SPECIFICATIONS

Engine

Make ..... CDC
Model 6TAA-590

Type: Four stroke, water cooled with overhead valves, direct injection in-line cylinder (electronic control) with turbocharger.
Number of cylinders 6
Bore and stroke ..... 4.13 x 4.92 inches
Displacement ..... 359 cu in

Operating conditions
Idle ..... 1000 rpm
Max speed ..... 2250 rpm
SAE net horse power ..... 190 HP
Max torque ..... 487 lb-ft at 1400 rpm

Capacities

Engine oil capacity ..... 6.3 gallons
Engine cooling circuit ..... 7.6 gallons
Capacity of only the radiator ..... 5.2 gallons
Fuel reservoir ..... 89.8 gallons
Hydraulic fluid reservoir capacity ..... 31.7 gallons
Total hydraulic circuit capacity ..... 63.4 gallons
Capacity of only the oil-cooler ..... 4.1 gallons
Travel reduction gear housing capacity ..... 1.2 gallons
Swing drive housing capacity ..... 1.5 gallons
Idler pulley capacity ..... 8.25 oz
Upper roller capacity ..... 8.08 to 8.25 oz
Lower roller capacity ..... 9.24 oz

NOTE: *These capacities are given only for information purposes. To check the fluid levels, always use the oil gauge, visual gauges or the filler cap.*

Electrical system

Type of system ..... 24 volts earth negative
Alternator amperage ..... 50 amperes
Battery
- Number of batteries required 2
- Voltage of each battery ..... 12 volts
- Capacity ..... 112 Ah
- Reserve ..... 160 min
- Cold startability at 1.4°F ..... 800 A
- Load for load control ..... 400 A

Starter
- Voltage ..... 24 volts
- Power ..... 4.5 kW

Voltage regulator ..... built-in, without adjustment

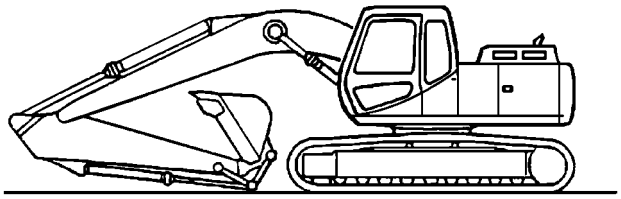
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ENGINE

Removal and installation

STEP 1



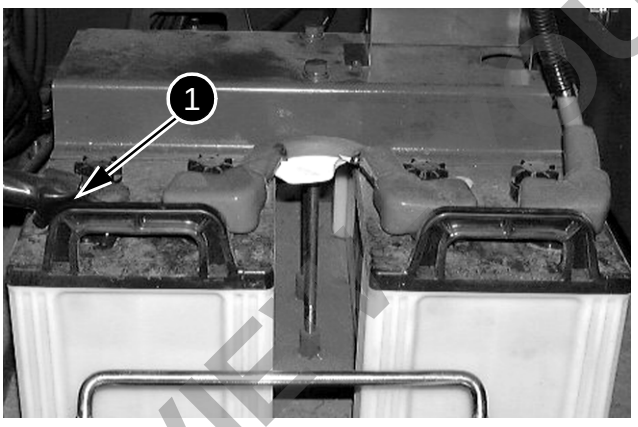
JS00163A

Park the machine on hard, flat ground. Lower the attachment to the ground.

STEP 2

Release pressure in the hydraulic system and in the hydraulic reservoir (see Section 8000).

STEP 3



CD00F091

Disconnect the (-) earth cable (1) from the battery.

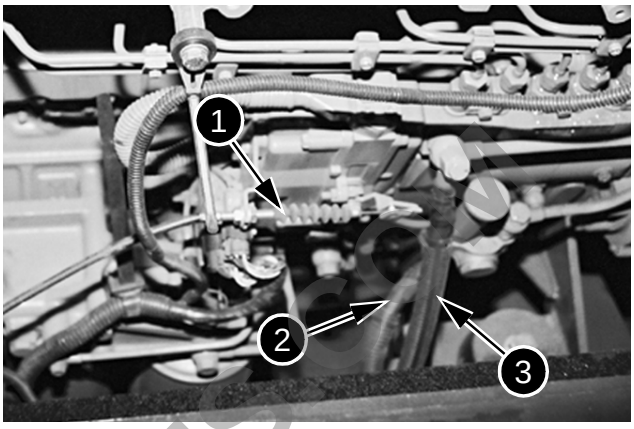
STEP 4

Refer to Section 8003 and remove the hydraulic pump.

STEP 5

Refer to Section 2001 and remove the radiator and oil-cooler assembly.

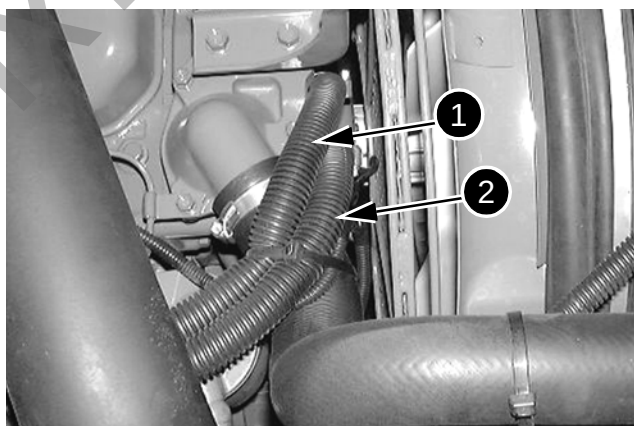
STEP 6



CD02C168

Remove the engine shutdown control (1).
Disconnect the fuel supply pipe (2) and the fuel return pipe (3) and plug them.

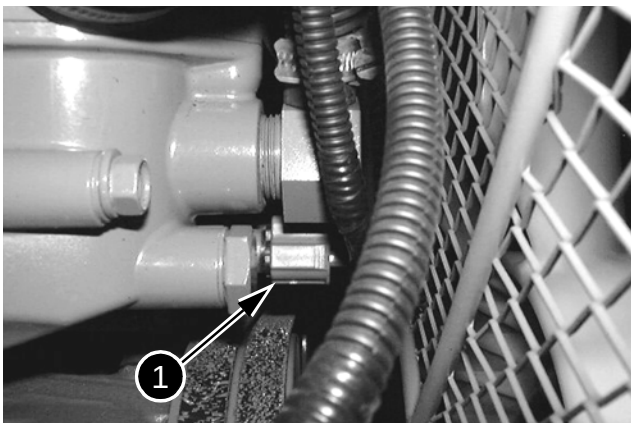
STEP 7



CD00J039

Remove the hoses (1) and (2) from the heater circuit and plug them.

STEP 8



CD00J044

Label and disconnect the electrical connections from the water temperature sensor (1).

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TROUBLESHOOTING

Prior Inspections

Item	Value	Action
POINTS TO BE CHECKED WHEN STARTING		
Lubricants - Coolants		
1. Check the quantity of fuel	---	Add fuel
2. Check that fuel is not contaminated	---	Clean, drain
3. Check the quantity of hydraulic fluid	---	Fill with fluid
4. Inspect the hydraulic fluid filter	---	Drain, clean
5. Check the quantity of oil in each reduction gear	---	Fill with oil
6. Check the quantity of engine oil	---	Fill with oil
7. Check the quantity of coolant	---	Fill with coolant
8. Check the filter restriction indicator (dust)	---	Clean or change
Electrical equipment		
9. Check the battery terminals and wiring for tightness and corrosion	---	Tighten or change
10. Check the alternator terminals and wiring for tightness and corrosion	---	Tighten or change
11. Check the starter motor terminals and wiring for tightness and corrosion	---	Tighten or change
OTHER POINTS TO CHECK		
Hydraulic system - Mechanical equipment		
12. Abnormal noise or smell	---	Repair
13. Check for oil leaks	---	Repair
14. Air in the system	---	Bleed the air
Electrical system - Electrical equipment		
15. Check the battery voltage (with engine shut down)	23-26 V	Change
16. Check the quantity of fluid in the battery	---	Add or change
17. Make sure that the cables are not discolored, burnt or stripped	---	Change
18. Check for missing or loose cable retaining clips	---	Repair
19. Check for dampness on cables (especially on connectors and terminals)	---	Disconnect and dry if damp
20. Check fuses for condition and corrosion	---	Change
21. Check the alternator voltage (with engine speed above the throttle control mid-point) (when battery charge is insufficient, there can be 25 V only at start up)	27.5-29.5 V	Change
22. Noise from battery relay (with starter motor ON or OFF)	---	Change

