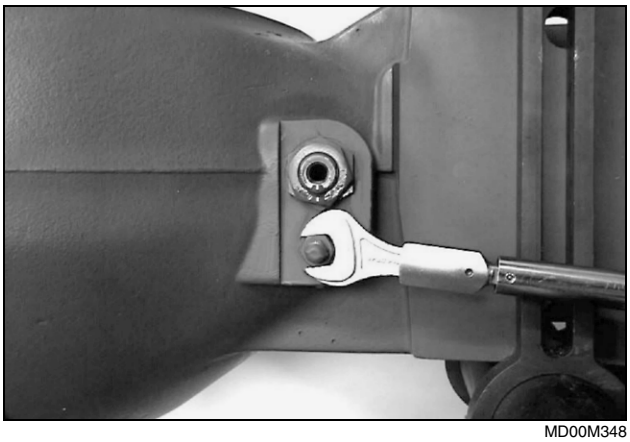


BD00M347

1. O-RING
2. PLUG
3. BREATHER

Remove and discard O-ring (1) from plug (2) and install a new O-ring. Install breather (3) in plug.

STEP 125

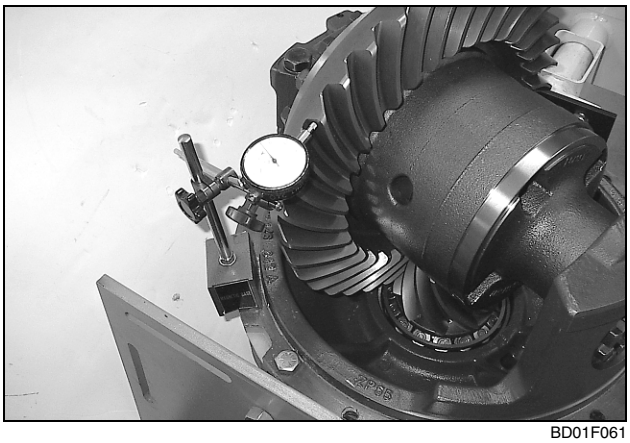


MD00M348

Install the plug in axle housing. Tighten plug to a torque of 70 Nm (52 lb-ft)

Adjust Backlash and Bearing Preload

STEP 170



BD01F061

Place CAS10066A dial indicator right-angled at the outer diameter of the tooth flank (ring gear). Adjust the pinion to ring gear backlash to the low side of specifications (see numbers etched on the outer diameter of the ring gear) by alternately turning each of the adjusting nuts to move the ring gear closer to or further away from the pinion.

STEP 171

Go to the adjusting nut opposite the ring gear and loosen the nut approximately one turn to release pressure on the bearing. It should be very noticeable that pressure is released on the bearing, as the adjusting nut will turn much easier.

STEP 172

Tighten the bearing adjusting nut slowly until firm contact is made with the bearing.

NOTE: *As the adjusting nut makes firm contact with the bearing, the adjusting nut will immediately begin to turn with more effort.*

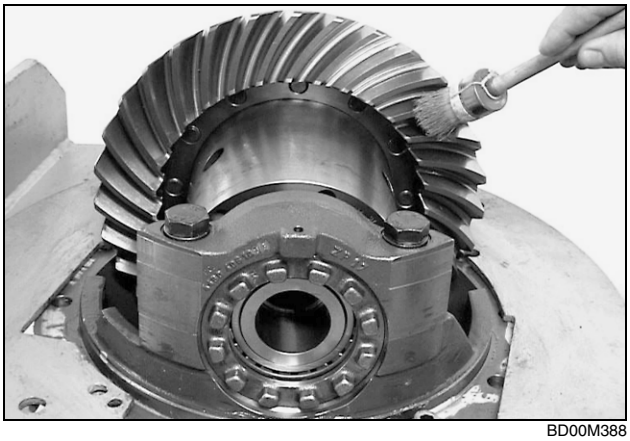
STEP 173

To adjust the differential bearing preload, note the position of the adjusting nut. Now tighten the nut two additional notches.

STEP 174

When the bearing preload is adjusted the backlash may increase slightly. Check pinion backlash to confirm that it is within specifications. If within specifications, install the adjusting nut locking roll pins. If backlash is outside of specified range, repeat Step 170 through 174 again.

STEP 175



BD00M388

Apply marking ink on several teeth of the ring gear and rotate it in both directions. Compare the obtained tooth contact pattern with the examples on pages 4 and 5.

NOTE: *If the tooth contact pattern differs, the wrong shim size was selected in Step 130. Remove differential and repeat Steps 126 though 130.*

STEP 176

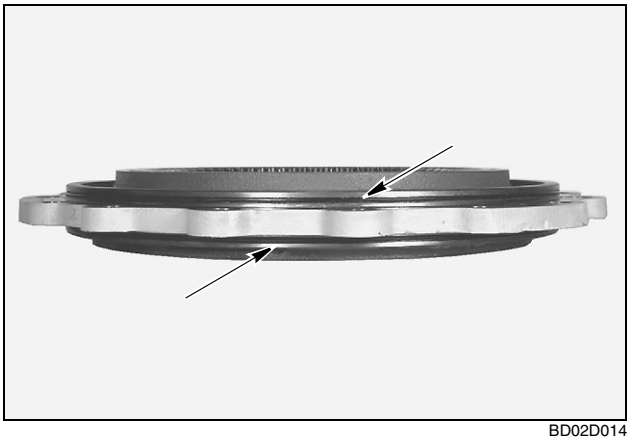
BD00M389

Install pins to secure both adjusting nuts.

STEP 177

Apply sealing compound (Three Bond Type 1215) to differential mounting surface on axle housing. Install two CAS2861 alignment studs in axle housing to aid installation of differential carrier. Using suitable lifting equipment, install the differential carrier in the axle housing then remove alignment studs.

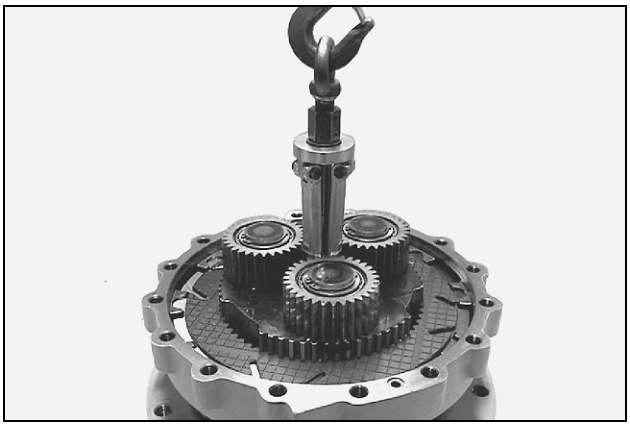
STEP 12



BD02D014

Remove and discard O-rings from ring gear.

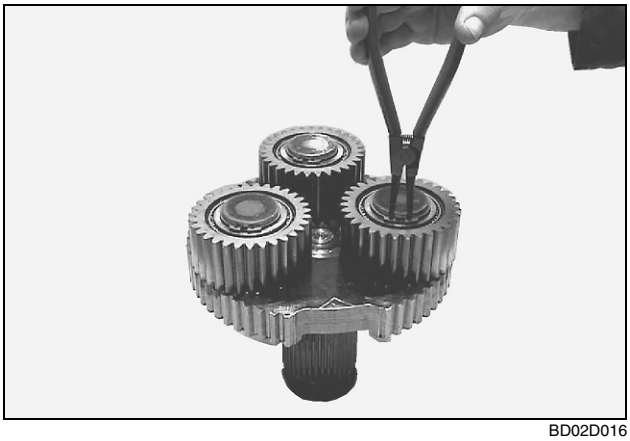
STEP 13



BD02D015

Using OEM4054 pulling attachment, remove the planetary carrier.

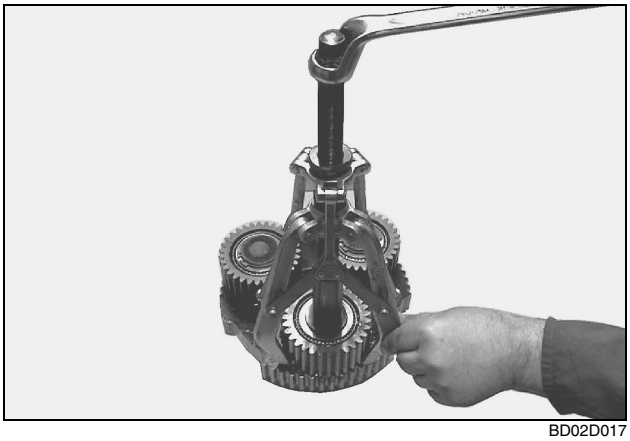
STEP 14



BD02D016

Remove retaining ring.

STEP 15



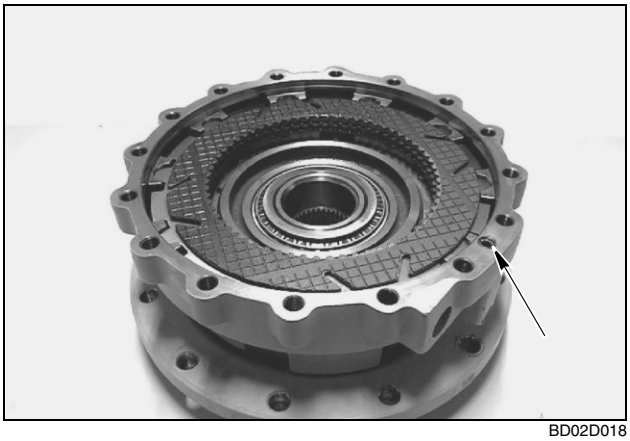
BD02D017

Using CAS2848 planetary gear puller and step plate 8061, remove planetary gear and outer bearing from planetary carrier shaft. Using a suitable puller, remove the inner bearing from carrier shaft.

STEP 16

Repeat Steps 14 and 15 to remove the remaining two retaining rings, planetary gears, and four bearings.

STEP 17



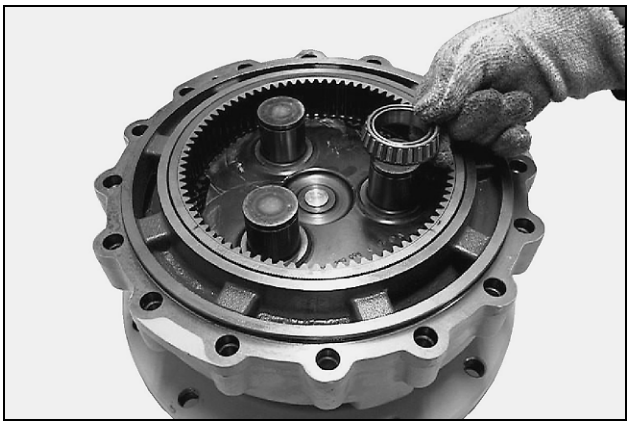
BD02D018

Remove and discard O-ring from brake housing port.

STEP 63

> **WARNING:** *Always wear heat protective gloves to prevent burning your hand when handling heated parts.*

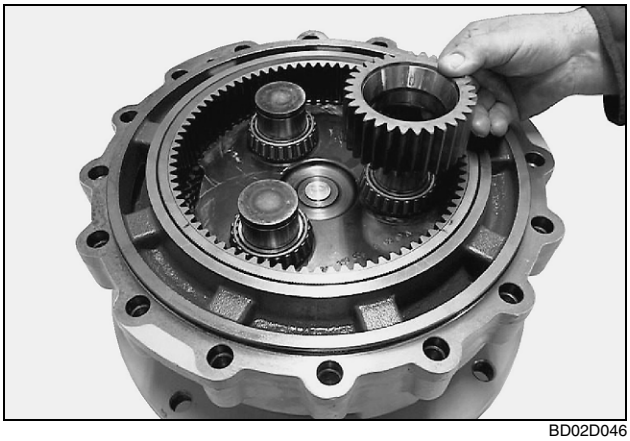
SM121A



BD02D045

Heat the planetary gears inner bearings to 100° C (212° F) in a bearing oven. Wearing heat resistant gloves or mittens, install the bearings on the shafts until the bearing is against the bottom of the shaft.

STEP 64



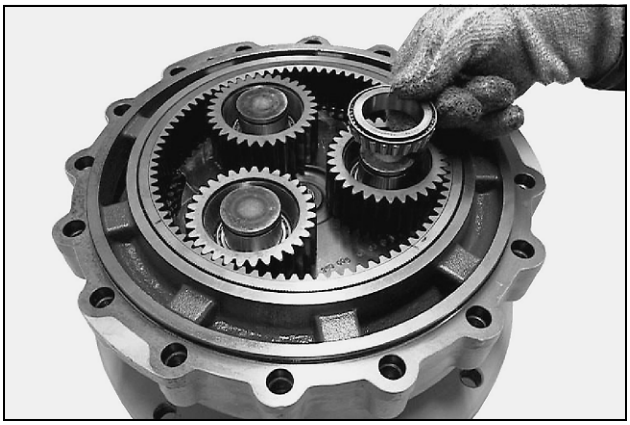
BD02D046

Install the planetary gears on the bearings.

