821F
921F
Tier 4
Wheel Loader

SERVICE MANUAL

Part number 84487565
1st edition English
April 2011

CASE

921F - CAPACITIES AND LUBRICANTS

Engine Oil
- Capacity with Filter Change ..... 13.25 liters (14 U.S. Quarts)
- Total system capacity ..... 15.1 liters (16 U.S. Quarts)
- Type of oil ..... Case AKCELA No. 1 engine oil - see engine oil recommendations on page 4

Engine Cooling System
- Capacity ..... 30 liters (32 U.S. Quarts)
- Type of Coolant ..... 50% water and 50% Ethylene Glycol

Fuel Tank
- Capacity ..... 288 liters (76 U.S. Gallons)
- Type of Fuel ..... See Diesel fuel specifications on page 5

DEF (Diesel Exhaust Fluid) Tank
- Capacity ..... 41.3 liters (43.6 U.S. Quarts)

Hydraulic System
- Hydraulic Reservoir Refill Capacity ..... 110 liters (29.0 U.S. Gallons)
- Total System Capacity ..... 200 liters (53.0 U.S. Gallons)
- Type of Oil ..... Case AKCELA Hy-Tran Ultra®

Transmission
- Refill Capacity with Filter Change ..... 34.1 liters (36 U.S. Quarts)
- Type of Oil ..... Case Nexplore

Axles
- Capacity
  - Front ..... 42.0 liters (44.4 U.S. Quarts)
  - Rear ..... 40.0 liters (42.3 U.S. Quarts)
- Type of Lubricant ..... Case Nexplore

NOTE: *DO NOT use an alternate oil in the axles. The brake components in the axles could be damaged as a result of using an alternate oil. Machines are shipped from the factory with break-in oil.*

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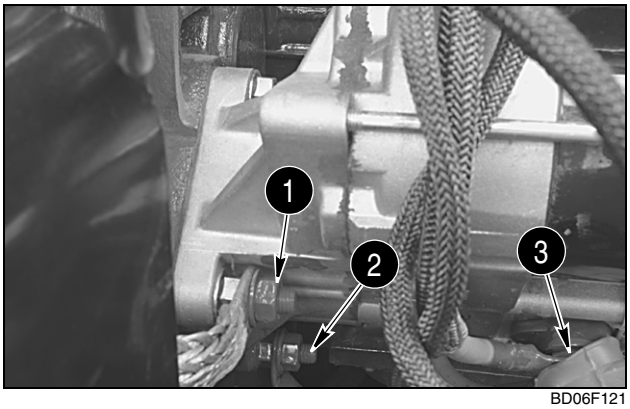
STEP 29

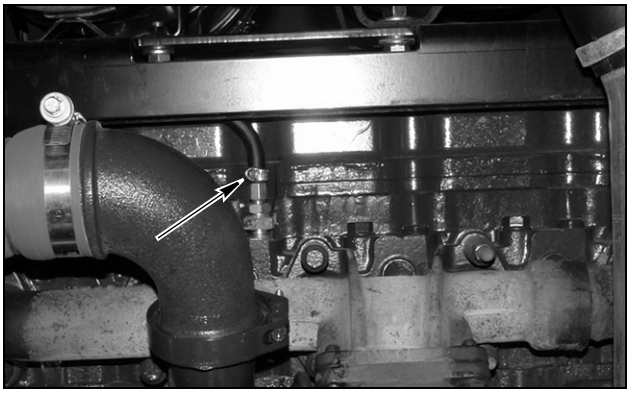


BD06F121

Tag and remove the wires from the starter solenoid (3), remove the ground cable (2), and ground strap (1) from the starter.

NOTE: *Move the starter cables away from the engine, move the wiring harness away from the engine.*

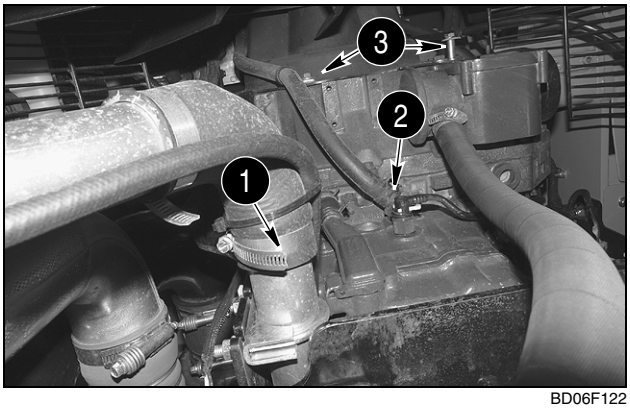
STEP 30



BD06F146

Disconnect the engine coolant vent hose and root to the rear of the engine.

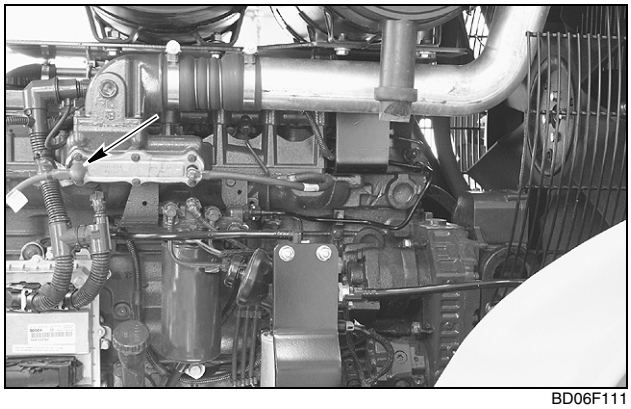
STEP 31



BD06F122

Remove the radiator hose (1) from the rear of the engine, remove the heater hose from the rear of the engine (2), remove the clamp bolts and clamps (3) from the bell housing.

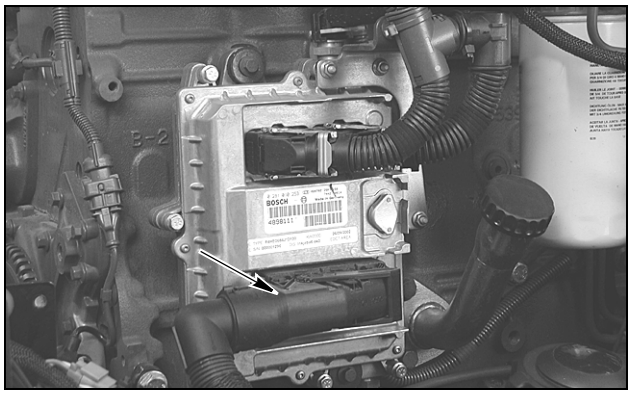
STEP 32



BD06F111

Tag and remove the grid heater cable.

STEP 33

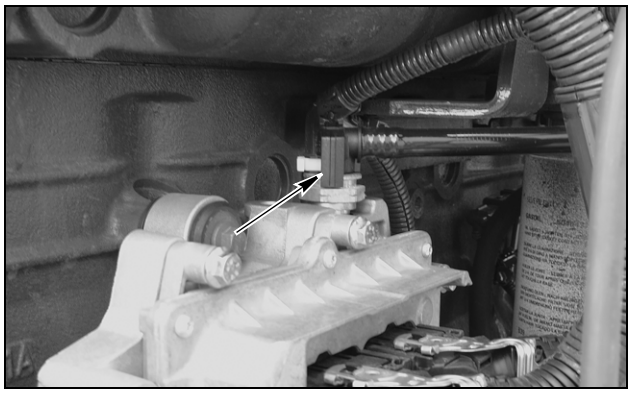


BD03A142

Disconnect the wiring harness from the EDC 7 controller.

NOTE: *Lifting up on the lever will release the connector from the controller.*

STEP 34



BD06F123

Remove the fuel line from the top of the EDC 7 controller, plug the line and cap the fitting.

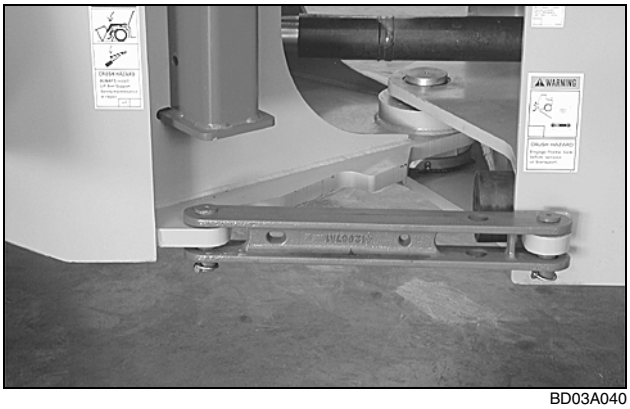
RADIATOR

Removal

STEP 1

Park loader on level surface and lower bucket to ground. Apply parking brake and shut down engine.

STEP 2



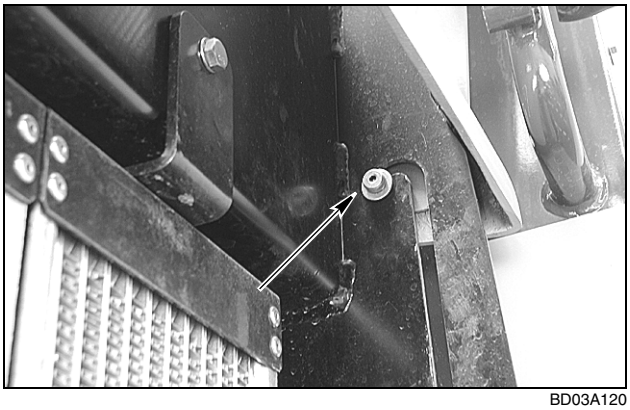
BD03A040

Put articulation lock in LOCKED position.

STEP 3

Put master disconnect switch in OFF position.

STEP 4



BD03A120

Have another person raise and hold the side panel up into the raised position. Remove the two mounting screws for the side panel, remove the panel.

NOTE: *Photo is of the oil cooler side of the machine, the procedure is the same.*

STEP 5

BD06F128

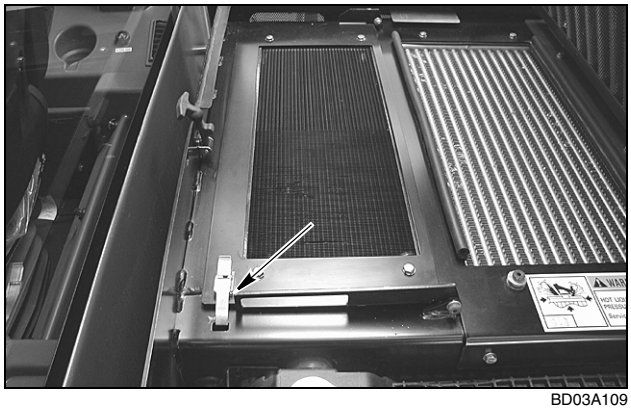
Remove bolt and washer securing LH fender. Remove LH fender.

STEP 6

BD02N160

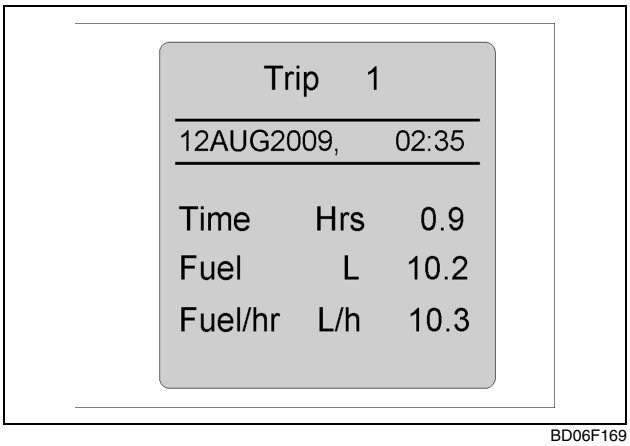
Put a 30.0 liter (32.0 U.S. quart) container below radiator drain. Remove radiator cap then remove cap and drain coolant into container. Install cap after coolant has drained. Install radiator cap.

STEP 7



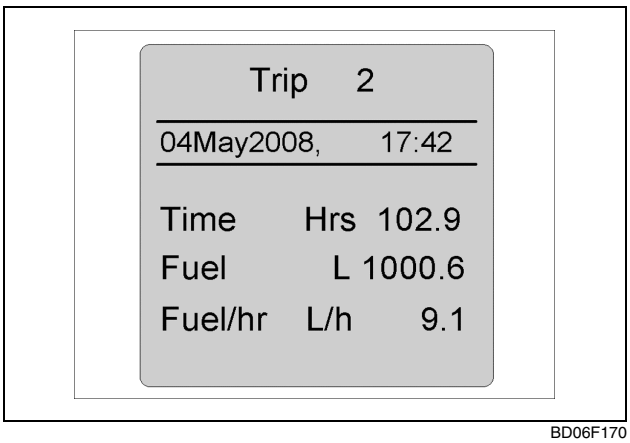
BD03A109

Release catch and tilt air conditioning condenser core up to gain access to upper radiator hose.



BD06F169

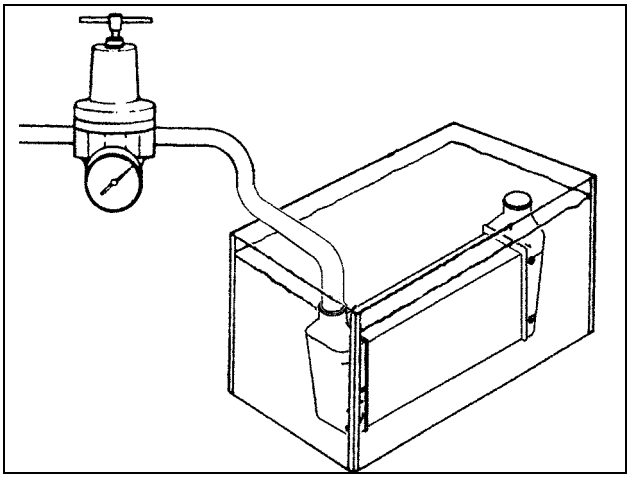
6. Press the down button again and the Trip 1 screen will display. The LCD provides two trip computers. These will display since last reset the total time in hours, the total fuel, and the average fuel consumption per hour.



BD06F170

7. By continuing to scroll down, the fifth screen will display the Trip 2 screen. Trip 1 and Trip 2 screens can be reset independently. The previous screen can be accessed by using the up arrow key.

Leak Test



BS03B028

Check the core for leaks by closing off the outlet tube and attaching regulated air pressure 550kPa (80psi) to the inlet tube. Submerge the cooler in water and watch for air leakage.

NOTE: *If leakage is detected replace the after cooler.*

Installation

STEP 1

BD03A111

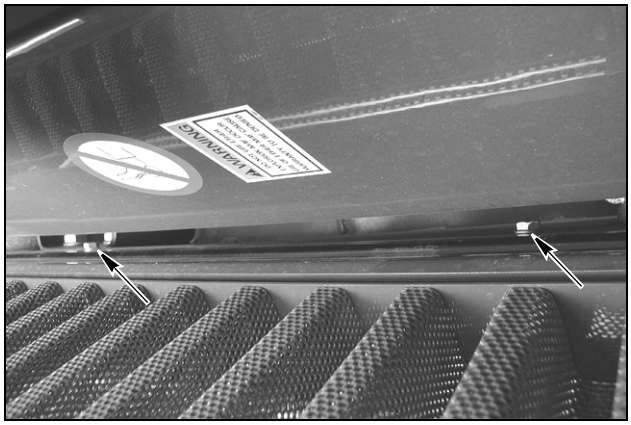
Install after cooler in its frame. Install four mounting bolts. Support after cooler with appropriate lifting device. Install the after cooler and frame in the machine.

STEP 2

BD03A113

Install two side mounting bolts

STEP 3



BD03A117

Install two bolts at the rear of the after cooler mounting frame.