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ITEM	DESCRIPTION
A1.	COMPUTER
A2.	ENGINE CONTROLLER
A4.	WIPER CONTROLLER
A6.	BLOWER AMP
B1.	COOLANT TEMPERATURE SENSOR
B2.	HYDRAULIC OIL TEMPERATURE SENSOR
B21.	ENGINE OIL PRESSURE SWITCH
B22.	SWING PILOT PRESSURE SWITCH
B23.	BREAKER / CRUSHER PILOT PRESSURE SWITCH
B25.	BREAKER PILOT PRESSURE SWITCH
B26.	UPPER PILOT PRESSURE SWITCH (YELLOW BAND)
B27.	TRAVEL PILOT PRESSURE SWITCH
B41.	ENGINE RPM SENSOR
B42.	PUMP PRESSURE SENSOR (P1)
B43.	PRESSURE SENSOR (NEGA-CONT)
B44.	PUMP PRESSURE SENSOR (P2) (BLUE BAND)
B46.	ENGINE POSITION SENSOR
B47.	BOOST PRESSURE SENSOR
B5.	SVA SENSOR
B6.	AIR TEMPERATURE SENSOR
B61.	SUNLOAD SENSOR
B7.	WATER IN FUEL SENSOR
B8.	COOLANT LEVEL SENSOR
B81.	HORN
C1.	WORKING LIGHT (UPPERSTRUCTURE)
E2.	WORKING LIGHT (ATTACHMENT)
E4.	CAB LIGHT
E51.	CIGARETTE LIGHTER
E52.	AIR CONDITIONER
E53.	HEATER
F1.	FUSE 10A: ENGINE CONTROLLER TEST POINT CONNECTOR
F10.	FUSE 10A: BREAKER AND CRUSHER OPTION / SECOND OPTION
F11.	FUSE 10A: BACK-UP
F12.	FUSE 10A: KEY SWITCH
F13.	FUSE 20A: HEATER / AIR CONDITIONER
F14.	FUSE 5A: AIR CONDITIONER COMPRESSOR
F15.	FUSE 15A: WORKING LIGHT
F16.	FUSE 15A: OPTIONAL POWER CONNECTOR
F17.	FUSE 10A: DC-DC (24V-12V) CONVERTER
F18.	FUSE 15A: WIPER AND WASHER
F19.	FUSE 10A: HORN
F2.	FUSE 20A: COMPUTER CONTROL INSTRUMENT PANEL AND DIAGNOSTIC TEST SOCKET
F20.	FUSE 10A: CIGARETTE LIGHTER
F21.	FUSE BOX
F22.	FUSE 20A: MAIN FUSE FOR F1, F11 AND F12 CIRCUITS
F23.	FUSE 65A: MAIN FUSE FOR F3 TO F10 AND F13 TO F20 CIRCUITS
F24.	FUSE 20A: MAIN FUSE FOR F2 CIRCUIT
F29.	FUSE 120A: GREAD HEATER
F3.	FUSE 20A: COMPUTER POWER
F30.	BOX FUSE
F32.	ENGINE CONTROLLER FUSE BOX
F4.	FUSE 10A: HYDRAULIC FUNCTION CANCELLATION LEVER SWITCH
F5.	FUSE 10A: OPTIONAL POWER CONNECTOR
F6.	FUSE 20A: OPTION LINE CONNECTOR
F7.	FUSE 20A: FUEL FILLER PUMP
F8.	FUSE 10A: CAB SEAT AIR SUS
F9.	FUSE 10A: CONDENSOR FAN RELAY
G1.	BATTERY
G2.	ALTERNATOR
H1.	AUDIBLE WARNING DEVICE
H2.	TRAVEL ALARM
K1.	RELAY-ENGINE EMERGENCY STOP
K13.	RELAY-STARTER
K14.	RELAY-FUEL SHUTOFF
K15.	RELAY-GRID HEATER
K17.	BLOWER OFF RELAY
K3.	RELAY-HORN
K4.	RELAY-WORKING LIGHT
K7.	RELAY BATTERY
M1.	STARTER MOTOR
M12.	FUEL PUMP
M13.	PRIME PUMP MOTOR
M3.	WIPER MOTOR
M4.	WASHER MOTOR
M5.	MOTOR (AIR CHANGING)
M6.	AIR VENT DIRECTION CONTROL MOTOR
M7.	MOTOR ACT (AIR-MIX)
M8.	BLOWER MOTOR
P1.	INSTRUMENT PANEL
P2.	SWITCH PANEL (LEFT-HAND)
P3.	SWITCH PANEL (RIGHT-HAND)
P4.	MONITOR DISPLAY
P5.	HOURMETER
P6.	AIR CONDITIONER CONTROL PANEL
P8.	HEATER CONTROL PANEL
R1.	THROTTLE VOLUME
R4.	THERMISTOR
R5.	FUEL SENSOR
R6.	GREAD HEATER
S1.	KEY SWITCH
S10.	WORKING LIGHT SWITCH
S11.	WIPER SWITCH
S12.	WASHER SWITCH
S13.	OVERLOAD SWITCH
S14.	BREAKER / CRUSHER SWITCH
S15.	HORN SWITCH
S16.	ONE TOUCH IDLE
S2.	TRAVEL MODE SWITCH
S21.	ONE TOUCH MULTIPURPOSE (R)
S22.	FREE SWING SWITCH
S24.	OPTION LINE SWITCH (MULTIPURPOSE)
S25.	ONE TOUCH MULTIPURPOSE (L)
S3.	WORK MODE SWITCH
S4.	AUTO MODE SWITCH
S5.	CUSHION CONTROL SWITCH
S51.	HYDRAULIC FUNCTION CANCELLATION LEVER SWITCH
S52.	AIR CONDITIONING COMPRESSOR CLUTCH SWITCH
S53.	DOOR LIMIT SWITCH
S54.	FRONT WINDOW LIMIT SWITCH
S7.	AUDIBLE ALARM CUT OUT SWITCH
S8.	SWING BRAKE SWITCH
S9.	ENGINE EMERGENCY STOP SWITCH
U1.	DC-DC (24V-12V) CONVERTER
W1.	ANTENNA
X1.	FUEL FILLER PUMP CONNECTOR
X10.	CONDENSOR FAN RELAY CONNECTOR
X3.	OPTINAL POWER CONNECTOR
X4.	ENGINE TEST POINT CONNECTOR
X5.	CONTROLLER TEST POINT CONNECTOR
X8.	RADIO CONNECTOR
X9.	ANTI THEFT SYSTEM CONNECTOR
Y1.	SWING PILOT SHUT-OFF SOLENOID VALVE (GREEN BAND)
Y16.	MULTI-PURPOSE SOLENOID VALVE (R) (OPTIONAL)
Y17.	MULTI-PURPOSE SOLENOID VALVE (L) (OPTIONAL)
Y18.	FREE SWING SOLENOID VALVE
Y2.	PILOT PRESSURE SOLENOID VALVE (BLUE BAND)
Y3.	SWING BRAKE SOLENOID VALVE (PINK BAND)
Y4.	2 STAGE TRAVEL SOLENOID VALVE (RED BAND)
Y5.	POWER-UP SOLENOID VALVE (YELLOW BAND)
Y6.	CUSHION CONTROL SOLENOID VALVE (LIGHT GREEN BAND)
Y7.	MAIN PUMP PROPORTIONAL SOLENOID
Y8.	AIR CONDITIONER MAGNET CLUTCH
Y9.	CRUSHER/BREAKER OPTION TWO FLOW SOLENOID VALVE

LEGEND

- CONNECTED
- NOT CONNECTED
- BOOT GROUND
- CABLE GROUND
- SINGLE WIRE CONNECTOR
- HARNESS
- CONNECTOR (MALE)
- CONNECTOR (FEMALE)
- TWIST-PAIR CABLE
- INSULATION AGAINST MAGNETISM
- INDICATES CONSTANT POWER
- INDICATES POWER WHEN KEY SWITCH IS ON

CONNECTOR NUMBER (IN CAB) — CN12 (R) — COLOR OF CONNECTOR (IF NOT INDICATED COLOR IS WHITE)

CONNECTOR LETTER LOCATED (OUTSIDE CAB)

60 B 001 — AREA / COLOR — CIRCUIT NUMBER

TABLE OF COLOR SYMBOLS

SYMBOL	COLOR
B	BLACK
W	WHITE
Br	BROWN
P	PINK
V	VIOLET
G	GREEN
O	ORANGE
R	RED
Y	YELLOW
Lg	LIGHT GREEN
So	SKY BLUE
L	BLUE
Gr	GRAY

NOTE :
1. "BR" INDICATES BLACK CABLE WITH RED STRIPE.
2. WATERPROOF CONNECTORS USED OUTSIDE OF CAB.