STEP 65

> **WARNING:** *Always wear heat protective gloves to prevent burning your hand when handling heated parts.*

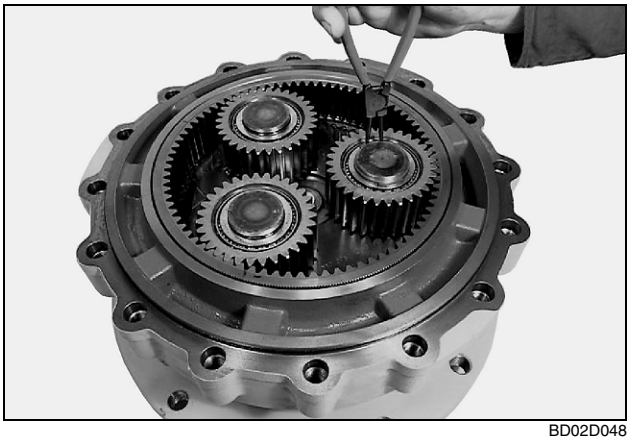
SM121A



BD02D047

Heat the planetary gears outer bearings to 100° C (212° F) in a bearing oven. Wearing heat resistant gloves or mittens, install the bearings on the shafts until the bearing is against the gear.

STEP 66

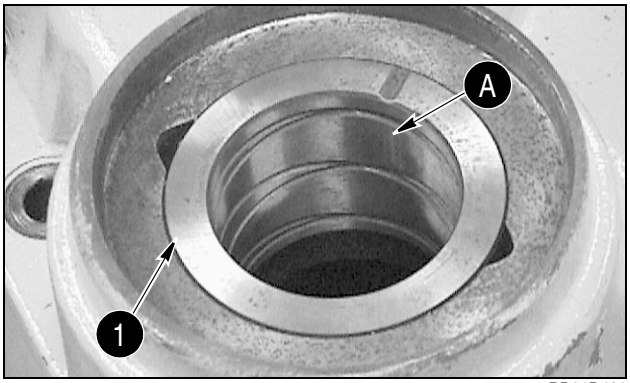


BD02D048

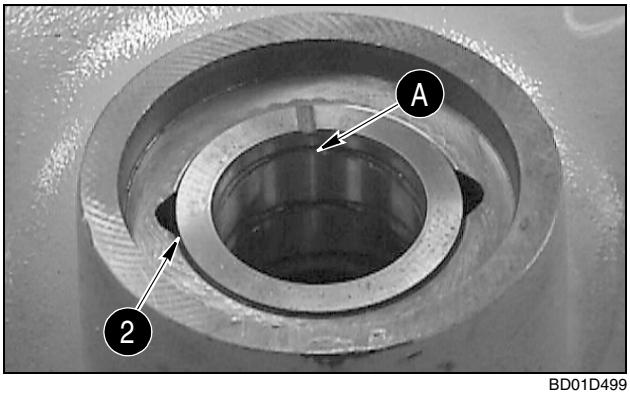
Install the retaining rings on the planetary gear shafts.

PIVOT PIN BUSHINGS

STEP 110



BD01D482



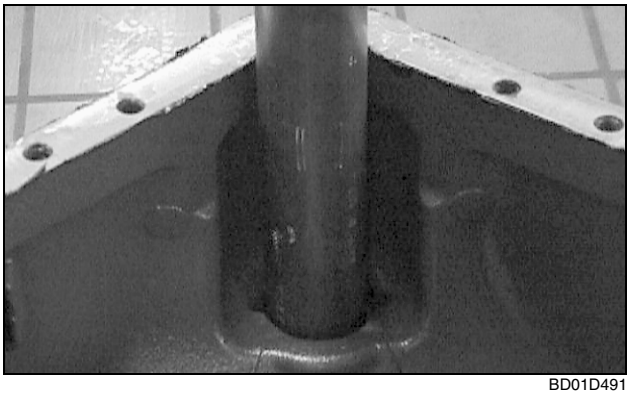
BD01D499

1. DIFFERENTIAL CARRIER PIVOT PIN BUSHING
2. AXLE HOUSING PIVOT PIN BUSHING

A. THRUST SURFACE

Inspect pivot pin bushings in differential carrier and axle housing for cracks, breaks, deformation, or other damage. Check oil splash grooves for scoring or chipping. Check for scoring on thrust surface (A). If bushing (1 or 2) requires replacement, do Steps 111 and 112.

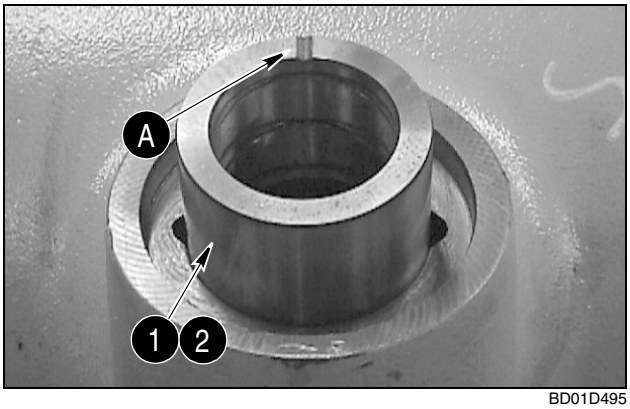
STEP 111



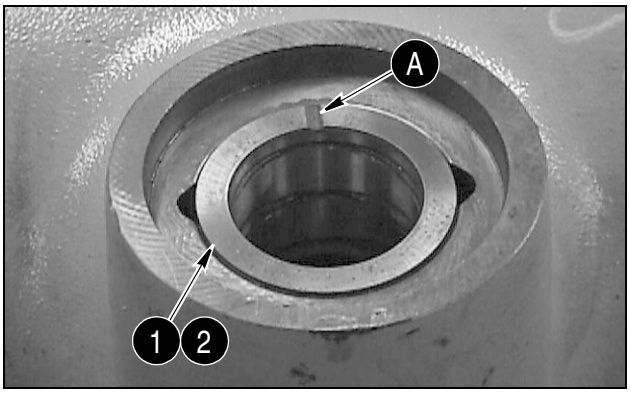
BD01D491

Put axle housing or differential carrier in hydraulic press. Make sure housing or carrier is properly supported. Using a 66.6 mm (2.625 inches) diameter by suitable length rod, press bushing out of housing or carrier.

STEP 112



BD01D495



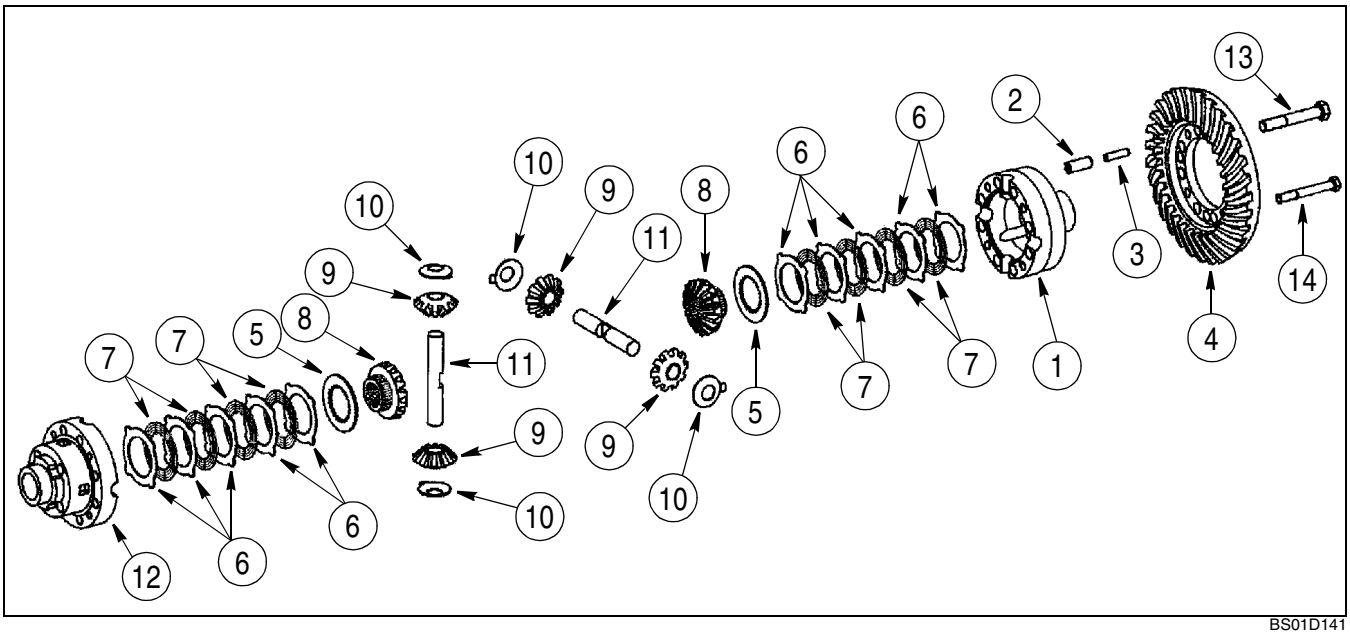
BD01D499

1. DIFFERENTIAL CARRIER PIVOT PIN BUSHING
2. AXLE HOUSING PIVOT PIN BUSHING

A. GROOVE

WARNING: *Always wear insulated gloves or mittens when handling frozen parts.*

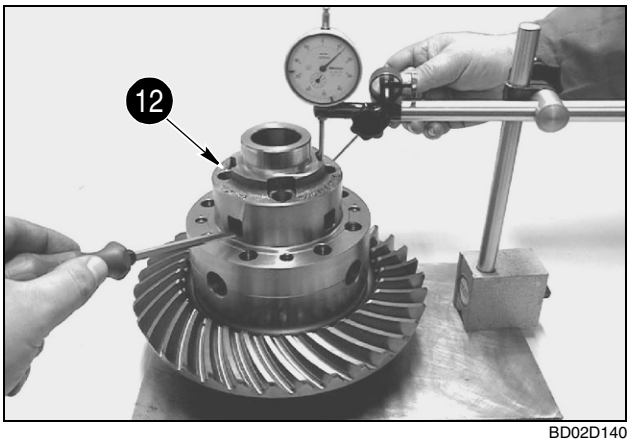
Freeze new bushing in dry ice for several hours. Install bushing in axle housing or differential carrier with groove (A) on circumference of bushing facing center of housing or carrier. Install bushing against shoulder in housing or carrier.



BS01D141

1. DIFFERENTIAL CAGE HALF
2. SLOTTED PIN
3. SLOTTED PIN
4. RING GEAR
5. THRUST WASHER
6. SEPARATOR PLATE
7. FRICTION PLATE
8. BEVEL GEAR
9. BEVEL GEAR
10. THRUST WASHER
11. SHAFT
12. DIFFERENTIAL CAGE HALF
13. BOLT
14. BOLT

STEP 160



BD02D140

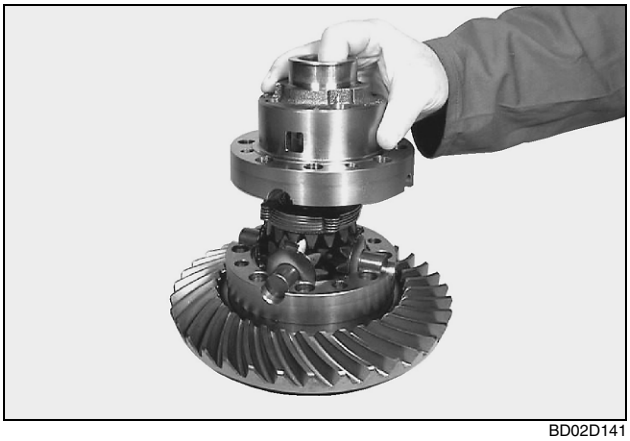
Check the end play (zero to 0.15 mm (0.006 inch)) of the bevel gear (8). Do this by mounting a dial indicator as shown set to indicate from the top separator plate through one of the top holes in differential cage half (12). Zero the dial indicator. Using screwdrivers or other suitable tools inserted in holes in side of cage half, move the bevel gear up. Record the dial indicator reading. Dial indicator should indicate zero to 0.15 mm (0.006 inch) (required end play).

If required end play of zero to 0.15 mm (0.006 inch) is not obtained, install new outer clutch discs of thickness necessary to obtain required end play.

STEP 161

After obtaining the required end play, disassemble the differential. Install the adjusted clutch pack that was in the differential cage half (12) in the other differential cage half (1). Repeat Step 160 to check the end play. After both clutch packs have been adjusted, go to Step 162.