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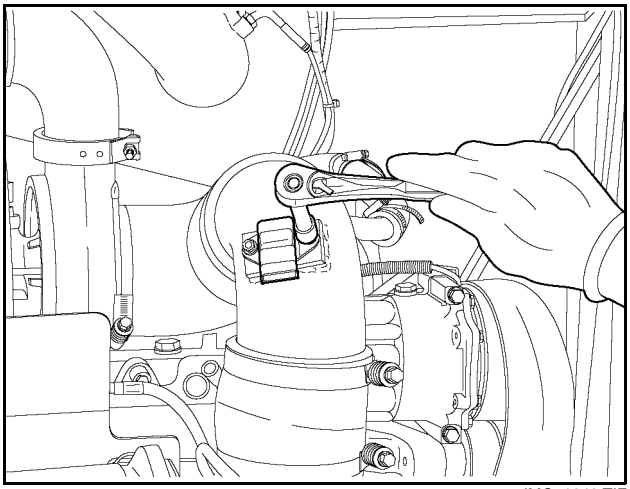
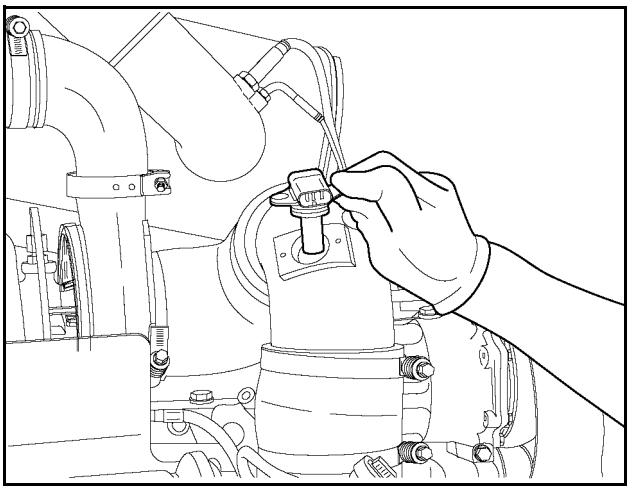
STEP 5



IMG_1646.TIF

Remove hex bolts.

STEP 6



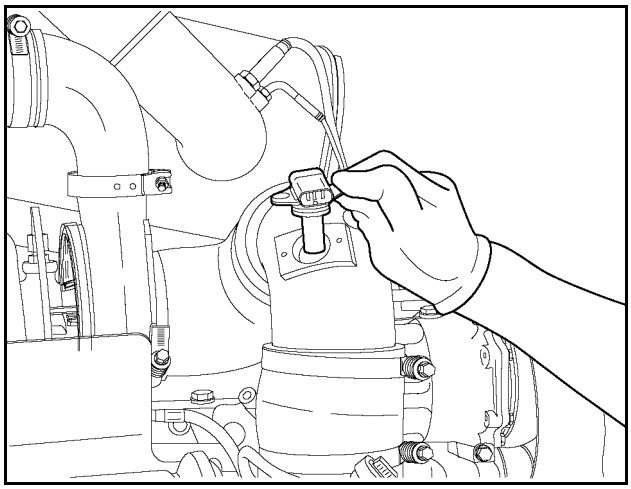
IMG_1648.TIF

Remove sensor.

NOTE: *Cover hole in the intake pipe to prevent debris from entering the system.*

Installation

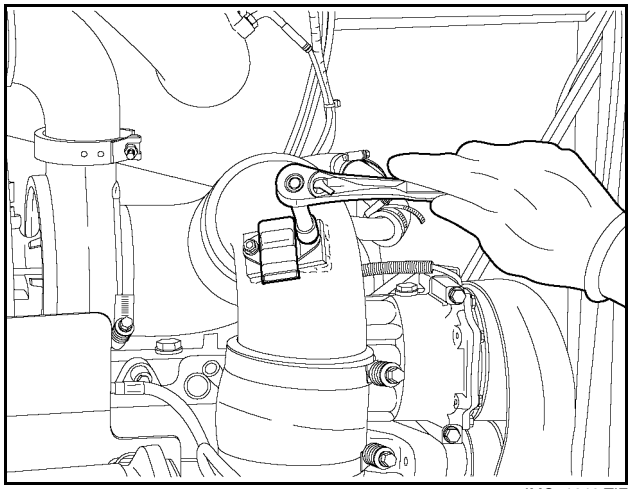
STEP 1



IMG_1648.TIF

Remove plug covering hole in intake pipe. Insert sensor.

STEP 2



IMG_1646.TIF

Secure sensor with hex bolts.

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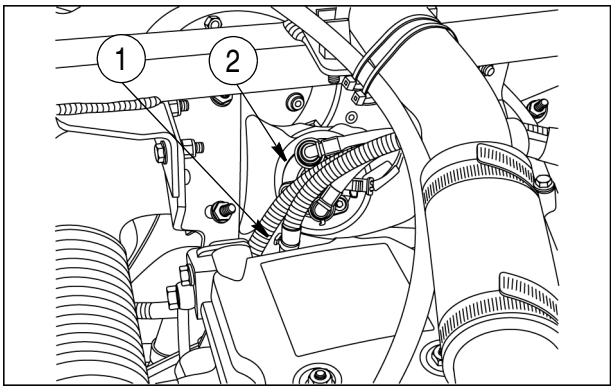
STEP 5

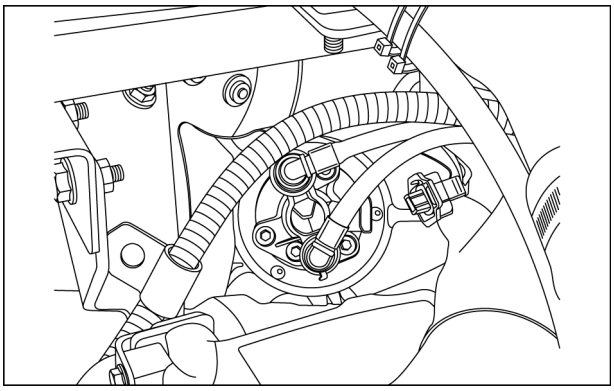


WHL026MM.PNG

Remove engine coolant line hold down bracket (1) for easier access to dosing injector (2).

NOTE: *Mark location and routing of coolant lines for reference during reassembly.*

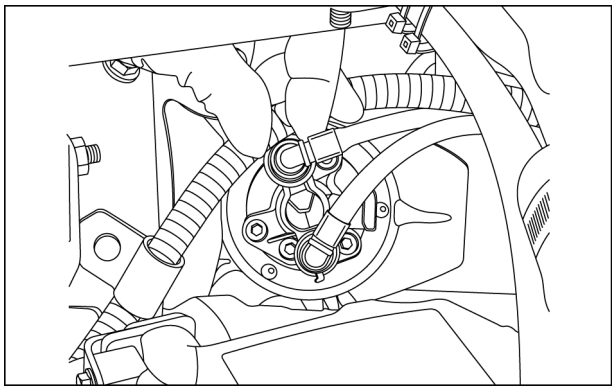
STEP 6



WHL001MM.PNG

Disconnect dosing injector wiring harness.

STEP 7

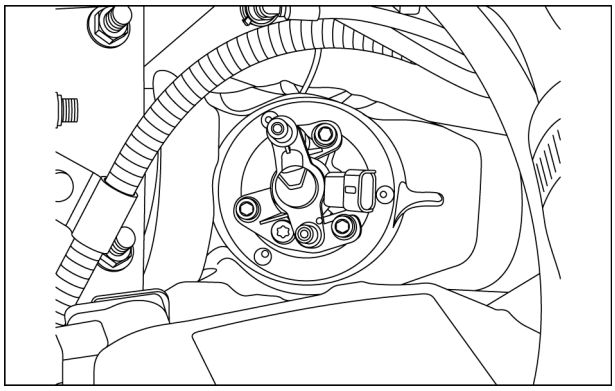


WHL021MM.PNG

Mark location of DEF/AdBlue supply and return lines for reference during reassembly. Remove DEF/AdBlue supply and return lines. Cap lines to prevent debris from entering the system

NOTE: *To separate connections, squirt water into fittings to lubricate O-rings. Squeeze fitting locking tabs slightly and push fitting together then pull it apart. If fitting will not release, but is free to rotate, the O-ring is likely stuck and additional water should be applied.*

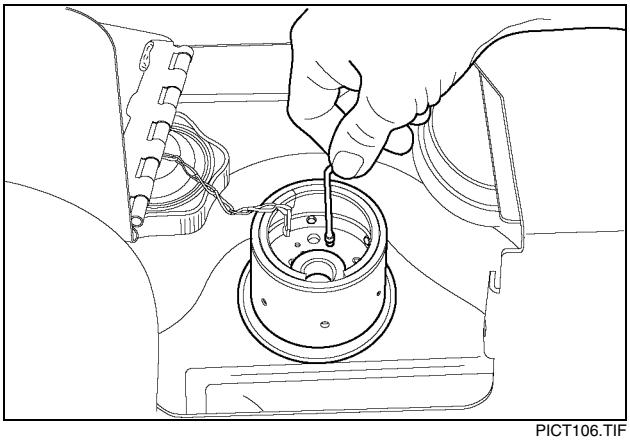
STEP 8



WHL023MM.PNG

Remove bolts securing dosing injector into mixing pipe.

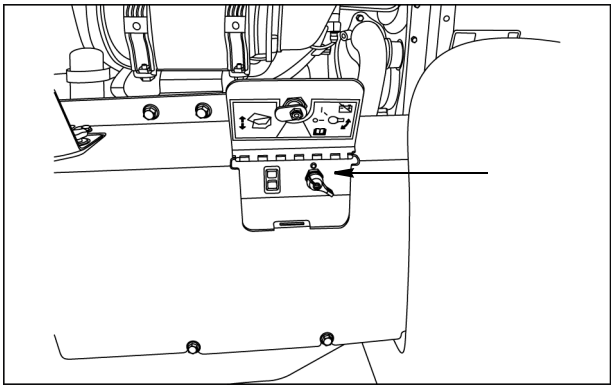
STEP 9



PICT106.TIF

Secure filler neck assembly using Torx bolts. Refill DEF/AdBlue storage tank and engine cooling system.

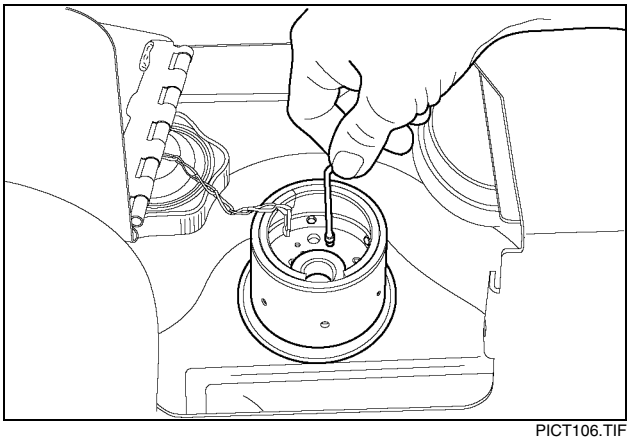
STEP 10



IMG_0099.PNG

Turn master electric power switch to “on” position. Clear any fault codes. Start machine and check for DEF/AdBlue and coolant leaks. Confirm that the problem has been corrected.

STEP 5

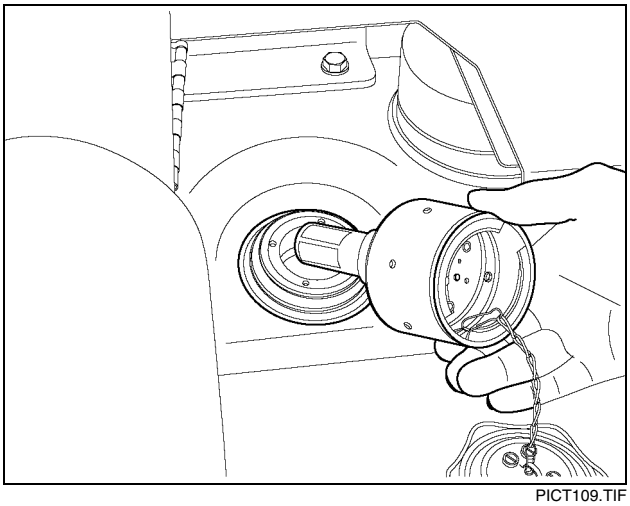


PICT106.TIF

Remove bolts securing filler cap/neck screen assembly.

NOTE: *Place a stopper into filler neck hole to prevent loose screws and debris from entering supply tank.*

STEP 6

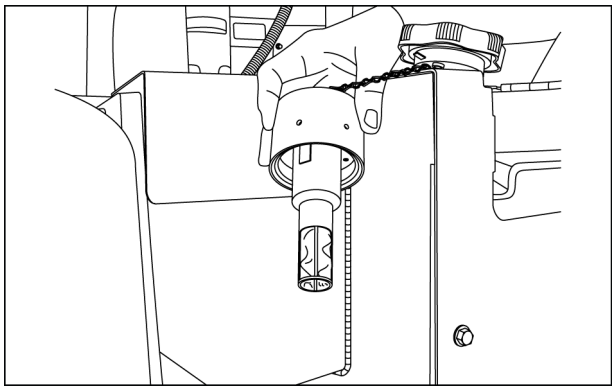


PICT109.TIF

Remove filler cap/neck screen assembly and O-ring. Pull upwards while twisting assembly left and right.

NOTE: *Cap opening of supply tank to prevent debris from entering tank.*

STEP 7



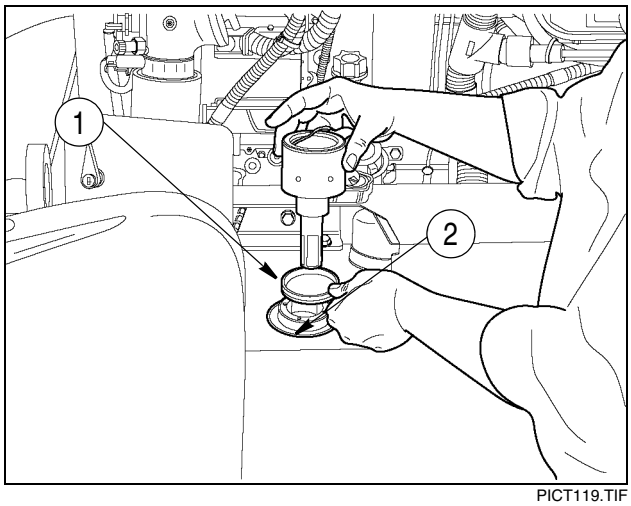
WHL018MM.PNG

Remove plug from filler neck. Rinse screen with water to remove accumulated debris. Reinstall plug into filler hole.

NOTE: *If the screen is damaged replace it. To replace, remove bolts and separate filler neck from screen. Attach new screen to filler neck and secure with bolts.*

Installation Supply Tank Filler Neck Screen

STEP 1



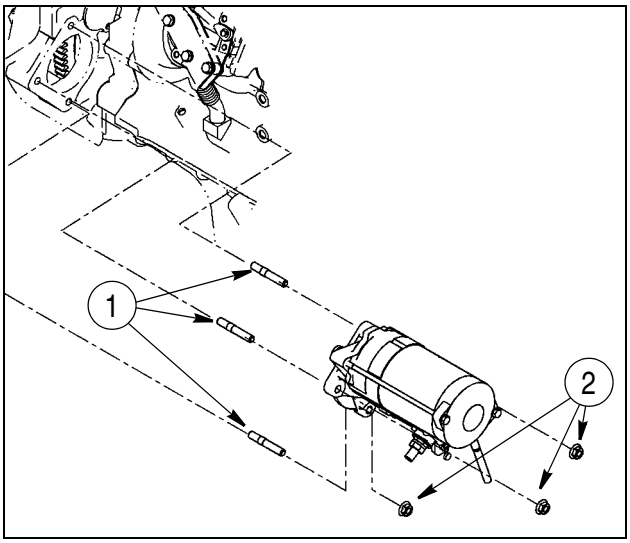
PICT119.TIF

Reinstall O-ring (1) onto supply tank (2) with radius surface facing upward.