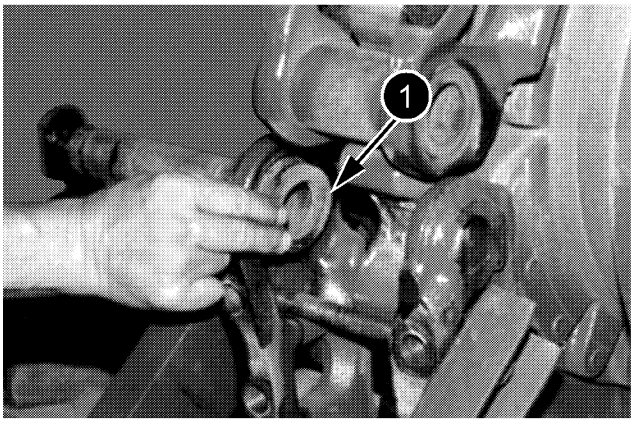
CX290 EXCAVATOR ELECTRICAL SCHEMATIC

Part Number 9-42670

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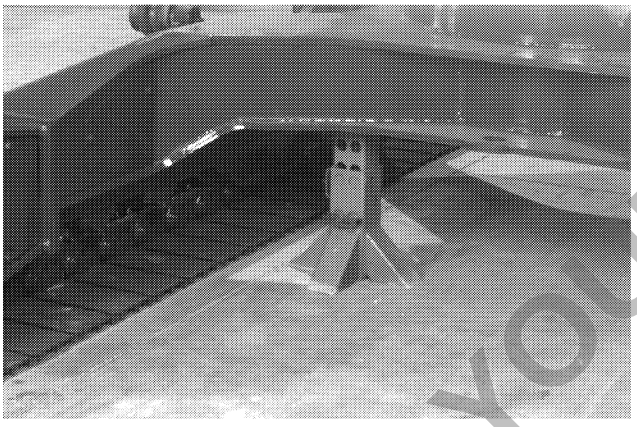
STEP 10



JD00278A

Using a crowbar, separate the chain links. Remove the two spacers (1) from the end of chain axle.

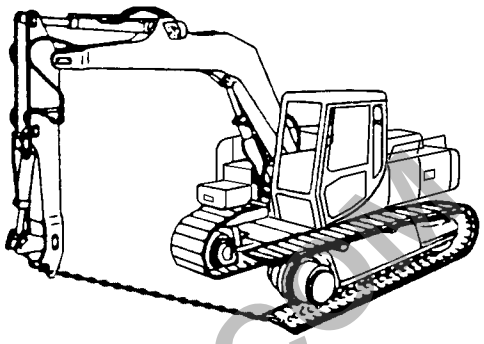
STEP 11



JD00279A

Start the engine. Using the attachment, lift the upperstructure on the side of the track to be removed. Install supports under the machine to hold the machine in place and lower the machine onto the supports. Shut down the engine.

STEP 12



JS00280A

Sling the lower end of the track. Start the engine. Operate the machine backwards and move the arm out at the same time. When the track is free from the sprocket, stop reversing the machine. Continue operating the arm out until the track is pulled from beneath the machine. Stop the engine, move the track to be replaced away from the machine.

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SPECIAL TORQUE SETTINGS

No.	Component	Screw (Ø)	Wrench (mm)	Torque setting (lb-ft)
1 *	Travel motor and reduction gear assembly	M24	36	664-774
2 *	Sprocket	M20	30	384-448
3 *	Idler wheel	M16	24	197-230
4 *	Upper roller	M20	30	384-448
5 *	Lower roller	M24	36	664-774
6	Chain guide	M24	36	664-774
7	Track pad	M24	32	912-1114
8	Counterweight	M30	46	782-911
9	Turntable (frame)	M24	36	577-673
10	Turntable (upperstructure)	M24	36	577-673
11 *	Swing motor and reduction gear assembly	M24	36	577-673
12 *	Engine	M16	24	195-231
13 *	Engine bracket	M10	17	47-54
14	Radiator	M16	24	108-130
15 *	Hydraulic pump	M10	17	47-54
		M20	Hexagonal	271-366
16 *	Hydraulic reservoir	M16	24	171-203
17 *	Fuel reservoir	M16	24	171-203
18 *	Control valve	M16	24	197-230
19 *	Hydraulic swivel	M12	19	80-94
20	Cab	M16	24	57-59
21	Battery	M10	17	15-21

NOTE: *Use Loctite 262 or an equivalent on retaining screws of those components marked with an asterisk (*).*

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CX290 Crawler Excavators
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	Disassembly and assembly of the engine	*	
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6	**DRIVE TRAIN**		
	Drive motor and final drive transmission removal and installation	6001	9-43140GB
	Swing reduction gear, removal and installation	6003	9-44010GB
	Swing reduction gear, disassembly and assembly	6004	9-43220GB
	Travel reduction gear assembly and disassembly	6005	9-43150GB
7	**UNDERCARRIAGE HYDRAULICS**		
8	**UPPERSTRUCTURE HYDRAULICS**		
	Depressurising and decontaminating the hydraulic system, use of the vacuum pump and bleeding the components	8000	9-44030GB
	Specifications, troubleshooting, checks and hydraulic pressure settings	8001	9-53390
	Hydraulic reservoir removal and installation	8002	7-27990GB
	Main and pilot pumps, removal and installation	8003	9-44050GB
	Main hydraulic control valve, removal and installation	8004	9-44410GB
	Attachment cylinders, removal and installation	8005	7-27791GB
	Hydraulic swivel, removal and installation	8006	7-27811GB
	Pilot blocs, removal and installation	8007	9-35590
	Swing motor, removal and installation	8008	9-44020GB
	Free swing disassembly and assembly	8009	9-35530
	Main hydraulic pump, disassembly and assembly	8010	9-35491GB
	Main hydraulic control valve, disassembly and assembly	8011	9-43550GB
	Attachment cylinders, disassembly and assembly	8012	9-44420GB
	Hand control levers, disassembly and assembly	8013	7-28110GB
	Foot control levers, disassembly and assembly	8014	7-28210GB
	Six-solenoid valves, disassembly and assembly	8015	9-43360GB
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	Hydraulic swivel, disassembly and assembly	8018	7-28080GB
	Swing motor, disassembly and assembly	8019	9-43440GB
	Hydraulic functions	8020	9-53400
	Travel hydraulic motor, disassembly and assembly	8021	9-43160GB

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SAFETY

This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.

To prevent injury always follow the Warning, Caution and Danger notes in this section and throughout the manual.

Place a “Do not operate“ tag on the starter switch key before carrying out any service or repair work on the machine.

.

WARNING: *Read the operator’s manual to familiarize yourself with the correct control functions.*

WARNING: *Operate the machine and equipment controls from the seat position only. Any other method could result in serious injury.*

WARNING: *This is a one man machine, no riders allowed.*

WARNING: *Before starting engine, study Operator’s Manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating.*
It is your responsibility to understand and follow manufacturers instructions on machine operation, service and to observe pertinent laws and regulations. Operator’s and Service Manuals may be obtained from your Case dealer.