STEP 162



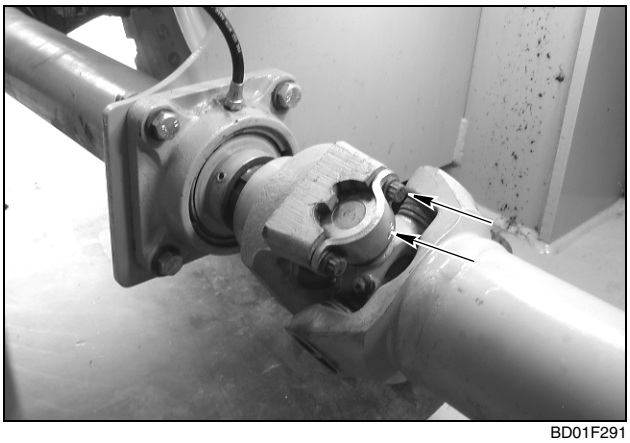
BD02D141

After adjustment is completed, separate the cage halves, and remove the parts. Keep clutch packs together and identify which side they are installed. Apply oil to all parts. Do Steps 154 to 158 to assemble the differential, then go to Step 163.

CENTER DRIVE SHAFT

Removal

STEP 35



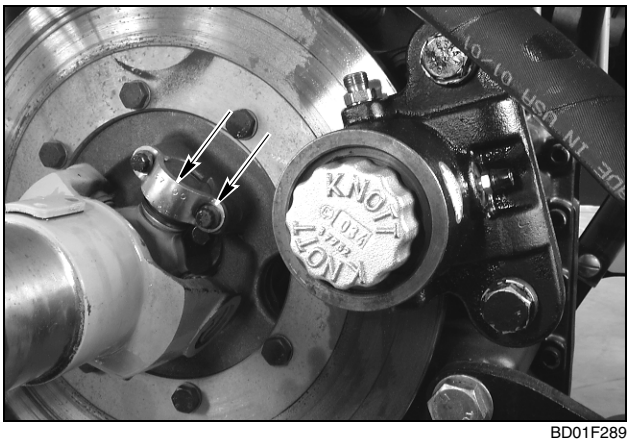
BD01F291

Loosen and remove the bolts and straps that fasten the center drive shaft to the yoke of the front drive shaft.

STEP 36

Use a prybar to disengage the center drive shaft from the yoke of the front drive shaft.

STEP 37



BD01F289

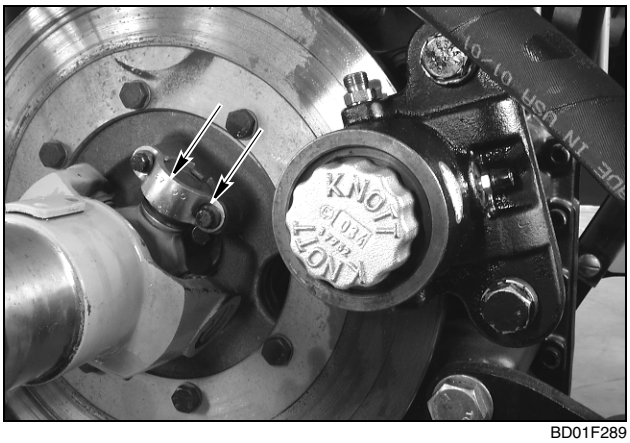
Loosen and remove the bolts and straps that fasten the center drive shaft to the transmission.

STEP 38

Hold the center drive shaft and remove from the machine.

Installation

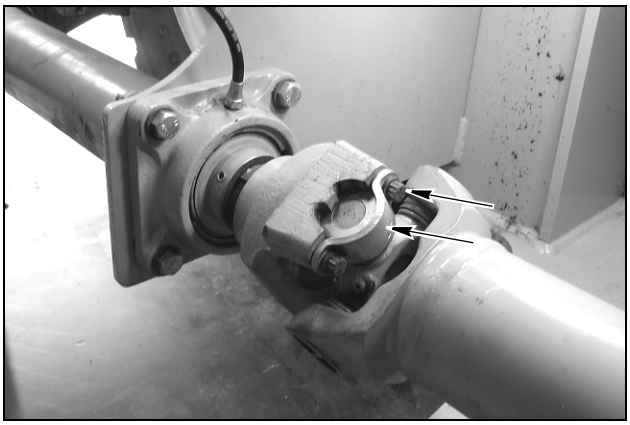
STEP 39



BD01F289

Hold the center drive shaft in position and install the bolts and straps that fasten the center drive shaft to the transmission. Tighten the bolts to a torque of 61 to 81 Nm (45 to 60 lb ft).

STEP 40



BD01F291

Install the bolts and straps that fasten the center drive shaft to the yoke of the front drive shaft. Tighten the bolts to a torque of 61 to 81 Nm (45 to 60 lb ft).

DISASSEMBLY

STEP 1

To aid in assembly, put alignment marks on transmission control valve (7, figure 1), distribution plate (2), and valve plate (4).

STEP 2

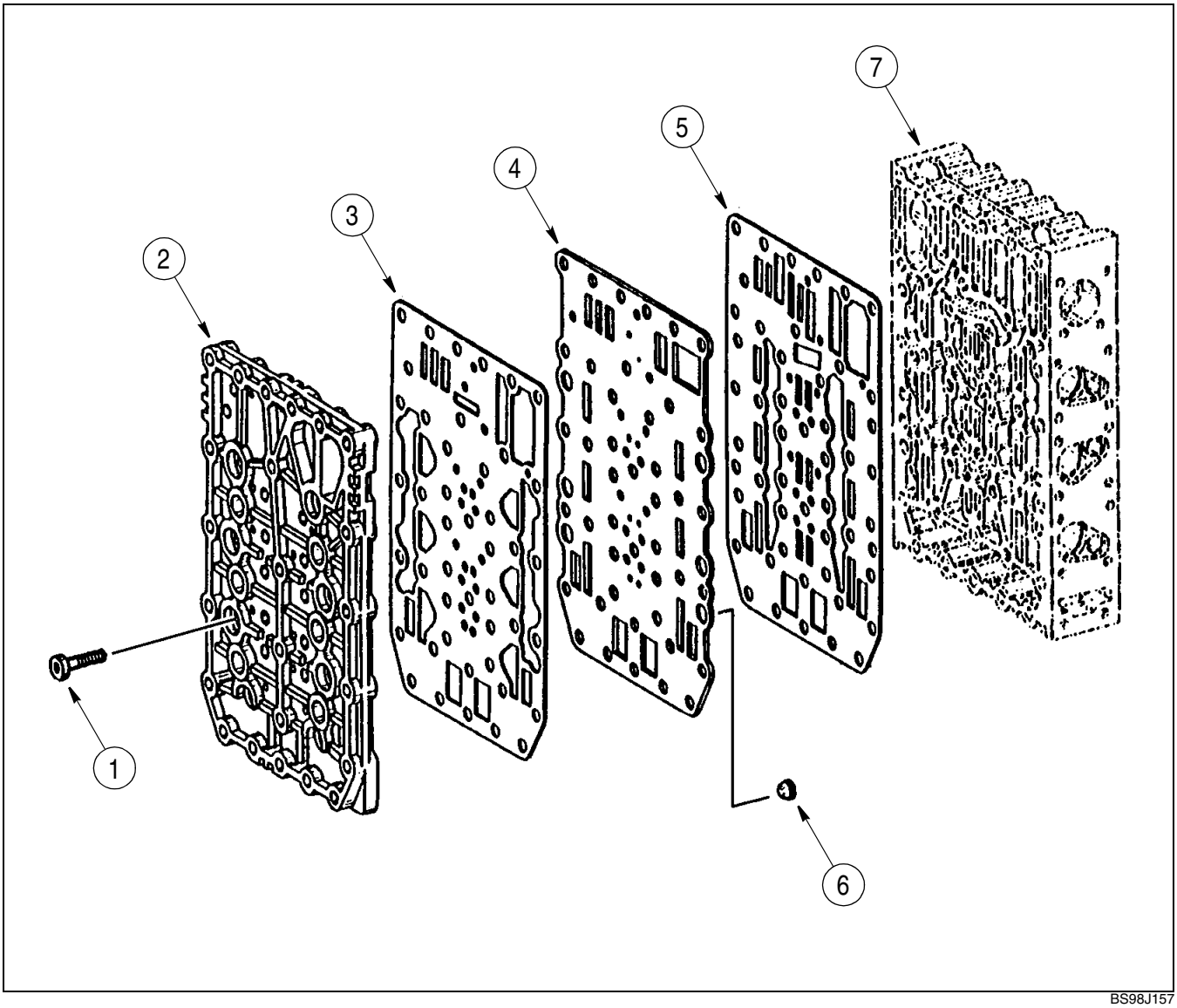
Remove 18 screws (1) securing distribution plate (2) to transmission control valve (7).

STEP 3

Remove distribution plate (2), housing gasket (3), valve plate (4), and housing gasket (5). Discard housing gaskets (3 and 5).

STEP 4

Remove six filter screens (6) from valve plate (4).



BS98J157

1. SCREW
2. DISTRIBUTION PLATE
3. HOUSING GASKET
4. VALVE PLATE
5. HOUSING GASKET
6. FILTER SCREEN
7. TRANSMISSION CONTROL VALVE

FIGURE 1. TRANSMISSION CONTROL VALVE PLATES AND GASKETS

SECTION INDEX

BRAKES

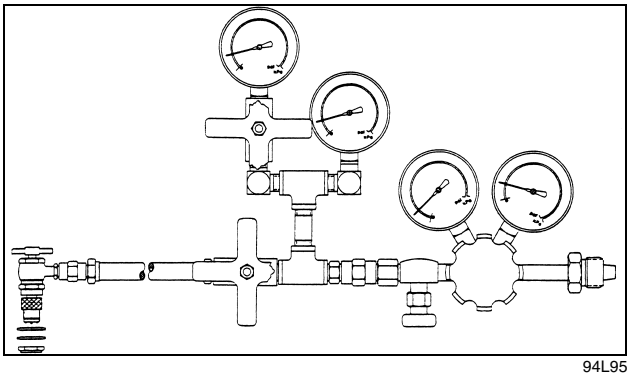
NEW HOLLAND CONSTRUCTION, LLC.
245 E NORTH AVENUE
CAROL STREAM, IL 60188 U.S.A.

Bur 6-73350

SPECIFICATIONS

Brake pump output	30.8 L/min at 172 bar at 2200 r/min (8.14 gpm at 2500 psi at 2200 rpm)
Accumulator nitrogen charge pressure	55 bar (797.7 psi)
Accumulator valve cut in pressure	157 to 167 bar (2277 to 2422 psi)
Accumulator valve cut out pressure	190 to 196 bar (2756 to 2843 psi)
Brake warning pressure switch	110 ± 5 bar (1595 ± 72.5 psi)
Brake light pressure switch	1.8 bar (26 psi)
Modulation pressure front brake cylinders	90 to 97 bar (1305 to 1406.5 psi)
Modulation pressure rear brake cylinders	88 to 95 bar (1276 to 1377.5 psi)

SPECIAL TOOL



94L95

CAS10899 NITROGEN CHARGING KIT USED TO CHECK AND CHARGE THE ACCUMULATOR WITH NITROGEN.

Section
7004

BRAKE ACCUMULATORS

7004

NEW HOLLAND CONSTRUCTION, LLC.
245 E NORTH AVENUE
CAROL STREAM, IL 60188 U.S.A.

Bur 6-73380

STEP 16

BD01D296

Remove the plugs and caps and install the hose onto the parking brake.

STEP 17

Park the machine on a clear level surface with wheel chocks and the articulation lock in place.

IMPORTANT: *It will be necessary to have an assistant help for this procedure. An operator must be present in the cab at all times to apply the service brakes and shut down the machine in the event of mechanical failure.*

STEP 18

Start the machine and run the engine at low idle with the bucket resting on the ground.

STEP 19

Disengage the parking brake.

NOTE: *Hydraulic pressure will not be applied to the parking brake until the parking brake rocker switch is turned off, the service brakes applied and the transmission is put into gear.*

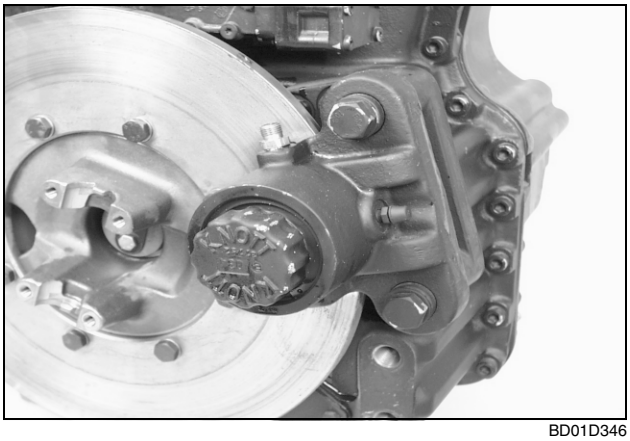
A. Place the parking brake rocker switch in the OFF position.