NOTE: *Lubricate O-ring with petroleum jelly.*

Installation

STEP 5

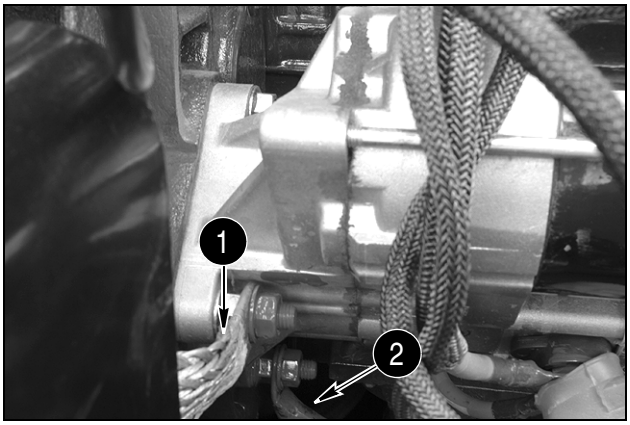


BC05G047

1. STUDS
2. NUTS

Apply Loctite 747 primer to studs and holes, apply 2 drops of Loctite 271 to each hole and stud. Immediately install and torque studs to 19 to 29 Nm (14 to 21 pound-feet). Allow adhesive to cure for 20 minutes before installing starter.

STEP 6



BD06F135

Position the starter on the machine, attach the ground cable to the bottom mounting stud (2) and install the nut, attach the ground strap and wire to the outer stud (1) and install the nut, install the lower nut. Torque the three nuts to 40 to 50 Nm (29 to 37 pound-feet).

STEP 7

BD06F134

Install and tighten the wires on the starter solenoid. Remove and discard tags.

STEP 8

Place the master disconnect switch in the ON position. Lower the engine compartment with lifting motor.

Wire Identification Codes

21C Bk - 1.0

- 21C — Wire Name
- Bk — 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				
Bk = Black	DU = Dark Blue	S = Gray	LG = Light Green	K = Pink
T = Tan	W = White	N = Brown	G = Green	U = Blue
LU = Light Blue	Or = Orange	R = Red	P = Purple	Y = Yellow

Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size, and Material**	**Connector**	**Cav**	**Connector**	**Cav**
0 NE	Hood Grounds (EU)	Bk 1.0 SXL	SPL_B1	A	LLR_9, LH_Rear_Comb_LT	5
0 NF	Hood Grounds (EU)	Bk 1.0 SXL	SPL_B1	A	LLR_9, RH_Rear_Comb_LT	5
0 NG	Hood Grounds (EU)	Bk 1.0 SXL	SPL_B1	A	SPL_J1, Ultrasonic	A
0 PA	Left Speaker Grnd	Bk 0.8 GXL	LSPK, Left Speaker	B	SPK, Speaker	8
0 PB	Right Speaker Grnd	Bk 0.8 GXL	RSPK, Right Speaker	B	SPK, Speaker	2
0 RD	Ride Control Grnd	Bk 1.0 SXL	YRC_J, Ride CNTRL_Jumper	2	YRC_J2, Ride_Control_OPT	2
0 SC	GRND, Joystick	Bk 0.8 GXL	JSS_ARM, JSS Armrest to CAB	7	PVRES, JSS Joystick	V
0 SD	GRND, Joystick	Bk 0.8 GXL	SPL_JSS_14, Ultrasonic	A	CAB_ARM, CAB to Armrest	7
0 SE	GRND	Bk 0.8 TXL	SPL_JSS_10, Ultrasonic	A	CAN_MOD_2, JSS can mod	10
0 SF	GRND	Bk 0.8 GXL	SPL_JSS_14, Ultrasonic	A	Cab to JSS Frame	G
0 SG	Common	Bk 0.8 GXL	SPL_JSS_10, Ultrasonic	A	Arm_Pos, Arm position	1
0 SH	GRND, CAN MOD	Bk 0.8 GXL	JSS_ARM, JSS Armrest to cab	2	SPL_JSS_10, Ultrasonic	A
0 SJ	GRND, CAN MOD	Bk 0.8 GXL	SPL_JSS_9, Ultrasonic	A	CAB_ARM, Cab to Armrest	2
0 SK	GRND, CAN MOD	Bk 0.8 GXL	CAB_ARM_FRM, Cab to Arm to Frm	8	SPL_JSS_9, Ultrasonic	A
0 SL	Ground	Bk 0.8 GXL	JSS_RLY, Relay K2	87A	SPL_JSS_9, Ultrasonic	A
0 SM	GRND, Joystick	Bk 0.8 GXL	JSS_CNT, JSS Controller	10	SPL_JSS_20, Ultrasonic	A
0 SN	GRND, Joystick	Bk 0.8 GXL	SPL_JSS_20, Ultrasonic	A	JSS_CNT, JSS Controller	11
0 SP	GRND, Joystick	Bk 0.8 GXL	SPL_JSS_14, Ultrasonic	A	R1, Resistor	CS0
0 SR	GRND, Joystick	Bk 0.8 GXL	SPL_JSS_14, Ultrasonic	A	JSS_CNT, JSS Controller	15
0 SS	GRND, Joystick	Bk 0.8 GXL	JSS_197F, Main_CAB_FNR	1	FNR_RLY, Relay K2	87A
0 ST	GRND, Joystick	Bk 0.8 GXL	FNR_RLY, Relay K2	85	SPL_JSS_9, Ultrasonic	A
0 SU	GRND, Joystick	Bk 0.8 GXL	SPL_JSS_20, Ultrasonic	A	SPL_JSS_9, Ultrasonic	A
0 T	DEF Sensor GND	Bk 0.8 GXL	UBJ, DEF Level Temp	2	Dnox2, NOX Controller	19
0 TA	DEF Sensor GND	LU 0.8 GXL	UBJM, DEF Level Temp	2	DTLTS, DEF_Tank_Level_Temp_Sensor	2
0 U	EXHT Temp DWN GND	Bk 0.8 SXL	DNOX2, NOX Controller	25	DTS, Downstream Temp SENS	2
12ACC	Ignition Switch ACC Power	W 0.8 GXL	S-KEY, Ignition Switch	4	SPL-ACC, Ultrasonic	A
12ACC B	ACC PRM Control Power	W 0.8 GXL	SPL-ACC, Ultrasonic	A	PRM-B1, PRM Signal	A

Wire Identification Codes

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Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size, and Material**	**Connector**	**Cav**	**Connector**	**Cav**
23B D	NOX Relay B+	Or 0.8 GXL	ECD, Elec CNTR D	AA8	CABE2, Cab to Eng2 Bulkhd	A
23B E	NOX Sensor B+	Or 1.0 GXL	ENG2, Eng Bulkhd 2	F	SPL_EDC2, Ultrasonic	A
23B F	NOX Relay B+	Or 1.0 SXL	ENG2, Eng Bulkhd 2	A	SPL_EDC4, Ultrasonic	A
23D D	NOX Sensor GND	Bk 0.8 TXL	NOXS, NOX Sensor	2	GND_ENG2, WIF, EDC	1
23J B	DNOX2 K-Line	W 0.8 GXL	DIA_2, Diagnostic	E	CAB_Em Cab-Engine	18
23K A	Temp/Humd B+	K 0.8 TXL	HTS, HMDTY and AMB Temp	1	EDC7, Engine Controller	68
23K B	Temp/Humd Temp	Y 0.8 GXL	HTS, HMDTY and AMB Temp	2	EDC7, Engine Controller	26
23K C	Temp/Humd Humd	Y 0.8 GXL	HTS, HMDTY and AMB Temp	4	EDC7, Engine Controller	27
23K E	Temp/Humd GND	LU 0.8 GXL	EDC7, Engine Controller	28	HTS, HMDTY and AMB Temp	3
24B	Throttle Signal	W 0.8 TXL	ENG_B, Cab BTTOM	3	EDC7, Engine Controller	79
24B A	Throttle Signal	W 0.8 TXL	RTHP, Throttle Pedal	3	BTM+E, Cab BTTOM	3
24L	Low Idle Sw	W 0.8 TXL	ENG_B, Cab BTTOM	6	EDC7, Engine Controller	48
24L A	Low Idle Sw	W 0.8 TXL	RTHP, Throttle Pedal	6	BTM_E, Cab BTTOM	6
24R	Throttle Grnd	W 0.8 TXL	ENG_B, Cab BTTOM	4	EDC7, Engine Controller	78
24R A	Throttle Grnd	W 0.8 TXL	RTHP, Throttle Pedal	4	BTM_E, Cab BTTOM	4
24S	Throttle Supply	W 0.8 TXL	ENG_B, Cab BTTOM	5	EDC7, Engine Controller	77
24S A	Throttle Supply	W 0.8 TXL	RTHP, Throttle Pedal	5	BTM_E, Cab BTTOM	5
24T B	TC Lockup SOL GND	LU 1.0 SXL	TRANS, Cab Transmission	25	YLS, TC_Lockup_Valve	2
255E	Pedal Sensor +5V	K 0.8 TXL	BTM_C, Cab Bottom Bulkhd	E	BPP, Pedal Position	5
25A	Eng Speed Sig	LU 0.8 GXL Twist	TRANS, Cab Transmission	7	ESS, Engine speed Sensor	1
25A A	Eng Speed Sig	LU 0.8 TXL	TECM, Trans	19	Cab+T, Cab-Transmission	7
25B	Int Speed Sig	LU 0.8 GXL Twist	TRANS, Cab Transmission	9	ISS, Int Speed Sensor	1
25B A	Int Speed Sig	LU 0.8 TXL	TECM, Trans	42	Cab+T, Cab-Transmission	9
25C	Turbine Speed Sig	LU 0.8 GXL Twist	TRANS, Cab Transmission	8	TSS, Turbine Speed Sensor	1
25C A	Turbine Speed Sig	LU 0.8 TXL	TECM, Trans	41	Cab+T, Cab-Transmission	8
25D	Output Speed Sig	LU 1.0 SXL	TRANS, Cab Transmission	10	OSS, Output Speed Sensor	2
25D A	Output Speed Sig	LU 0.8 TXL	TECM, Trans	62	Cab+T, Cab-Transmission	10
25F	Forward Signal	LU 0.8 TXL	TS1, Transmission Shifter	B	TECM, Trans	43
25G	Brake Declutch Switch	LU 1.0 SXL	Trans, Transmission-Cab	14	PBD, Declutch Pressure Switch	B

Wire Identification Codes

21C Bk - 1.0

- 21C — Wire Name
- Bk — 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				
Bk = Black	DU = Dark Blue	S = Gray	LG = Light Green	K = Pink
T = Tan	W = White	N = Brown	G = Green	U = Blue
LU = Light Blue	Or = Orange	R = Red	P = Purple	Y = Yellow

Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size, and Material**	**Connector**	**Cav**	**Connector**	**Cav**
51B J	JSS ACT SW	Bk 0.8 TXL	JSS_ARM, JSS Armrest to Cab	6	CAN_MOD_2, JSS Can Mod	1
51B K	JSS Power	W 0.8 GXL	FNR_RLY, Relay K2	86	SPL_JSS_4, Ultrasonic	A
51C A	JSS ACT BTN	Y 0.8 GXL	JSS_VAB, JSS Cab	10	SJS, Joystick_Control_SW	5
51C B	JSS ACT BTN	Y 0.8 GXL	CAB_ARM_FRM, Cab to Arm to Frm	10	JSS_CNT, JSS Controller	13
51D A	GRND, Relay CTRL	Bk 0.8 GXL	JSS_CAB, JSS Cab	4	AIC_1, ADV Instr Cluster 1	21
51D B	GRND, Relay CTRL	Bk 0.8 GXL	CAB_ARM_FRM, Cab to Arm to Frm	4	JSS_RLY, Relay K2	85
51E A	Armrest Lower	Or 0.8 GXL	JSS_CNT, JSS Controller	6	CAB_ARM, Cab to Armrest	3
51E B	Armrest Lower	Or 0.8 GXL	JSS_ARM, JSS Armrest to Cab	3	ARM_POS, Arm Position	3
51F A	LS Press Sw SIG	G 1.0 GXL	JSS_LS, JSS Load Sense	B	JSS_FRM, JSS Frame to Cab	A
51F B	LS Press Sw	G 0.8 GXL	CAB_FRM, Cab to JSS Frame	A	JSS_CNT, JSS Controller	16
51H B	Joystick Signal	Y 0.8 GXL	JSS_CNT, JSS Controller	4	CAB_ARM, Cab to Armrest	10
51H C	Joystick Signal	Y 0.8 GXL	JSS_ARM, JSS Armrest to Cab	10	PVRES, JSS Joystick	T
51J A	Valve Alarm	P 0.8 GXL	SPL_JSS_11, Ultrasonic	A	CAB_FRM, Cab to JSS Frame	B
51J B	Valve Alarm	P 0.8 GXL	JSS_CNT, JSS Controller	12	SPL_JSS_11, Ultrasonic	A
51J C	JSS Alarm	P 1.0 GXL	JSS_VALVE, JSS HYD Valve	2	JSS_FRM, JSS Frame to Cab	B
51J D	Valve Alarm	P 0.8 GXL	SPL_JSS_11, Ultrasonic	A	R1, Resistor	CS0
51K B	Pilot Press SW	G 0.8 GXL	CAB_FRM, Cab to JSS Frame	C	JSS_CNT, JSS Controller	8
51K C	Pilot Press SW SIG	G 1.0 GXL	JSS_PIL_PR, JSS Pilot Pressure	B	JSS_FRM, JSS Frame to Cab	C
51L	Joystick Signal	Y 1.0 GXL	JSS_VALVE, JSS HYD Valve	1	JSS_FRM, JSS Frame to Cab	D
51L A	Joystick Signal	Y 0.8 GXL	JSS_CNT, JSS Controller	7	CAB_FRM, Cab to JSS Frame	D
51NC	NC Neutral SW	Bk 0.8 TXL	PVRES, JSS Joystick	W	CAN_MOD_2, JSS Can Mod	3
51NO	NO Neutral SW	Y 0.8 GXL	JSS_ARM, JSS Armrest to Cab	11	PVRES, JSS Joystick	U
51NO A	NO Neutral SW	P 0.8 GXL	CAB_ARM, Cab to Armrest	11	JSS_CNT, JSS Controller	14
51PW H	JSS Power	W 1.0 SXL	SPL_JSS_16, Ultrasonic	A	JSS_FRM, JSS Frame to Cab	H

Wire Identification Codes

21C Bk - 1.0

- 21C — Wire Name
- Bk — 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				
Bk = Black	DU = Dark Blue	S = Gray	LG = Light Green	K = Pink
T = Tan	W = White	N = Brown	G = Green	U = Blue
LU = Light Blue	Or = Orange	R = Red	P = Purple	Y = Yellow

Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size, and Material**	**Connector**	**Cav**	**Connector**	**Cav**
J7 ECC	Horn HOD Control	ECC-BUSS	ECC, Elect Center C	L1-6	ECC, Elect Center C	L1-7
J9 ECC		ECC-BUSS	ECC, Elect Center C	L1-8	ECC, Elect Center C	L1-9
RAD1	Radio Ground	W 0.8 GXL	RAD-J3, Radio Jumper	5	RAD-J1, Radio Power	8
RAD2	12V Fused Power to Radio	W 0.8 GXL	RAD-J3, Radio Jumper	12	RAD-J1, Radio Power	7
RAD3	12V Fused Power to Radio	W 0.8 GXL	RAD-J3, Radio Jumper	7	RAD-J1, Radio Power	4
RAD4	Left Speaker Ground	W 0.8 GXL	RAD-J3, Radio Jumper	3	RAD-J2, Speaker	8
RAD5	Left Speaker	W 0.8 GXL	RAD-J3, Radio Jumper	10	RAD-J2, Speaker	7
RAD6	Not Used	W 0.8 GXL	RAD-J3, Radio Jumper	4	RAD-J2, Speaker	6
RAD7	Not Used	W 0.8 GXL	RAD-J3, Radio Jumper	11	RAD-J2, Speaker	5
RAD8	Not Used	W 0.8 GXL	RAD-J3, Radio Jumper	2	RAD-J2, Speaker	4
RAD9	Not Used	W 0.8 GXL	RAD-J3, Radio Jumper	9	RAD-J2, Speaker	3
RAD10	Right Speaker Ground	W 0.8 GXL	RAD-J3, Radio Jumper	1	RAD-J2, Speaker	2
RAD11	Right Speaker	W 0.8 GXL	RAD-J3, Radio Jumper	8	RAD-J2, Speaker	1

20 – Water Separator Heater

Located in the right side of the engine compartment on water separator housing, open engine compartment to gain access.