WARNING: *If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.*

WARNING: *When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.*

WARNING: *When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.*

WARNING: *When putting the hydraulic cylinders on this machine through the necessary cycles to check operation or to remove air from a circuit, make sure all people are out of the way.*

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REVISION No. 1
Crawler excavators
CX290
Service manual Cre 9-53580

Revision contents:

9-53581	Identification Decal	New Decal
9-53431	Table of Contents	New Table of Contents
9-88870GB	Section 9006 - Air Conditioner Troubleshooting and System Checks	New Section

NOTE: *Keep this revision page with the first pages in your binder for reference purposes. If you have several revisions to insert at the same time, start with the oldest, then the next oldest, and so on.*

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SPECIFICATION

Weight of engine ..... See Section 1002

TORQUE SETTING

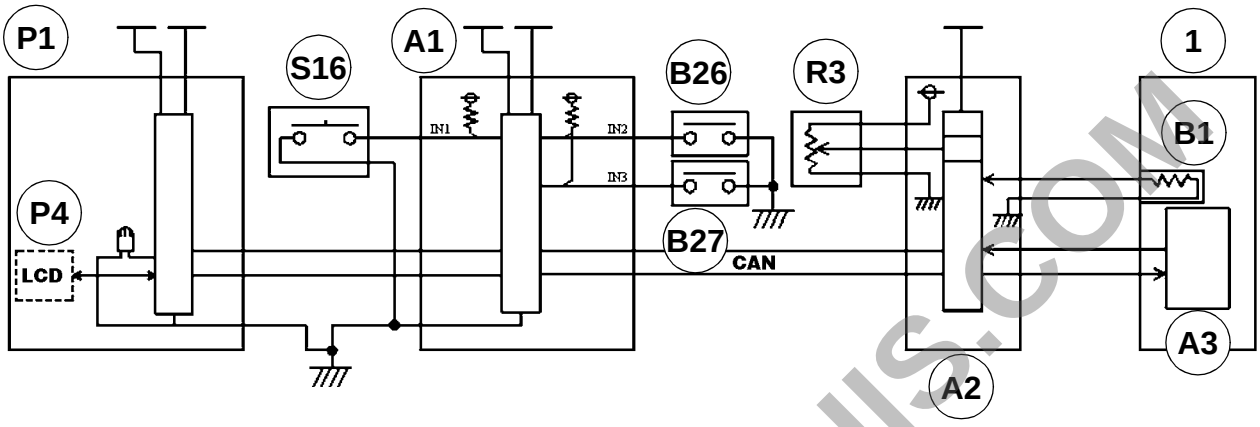
Retaining screw of the engine ..... 214 ± 18 lb-ft

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Automatic Engine Warm-up

1) Circuit configuration



CS00F515

1. Engine
A1. Computer
A2. Engine controller
A3. Electronic acceleration
B1. Coolant temperature sensor
B26. Upper pilot pressure switch (yellow band)
B27. Travel pilot pressure switch
P1. Instrument panel
P4. Monitor display
R3. Throttle volume
S16. One touch idle

2) Operation

1. When the engine is started, if the coolant solution temperature is equal to or lower than 122°F, the engine coolant temperature sensor (B1) transmit an signal to the computer (A1).

2. The computer (A1) manages the automatic engine warm-up.

3. Automatic engine warm-up conditions:
- Coolant temperature sensor (B1) equal to or lower than 122°F.
- Upper pilot pressure switch (yellow band) (B26) and travel pilot pressure switch (B27) not on.
- One touch idle (S16), not actived.
- Position of throttle volume (R3), unchanged.
- Engine speed not higher than 1800 rpm for 3 minutes.

4. If one of the above conditions is not present, the automatic engine warm-up does not operate. To perform the engine warm-up again, the engine has to be shut down and re-started.

5. When automatic engine warm-up is operating, "AUTO WARM UP" is displayed on the monitor display (P4).

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Reading the Organization Charts

Error code and description of problem

The error code and the description of the problem are shown in the organization charts

Error code	Description of problem
1	The message is still displayed even after refuelling
2	The message is still displayed even after adding coolant solution

Prior checks

Before identifying the cause of the problem, always make prior checks.

Procedure method

After checking or measuring the items described in Step 1, depending on the results, choose YES or NO and pass on to the next step.

The description in the YES or NO refers directly to the cause of the problem as the result of checks or measurements made. Refer to the description of the cause and carry out the repair procedures described on the right-hand side.

The inspection methods/measurements are described in Step 1. YES should be chosen if the criteria or questions meet the situation; NO if they do not meet it.

The necessary preparation work, operating method and the criteria are described under Step 1. This should be carefully read before starting the inspection and the measurements and the procedures should be followed, starting by Step (1) since negligent preparation work or incorrect operating methods can cause damage to the machine.

Wire color

When troubleshooting, refer to the table below for the wire colors. (For connector numbers, refer to the following pages).

Table showing wire colors

Symbol	Wire	Symbol	Wire
B	Black	R	Red
W	White	Y	Yellow
Br	Brown	Lg	Light green
P	Pink	Sb	Sky blue
V	Violet	L	Blue
G	Green	Gr	Grey
O	Orange		

BR indicates color B striped with R.
Example: BR indicates a black wire with red stripes

IMPORTANT: *Before removing or installing a connector, always turn the ignition key to OFF.*

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SPECIAL TORQUE SETTINGS 2

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- Track tension adjustment 10
- Checking pin and bushing wear 12

WARNING: *This symbol is used in this manual to indicate important safety messages. Every time you see this symbol, read carefully the message that follows, as it indicates that there is a risk of serious injury.*

SPECIFICATIONS

See Section 1002

SPECIAL TORQUE SETTINGS

See Section 1002

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SPECIFICATIONS

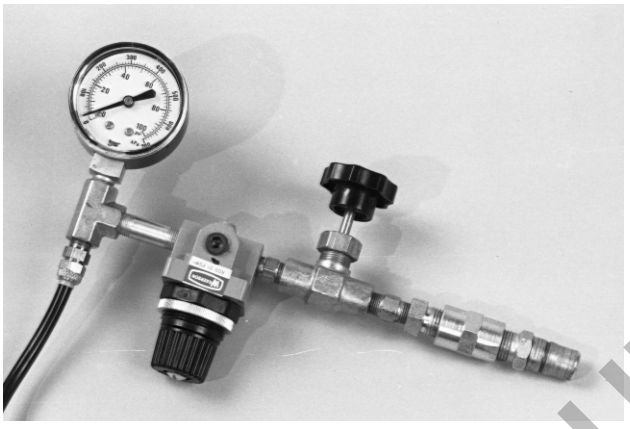
Idler wheel .....See Section 1002

SPECIAL TORQUE SETTINGS

Shock absorber spring yoke screw * .....197 to 230 lb-ft
Tension cylinder screw * .....197 to 230 lb-ft
Tension cylinder non-return valve.....43.5 lb-ft

* Apply Loctite 262 to the threads

SPECIAL TOOLS



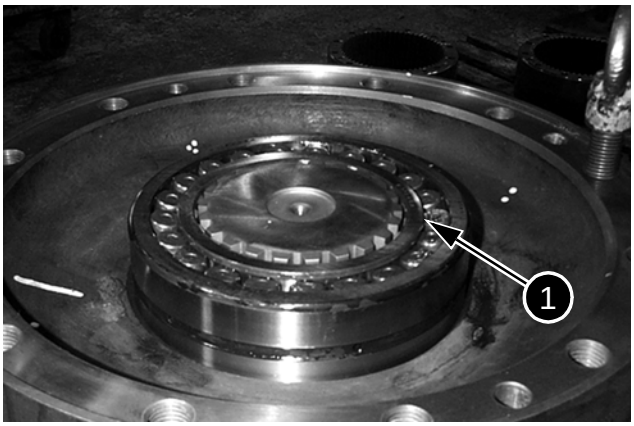
B407320M

Use CAS 1450 and CAS 1682 to check for leaks as below

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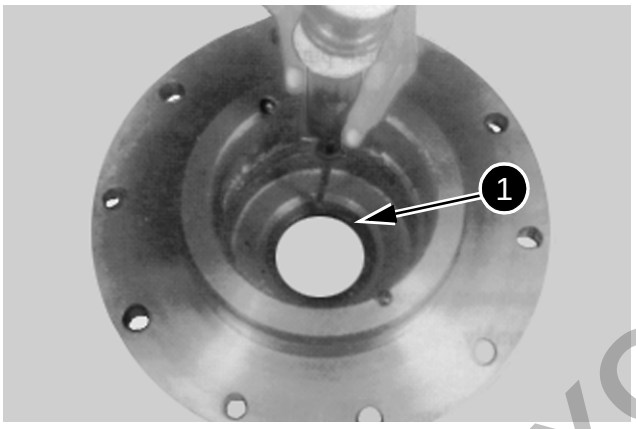
STEP 11



CD02B039

Remove the roller bearing (1) from the gear housing.