B. Apply the service brake and put the machine into gear.

C. The parking brake light on the cluster will turn off at this time.

D. Place the transmission back into neutral before proceeding.

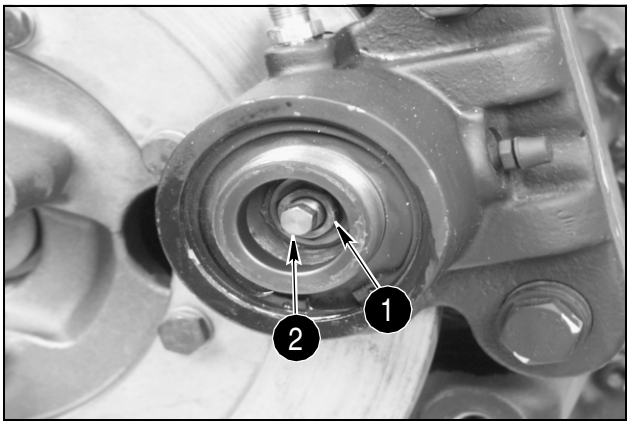
STEP 20



BD01D346

Remove the cover from the front of the parking brake.

STEP 21

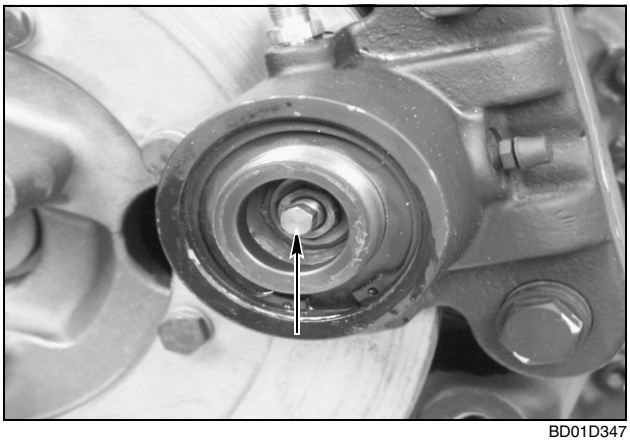


BD01D347

1. JAM NUT
2. CENTER POST

Loosen the jam nut (1) that secures the center post (2).

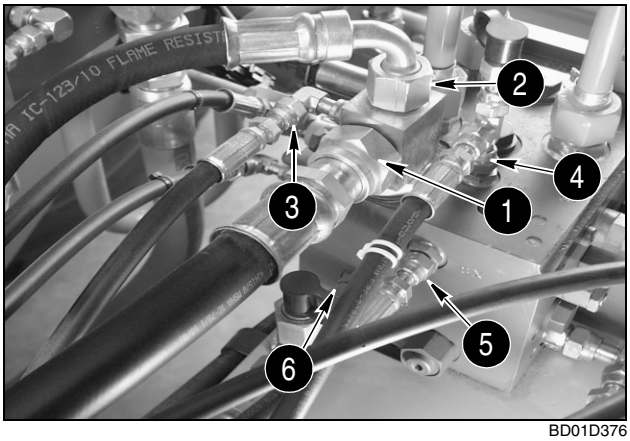
STEP 22



BD01D347

Turn the center post clockwise until both brake pads contact the brake disc, then turn the center post counterclockwise one turn.

STEP 11



BD01D376

1. VALVE RETURN HOSE
2. RIDE CONTROL TANK HOSE
3. ACCUMULATOR DRAIN HOSE
4. PUMP LOAD SENSING HOSE
5. STEERING LOAD SENSING HOSE
6. STEERING PRESSURE HOSE
7. PUMP PRESSURE HOSE (NOT SHOWN)

A. Tag and disconnect the valve return hose (1) at the loader control valve and install a plug in the hose and a cap on the fitting.

B. Tag and disconnect the pump pressure hose (7) and install a plug in the hose and a cap on the fitting.

NOTE: *The pump pressure hose (7) will be connected to a elbow at the bottom of the loader control valve.*

C. Tag and disconnect the ride control tank hose (2) and install a plug in the hose and a cap on the fitting.

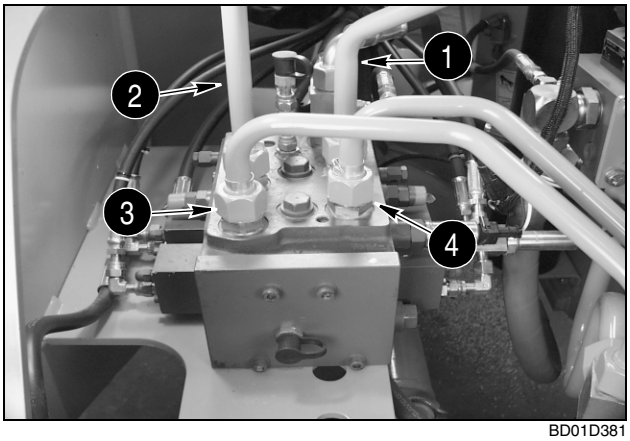
D. Tag and disconnect the accumulator drain hose (3) and install a plug in the hose and a cap on the fitting.

E. Tag and disconnect the pump load sensing hose (4) and install a plug in the hose and a cap on the fitting.

F. Tag and disconnect the steering load sensing hose (5) and install a plug in the hose and a cap on the fitting.

G. Tag and disconnect the steering pressure hose (6) and install a plug in the hose and a cap on the fitting.

STEP 12



BD01D381

1. ROD END TILT TUBE
2. HEAD END TILT TUBE
3. HEAD END LIFT TUBE
4. ROD END LIFT TUBE

A. Tag and disconnect the rod end tilt tube (1) from the loader control valve and install a plug in the tube and a cap on the fitting.

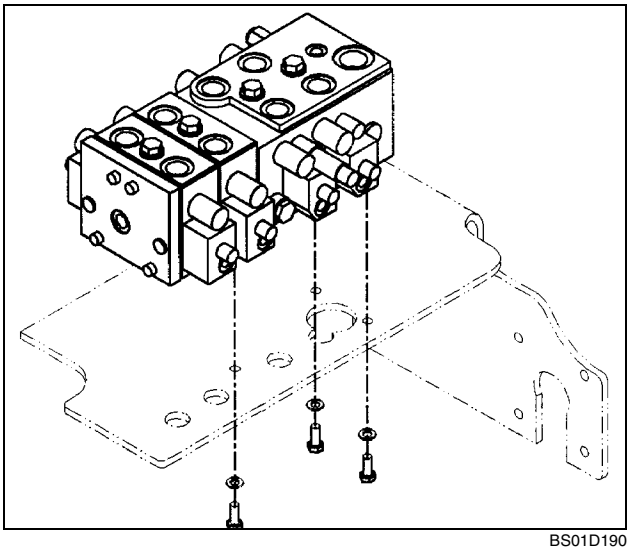
B. Tag and disconnect the head end tilt tube (2) from the loader control valve and install a plug in the tube and a cap on the fitting.

C. Tag and disconnect the head end lift tube (3) from the loader control valve and install a plug in the tube and a cap on the fitting.

D. Tag and disconnect the rod end lift tube (4) from the loader control valve and install a plug in the tube and a cap on the fitting.

E. Tag and disconnect any auxiliary spool tubes if equipped.

STEP 13

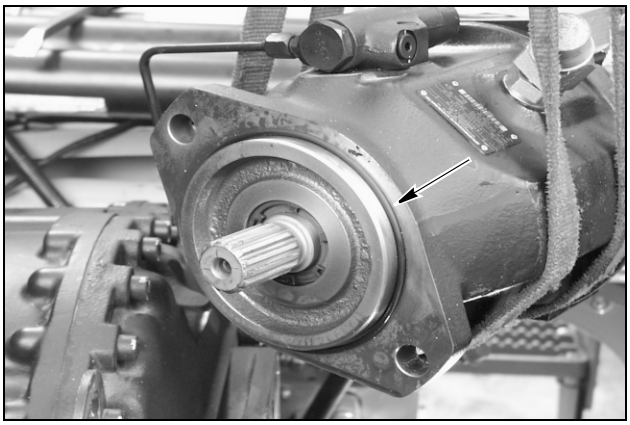


BS01D190

Loosen and remove the three bolts and washers that hold the loader control valve to the valve mounting plate.

Installation

STEP 57



BD01D335

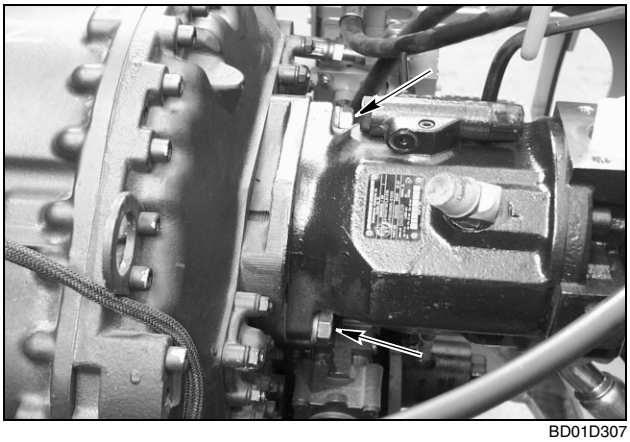
Use proper lifting device to lift and support the hydraulic pump. Install a new O-ring on the hydraulic pump.

STEP 58

BD01D334

Install the hydraulic pump on the transmission.

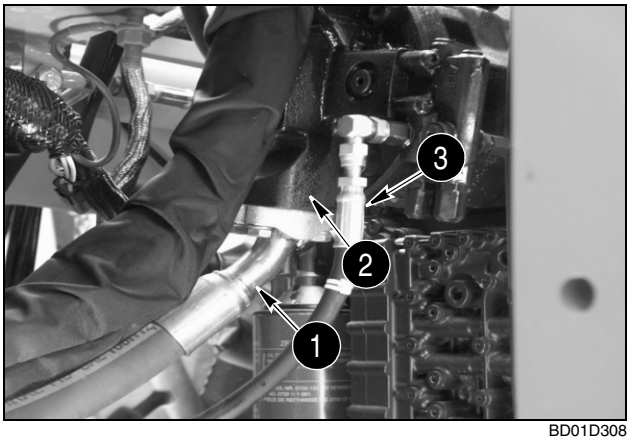
STEP 59



BD01D307

Install the two bolts that fasten the hydraulic pump to the transmission. Tighten the two bolts to a torque of 335 to 375 Nm (245 to 275 lb ft).