Check Points	Correct Reading	Possible Cause of Bad Reading
Terminal for wire 0-BW to ground	Continuity	Bad ground circuit.
NOTE: *Disconnect connector WSH from water separator heater.*		
Between terminals A and B of heater	1.9 ohms	Bad heater.
NOTE: *If the readings are good, check circuit 1-GA between water separator heater connector WSH and power relay module D connector PRM-D1.*		

21 – Fuel Filter Heater

Located in the right side of the engine compartment on fuel filter housing, open engine compartment to gain access.

Check Points	Correct Reading	Possible Cause of Bad Reading
Terminal for wire 0-BX to ground	Continuity	Bad ground circuit.
NOTE: *Disconnect connector FFH from fuel filter heater.*		
Between terminals A and B of heater	1.9 ohms	Bad heater.
NOTE: *If the readings are good, check circuit 1-G between fuel filter heater connector FFH and power relay module D connector PRM-D1.*		

35 – Ride Control Switch

Located on right side console.

Check Points	Correct Reading	Possible Cause of Bad Reading
NOTE: *Disconnect connector SRC from ride control switch.*		
Connector SRC pin 7 to ground	Continuity	Bad ground circuit.
Ride control switch terminal 6 (positive) to terminal 7 (negative)	Continuity	Bad ride control switch.
NOTE: *Connect connector SRC to ride control switch. Put master disconnect switch and ignition switch in ON position. Put ride control switch in OFF position.*		
Terminal for wire 19C-D to ground	24 volts	Check fuse ECA-F5 and power relay module C. Also check circuit 19C.
Terminal for wire 58C to ground	0 volt	Bad ride control switch.
NOTE: *Put the ride control switch in the ON position.*		
Terminal for wire 58C to ground	24 volts	Bad ride control switch.
NOTE: *Put the driving light switch (95) in position 3.*		
Terminal for wire 49-G to ground	24 volts	Check driving lamp switch (95). Also check circuit 49. If LED in ride control switch is not ON with 24 volts at check point, replace ride control switch.

36 – Ride Control Relay

Located in the cab access panel for fuses and relays.

Check Points	Correct Reading	Possible Cause of Bad Reading
Terminal 85 for wire 58L to connector TECM pin 57	Continuity	Check wire 58L.
Terminal 86 for wire 58H-C to connector TECM pin 8	Continuity	Check wire 58H-C.
Terminal 87 for wire 58-E to ride control switch (35) pin 6	Continuity	Check wire 58-E
NOTE: *Put master disconnect switch and ignition switch in ON position. Put ride control switch in ON position.*		
Terminal for wire 58T to ground	24 volts	Bad ride control switch. Also check wire 58T.
NOTE: *If readings are normal, replace ride control relay.*		

69 – Brake Warning Pressure Switch

Located on the foot brake valve.

Check Points	Correct Reading	Possible Cause of Bad Reading
NOTE: *Brake warning pressure switch opens at 110.3 bar (1600 psi).*		
NOTE: *Put the master disconnect switch and the ignition switch in the ON position.*		
Terminal 2 for wire 0-AL to ground	Continuity	Bad ground circuit.
Terminal 1 for wire 33P to ground	Approximately 11.5 volts	Check circuit 33P.
NOTE: *With engine not running pump brakes at least 12 times. Disconnect the wires from the brake warning pressure switch.*		
Between terminals 1 and 2 of the switch	Continuity	Bad brake warning pressure switch.
NOTE: *Start and run the engine at idle two minutes.*		
Between terminals 1 and 2 of the switch	Open Circuit	Bad brake warning pressure switch or brake pressure is below 110.3 bar (1600 psi). Refer to Section 7002 to check brake pressure.

80 – Work Lamps Switch

Located on right side console.

Check Points	Correct Reading	Possible Cause of Bad Reading
Terminal for wire 0-B14 to ground	Continuity	Bad ground circuit
NOTE: *Put master disconnect witch in the ON position.*		
Terminal for wire 42-A and 42-B to ground	24 volts	Bad fuse ECC-F2.
NOTE: *Put the work lamps switch in position 2 for front work lamps.*		
Terminal for wire 42C-C to ground	24 volts	Bad work lamps switch.
NOTE: *Put the wok lamps switch in position 3 for rear work lamps.*		
Terminal for wire 42R-C to ground	24 volts	Bad work lamps switch.

81 – Door Switch

Located above door in cab.

Check Points	Correct Reading	Possible Cause of Bad Reading
NOTE: *Put the master disconnect switch in the ON position.*		
Terminal for wire 19U-F to ground	24 volts	Bad fuse ECC-F1.
NOTE: *Disconnect connector DS at door switch.*		
Between pins on door switch with door open	Continuity	Bad door switch.
Between pins on door switch with door closed	Open circuit	Bad door switch

82 – Rotating Beacon (Option)

Plug is located on left side front of cab.

Check Points	Correct Reading	Possible Cause of Bad Reading
Bulb	Continuity	Bad bulb.
Terminal for wire 0-MC to ground	Continuity	Bad ground circuit.
NOTE: *Put master disconnect switch and beacon switch (84) in ON position.*		
Terminal for wire 46-D to ground	24 volts	Bad circuit between the beacon and the beacon switch (84). Also check the beacon switch (84).
NOTE: *If readings are good replace the rotating beacon.*		

96 – Left Hand Front Combination Lamp

Located on the left front of the machine.

Check Points	Correct Reading	Possible Cause of Bad Reading
NOTE: *Disconnect wiring harness connector LLF from LH front combination lamp connector.*		
Combination lamp connector pin 3 to pin 1	Continuity	Bad high beam lamp bulb.
Combination lamp connector pin 4 to pin 1	Continuity	Bad position lamp bulb.
Combination lamp connector pin 2 to pin 1	Continuity	Bad low beam lamp bulb.
Combination lamp connector pin 5 to pin 1	Continuity	Bad turn signal lamp bulb.
NOTE: *Connect wiring harness connector LLF to LH front combination lamp connector.*		
Terminal for wire 0-AJ to ground	Continuity	Bad ground circuit.
NOTE: *Put master disconnect switch in ON position and driving lamp switch (95) in position 2.*		
Terminal for wire 18F to ground	24 volts	Check fuse ECB-F7 and driving lamp switch (95). Also check circuit 18F.
NOTE: *Put high/low beam lever (94) in HIGH beam position.*		
Terminal for wire 18B to ground	24 volts	Check fuse ECB-F3, driving lamp switch (95), and high/low beam switch (94). Also check circuit 18B and wire 41H-B.
NOTE: *Put high/low beam lever (94) in LOW beam position.*		
Terminal for wire 18D to ground	24 volts	Check fuse ECB-F6, driving lamp switch (95), and high/low beam switch (94). Also check circuit 18D and wire 41L-B.
NOTE: *Put ignition switch in ON position. Put turn signal lever in LEFT turn position.*		
Terminal for wire 45L to ground	Intermittent 24 volts	Check the turn signal switch (94) and flasher module (92). Also check circuit 45L to flasher module.
NOTE: *If all readings are good, and lamps still do not turn ON replace the LH front combination lamp.*		

104 – Front Wiper High Speed Relay

Located in the cab access panel for fuses and relays.

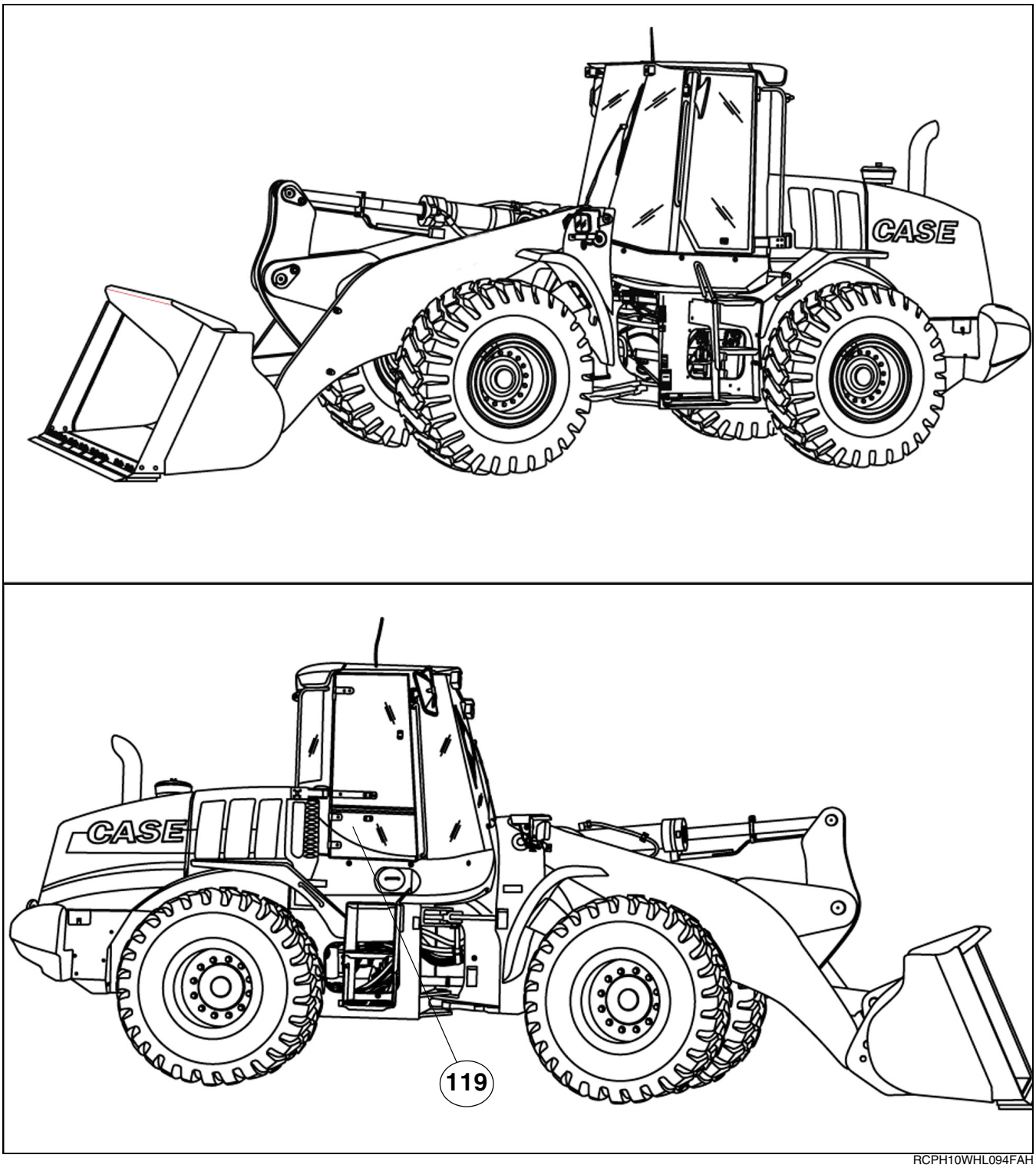
Check Points	Correct Reading	Possible Cause of Bad Reading
NOTE: *Put the master disconnect switch and the ignition switch in the ON position.*		
Terminal for wire 19J-D and 19J-E to ground	24 volts	Bad fuse ECA-F12, check circuit 19J, also check power relay module B (14).
NOTE: *Put the front wiper switch in the HIGH position.*		
Terminals for wire 63HC-B to ground	Continuity	Bad front wiper and washer switch (108).
Terminals for wire 63HC-B to ground	24 volts	Bad wiper high speed relay.
NOTE: *Put the front wiper switch in the LOW position.*		
Terminals for wire 63C2 to ground	24 volts	Bad wiper high speed relay.

105 – Front Wiper Cut Out Relay

Located in the cab access panel for fuses and relays.

Check Points	Correct Reading	Possible Cause of Bad Reading
NOTE: *Put the master disconnect switch and the ignition switch in the ON position.*		
Terminal for wire 19J-G to ground	24 volts	Check fuse ECA-F12, check circuit 19J, also check power relay module B (14).
Terminal for wire 63L-B to ground	24 volts	Bad wiper cut out relay.
NOTE: *Put the front wiper switch in the HIGH position.*		
Terminals for wire 63HC-A to ground	Continuity	Bad front wiper and washer switch (108).
Terminals for wire 63L-B to ground	0 volts	Bad wiper cut out relay.

CAN COMMUNICATION



RCPH10WHL094FAH

119.DIAGNOSTIC CONNECTOR

NOTE: *The battery must be at full charge and all connections clean and tight before doing any testing of the electrical system. Use a Multimeter for the following tests.*

138 – Mixed Air Sensor		
Check Points	**Correct Reading**	**Possible Cause of Bad Reading**
NOTE: *Automatic climate control only.*		

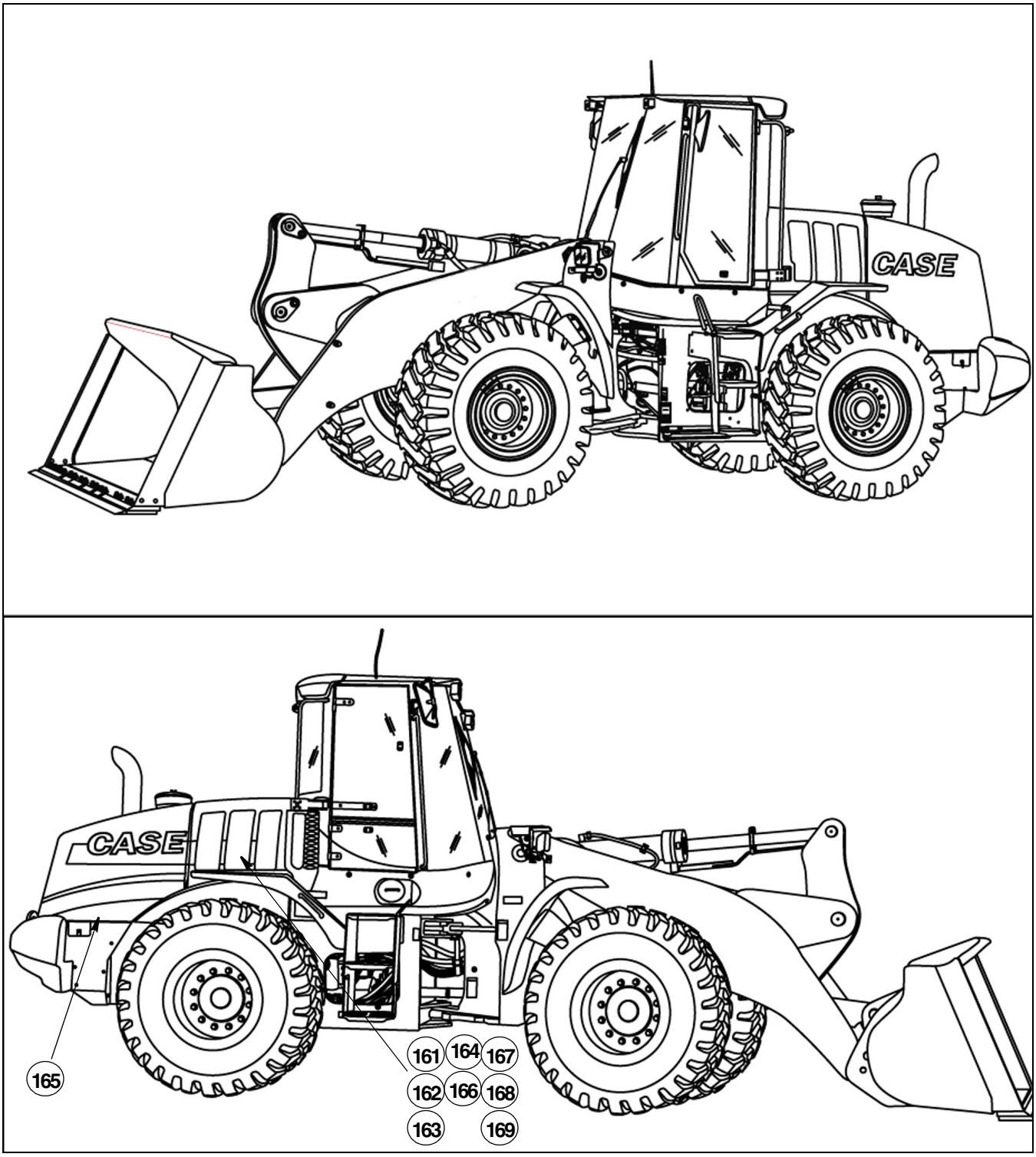
139 – Compressor Relay		
Check Points	**Correct Reading**	**Possible Cause of Bad Reading**
NOTE: *Automatic climate control only*		