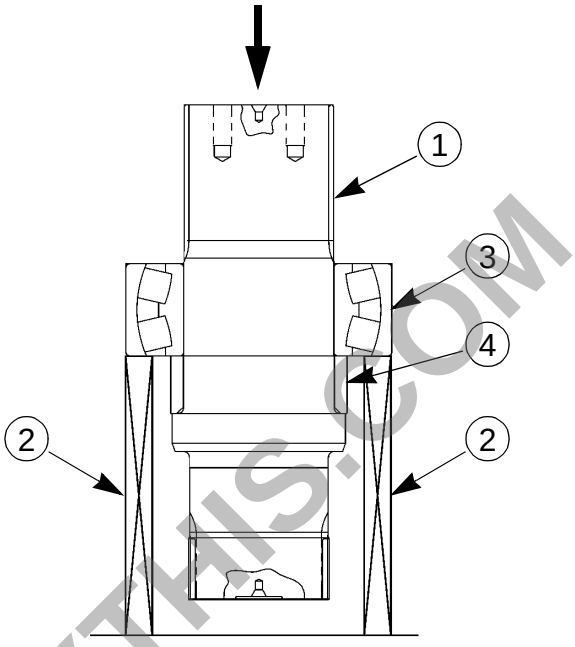
STEP 12



JD00459A

Using a suitable tool remove the lip seal (1) from the gear housing. Discard the lip seal.

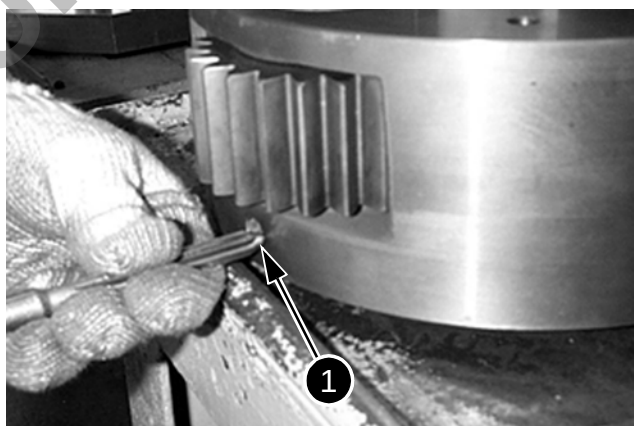
STEP 13



CI02B503

Place the shaft (1) under a press. Insert two shims (2), press the shaft (1) from the bearings (3). Remove the spacer (4).

STEP 14



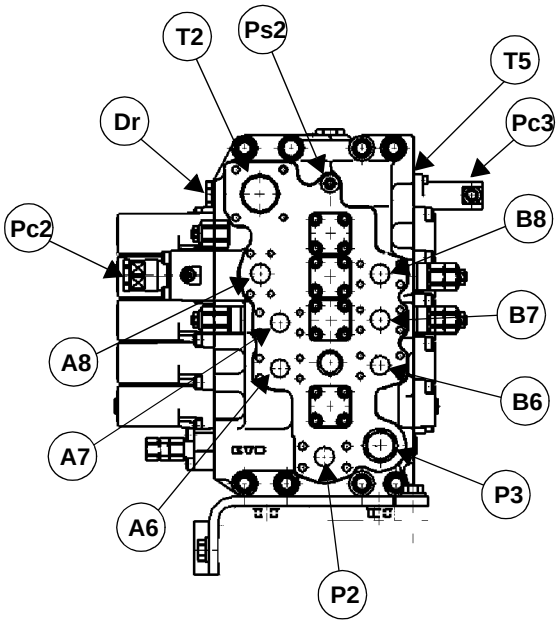
CD02B040

Place the planetary gear assembly on a workbench. Press the retainer pins (1) in the axles just enough to remove the axles.

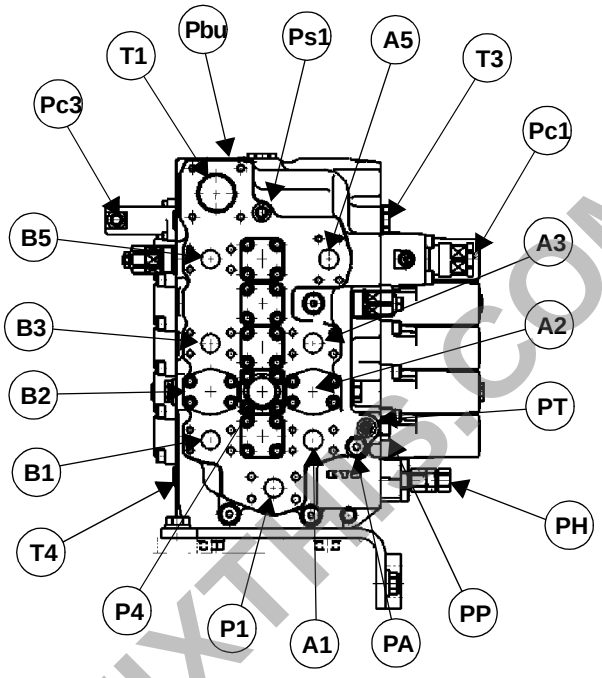
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Control valve



CS01M603



CS01M602

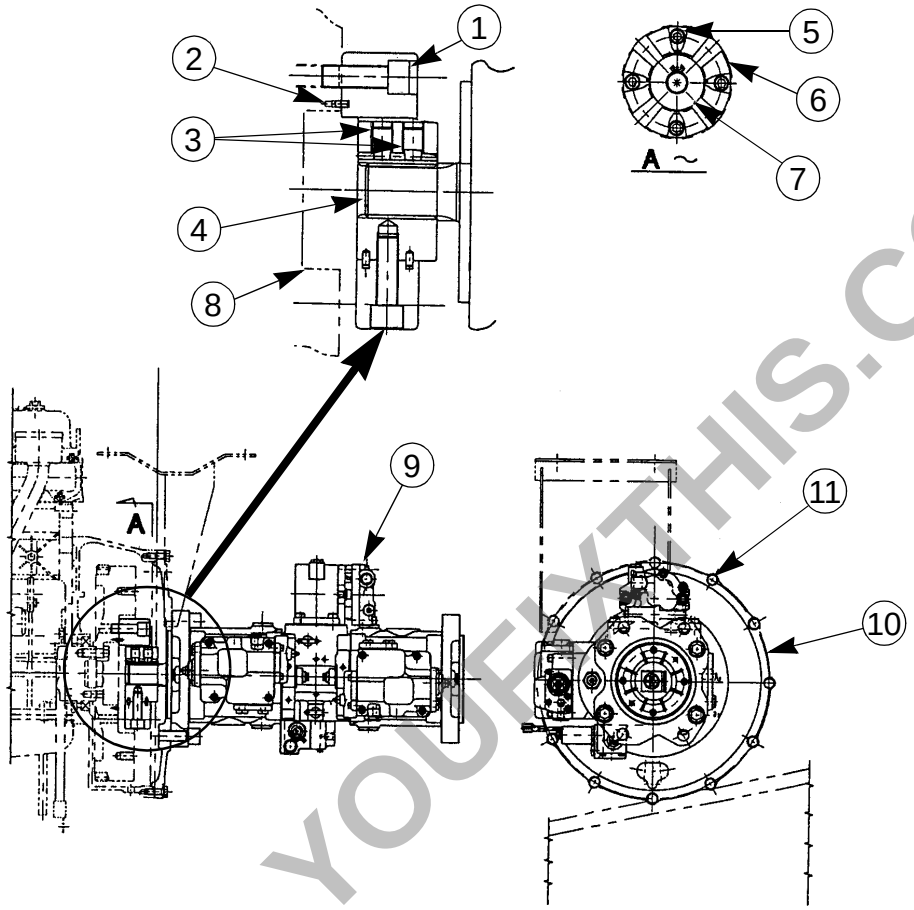
Port	Description	Port	Description
B7	Bucket opening	P3 P4	Option circuit
A7	Bucket closing	T1 T2	Return
B8	Boom lowering	Ps1 Ps2	Negative signal check
A8	Boom raising		
A6	LH forward travel	PT	Travel pilot pressure switch
B6	LH reverse travel	PH	Main relief power boost control
A5	Dipper out	PA	Attachment and swing pressure switch
B5	Dipper in	Dr	Leak return
B3	RH swing	Pc1	Dipper load holding
A3	LH swing	Pc2	Boom load holding
A2	Option circuit	T4	By-pass return
B2	Option circuit	T5	To shock absorber (pre-heat)
A1	LH forward travel	T3	Swing return
B1	LH reverse travel	Pc3-Pc3'	Priority to swing
P1 P2	Pump pressure	Pbu	Swing priority cancellation
		PP	Pilot pressure