STEP 60



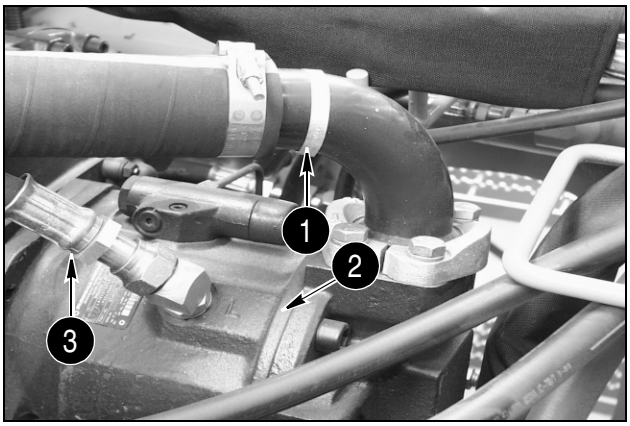
BD01D308

1. PRESSURE HOSE
2. HYDRAULIC PUMP
3. LOAD SENSING HOSE

A. Install the pressure hose (1) to the hydraulic pump (2).

B. Install the load sensing hose (3) to the hydraulic pump (2).

STEP 61

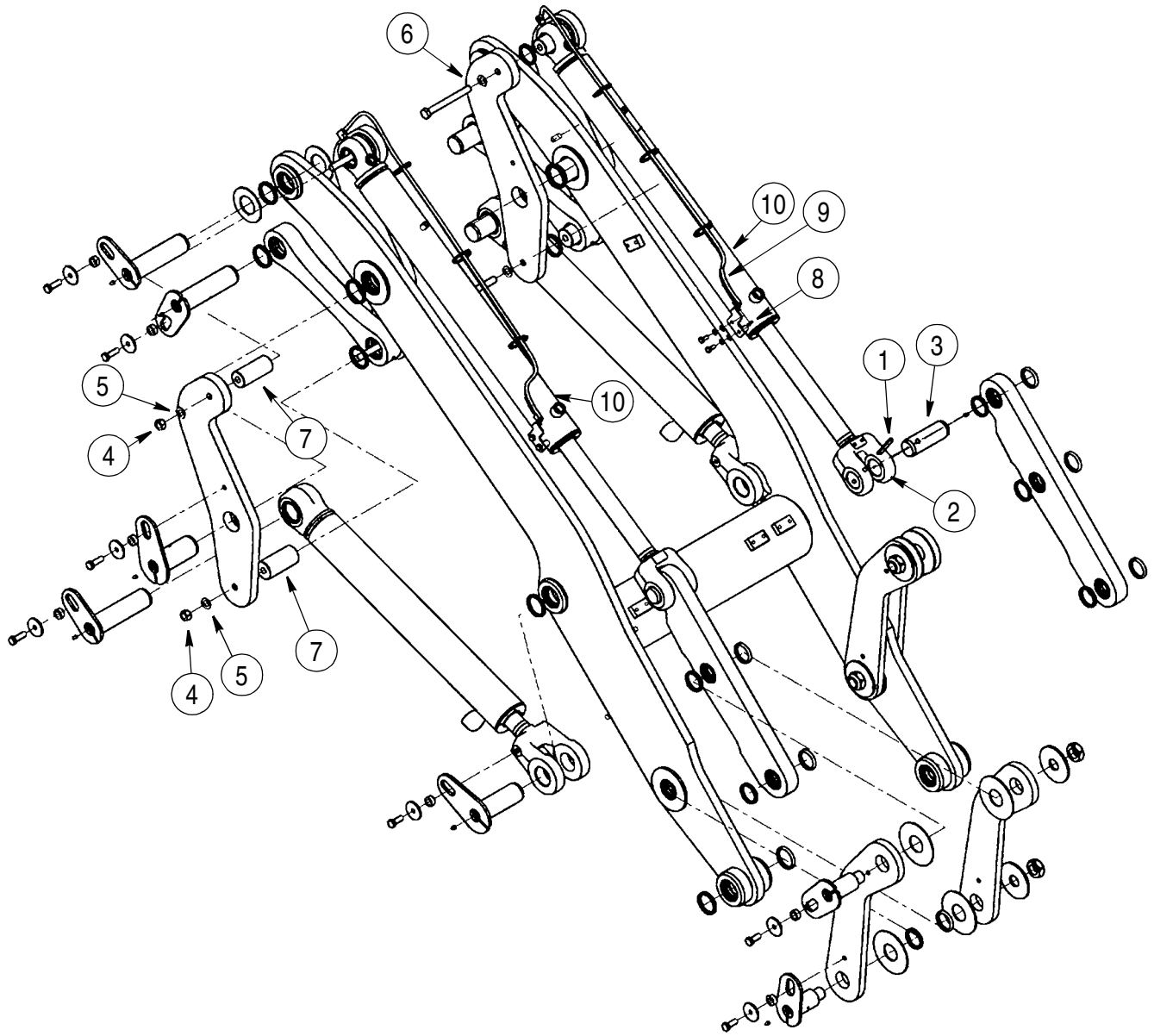


BD01D303

1. SUCTION HOSE
2. HYDRAULIC PUMP
3. CASE DRAIN HOSE

A. Install the suction hose (1) to the hydraulic pump (2).

B. Install the case drain hose (3) to the hydraulic pump (2).



BS01C085

1. ROLL PIN
2. YOKE
3. PIVOT PIN
4. NUT
5. WASHER
6. INNER BELLCRANK
7. PIVOT PIN
8. NUT
9. GREASE LINE
10. BUCKET CYLINDER

TC LOADER BUCKET CYLINDER REMOVAL AND INSTALLATION ILLUSTRATION

Installation

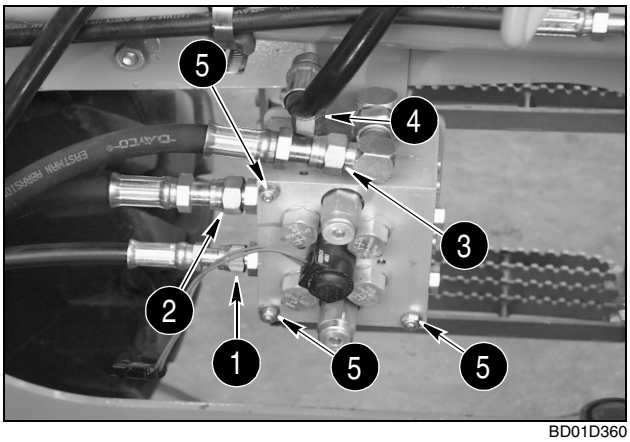
STEP 210

Place the fan reversing valve into position on the machine.

STEP 211

Lubricate and install new O-rings in the fittings.

STEP 212



BD01D360

1. FAN FORWARD HOSE
2. FAN REVERSE HOSE
3. FAN VALVE RETURN HOSE
4. FAN VALVE SUPPLY HOSE
5. NUTS
6. WASHERS (NOT SHOWN)
7. BOLTS (NOT SHOWN)

A. Install the bolts (7), washers (6) and nuts (5). Tighten the nuts (5).

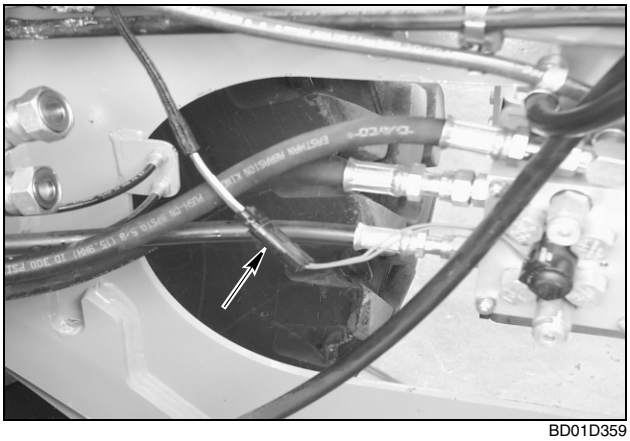
B. Connect the fan valve supply hose (4) to the fitting on the fan reversing valve.

C. Connect the fan valve return hose (3) to the elbow on the fan reversing valve.

D. Connect the fan reverse hose (2) to the fitting on the fan reversing valve.

E. Connect the fan forward hose (1) to the fitting on the fan reversing valve.

STEP 213



BD01D359

Connect the electrical connector for the fan reversing valve.

STEP 214

Check the level of the hydraulic oil in the reservoir.

STEP 215

Start the engine and run the engine at low idle for two minutes.

STEP 216

Stop the engine and check for hydraulic oil leakage at the fan reversing valve.

STEP 217

Check the level of the hydraulic oil in the reservoir and add as required. Tighten the filler cap on the reservoir.

TESTING THE HYDRAULIC PUMP PERFORMANCE AND TORQUE LIMITER

STEP 1

Make sure that the temperature of the hydraulic oil is at least 52°C to 60°C (125°F to 140°F). The following is the procedure for heating the hydraulic oil.

A. Start the engine and run at high idle.

B. Lower the loader bucket to the ground.

C. Hold the lift control lever in the “FLOAT” position.

D. Roll the bucket back against the stops and hold.

View the oil temperature by pressing the program switch, then press the up count switch to function 008. Return the program switch to the center (OFF) position.

STEP 2

Connect the flowmeter (5) by installing a tee fitting (1) between the pump and the loader control valve (2). Refer to illustration on page 10.

STEP 3

Make sure that the flowmeter valve is in the closed position. Raise the lift arms to the stops and secure the lift control lever in the “RAISE” position.

STEP 4

Operate the engine at 2000 rpm and open the flowmeter valve until the pump pressure is 500 psi. The flow at this point should be 36.5 to 37.5 gpm.

STEP 5

Close the flowmeter valve slowly and read the flow at 2000 psi @ 2000 rpm. The flow should read 35.5 to 36.5 gpm.

STEP 6

Continue slowly closing the flowmeter valve, monitoring the flow with the engine speed at 2000 rpm. At a point between 2200 and 2400 psi, the flow should noticeably start decreasing. This is the torque limit setting of the pump. Record this pressure.

STEP 7

Continue slowly closing the flowmeter valve until 3300 psi is reached. The flow should read between 23.5 and 26.0 gpm.

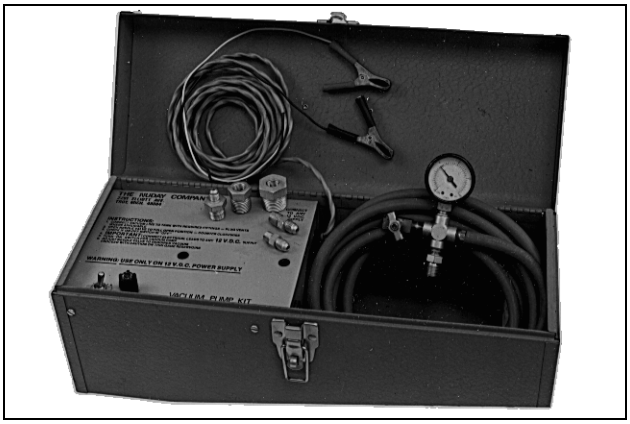
STEP 8

If any of the pump flow readings are not within specifications, the pump may be out of calibration and Technical Services Group should be contacted.

SPECIAL TOOLS

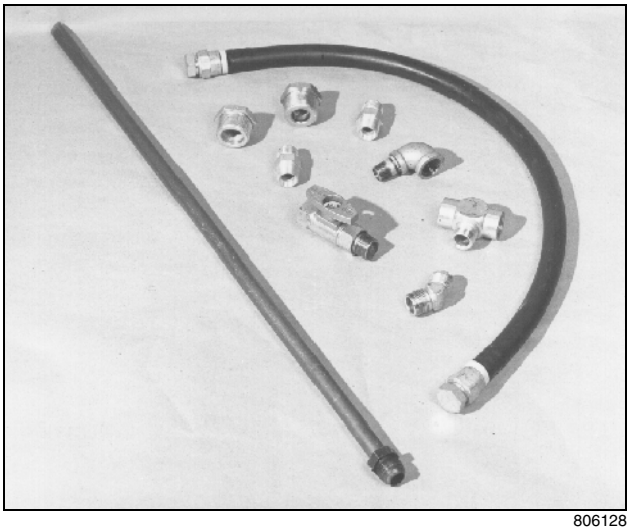
806127

CAS101162A, filter unit, portable.



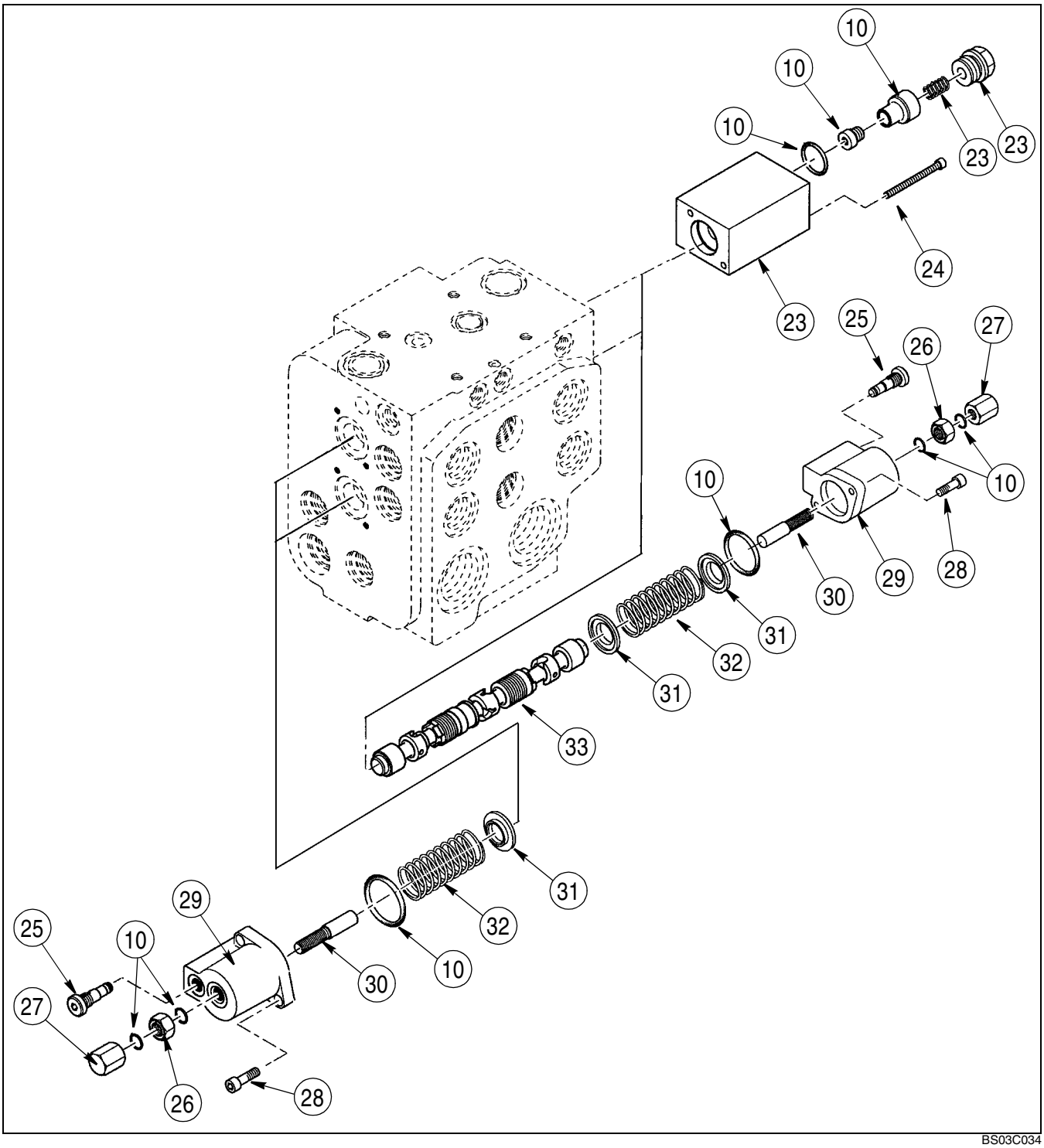
TR98H032

CAS10192, vacuum pump.