140 – Recycling Motor		
Check Points	**Correct Reading**	**Possible Cause of Bad Reading**
NOTE: *Automatic climate control only*		

141 – Electronic Water Valve		
Check Points	**Correct Reading**	**Possible Cause of Bad Reading**
NOTE: *Automatic climate control only*		

142 – 24 to 12 Volt Converter		
Check Points	**Correct Reading**	**Possible Cause of Bad Reading**
NOTE: *Automatic climate control only.*		

SCR SYSTEM/ JOYSTICK STEERING/ MISC



RCPH10WHL094FAH

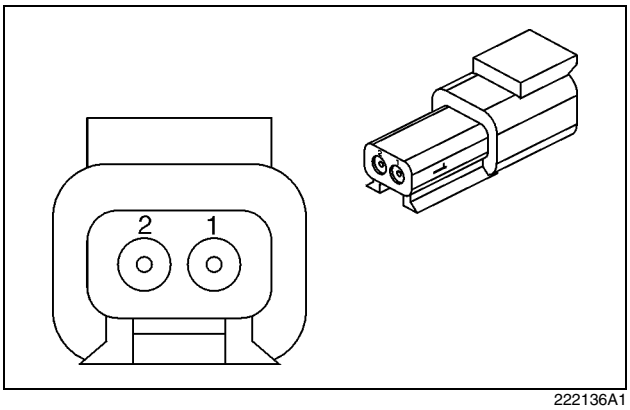
161.NOX SENSOR
162.HUMIDITY AND AMBIENT TEMPERATURE SENSOR
163.NOX SENSOR (NOXS)
164.TANK HEATER CONTROL VALVE
165.DEF LEVEL AND TANK TEMPERATURE
166.UPSTREAM TEMPERATURE SENSOR
167.DOWNSTREAM TEMPERATURE SENSOR
168.DOSER METERING VALVE
169.DNOX CONTROLLER

NOTE: *The battery must be at full charge and all connections clean and tight before doing any testing of the electrical system. Use a Multimeter for the following tests.*

BU1, BACKUP_ALARM_GRND CNH PN 1964702C1,VENDOR PN				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	BACKUP ALARM GND	0_JB	SPL_J1	A

BU2, BACKUP_ALARM CNH PN 1964702C1,VENDOR PN				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	BKUP ALM RLY OUT	35A_H	HD_E	B
1	BKUP ALM RLY OUT	35A_HN	HD_N	7
1	BKUP ALM RLY OUT	35A_HT	HD_N_T_2	C

CONNECTOR BUZ - AIC BUZZER



222136A1

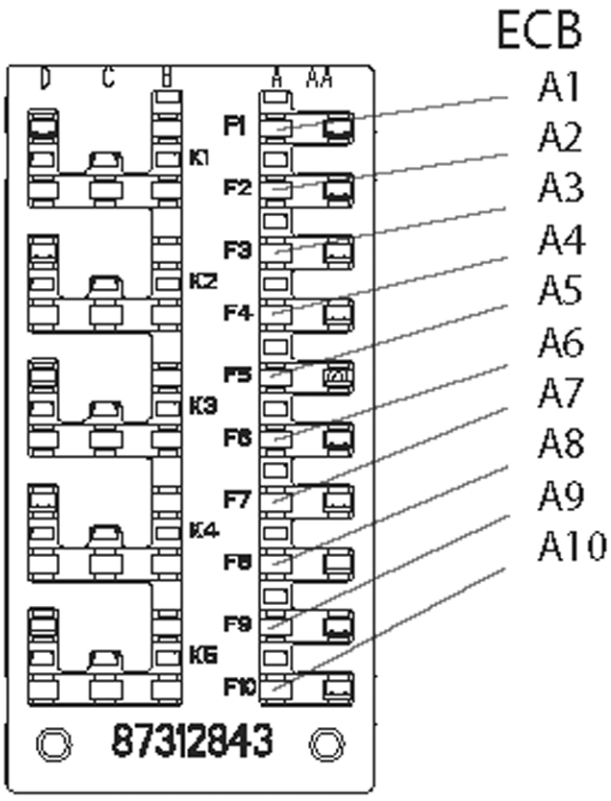
BUZ, AIC_BUZZER CNH PN 222136A1,VENDOR PN DTM04-2P				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	AIC BUZZER HSD	35B	AIC_1	13
2	BUZZER GND	0_B27	SPL_BUZ	A

CAB_PW, CAB POWER CNH PN 87315254,VENDOR PN DTCE 04-1-4P-LE03				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	CAB CB PROTECTED PWR	1CB_A	P_A3	1

CABE2, CAB TO ENG2 BULKHD CNH PN 87703918,VENDOR PN HDP24-24-21PN				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
A	NOX RELAY, B+	23B_D	ECD	AA8
B	DNOX2 BATT	18U_C	PRMB_L2	1
C	NOX SENSOR B+	23B_B	ECD	AA7
E	DNOX2 MODULE B+	18U_A	PRMB_L2	1
F	NOX SENSOR B+	23B_A	ECD	A8
G	TELEMATICS GRND	0_L	TEL	H
H	DNOX SW B+	18T	ECA	A10
K	BKUP ALM RLY OUT	35A_F	SPL_D8_C1	A
L	BKUP ALM RLY OUT	35A_C	SPL_35A	A
M	LH POSN/TAIL FUSED PWR	18F_A	SPL_POS_L	A
N	RH POSN/TAIL FUSED PWR	18G_F	SPL_POS_R	A
P	RIGHT TURN SGNL	45R_B	SPL_PK3	H
R	LEFT TURN SGNL	45L_B	SPL_PK3	D
S	BRK LT RLY OUT	44A_A	ECD	AA1
T	HOOD SWITCH FSD PWR	19Y_C	SPL_HOOD	A
U	HOOD DOWN RLY OUT	60D	ECC	B3
V	HOOD DOWN RLY CTRL	59D	ECC	D3
W	HOOD UP RLY OUT	60U	ECC	B1
X	HOOD UP RLY CTRL	59U	ECC	D1

CAB_ARM, CAB TO ARMREST CNH PN 225402C1,VENDOR PN DTM06-12SA				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
9	JSS OKAY PWR	51S_B	SPL_JSS_5	A
11	NO NEUTRAL SW	51NO_A	JSS_CNT	14
12	CAN LO, CAN MOD2	CANS_LB	CAB_ARM_FRM	1
1	CAN HI, CAN MOD2	CANS_HB	CAB_ARM_FRM	12
2	GRND, CAN MOD	0_SJ	SPL_JSS_9	A
3	ARMREST LOWER	51E_A	JSS_CNT	6
4	B+, CAN MOD	17P_D	SPL_JSS_18	A
6	JSS ACT SW	51B_H	SPL_JSS_7	A
7	GRND, JOYSTICK	0_SD	SPL_JSS_14	A
8	JSS POWER	51PW_R	SPL_JSS_6	A
10	JOYSTICK SIGNAL	51H_B	JSS_CNT	4

CAB_ARM_FRM, CAB TO ARM TO FRM CNH PN 225388C1,VENDOR PN DT04-12PA-B016				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
4	GRND, RELAY CNTL	51D_B	JSS_RLY	85
5	JSS ACT SW	51B_D	SPL_JSS_7	A
6	CAN LO, CAN MOD3	CANS_LD	JSS_CNT	2
7	CAN HI, CAN MOD3	CANS_HD	JSS_CNT	1
8	GRND, CAN MOD	0_SK	SPL_JSS_9	A
10	JSS ACT BTN	51C_B	JSS_CNT	13
12	CAN HI, CAN MOD2	CANS_HB	CAB_ARM	1
1	CAN LO, CAN MOD2	CANS_LB	CAB_ARM	12
2	B+, JOYSTICK	17P_G	SPL_JSS_18	A
9	JSS POWER	51PW_M	SPL_JSS_6	A
11	B+, JSS FUSED	18S_D	CAB_FRM	J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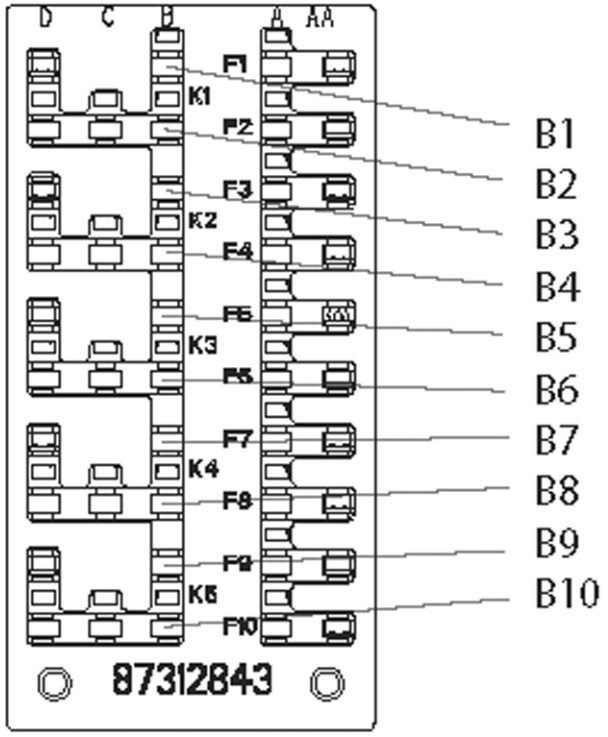
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GND_ENG1, STRT, FFH, WAT_SEP_HTR
CNH PN 1964718C1, VENDOR PN RING TERMINAL

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	WATER SEP HEATER GND	0_BW	WSH	A
1	FUEL FILTER HEATER GND	0_BX	FFH	B
1	STARTER RLY CTRL GND	0_GB	SRC_1	2

GND_ENG2, WIF, EDC
CNH PN 1964718C1, VENDOR PN RING TERMINAL

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	WIF SENSOR GND	0_BP	WIF	2
1	CRANK REQUEST GND	0_BAT	ENG	6
1	EDC7 GND	0_BAC	SPL_EDC1	A
1	EVGT_2 GND	0_BAU	TURBO	5
1	NOX SENSOR GND	23D_D	NOXS	2

GND_ENG3, SPLC_PK, WSHR MTR
CNH PN 1964718C1, VENDOR PN RING TERMINAL

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	ENGINE SPLICE GNDS	0_BM	SPL_ENG	A
1	GROUND	0_BBR	ENG_B	2

GND_ENG4, REAR LIGHTING
CNH PN 1964718C1, VENDOR PN RING TERMINAL

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	HOOD GROUNDS(EURO)	0_BAG	E_HD	C
1	HOOD GROUNDS(NA)	0_BAG_N	ENG_H	1
1	LH REAR LIGHT GND(EURO)	0_BT	LLR_E	5
1	RH REAR LIGHT GND(EURO)	0_BR	LRR_E	5

GND_ENG6, DEDICATED
CNH PN 1964718C1, VENDOR PN RING TERMINAL

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	AIC POWER GND	0_BG	ENG	19
1	AIC POWER GND RED	0_BH	ENG	20
1	AIC SENSOR GND	0_BJ	ENG	17
1	WIF BODY GRND	0_BAR	GND_WIF	1

GND_ENG7, TRANNY, COOL TEMP
CNH PN 1964718C1, VENDOR PN RING TERMINAL

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
	FAN SPEED SENSOR GND	917A	FSS	2
1	EDC7 SENDER GND	0_BAE	RECT	B
1	FUEL LEVEL SENDER GND	0_BU	RFLG	1
1	FUEL LEVEL SENDER GND	0_BZ	RFL_23	B

GND_FC, GROUND_A
CNH PN 1964718C1, VENDOR PN RING TERMINAL

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	FRONT CHASSIS GND	0_AG	SPL_A1	A
1	PROX SW GND	0_AB	SPL_A2	A

GND_GHI, STRT, FFH, WAT_SEP_HTR
CNH PN 8602094, VENDOR PN

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	GRID HTR GND	0_ES	GH_1	1

GND_JSS, GROUND_A
CNH PN 1964706C1, VENDOR PN RING TERMINAL

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	GRND	0_AV	SPL_JSS_17	A

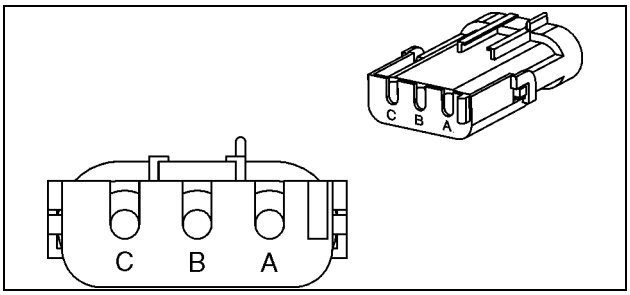
GND_POST, GROUND_A
CNH PN 1964706C1, VENDOR PN RING TERMINAL

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	PEDESTAL GND STRAP	0_BA	GND_POST2	1

GND_POST1, GROUND_A
CNH PN 1964706C1, VENDOR PN RING TERMINAL

CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	AIC CHASSIS GND	0_DA	AIC_2	22

CONNECTOR PSS - SECONDARY STEERING PRESSURE SWITCH

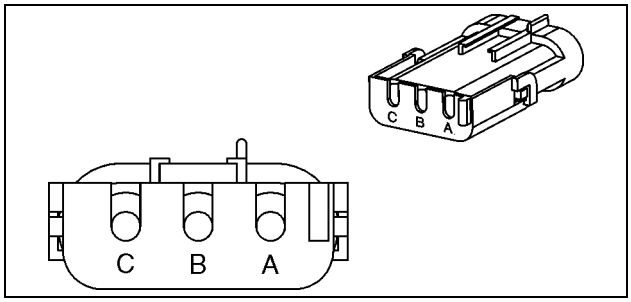


245485C1

PSS, SEC STR PRES SWITCH CNH PN 245485C1,VENDOR PN 12010717				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
B	SEC STEERING PRESS SW GND	0_CC	SPL_SEC	A
A	SEC STR HIGH PRESS	51P_A	SSM	9
C	SEC STR LOW PRESS SGNL	35X_A	SPL_C3	A

PVRES, JSS JOYSTICK CNH PN 1792058,VENDOR PN 1-967242-1				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
R	JSS OKAY PWR	51S_E	SPL_JSS_15	A
W	NC NEUTRAL SW	51NC	CAN_MOD_2	3
S	JSS POWER	51PW_V	SPL_JSS_13	A
T	JOYSTICK SIGNAL	51H_C	JSS_ARM	10
U	NO NEUTRAL SW	51NO	JSS_ARM	11
V	GRND, JOYSTICK	0_SC	JSS_ARM	7

CONNECTOR PXF - RTD



245485C1

PXF, RTD CNH PN 245485C1,VENDOR PN 12010717				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
B	PROX SW GND	0_AC	SPL_A2	A
A	RTD CTRL SIGNAL	53B	FRONT	12
C	PILOT CTRL RLY OUT	53P_H	SPL_A3	A

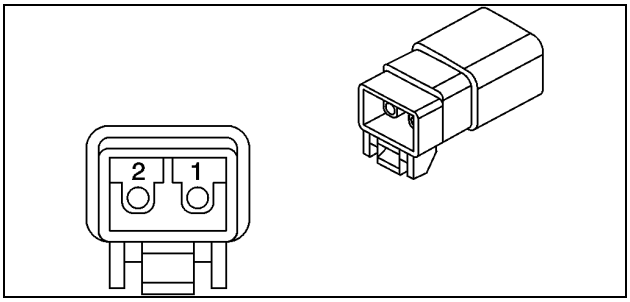
PXH, HGT_CNTRL-RTT CNH PN 245484C1,VENDOR PN 12015793				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
B	PROX SW GND	0_AA	SPL_A2	A
A	HC-RTT CTRL SGNL	54B	FRONT	11
C	PILOT CTRL RLY OUT	53P_J	SPL_A3	A

PXM, RTD CNH PN 245484C1,VENDOR PN 12015793				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
A	RTD CTRL SIGNAL	53B_A	PXT	A
B	RTD GND	0_AM	PXT	B
C	PILOT CTRL RLY OUT	53P_I	PXT	C