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HYDRAULIC PUMP COUPLING

Description



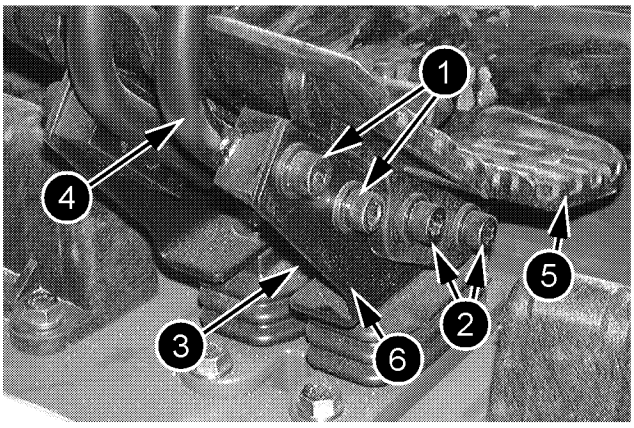
CS00M509

1 SCREW
2 ROLL PIN
3 LOCKING SCREW
4 HYDRAULIC PUMP SHAFT
5 DOWEL BLOCK
6 ELASTIC COUPLING
7 SPLINED SLEEVE
8 ENGINE HAND-WHEEL
9 HYDRAULIC PUMP
10 FLANGE
11 SCREW

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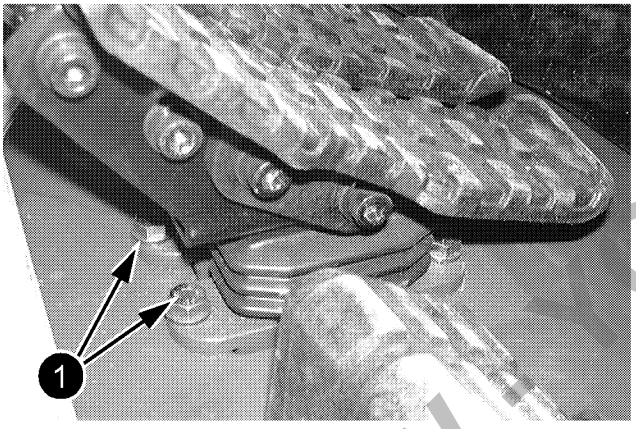
STEP 10



CD00G047

Remove the retainers (1), then remove the lever (4). Remove the retainers (2), then remove the pedal (5). Remove the retainers (3), then remove the bracket (6). Proceed in the same manner for the second pedal.

STEP 11



CD00E046

Put the floor carpet away from the pedals. Remove the four screws (1) that fasten the control pedal block to the cab floor, then remove the control pedal block.

NOTE: *When installing, proceed in the reverse order to that of removal. Start the engine and operate the control levers. Stop the engine, check the circuit for leaks and the hydraulic oil level in the reservoir, add oil if necessary.*

LH control lever

Removal and installation

NOTE: *Refer to page 3 and carry out steps 1 to 4.*

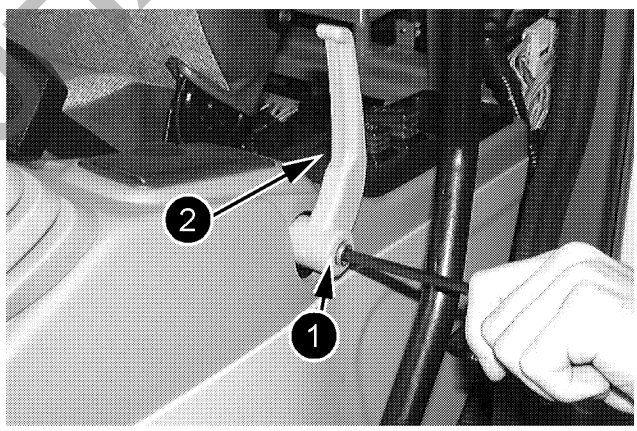
STEP 1



CD00G048

Lift the grommet. Loosen and remove the four retaining screws from the front upper portion of the control arm.

STEP 2



CD00G049

Loosen and remove the retaining screw (1) from the function cancellation lever (2), then remove the lever.

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Install the pilot spool (33) at (C) in the housing (38).

Install the lever (27), engaging the shaft (43) in the groove on the spool (33).

Install the plug (25) complete with the shaft (39) in the housing (38). Position the lever (27) correctly so that the shaft (39) is engaged in the orifice on the lever (27), then install the snap ring (23).

Install the plug (26) and the snap ring (24).

Install the spring (20), the spring seat (19) on the spool (34) and install the snap ring (18).

Install the spring (17).

Install the compensating piston (36), the sleeve (35), the spacer (41) and the piston (42) at orifice (B).

Install the cover (16) and tighten the screws (14).

Install the spring seat (13), the spring (12) and the spring guide (11) in the housing at (E) (see disassembly).

Install the spring seat (10), the inner spring (9), the outer spring (8) in the housing at (D) (see disassembly).

Install the cover (1) complete with adjusting screws (2), (3) and (6), the push-rod (4), the lock nuts (5) and (7).

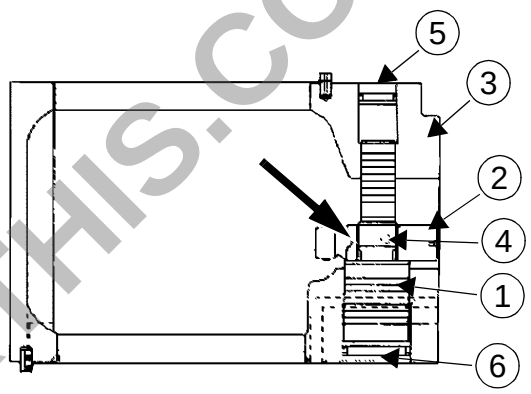
Install and tighten the retaining screws (15).

Pump assembly instructions

Assembly is done in the reverse order of disassembly, however, the following instructions need to be followed:

- Respect the reference marks made during disassembly.
- Lubricate the seals and the sliding parts.
- Do not mix the parts of the front and rear pumps.
- Use light Loctite when installing the control pivot.

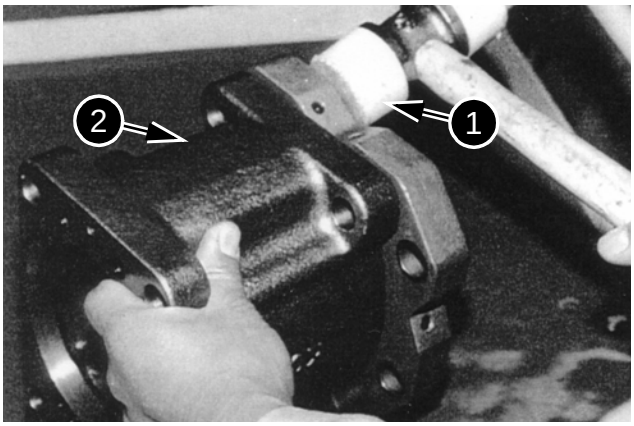
STEP 2



CI01G502

Install the control piston (1) and the control pivot (2) in the housing (3), coat with light Loctite that part of the control piston that is in contact with the control pivot (arrow). Position the pivot in such a way that the locking pin (4) is installed, wipe off excess Loctite. Lubricate the control piston (1) and its housing, fit new seals on the seal plates (5), (6) and install them in the housing (3).

STEP 3



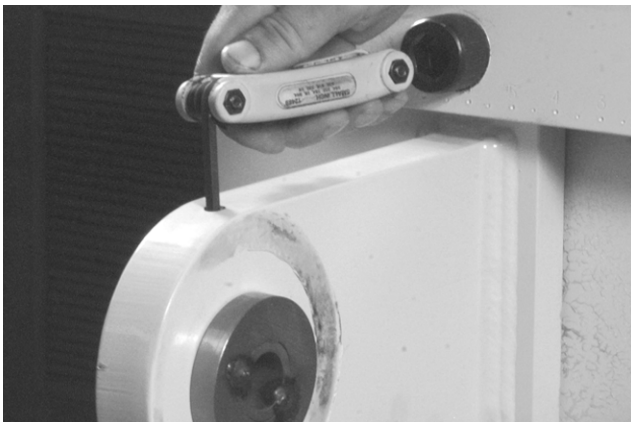
CD01G113

Fit a new O-ring on the flange (1). Install the flange (1) on the housing (2), respecting the reference marks made during disassembly.