806128

CAS10508, fitting kit.

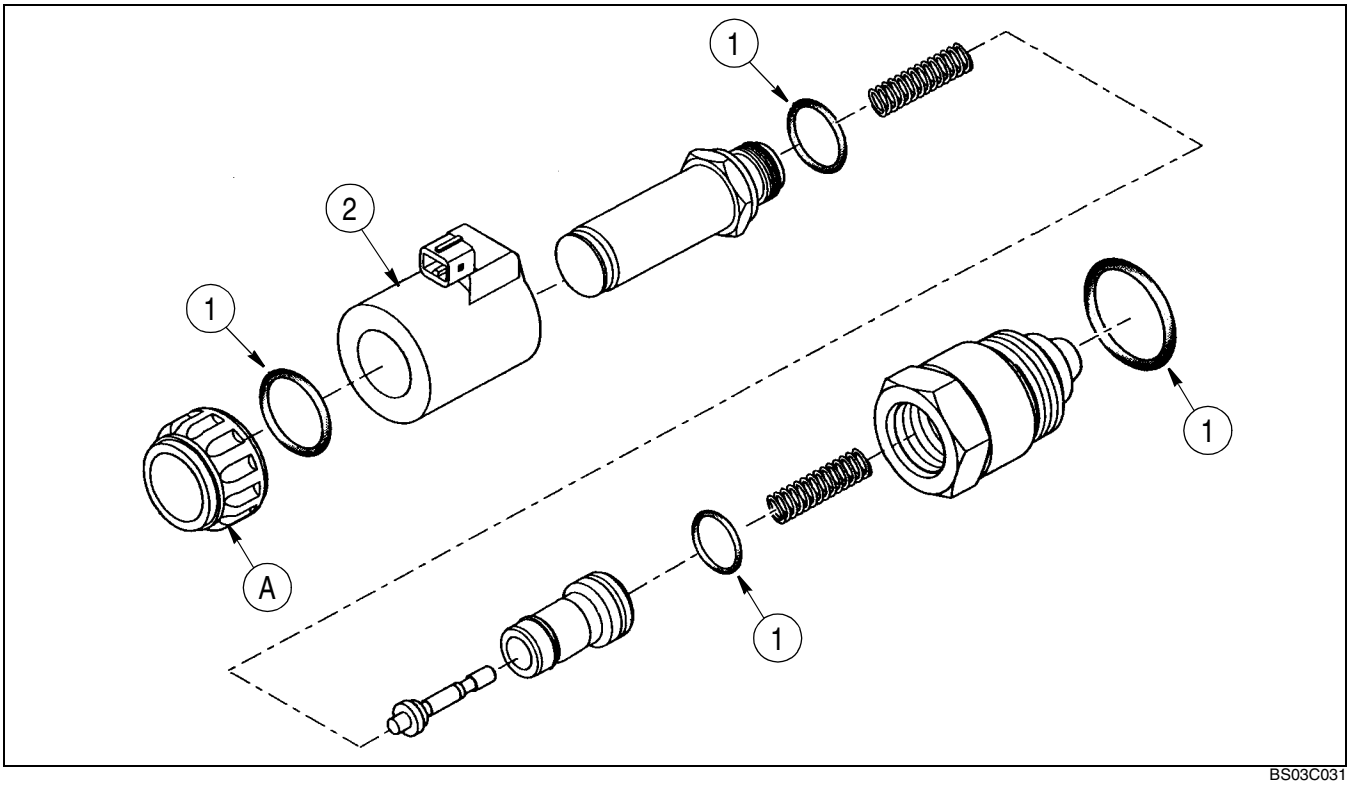


BS03C034

23. COVER
24. BOLT
25. PISTON
26. JAM NUT
27. CAP NUT
28. BOLT
29. COVER
30. ADJUSTING ROD
31. SPRING RETAINER
32. SPRING
33. SPOOL

2 SPOOL VALVE SPOOL CONFIGURATION

STEP 2

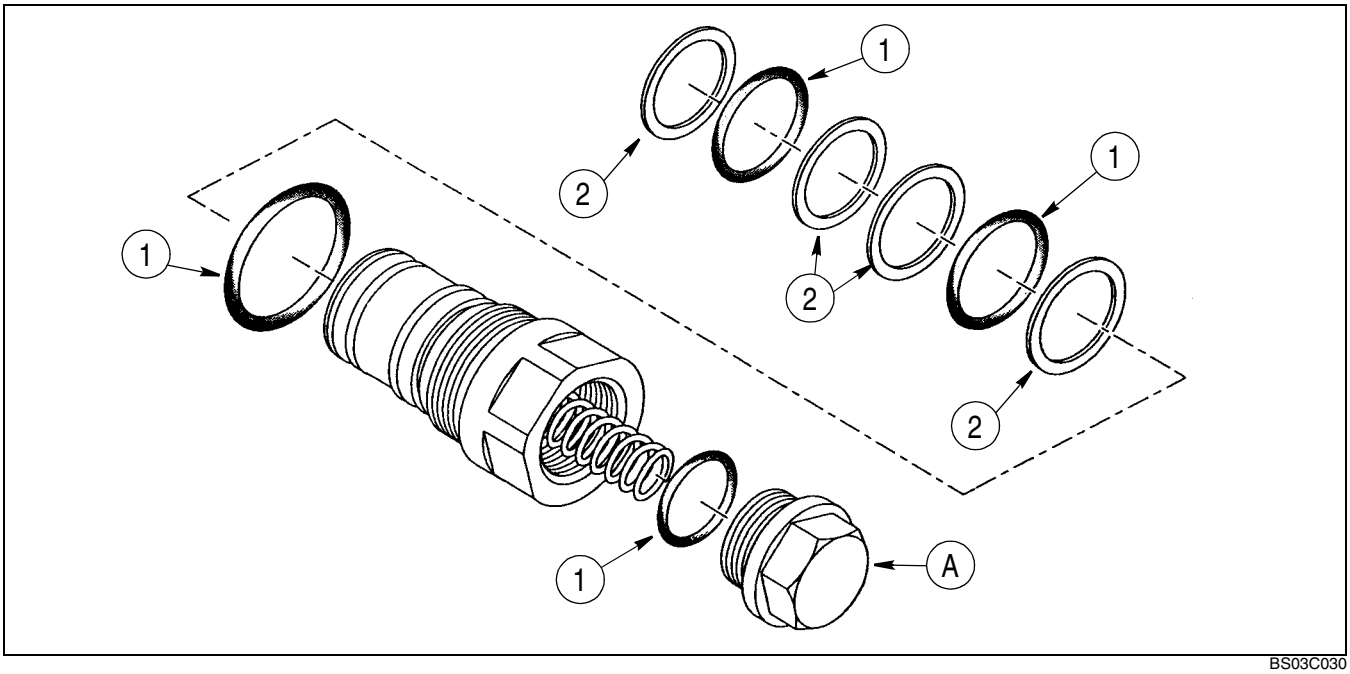


BS03C031

1. O-RINGS 2. COIL

Install new O-rings and thrust rings on anticavitation valve (18). Hand tighten coil nut (A).

STEP 3



BS03C030

1. O-RINGS 2. THRUST RINGS

Install new O-rings and thrust rings on anticavitation and pressure relief valves (19). Torque cap (A) to 100 Nm (73.7 lb-ft).

BUCKET CYLINDERS Z-BAR MODELS

Disassembly

1. Clean the outside of the cylinder. If the hoses were removed with the cylinder, remove the hoses from the cylinder.
2. Fasten the tube (1) in an acceptable repair stand or other holding equipment, refer to Figure 2. Do not damage the tube (1).
3. Loosen and remove the locking screw (12) from the gland (4) and tube (1).
4. Use a spanner wrench to loosen and remove the gland (4) out of the tube (1).
5. Pull the piston rod (12) straight out of the tube (1) to prevent damage to the tube (1).
6. Fasten the piston rod eye or yoke in a vise and put a support under the piston rod (12) near the piston (16). Put a shop cloth between the support and the piston rod (12) to prevent damage to the piston rod (12).
7. Use a torque multiplier, CAS1039 to loosen and remove the bolt (15), washer (14) that fastens the piston (16) to the piston rod (12).
8. Remove the piston (16) from the piston rod (12).
9. Remove the gland (4) from the piston rod (12).
10. Remove the seal (17), backup ring (19) and wear ring (20) from the piston (16).
11. Remove the O-ring (11), backup ring (10), wiper (5), seal (6), seal (7) and bushing (8) from the gland (4).

Inspection

1. Discard the parts that were removed from the piston and the gland.
2. Clean all parts in cleaning solvent. Use only lint free cloths for cleaning and drying.
3. Check to be sure that the piston rod is straight. If the piston rod is not straight, replace it with a new piston rod.
4. Illuminate the inside of the tube for deep grooves and other damage. If there is any damage to the tube, replace it with a new tube.
5. Remove any small scratches on the piston rod or inside the tube with emery cloth of medium grit. Use the emery cloth with a rotary motion.
6. Inspect the bushings in the piston rod eye or yoke and the tube. Replace as required.
7. Inspect the gland for rust and clean and remove rust as necessary.
8. Inspect the gland end of the tube for sharp edges that will cut the gland O-ring and remove as necessary.
9. Inspect the piston for damage and wear. If the piston is damaged or worn, replace it with a new piston.

Section
8007

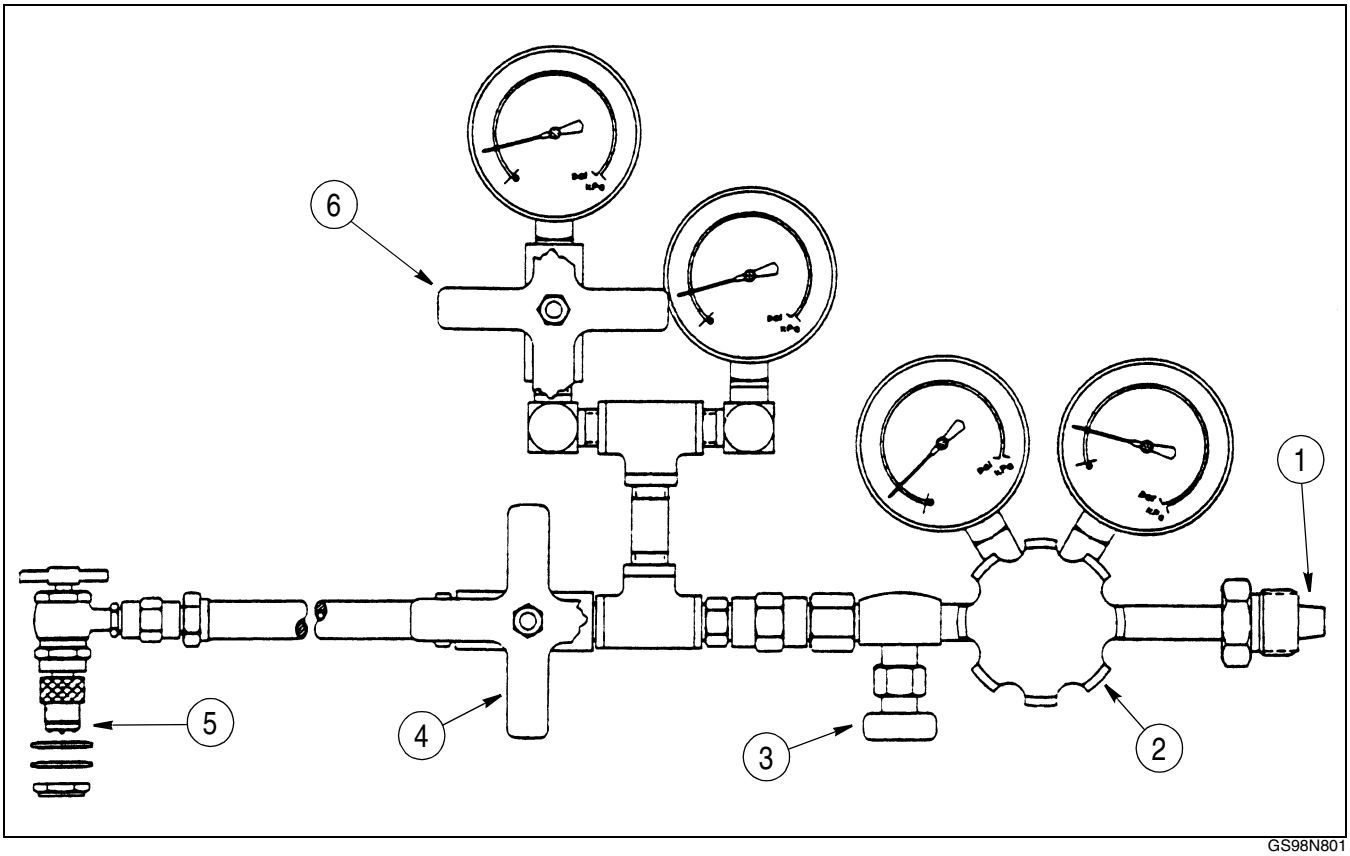
COUPLER SOLENOID LOCKING VALVE

8007

NEW HOLLAND CONSTRUCTION, LLC.
245 E NORTH AVENUE
CAROL STREAM, IL 60188 U.S.A.