PXT, RTD CNH PN 245484C1,VENDOR PN 12015793				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
A	RTD CTRL SIGNAL	53B_A	PXM	A
B	RTD GND	0_AM	PXM	B
C	PILOT CTRL RLY OUT	53P_I	PXM	C

R1, RESISTOR CNH PN RESISTOR_FORGO,VENDOR PN				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
CS0	GRND, JOYSTICK	0_SP	SPL_JSS_14	A
CS0	VALVE ALARM	51J_D	SPL_JSS_11	A

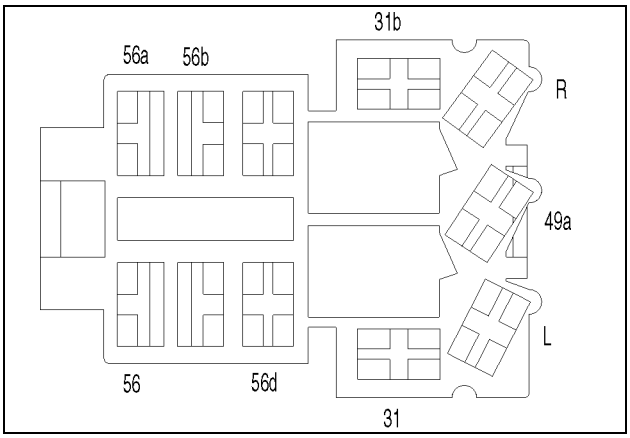
CONNECTOR SRC-1 - STARTER RELAY



225316C1

SRC_1, RELAY CNH PN 225316C1,VENDOR PN				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
2	STARTER RLY CTRL GND	0_GB	GND_ENG1	1
1	STRTR RLY SIGNAL	21D	ENG	15

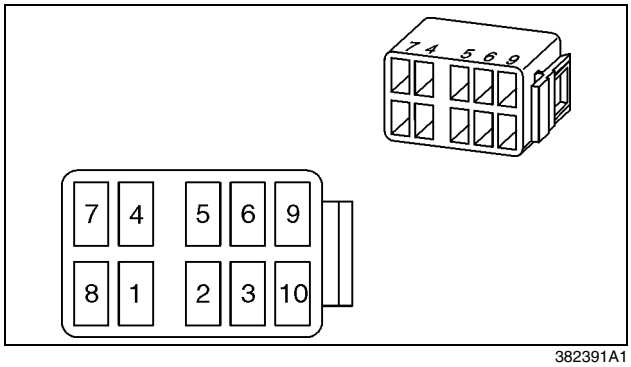
CONNECTOR SRHSTLK - RH STALK SWITCH



87318288

SRHSTLK, RH STALK SWITCH CNH PN 87318288,VENDOR PN Elobau 6-815579				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
56a	HIGH BEAM PWR	41H_A	SPL_HB	A
56b	LOW BEAM PWR	41L_A	SPL_LB	A
56d	HIGH BEAM FLASH FSD PWR	19Z_C	SPL_DR	A
31	HORN SW GND	0_EP	GND_CAB_SPL	C
56	DR LTS PWR	41J	SDR	6
31b	HORN RLY CTRL	64C	ECC	B8
49a	TURN SIGNAL FSD PWR	19B	ECA	A8
L	LEFT TURN SWITCH PWR	45A_A	FLSHR	9
R	RIGHT TURN SWITCH PWR	45B_A	FLSHR	10

CONNECTOR SRTD - DETENT SWITCH



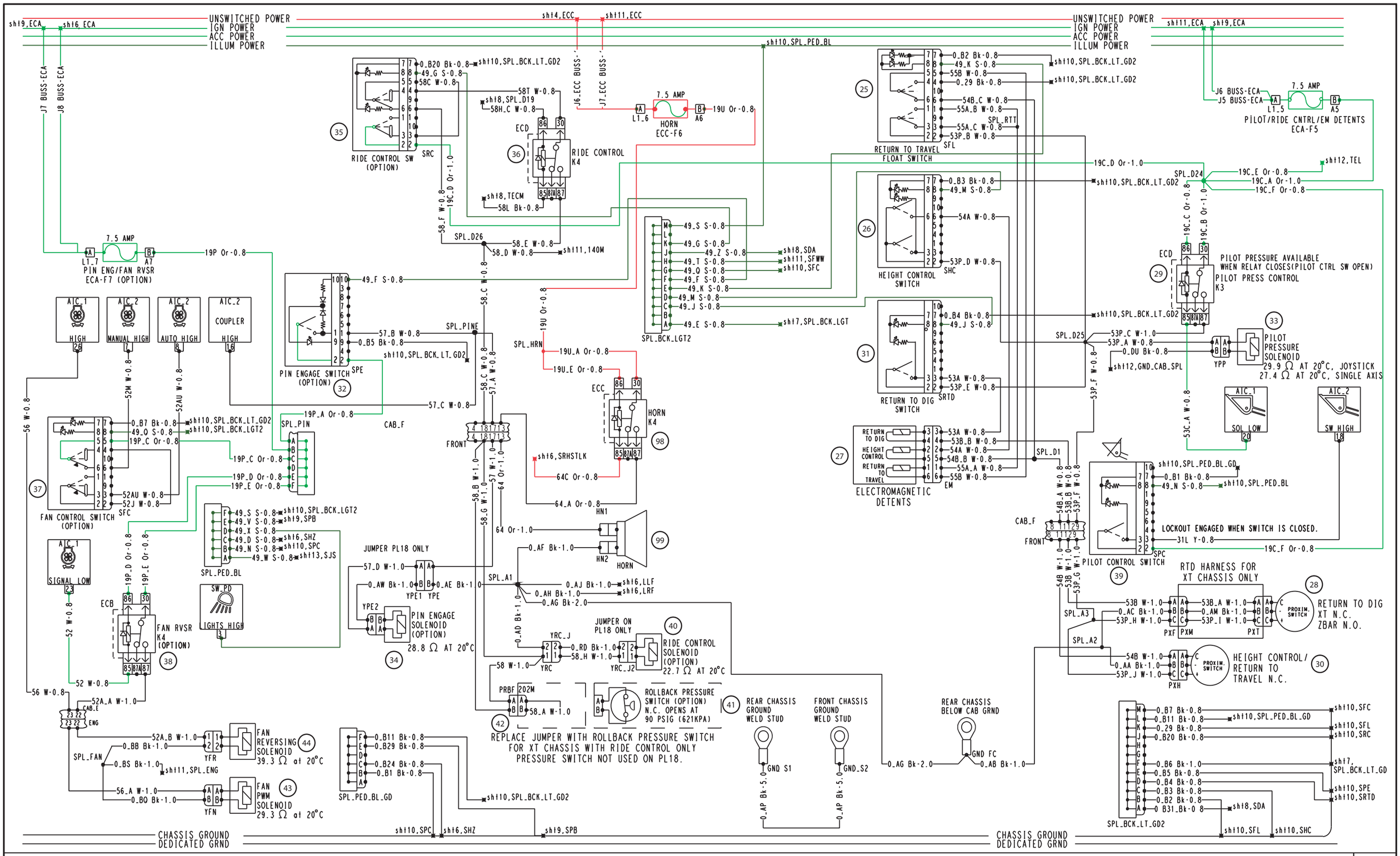
382391A1

SRTD, DETENT_SWITCH CNH PN 382391A1,VENDOR PN VC1-01				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
2	PILOT CTRL RLY OUT	53P_E	SPL_D25	A
3	RTD SW PWR	53A	EM	3
7	BACK LIGHT GND	0_B4	SPL_BCK_LT_GD2	D
8	BACK LIGHT POWER	49_J	SPL_BCK_LGT2	C

SRWP, REAR_WIPER_SW CNH PN 382391A1,VENDOR PN VC1-01				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	REAR WPR PARK CTRL	68C	CAB_RF	K
2	REAR WPR SW PWR	68L	SPL_3	A
3	REAR WPR SW FSD PWR	19K_A	SPL_RWW	A
5	REAR WPR SW FSD PWR	19K_B	SPL_RWW	A
6	REAR WSHR PUMP	68W	CAB_E	24
7	BACK LIGHT GND	0_B23	SPL_BCK_LT_GD	L
8	BACK LIGHT POWER	49_C	SPL_BCK_LGT	C

SSD, SEC_STR_DIODE CNH PN 245485C1,VENDOR PN 12010717				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
A	SEC STR FLYBACK GND	0_CH	245F	1
B	SEC STR FLYBACK GND	0_CG	245F	1
C	SEC STR FLYBACK	51_D	SSS	1

SSS, SS MAG SWITCH CNH PN 1964704C1,VENDOR PN				
CAVITY	CIRCUIT REFERENCE	WIRE	TO CONNECTOR	CAVITY
1	SEC STR FLYBACK	51_D	SSD	C
1	SEC STR MOTOR CTRL	51_B	SPL_SS	A


UNSWITCHED POWER
IGN POWER
ACC POWER
ILLUM POWER
sht9,ECA
sht6,ECA
J7 BUSS-ECA
J8 BUSS-ECA
7.5 AMP
L1_7
A7
PIN ENG/FAN RVSR
ECA-F7 (OPTION)
19P Or-0.8
AIC_1
HIGH
28
AIC_2
MANUAL HIGH
7
AIC_2
AUTO HIGH
8
AIC_2
COUPLER
HIGH
16
56 W-0.8
52M W-0.8
52AU W-0.8
0_B7 Bk-0.8
49_Q S-0.8
19P_C Or-0.8
sht10,SPL_BCK_LT_GD2
sht10,SPL_BCK_LGT2
37
52AU W-0.8
52J W-0.8
SFC
FAN CONTROL SWITCH
(OPTION)
SIGNAL LOW
23
52 W-0.8
ECB
86
30
19P_D Or-0.8
19P_E Or-0.8
FAN RVSR
K4
(OPTION)
38
85
87A
87
52 W-0.8
52A_A W-1.0
CAB_E
23
22
ENG
52A_B W-1.0
0_BB Bk-1.0
SPL_FAN
0_BS Bk-1.0
sht11,SPL_ENG
YFR
FAN
REVERSING
SOLENOID
39.3 Ω at 20°C
44
56_A W-1.0
0_BQ Bk-1.0
YFN
FAN
PWM
SOLENOID
29.3 Ω at 20°C
43
CHASSIS GROUND
DEDICATED GRND
sht4,ECC
sht11,ECC
J6,ECC BUSS-
J7,ECC BUSS-
sht10,SPL_PED_BL
0_B20 Bk-0.8
49_G S-0.8
58C W-0.8
sht10,SPL_BCK_LT_GD2
58T W-0.8
sht8,SPL_D19
58H_C W-0.8
35
RIDE CONTROL SW
(OPTION)
SRC
19C_D Or-1.0
58_F W-0.8
ECD
86
30
36
RIDE CONTROL
K4
85
87A
87
sht8,TECM
58L Bk-0.8
L1_6
7.5 AMP
A6
19U Or-0.8
HORN
ECC-F6
SPL_D26
58_E W-0.8
58_D W-0.8
sht11,140M
49_F S-0.8
57_B W-0.8
0_B5 Bk-0.8
sht10,SPL_BCK_LT_GD2
SPE
PIN ENGAGE SWITCH
(OPTION)
32
SPL_PINE
58_C W-0.8
57_A W-0.8
57_C W-0.8
19P_A Or-0.8
CAB_F
SPL_PIN
19P_C Or-0.8
19P_D Or-0.8
19P_E Or-0.8
49_S S-0.8
49_V S-0.8
49_X S-0.8
49_D S-0.8
49_N S-0.8
49_W S-0.8
sht10,SPL_BCK_LGT2
sht9,SPB
sht6,SHZ
sht10,SPC
sht13,SJS
SPL_PED_BL
SW_PD
LIGHTS HIGH
3
JUMPER PL18 ONLY
57_D W-1.0
0_AW Bk-1.0
YPE1
YPE
0_AE Bk-1.0
YPE2
PIN ENGAGE
SOLENOID
(OPTION)
28.8 Ω AT 20°C
34
SPL_A1
0_AJ Bk-1.0
sht6,LLF
0_AH Bk-1.0
sht6,LRF
0_AG Bk-2.0
0_AD Bk-1.0
YRC_J
0_RD Bk-1.0
58_H W-1.0
YRC
JUMPER ON
PL18 ONLY
40
YRC_J2
RIDE CONTROL
SOLENOID
(OPTION)
22.7 Ω AT 20°C
58 W-1.0
PRBF
202M
58_A W-1.0
42
ROLLBACK PRESSURE
SWITCH (OPTION)
N.C. OPENS AT
90 PSIG (621KPA)
41
REPLACE JUMPER WITH ROLLBACK PRESSURE SWITCH
FOR XT CHASSIS WITH RIDE CONTROL ONLY
PRESSURE SWITCH NOT USED ON PL18.
49_S S-0.8
49_G S-0.8
49_Z S-0.8
49_T S-0.8
49_Q S-0.8
49_F S-0.8
49_K S-0.8
49_M S-0.8
49_J S-0.8
49_E S-0.8
sht8,SDA
sht11,SFWW
sht10,SFC
sht7,SPL_BCK_LGT
SPL_BCK_LGT2
19U Or-0.8
SPL_HRN
19U_A Or-0.8
19U_E Or-0.8
ECC
86
30
HORN
K4
98
85
87A
87
sht6,SRHSTLK
64C Or-0.8
64_A Or-0.8
HN1
64 Or-1.0
0_AF Bk-1.0
HN2
HORN
99
58_B W-1.0
58_G W-1.0
57 W-1.0
64 Or-1.0
FRONT
4 18 17 13
4 18 17 13
SPL_PED_BL_GD
0_B11 Bk-0.8
0_B29 Bk-0.8
0_B24 Bk-0.8
0_B1 Bk-0.8
sht10,SPL_BCK_LT_GD2
sht10,SPC
sht6,SHZ
sht9,SPB
CHASSIS GROUND
DEDICATED GRND
UNSWITCHED POWER
IGN POWER
ACC POWER
ILLUM POWER
sht11,ECA
sht9,ECA
J6 BUSS-ECA
J5 BUSS-ECA
7.5 AMP
L1_5
A5
PILOT/RIDE CNTRL/EM DETENTS
ECA-F5
25
0_B2 Bk-0.8
49_K S-0.8
55B W-0.8
0_29 Bk-0.8
sht10,SPL_BCK_LT_GD2
54B_C W-0.8
55A_B W-0.8
SPL_RTT
55A_C W-0.8
53P_B W-0.8
SFL
RETURN TO TRAVEL
FLOAT SWITCH
19C_D Or-1.0
SPL_D24
19C_E Or-0.8
19C_A Or-1.0
19C_F Or-0.8
sht12,TEL
26
0_B3 Bk-0.8
49_M S-0.8
54A W-0.8
53P_D W-0.8
SHC
HEIGHT CONTROL
SWITCH
19C_C Or-0.8
19C_B Or-1.0
ECD
86
30
29
PILOT PRESSURE AVAILABLE
WHEN RELAY CLOSES(PILOT CTRL SW OPEN)
PILOT PRESS CONTROL
K3
85
87A
87
31
0_B4 Bk-0.8
49_J S-0.8
sht10,SPL_BCK_LT_GD2
SPL_D25
53P_C W-1.0
53P_A W-0.8
0_DU Bk-0.8
sht12,GND_CAB_SPL
33
YPP
PILOT
PRESSURE
SOLENOID
29.9 Ω AT 20°C, JOYSTICK
27.4 Ω AT 20°C, SINGLE AXIS
53P_F W-0.8
53C_A W-0.8
AIC_1
SOL LOW
20
AIC_2
SW HIGH
18
RETURN
TO DIG
HEIGHT
CONTROL
RETURN
TO
TRAVEL
27
53A W-0.8
53B_B W-0.8
54A W-0.8
54B_B W-0.8
55A_A W-0.8
55B W-0.8
EM
ELECTROMAGNETIC
DETENTS
SPL_D1
54B_A W-0.8
53B W-0.8
53P_G W-0.8
CAB_F
FRONT
8 11 12 9
8 11 12 9
sht10,SPL_PED_BL_GD
0_B1 Bk-0.8
49_N S-0.8
sht10,SPL_PED_BL
LOCKOUT ENGAGED WHEN SWITCH IS CLOSED.
31L Y-0.8
19C_F Or-0.8
SPC
PILOT CONTROL SWITCH
39
RTD HARNESS FOR
XT CHASSIS ONLY
28
53B W-1.0
0_AC Bk-1.0
53P_H W-1.0
SPL_A3
SPL_A2
PROXIM.
SWITCH
PXF
PXM
PXT
RETURN TO DIG
XT N.C.
ZBAR N.O.
54B W-1.0
0_AA Bk-1.0
53P_J W-1.0
PXH
30
HEIGHT CONTROL/
RETURN TO
TRAVEL N.C.
REAR CHASSIS
GROUND
WELD STUD
GND_S1
0_AP Bk-5.0
FRONT CHASSIS
GROUND
WELD STUD
GND_S2
0_AP Bk-5.0
REAR CHASSIS
BELOW CAB GRND
GND FC
0_AG Bk-2.0
0_AB Bk-1.0
0_B7 Bk-0.8
0_B11 Bk-0.8
0_29 Bk-0.8
0_B20 Bk-0.8
0_B6 Bk-0.8
0_B5 Bk-0.8
0_B4 Bk-0.8
0_B3 Bk-0.8
0_B2 Bk-0.8
0 B31_Bk-0 8
sht10,SFC
sht10,SFL
sht10,SRC
sht7,
SPL_BCK_LT_GD
sht10,SPE
sht10,SRTD
sht8,SDA
sht10,SFL
sht10,SHC
SPL_BCK_LT_GD2
CHASSIS GROUND
DEDICATED GRND

MAINTENANCE

Electrolyte Level

If the battery is a maintenance free battery, check the level of the electrolyte every 1000 hours of operation or six months, whichever occurs first. For all other batteries, check the level of the electrolyte every 250 hours of operation.