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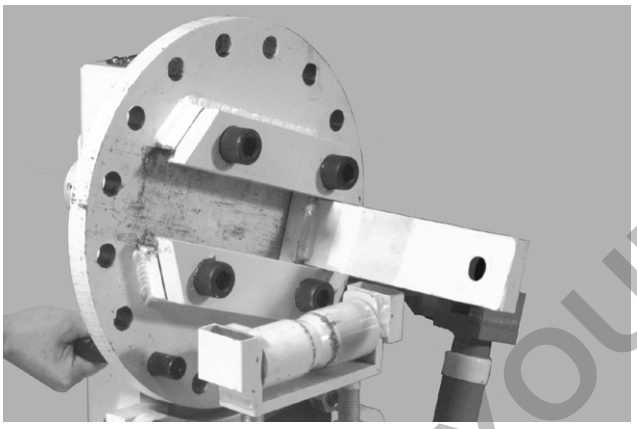
STEP 5



JD00621A

Tighten the bushing retaining screws.

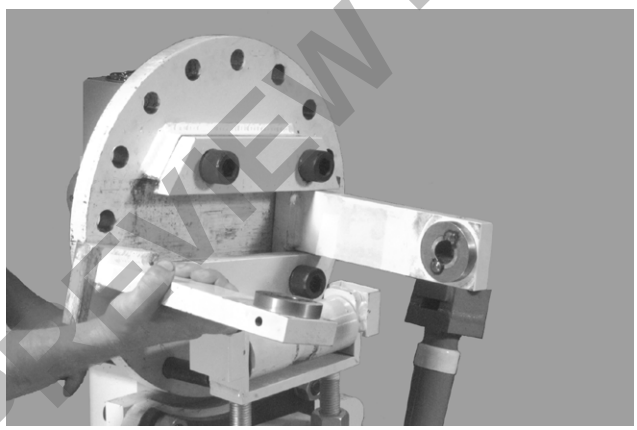
STEP 6



JD00623A

Install the stop pins on the boom tail stock.

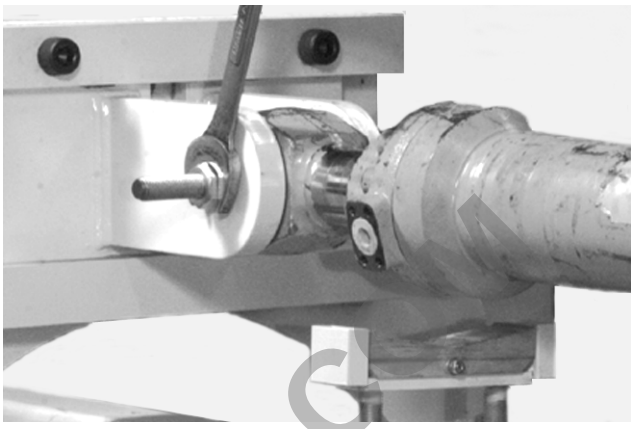
STEP 7



JD00624A

Install suitable bushings on the cylinder tail stock chuck wings. Tighten the retaining screws. Install the chuck wings on the cylinder tail chuck. Tighten the locking screws. Use the scale on the face of the chuck to aid in centering the chuck wings.

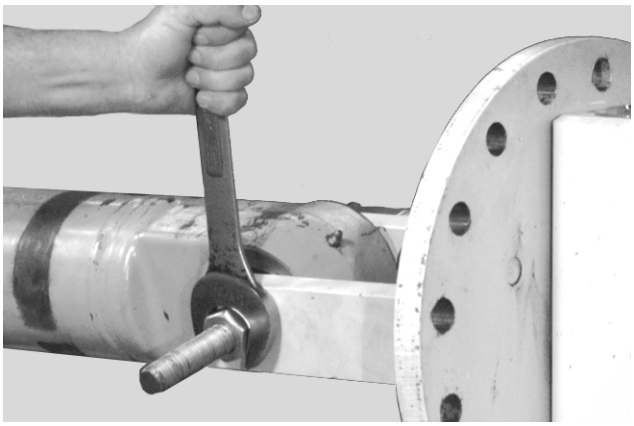
STEP 8



JD00625A

Connect lifting equipment, if necessary, to the cylinder. Position the cylinder in the repair stand with the rod end of the cylinder at the head stock chuck. Loosen the retaining screws of the tail stock chuck wings. When positioning the cylinder rod end on the head stock chuck wing, be sure that the chuck wing bushings are centred in the rod bushing. Install the screw and nuts to secure the cylinder rod end to the repair stand.

STEP 9



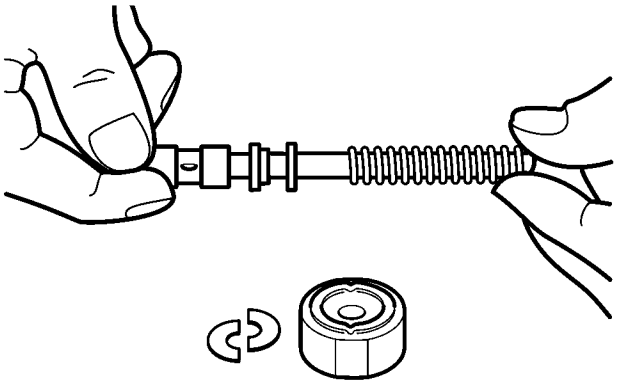
JD00626A

On the cylinder repair stand, loosen the retaining screws of the tail stock chuck wings. When positioning the cylinder barrel end on the head stock chuck wing, be sure that the bushings are centred in the cylinder barrel bushing. Install the screw and nuts to secure the cylinder barrel end to the repair stand.

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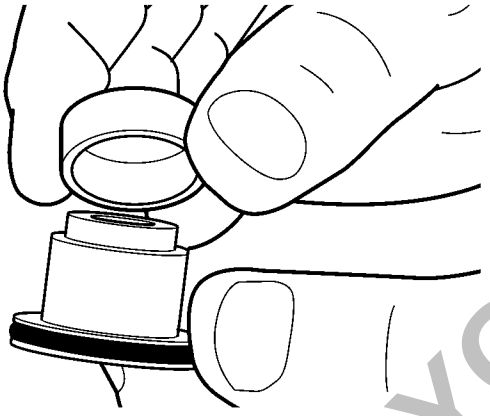
STEP 18



CI01B536

Mark and remove the spool, the spring seat, the calibrated spring, the spring seat and the shim.

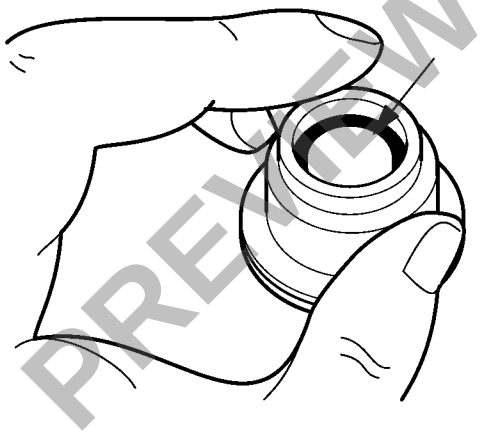
STEP 19



CI01B537

Mark and remove the bushing from the tappet guide.

STEP 20



CI01B538

Remove the wiper seal from the tappet guide.

NOTE: *Make sure you do not damage the inner portion of the tappet guide.*

STEP 21

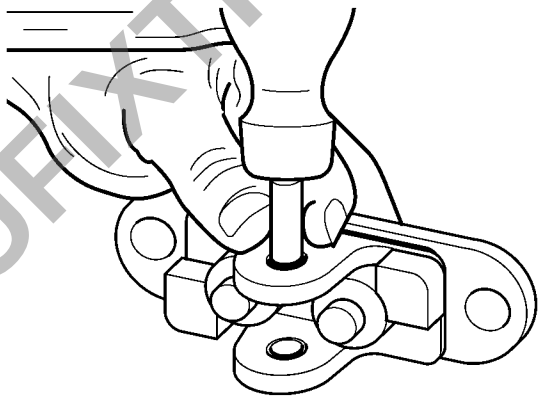


CI01B539

Remove the O-ring from the tappet guide.