Bur 6-73470

CHARGING THE ACCUMULATOR WITH NITROGEN



GS98N801

1. TO NITROGEN TANK
2. VALVE A
3. VALVE B
4. VALVE D
5. TO ACCUMULATOR
6. VALVE C

NITROGEN CHARGING KIT CAS10899

WARNING: *Use only nitrogen when charging the accumulator. Do not use air or oxygen that will cause an explosion.*

M253A

WARNING: *Do not drop the accumulator. A charged accumulator contains nitrogen compressed to 31 bar (450 psi). If the charging valve breaks away from the accumulator, the escaping nitrogen will propel the accumulator at a dangerous rate of speed.*

M406

WARNING: *Do not expose the accumulator to temperatures above 49° C (120° F). A charged accumulator contains nitrogen compressed to 31 bar (450 psi). High heat will cause the safety plug to blow out of the accumulator and the escaping nitrogen will propel the accumulator at a dangerous rate of speed.*

M407

IMPORTANT: *The four valves must be in the positions noted in the procedure before connecting the Nitrogen Accumulator Charging Kit to the machine or nitrogen, refer to the above illustration.*

IMPORTANT: *To help prevent equipment damage, the low pressure gauge valve C MUST BE SHUT OFF during high pressure (10 bar/150 psi and above) applications.*

Section 9001

PEDALS AND LEVERS

Issued October, 2003

NEW HOLLAND CONSTRUCTION, LLC.
245 E NORTH AVENUE
CAROL STREAM, IL 60188 U.S.A.

Bur 6-73520

OPERATION

The refrigerant circuit of the air conditioning system contains five major components: compressor, condenser, receiver-drier, expansion valve and evaporator. These components are connected by tubes and hoses and operate as a closed system. The air conditioner system is charged with HFC-134a refrigerant.

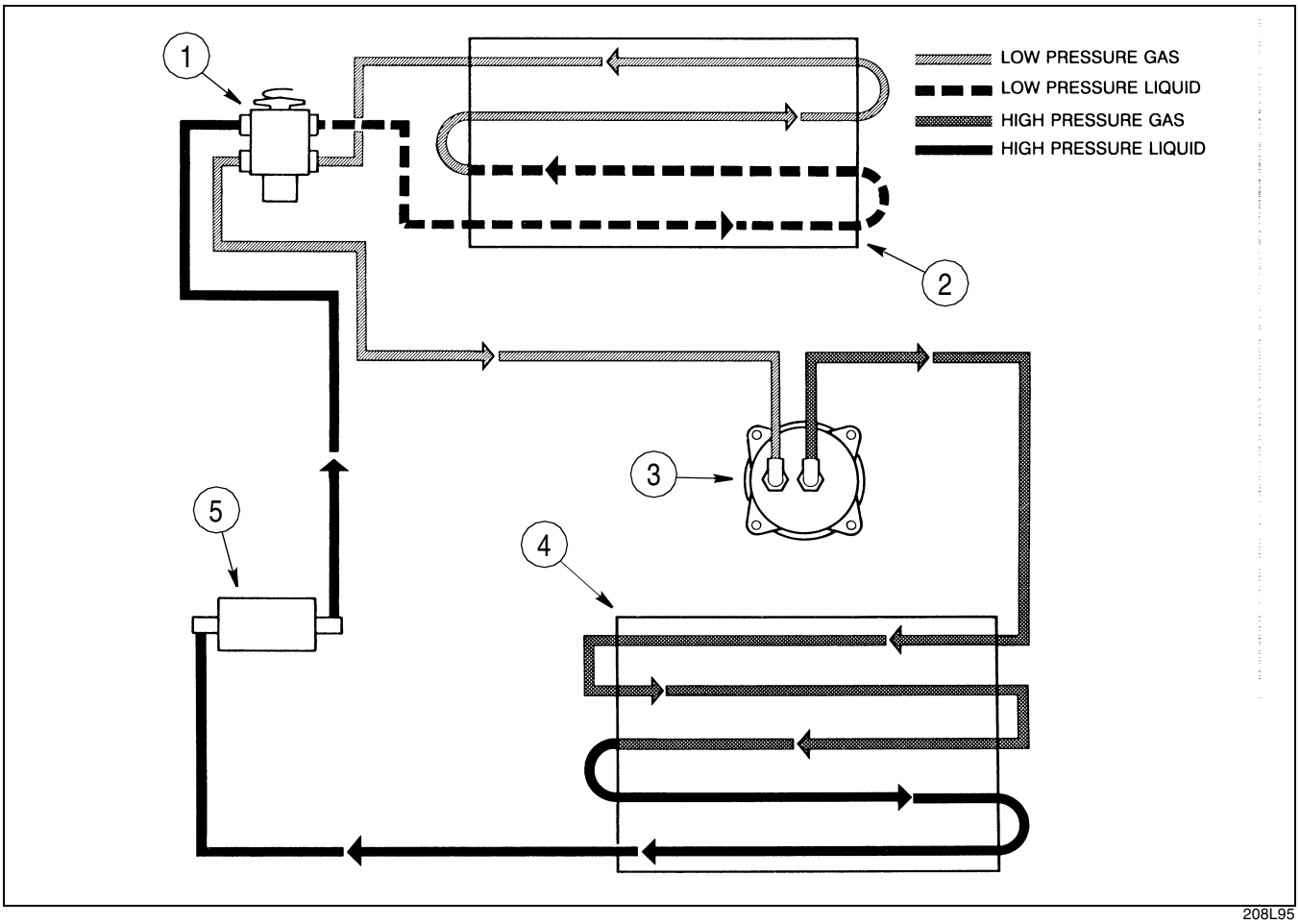
The compressor receives the refrigerant as a low pressure gas. The compressor then compresses the refrigerant and sends it in the form of a high pressure gas to the condenser. The air flow through the condenser then removes the heat from the refrigerant. As the heat is removed the refrigerant changes to a high pressure liquid.

The high pressure refrigerant liquid then flows from the condenser to the receiver-drier. The receiver-drier is a container filled with moisture removing material, which removes any moisture that may have entered the air conditioner system in order to prevent corrosion of the internal components of the air conditioner system.

The refrigerant, still in a high pressure liquid form, then flows from the receiver-drier to the expansion valve. The expansion valve then causes a restriction in flow of refrigerant to the evaporator core. The evaporator meters refrigerant flow based on evaporator heat load.

As the refrigerant flows through the evaporator core, the refrigerant is heated by the air around and flowing through the evaporator fins. The combination of increased heat and decreased pressure causes the air flow through the evaporator fins to become very cool and the liquid refrigerant to become a low pressure gas. The cooled air then passes from the evaporator to the cab for the operator's comfort.

The electrical circuit of the air conditioning system consists of a fan speed control, temperature control, one (1) relay, a blower motor, blower resistor, A.C. compressor clutch, A.C. low pressure switch, A.C. high pressure switch, and A.C. warning light.

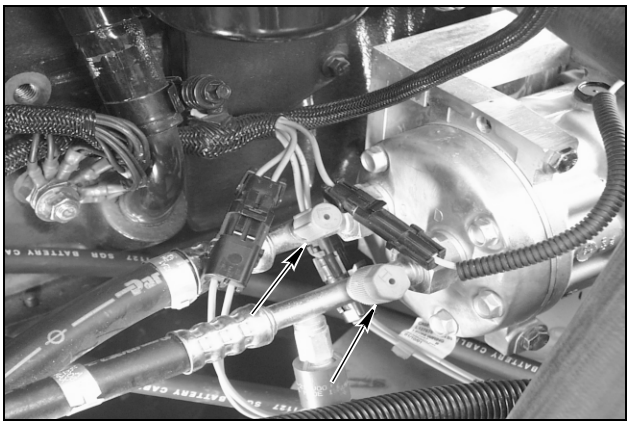


208L95

1. EXPANSION VALVE
2. EVAPORATOR
3. COMPRESSOR
4. CONDENSER
5. RECEIVER-DRIER

A/C RECOVERY AND CHARGING STATION CONNECTIONS

STEP 1

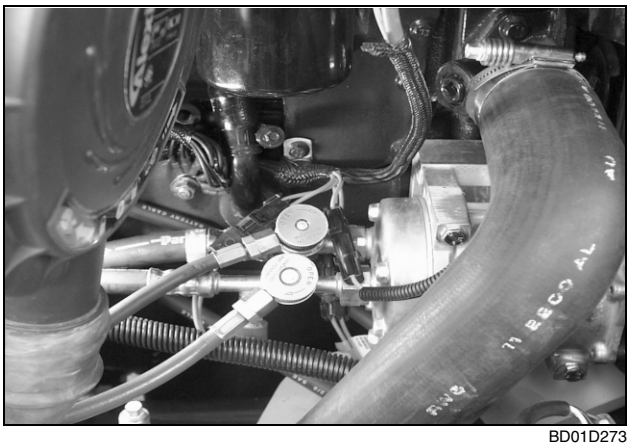


BD01D251

Clean the external surfaces of the compressor and hoses. Remove the caps from the service ports on the suction and pressure hoses.

WARNING: *Do not steam clean any air conditioning system parts while the system is charged. The heat will cause the refrigerant to rise to a pressure that could cause the system to explode.* SM104A

STEP 2



BD01D273

Connect the hoses from the test gauges to the service ports by turning the knurled knobs on the depressors.

Connect the hose from the low pressure gauge to the port on the suction hose.

Connect the hose from the high pressure gauge to the port on the discharge hose.

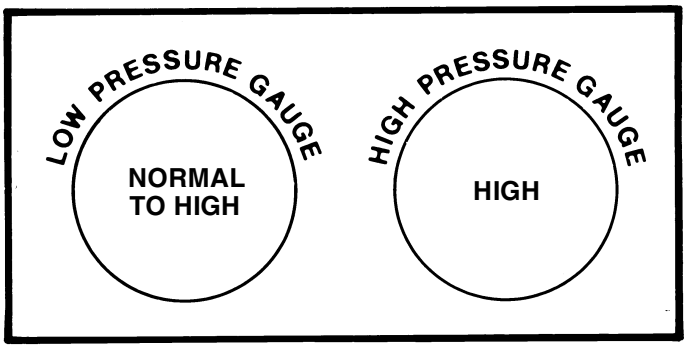
WARNING: *Always wear safety goggles when working with liquid refrigerant. Liquid refrigerant in your eyes could cause blindness.* SM105A

Make sure the charging station manifold gauge valves are in the closed position.

STEP 3

Start the engine and run at 1500 RPM maximum speed. Operate the air conditioner system at maximum cooling setting and blower speed for 15 minutes with the cab door open. Observe the test gauges and check the chart on page 13 against the gauge readings.

PROBLEM: NOISE IN SYSTEM



476L7

SEE PRESSURE - TEMPERATURE CHART ON PAGE 14

Too Much Refrigerant in System - Indications:

A. Cool discharge air from heater/evaporator. B. Compressor makes noise.	→	1. Remove refrigerant from system until gauge readings are below normal. See Section 9003. 2. Add new refrigerant until gauge readings are normal. See Section 9003.