NOTE: *A maintenance free battery will have the words Maintenance Free on the decal on the top of the battery. If the center part of the decal has been removed for access to the battery caps, it is possible that the words Maintenance Free have been removed from the decal.*

Check the level of the electrolyte more often during hot weather. The use of a large amount of water by the battery can be caused by high battery temperature or a voltage regulator setting that is too high. Keep the electrolyte level above the top of the plates in the battery at all times to prevent damage to the battery.

NOTE: *On maintenance free batteries it is necessary to remove the center part of the decal for access to the battery caps. Do not discard the center part of the decal. Install the center part of the decal after the battery caps have been installed.*

If the level of the electrolyte is low, add distilled water or other clean water until the electrolyte is just below the cell opening. Do not add more water than is needed. Too much water can cause bad performance, a short service life, and corrosion around the battery.

NOTE: *Add water only. DO NOT add electrolyte.*

Inspecting and Cleaning a Battery

If damage causes an electrolyte leak, replace the battery.

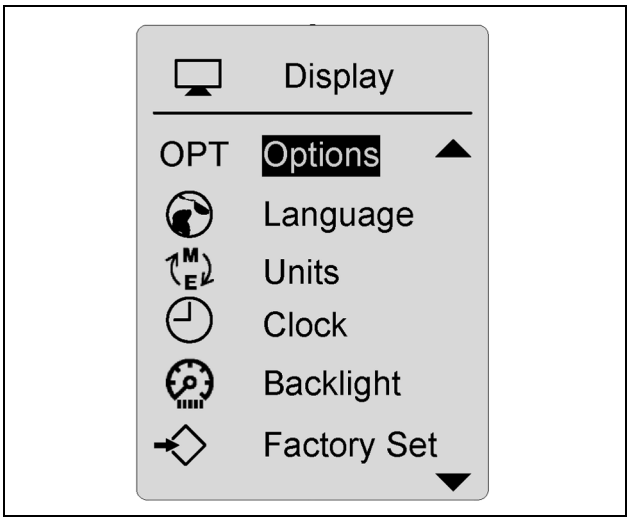
Inspect the battery at regular intervals for dirt, corrosion, and damage. Electrolyte and dirt on the top of the battery can cause the battery to discharge by making a passage for the current to flow.

If the battery must be cleaned, remove the battery from the battery carrier and clean the battery, cable terminals, and the battery carrier. When available, use Case Battery Saver and Cleaner according to the instructions on the container. Case Battery Saver and Cleaner also helps prevent corrosion. If Case Battery Saver and Cleaner is not available, use baking soda and water as a cleaner. DO NOT permit any type of cleaner to enter the cells of the battery.

Install the battery in the machine and make sure the fasteners are tight. Apply Case Battery Saver and Cleaner or Urethane Seal Coat to the cable terminals to prevent corrosion. See the Parts Counter Catalog. DO NOT apply grease.

TABLE OF CONTENTS

Display

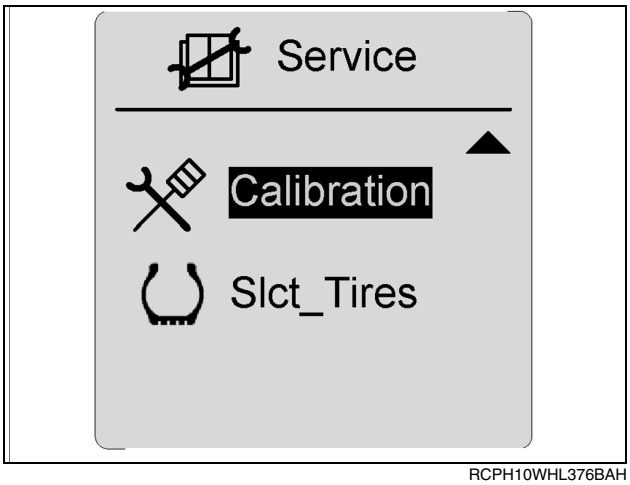


RCPH10WHL358BAH

Highlight the display selection and press confirm

Items and selections in this menu are:

- Languages (English, German, French, Italian, spanish, Portuguese)
- Units (metric, English, Imperial)
- Clock (Hour, minute, month, day, year)
- Backlight (Day display, day LED, night display, night LED).



RCPH10WHL376BAH

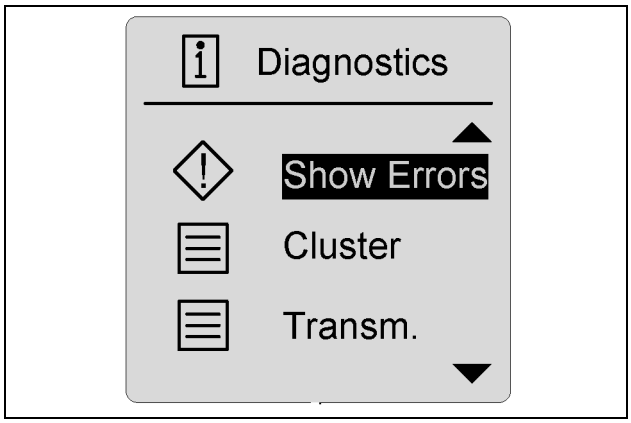
Service

Highlight the desired selection and press confirm. The tests in the configuration menu should be performed only by a qualified operator or technician. Some test require the engine to be running at high RPM'S.

Items and selections in this menu are:

- Calibration (Park brake and pedal calibration)
- Select tires (tire size)

Diagnostics



RCPH10WHL447AAH

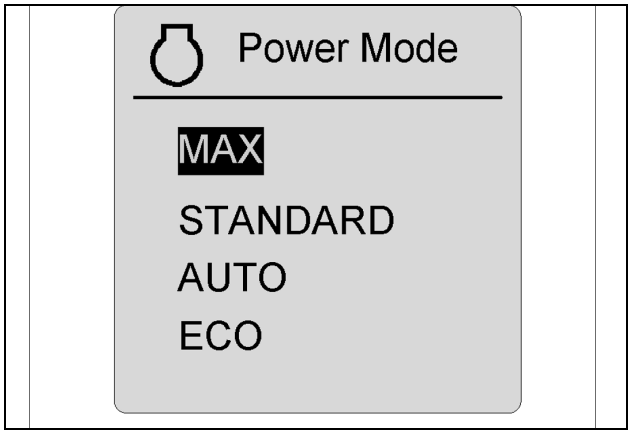
Highlight the desired selection and press confirm.

NOTE: *Pressing the escape key will return the LCD back to the normal driving screen. In order to lock the changes into memory, the operator must press the confirm key, then use the escape key to return to the main screen. turning the machine off will also lock the settings into memory.*

Selecting Power Modes

The power mode allows the operator to choose the most effective machine power for the current job conditions. Most commonly auto is chosen, as the power will automatically increase or decrease between maximum power and standard power while the machine is working. This allows for maximum power if necessary, but will switch to standard mode for economy. Maximum power can be chosen for more severe work conditions. Economy can be chosen for limited power and fuel efficiency.

Press and hold the confirmation button for two seconds to arrive at the service screen.



RCPH10WHL372BAH

At the screen shown above, highlight the power mode and press the confirmation button to move to the Power Mode Selection Menu.

	DEFINITION	POSSIBLE STEPS FOR REPAIR
1860	CAN timeout of C5.E detected by JSC	No information available at time of print.
1861	CAN timeout of AIC detected by JSC controller	No information available at time of print.
1863	Internal malfunction transmission controller. TCU message JSS F-N-R disabled or JSS F-N-R not activated.	No information available at time of print.
1864	Test	No information available at time of print.

NOTE: *The following fault codes are for optional climate controlled heating and air conditioning system.*

CODE	DEFINITION	DESCRIPTION AND POSSIBLE STEPS FOR REPAIR
1909	Open circuit evaporator temperature sensor	AC relay compressor is disabled. 1. Check sensor for short circuit to ground or open circuit. 2. Check harness between control module and relay.
1910	Short circuit evaporator temperature sensor	
1919	Water valve motor output failure, does not work correctly	1. Verify if the system controls are functioning properly when requesting heat or AC. 2. The motor is working in a degraded mode, replace valve.
1920	Recirculation actuator DC motor output failure, does not work correctly	1. Turn system on with fan speed on low, verify position of flap. 2. Place the fan speed on high, check position of flap. 3. Check harness between controller and flap motor.
1921	AC relay output failure, does not work.	1. Check for proper connection of relay. 2. Replace relay with known good relay and retest system. 3. Verify system activation when AC button is pressed. 4. Check charge level of AC system.

CODE	DEFINITION	DESCRIPTION AND POSSIBLE STEPS FOR REPAIR
3176	Fuel delivery exceeded threshold for pressure in overrun mode	High pressure system: Leakage in the high pressure section, injection nozzle stuck in open position, worn or defective high pressure pump, worn injector, leaking pressure relieve valve. Low pressure system: 'Zero delivery' is not active in metering unit (excessive leakage in metering unit). Check for defects according to failure list.
3177	Engine overspeed detected.	The Engine Control Unit (ECU) has detected an engine over-speed condition. An engine over-speed can occur both during certain engine operating conditions without any defect in a component, for example downhill driving, or as a result of, for example another ECU error. This error is for information purposes and is initiated by engine speed in excess of **2800 RPM** for over 5 seconds and is reset once the engine speed is below the threshold for over 2 seconds. Though this error by itself does not require any action, the over-speed state can cause an injection shutoff request within the ECU. If this error reoccurs frequently, check driving conditions of the vehicle, engine speed acquisition and injection system for quantity set-point and actual value during fault recognition, check also for other ECU errors.
3178	Time-out of CAN message BC2EDC1	Defective CAN controller of Body Computer, undervoltage of BC, missing BC, CAN cable connecting the BC is disconnected or broken. Short circuit in wiring. Check presence and correct connection of the BC to the network, Check correct functioning of the BC CAN controller and its voltage supply. Check wiring.
3179	Time-out of CAN message BC2EDC2	
3180	Time-out of CAN message VCM2EDC	Defective CAN controller of Vehicle Control Module, undervoltage of VCM, missing VCM, CAN cable connecting the VCM is disconnected or broken. Short circuit in wiring. Check presence and correct connection of the VCM to the network, Check correct functioning of the VCM CAN controller and its voltage supply. Check wiring.
3181	Rail pressure positive deviation too high concerning setpoint.	See engine manual for details.
3182	Timeout of CAN Message RXCCVS	See engine manual for details.
3183	Timeout of CAN Message TSC1-VR (when active)	See engine manual for details.
3184	Timeout of CAN Message TXC1-VR (when inactive)	See engine manual for details.
3185	Timeout of CAN message TF	See engine manual for details.

CODE	DEFINITION	DESCRIPTION AND POSSIBLE STEPS FOR REPAIR
3558	Info: Humidity sensor possibly saturated with water droplets - Signal ratio below limit	See engine/SCR manual for details.
3561	NOX value not plausible (After treatment plausibility)	See engine/SCR manual for details.
3577	DM1DCU SPN1 message- Error in DCU active	See engine/SCR manual for details.
3581	Performance limit active due to either stage - Performance limitation active	See engine/SCR manual for details.
3585	Engine shut off (after idling phase)	See engine/SCR manual for details.
3586	Plausibility check of catalyst system - Temperature after catalyst not plausible	See engine/SCR manual for details.
3587	Plausibility check of catalyst system - Temperature before catalyst not plausible	See engine/SCR manual for details.
3588	Plausibility check of catalyst system - Ambient temperature of humidity sensor or both catalyst temperatures not plausible	See engine/SCR manual for details.
3589	Plausibility check of catalyst system - Temperature deviation between up and downstream catalyst temperature too high during operation	See engine/SCR manual for details.
3591	SCR Catalyst thermal ageing limit exceeded - Main catalyst efficiency below threshold	See engine/SCR manual for details.
3593	Poor reagent quality	See engine/SCR manual for details.
3594	Indicates torque limitation due to SCR	See engine/SCR manual for details.
3599	Error path of oxidation catalyst not present: Warm up catalyst efficiency below threshold	See engine/SCR manual for details.
3602	Defect ratio between threshold limits - Catalyst temperature sensor circuit	See engine/SCR manual for details.
3611	Catalyst efficiency lower than first NOX prediction threshold level	See engine/SCR manual for details.
3612	Catalyst efficiency lower than second NOX prediction threshold level	See engine/SCR manual for details.
3613	Too high efficiency of catalyst system	See engine/SCR manual for details.
3614	SRA2EDC high effort fault	See engine/SCR manual for details.
3615	SRA2EDC initialization fault	See engine/SCR manual for details.
3616	Torque limitation due to turbo charger protection	See engine/SCR manual for details.

CODE	DEFINITION	DESCRIPTION AND POSSIBLE STEPS FOR REPAIR
9140	LogicalError in list0	No information available at time of print.
9141	LogicalError in list1	No information available at time of print.
9142	Logical Error in list2	No information available at time of print.
9143	Logical Error in list3	No information available at time of print.
9144	Logical Error in list4	No information available at time of print.
9145	Logical Error in list5	No information available at time of print.
9146	Logical Error in list6	No information available at time of print.
9147	Logical Error in list7	No information available at time of print.
9151	Logical Error when retrieving flash data	No information available at time of print.
9152	Logical Error when retrieving flash data	No information available at time of print.
9153	Logical Error when retrieving flash data	No information available at time of print.
9154	Logical Error when retrieving flash data	No information available at time of print.
9155	Logical Error when retrieving flash data	No information available at time of print.
9156	Logical Error when retrieving flash data	No information available at time of print.
9157	Logical Error when retrieving flash data	No information available at time of print.
9160	HourMeter Failure - Both copies are wrong	1. CAN communication interrupted during normal operation. 2. Faulty reading from component. 3. Connectors not mated fully, pins not pushed into connector fully, bent pin or broken wire at rear of connector. 4. Wiring or circuits open. 5. Wiring or circuits shorted.
9161	HourMeter Failure - One of two copies are wrong	1. CAN communication interrupted during normal operation. 2. Faulty reading from component. 3. Connectors not mated fully, pins not pushed into connector fully, bent pin or broken wire at rear of connector. 4. Wiring or circuits open. 5. Wiring or circuits shorted.
9162	HourMeter Failure - Pre-crank and after-crank check are wrong	1. CAN communication interrupted during normal operation. 2. Faulty reading from component. 3. Connectors not mated fully, pins not pushed into connector fully, bent pin or broken wire at rear of connector. 4. Wiring or circuits open. 5. Wiring or circuits shorted.
9173	SCR controller CAN timeout	No information available at time of print.
9174	SCR controller CAN did not start	No information available at time of print.
9175	CreateMbx 20ms DM1 BAM (SCR controller)	No information available at time of print.