NOTE: *Repeat the steps 7 to 21 for the three other control pedal ports.*

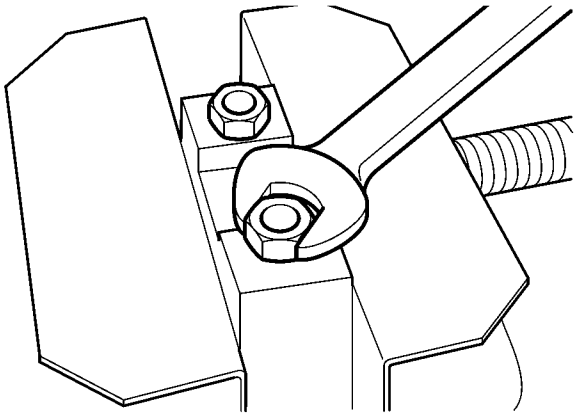
STEP 22



CI01B533

Position each cover on a flat surface and remove the bushings using a special tool and a hammer.

STEP 23



CI01B534

Fasten each cam assembly in a vice with protective jaws, loosen and remove the nuts and the setting screws.

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Section

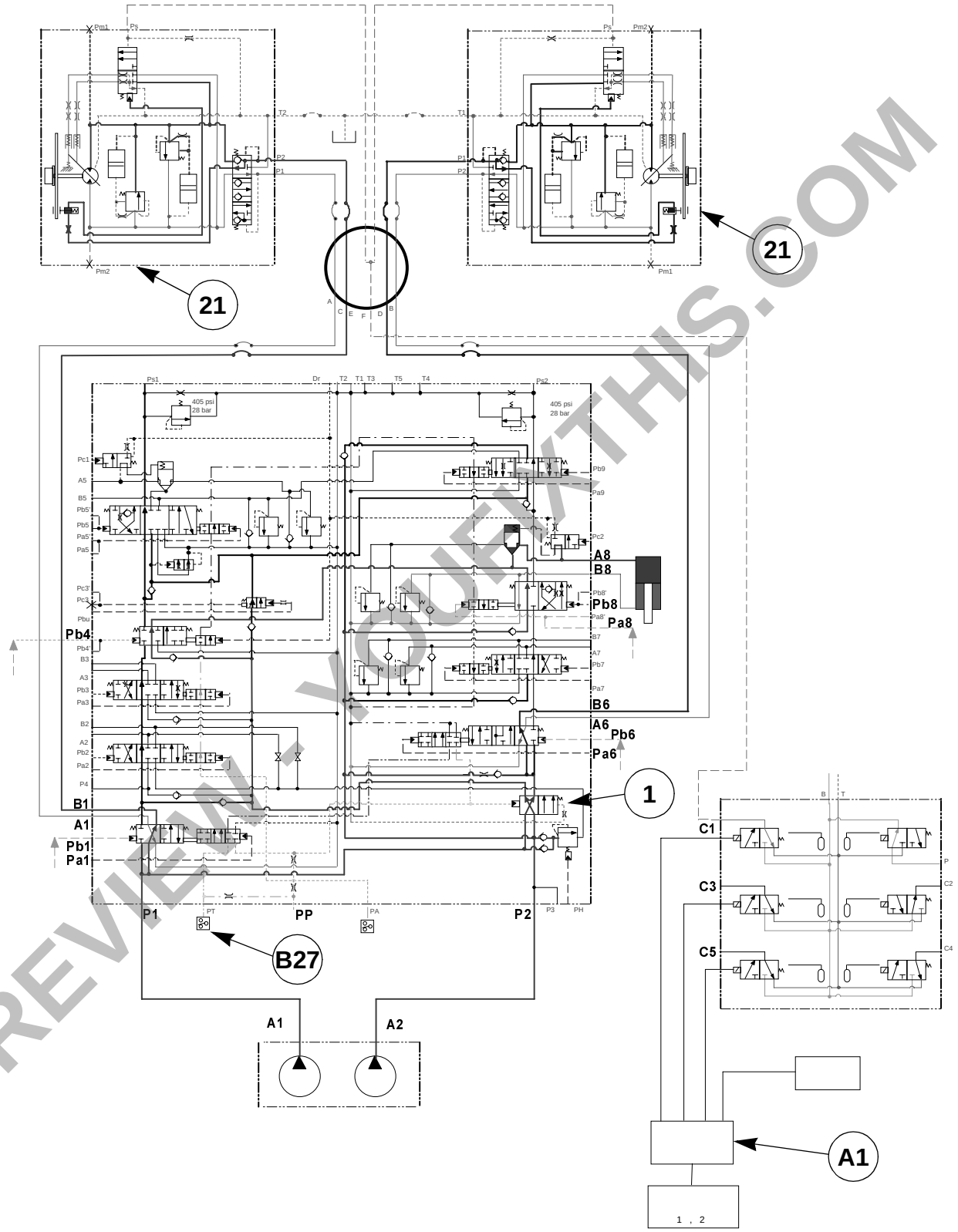
8018

DISASSEMBLY AND ASSEMBLY
OF THE HYDRAULIC SWIVEL

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SPECIAL TORQUE SETTINGS 2

SPECIFICATIONS 2

UPPERSTRUCTURE 3
- Inspection 3
- Removal 4
- Installation 6

COUNTERWEIGHT 10
- Description 10
- Removal 11
- Installation 11

WARNING: *This symbol is used in this manual to indicate important safety messages. Whenever you see this symbol, carefully read the message which follows. Your safety depends on it.*

SPECIAL TORQUE SETTINGS

See Section 1002.

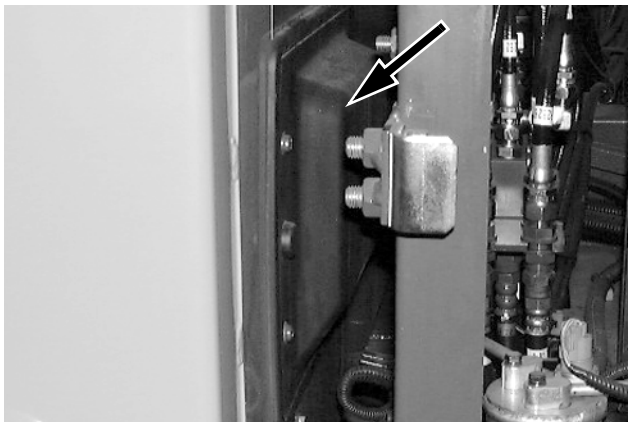
SPECIFICATIONS

Weight .....See Section 1002

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STEP 17



CD00G007

Remove the pollen filter guard, remove the pollen filter and remove the pollen filter conduit.

STEP 18

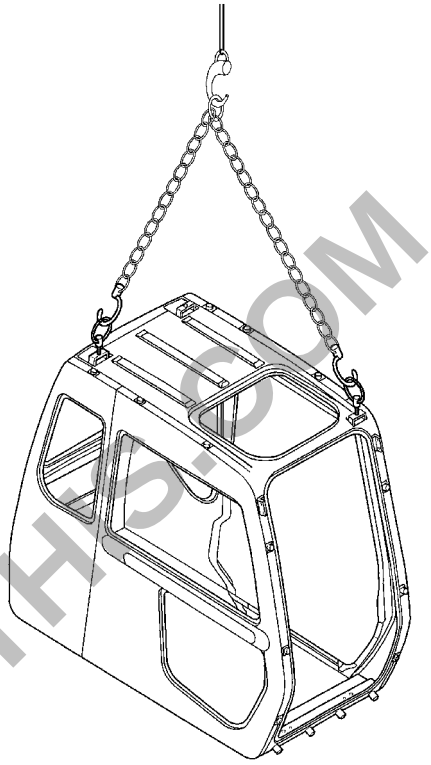
Remove the working light from the top of the cab. Retract the radio aerial. Install suitable lifting rings on the top of the cab. Install lifting equipment.

STEP 19

Remove the screws and washers which fasten the cab to the upperstructure frame.

NOTE: *Keep away from the cab while it is being lowered. Make sure that the cab is not damaged during lifting or lowering. Room for manoeuvre is very limited at the rear, on the sides and inside the cab.*

STEP 20



CI99G501

Using the lifting equipment, carefully raise the cab until it is completely away from the machine, then lower it to the ground.

NOTE: *The cab weighs 560 lbs.*

Installation

NOTE: *Keep away from the cab while it is being lowered. Make sure that the cab is not damaged during lifting or lowering. Room for manoeuvre is very limited at the rear, on the sides and inside the cab.*

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