STEP 18

A22114

Completely close the high and low pressure manifold valves.

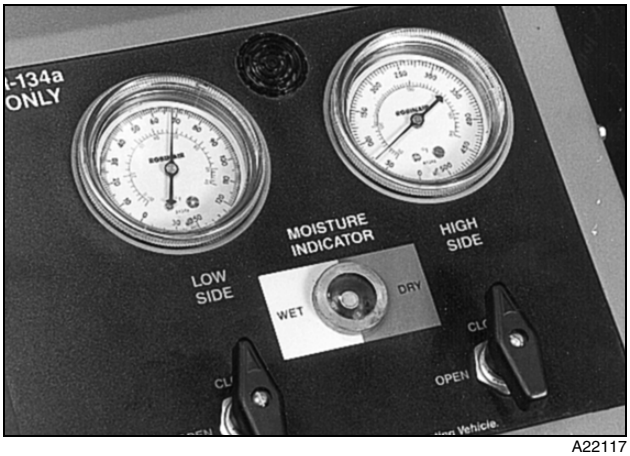
ATTENTION: *Check the OEM equipment manual before performing Step 19 to avoid damaging the recovery unit. The pressure reading should be obtainable with valves closed. Damage may occur if the machine is started with the valves accidently open or if either or both valves are opened while the A/C system is operating.*

STEP 19

Start the engine and run at 1500 RPM. Operate the air conditioner system at maximum cooling setting and blower speed with the doors and windows open.

NOTE: *The compressor will not operate if the system pressure is too low or too high. The pressure indicator lamp will illuminate when the relay is actuated by a low or high pressure and the compressor clutch will disengage. To restart the compressor, the air conditioner control or blower switch must be turned to the OFF position and then to the ON position.*

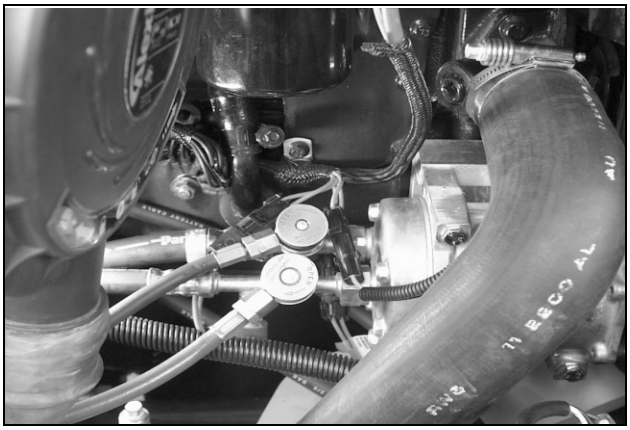
STEP 20



A22117

Observe the pressure gauge readings to determine that the correct amount of refrigerant has entered the system. See chart on Page 9002-9 for temperature and pressure variations.

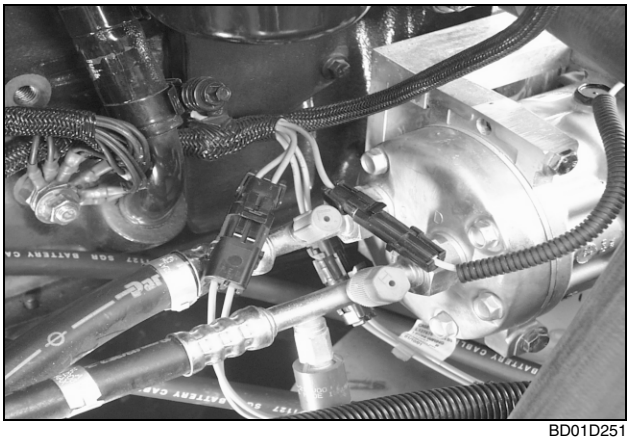
STEP 21



BD01D273

Stop the engine, close any open valves and carefully remove the manifold gauge hoses.

STEP 22



BD01D251

Install the caps on the service ports on the suction and discharge hoses.

EXPANSION VALVE, EVAPORATOR, HEATER CORE

Removal

STEP 15
Park the machine on a level surface and lower the bucket to the floor.

NOTE: *If replacing air conditioning components, discharge the air conditioning system according to the instructions in Section 9003.*

NOTE: *If replacing heater components, drain cooling system.*

STEP 16
Place the master disconnect in the OFF position.

STEP 17
Open right side access panel on cab.

STEP 18
Remove cap screws (1) and outer plate (3).

STEP 19
Remove cap screw (2) and side plate (4).

STEP 20
Disconnect the tubes from the expansion valve (6). Cap and plug all fittings and tubes.

STEP 21
Remove the expansion valve from the evaporator core.

STEP 22
Remove and discard the O-rings from the openings in the expansion valve.

STEP 23
Disconnect hoses from heater core.

STEP 24
Remove the evaporator/heater core from the machine.

Installation

STEP 25
Install the evaporator/heater core in position in the machine.

STEP 26
Connect the hoses and hose clamps to the heater core.

STEP 27
Lubricate new O-rings for the expansion valve with clean refrigerant oil.

STEP 28
Install the new O-rings in the openings of the expansion valve.

STEP 29
Connect the fittings of the evaporator core to the expansion valve .

STEP 30
Connect the liquid and the suction tube to the expansion valve.

STEP 31
Install new insulation tape around the fittings and the expansion valve.

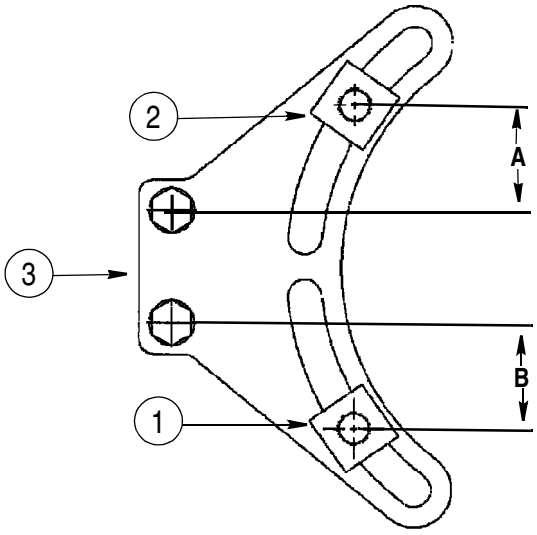
STEP 32
Install the side cover plate.

STEP 33
Install the outer cover for the evaporator/heater core.

STEP 34
Refill cooling system as required.

STEP 35
Charge the air conditioning system according to the instructions in Section 9003.

STEP 36
Place the master disconnect switch in the ON position.



BS01C082

1. HEIGHT CONTROL TARGET 2. RETURN TO TRAVEL TARGET 3. TARGET MOUNTING PLATE

MACHINE	A	APPROXIMATE RESULTING RETURN TO TRAVEL HINGE PIN HEIGHT	B	APPROXIMATE RESULTING HEIGHT CONTROL HINGE PIN HEIGHT
LW 130.B	44 mm (1.7 inches)	380 mm (15 inches)	38 mm (1.4 inches)	3302 mm (130 inches)
LW 130.B TC	78 mm (3 inches)	496 mm (19.5 inches)	54 mm (2.1 inches)	3302 mm (130 inches)

HEIGHT CONTROL AND RETURN TO TRAVEL ADJUSTMENT ILLUSTRATION

8. Refer to the table and the illustration on this page. Position the height control target (1) on the target mounting plate (3) using the table above.

NOTE: *The higher the height control target (1) is positioned in its slot in the target mounting plate (3), the lower the lift arms will stop as they are raised.*

9. Tighten the height control target (1).
10. Position the return to travel target (2) using the table above.

NOTE: *The higher the return to travel target (2) is positioned in its slot in the target mounting plate (3), the lower the lift arms will stop as they are lowered.*

11. Check to make sure the proximity switch (3) and all of the mounting bolts are tight. Refer to the illustration on page 6.
12. Start the engine.
13. Place the detent switch in the ON position, and set the return to travel/float detent switch to the return to travel position.
14. Place the loader control lever in the raise position and verify that the electromagnet holds it in that position until the height control target (2) passes in front of the proximity switch (3). Refer to the illustration on page 5.
15. With the lift arms still raised, place the loader control lever in the lower position and verify that the electromagnet holds it in that position until the return to travel target (5) passes in front of the proximity switch (3). Refer to the illustration on page 6.
16. Repeat steps 8 through 15 until the desired heights are reached.
17. Lower the bucket to the ground and stop the engine.

Section
9007

ROPS CAB AND ROPS CANOPY

9007

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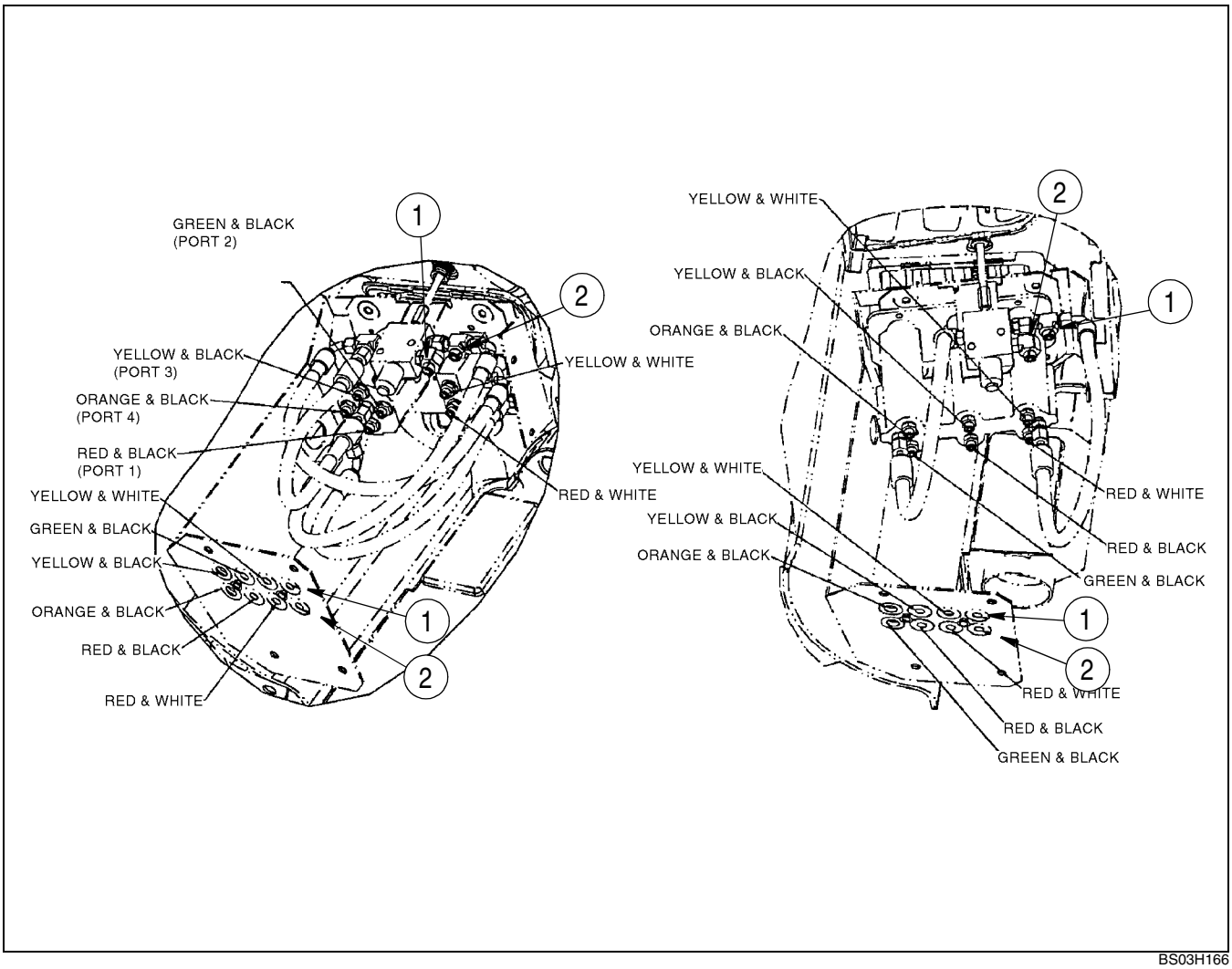
CAROL STREAM, IL 60188 U.S.A.

Bur 6-73570



BS03H166

1. PILOT PRESSURE HOSE
2. PILOT TANK HOSE

JOYSTICK AND 1 LEVER HOSE ILLUSTRATION

1. PILOT PRESSURE HOSE
2. PILOT TANK HOSE

3 LEVER HOSE ILLUSTRATION