CODE	DEFINITION	DESCRIPTION AND POSSIBLE STEPS FOR REPAIR
19265	Tank heating valve - short circuit to ground.	A valve remote from the storage tank is used to control coolant to prevent DEF/AdBlue® from freezing in cold temperatures. The valve will respond to a signal from the denox module/supply module based on temperature signals from the temperature sensor. **Cause:** A short circuit has been detected in the DEF tank heater control valve circuit. **Possible failure modes:** 1. Faulty DEF tank heating control valve. 2. Faulty electrical wiring or connection. 3. Faulty denox module/supply module.
19289	Temperature after catalyst too low	A valve remote from the storage tank is used to control coolant to prevent DEF/AdBlue® from freezing in cold temperatures. The valve will respond to a signal from the denox module/supply module based on temperature signals from the temperature sensor.
19290	Catalyst temperature sensor circuit range/performance	***NOTE:*** *After the repair has been completed, the code will still be present and active until it has been determined that the selective catalytic reduction (SCR) system is operating properly. The engine must be brought to normal operating temperature and run under load until the fault clears. If the code is still present and active after running the engine for 30 minutes, further diagnostics is necessary.* **Context:** The selective catalytic reduction (SCR) controller has sensed the Downstream catalyst temperature sensor is giving an implausible reading. This occurs when the SCR controller senses the Downstream catalyst temperature sensor reading is less than **110 °C** (**230 °F**) for longer than **450 s** (**450 s**) with engine speed of greater than **800 RPM** (**800 RPM**) and an engine load of at least **15 %** (**15 %**). **Cause:** The SCR controller has sensed a low Downstream catalyst temperature sensor reading. **Possible failure modes:** 1. Downstream catalyst temperature sensor not installed properly.

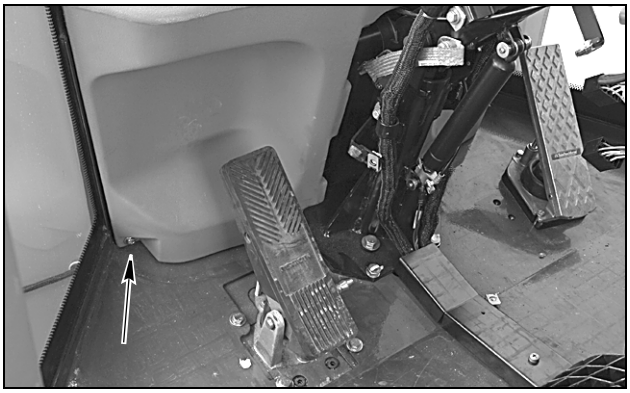
CODE	DEFINITION	DESCRIPTION AND POSSIBLE STEPS FOR REPAIR
19741	ECM/PCM Power relay control circuit/open - main relay open circuit	**Cause:** Switched power relay control circuit high. **Possible failure modes:** 1. Faulty relay 2. Faulty electrical wiring or connection 3. Denox module/supply module error
19742	ECM/PCM Power relay control circuit/open - main relay shut off too early	**Cause:** Switched power relay control circuit open. **Possible failure modes:** 1. Faulty relay 2. Faulty electrical wiring or connection 3. Denox module/supply module error
19748	UREA Temperature sensor of pump module - Out of range	**Cause:** High urea temperature in pump module. **Possible failure modes:** 1. Tank heating valve stuck open. 2. Check for other tank heating valve/coolant flow solenoid related error codes.
19749	Dynamic UREA leakage test - Leakage detected	**Cause:** High urea temperature in pump module. **Possible failure modes:** 1. Tank heating valve stuck open. 2. Check for other tank heating valve/coolant flow solenoid related error codes.
19757	Reagent - pump - Not delivering	The dosing control unit (DCU) has activated this fault due to other fault codes associated with the DEF / AdBlue® injection control being active. Diagnose those fault codes to clear this fault. If this fault is active without any other codes active, reload the software in the DCU or replace the DCU.
19766	Compressed air regulation valve	The dosing control unit (DCU) has activated this fault due to other fault codes associated with the DEF / AdBlue® injection control being active. Diagnose those fault codes to clear this fault. If this fault is active without any other codes active, reload the software in the DCU or replace the DCU
19775	Plausibility of catalyst temperature sensors - Plausibility error	The dosing control unit (DCU) has activated this fault due to other fault codes associated with the DEF / AdBlue® injection temperature being active. Diagnose those fault codes to clear this fault. If this fault is active without any other codes active, reload the software in the DCU or replace the DCU.

STEP 21

BD06G261

Install the front trim, install and tighten the three mounting bolts inside of the vent holes, install three vents into the front trim.

STEP 22



BD06G260

Install the two lower mounting screws that mount the front vent to the cab.

STEP 23

BD06G258

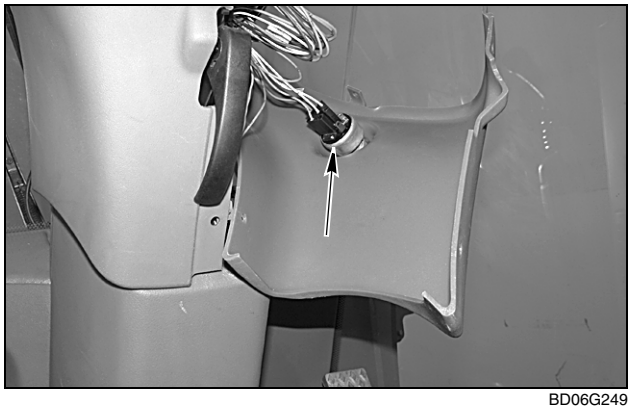
Install the lower trim onto the column, instal and tighten the two mounting screws mounting the lower trim, place the floor mat into position.

STEP 24

BD06G257

Install the screw into the brace.

STEP 25



BD06G249

Connect the ignition switch, install the right and left hand trim pieces onto the column.

STEP 26

BD06G248

Install and tighten the five mounting screws for the left and right hand trim.

STEERING BACK PRESSURE VALVE

Removal

1. Remove the fill cap for the hydraulic reservoir to release pressure in the reservoir, attach a vacuum pump to the reservoir, start the pump.
2. Disconnect hoses 2 and 6 from the pressure valve.
3. Remove the nuts, bolts and spacers from the pressure vale, remove the valve from the machine.

Installation

1. Install the valve, bolts, spacers and nuts onto the machine, tighten the bolts.
2. Install new O-rings onto the fittings of the hoses, install and tighten the hoses.
3. Stop the vacuum pump, install and tighten the reservoir filler cap.
4. Start and run the machine at low idle, turn the steering wheel from full left lock to full right lock holding the steering over relief.
5. Stop the machine and check for leaks.
6. Check fluid level in hydraulic reservoir. Add oil as required. See Section 1002 for specifications.

STEERING CYLINDER LEAK TEST

NOTE: *Make sure all persons are clear of the area of the center pivot. Make sure the center pivot is free of any obstructions.*

1. Park the machine on a level surface.
2. Turn the machine all the way to the right.
3. Stop the engine and apply the parking brake.
4. Find the tube that is connected to the rod end of the left-hand steering cylinder. Disconnect the tube from the left-hand cylinder.
5. Install a plug in the tube.
6. Start and run the engine at full throttle.
7. Turn the steering wheel to the right. Hold the steering wheel for a full right turn. Have another person check for leakage from the opening of the rod end of the left-hand steering cylinder.
8. If there is constant leakage from the rod end, the piston packing in the left-hand steering cylinder is damaged. Repairs must be made. See Section 5005.
9. Connect the tube to the rod end of the left-hand steering cylinder.
10. Turn the machine all the way to the left.
11. Stop the engine.
12. Find the tube that is connected to the rod end of the right-hand steering cylinder. Disconnect the tube from the right-hand steering cylinder.
13. Install a plug in the tube.
14. Start and run the engine at full throttle.
15. Turn the steering wheel to the left. Hold the steering wheel for a full left turn. Have another person check for leakage at the opening of the rod end of the right-hand steering cylinder.
16. If there is constant leakage from the rod end, the piston packing in the right-hand steering cylinder is damaged. Repairs must be made. See Section 5005.
17. Connect the tube to the rod end of the right-hand steering cylinder.

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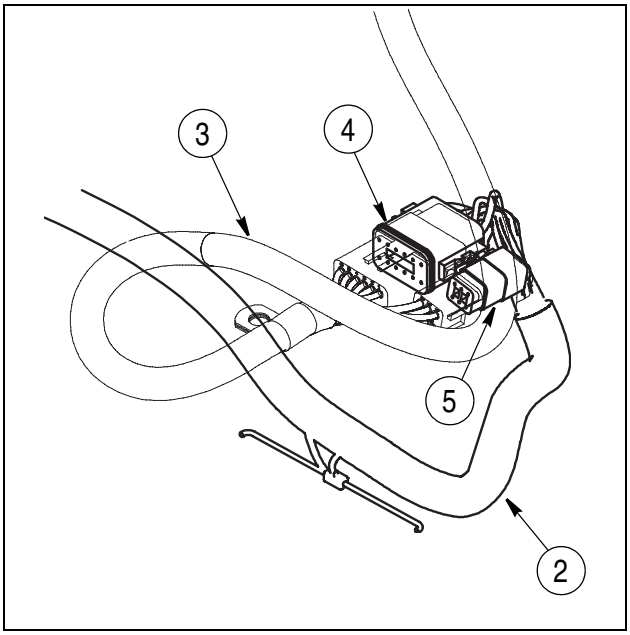
Summary table of the ON/OFF statuses

State of activation of the JSS, JSS F-N-R and auxiliary F-N-R:

Starting status	**JSS OFF**	**JSS OFF**	**JSS OFF**	**JSS ON**
	JSS / AUX F-N-R disabled	**(JSS) AUX F-N-R enabled**	**JSS / AUX F-N-R disabled**	**JSS (AUX) F-N-R enabled**
Activation signal	**JSS activation signal**	**JSS activation signal**	**Auxiliary F-N-R enabling signal**	**F-N-R enable signal or JSS enable signal**
JSS safety conditions to be met	▪ Equipment locking switch disabled; ▪ Armrest on left-hand side lowered; ▪ Vehicle stationary; ▪ Main F-N-R gear lever = neutral; ▪ JSS pilot pressure less than 8 bar; ▪ JSS Joystick = neutral; ▪ No errors on JSS system.	▪ Equipment locking switch disenabled; ▪ Armrest on left-hand side lowered; ▪ Vehicle stationary; ▪ Main F-N-R gear lever = neutral; ▪ JSS pilot pressure less than 8 bar; ▪ JSS Joystick = neutral; ▪ No errors on JSS system.		
Resulting JSS status	▪ **JSS ON**	▪ **JSS ON**	▪ **JSS OFF**	▪ **JSS ON**
F-N-R conditions	▪ **JSS ON** ▪ JSS F-N-R = neutral.	▪ **JSS ON** ▪ JSS F-N-R = neutral.	▪ Vehicle stationary; ▪ Main F-N-R gear lever = neutral; ▪ AUX F-N-R = neutral.	▪ Vehicle stationary ▪ Main F-N-R gear lever = neutral; ▪ AUX F-N-R = neutral.
Resulting F-N-R status	▪ **JSS F-N-R Enabled** ▪ Stays enabled.	▪ **JSS F-N-R Enabled** ▪ Stays enabled.	▪ **AUX F-N-R Enabled** ▪ within 8 seconds release parking brake and engage F or R to maintain enabling.	▪ **JSS F-N-R Enabled**
F-N-R conditions not met	▪ If JSS F-N-R not in neutral.	▪ If JSS F-N-R not in neutral.	▪ If AUX F-N-R not in neutral.	
F-N-R alternative status	▪ JSS / AUX F-N-R disabled.	▪ JSS / AUX F-N-R disabled.	▪ JSS / AUX F-N-R disabled.	

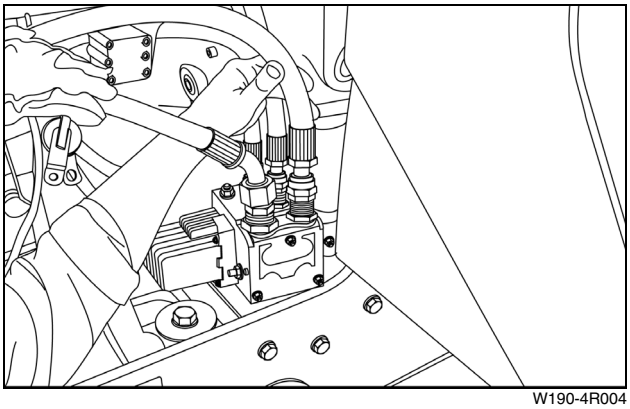
STEP 20



W190-4R087

Connect interface connector (4) of the joystick harness (2), connect the armrest harness (3) to connector (5).

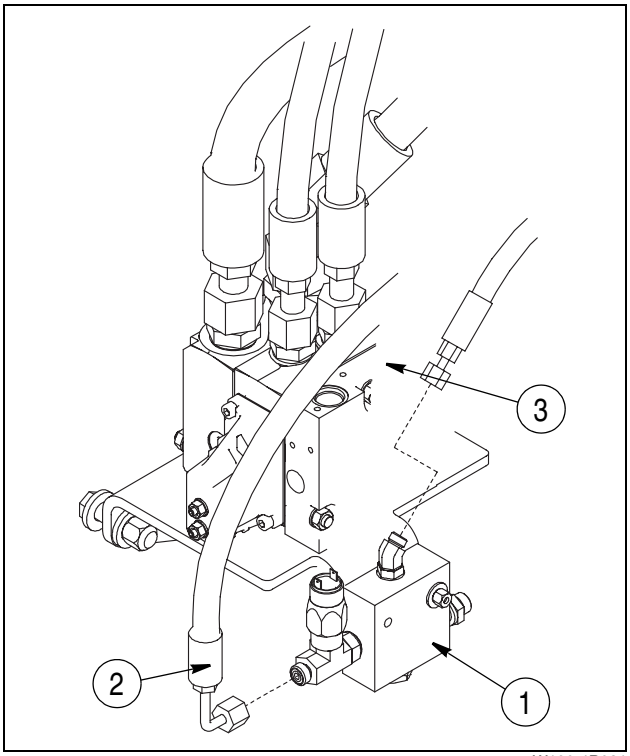
STEP 35



W190-4R004

Connect the suction hose of the steering priority valve. Tighten the pipe to a torque of 60 N m (44 pound feet).

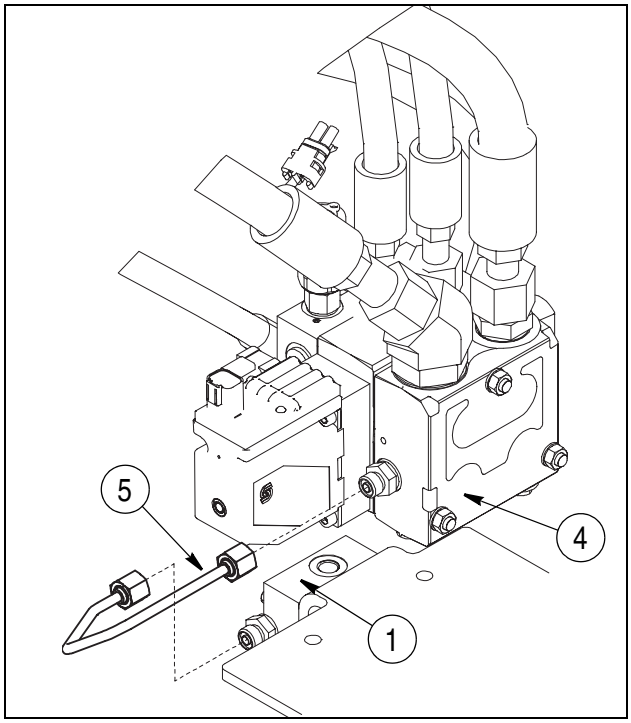
STEP 36



W190-4R031

Connect the hose (2) and hose (3) to valve PVFC (1). Tighten to 14 N m (10 pound feet).

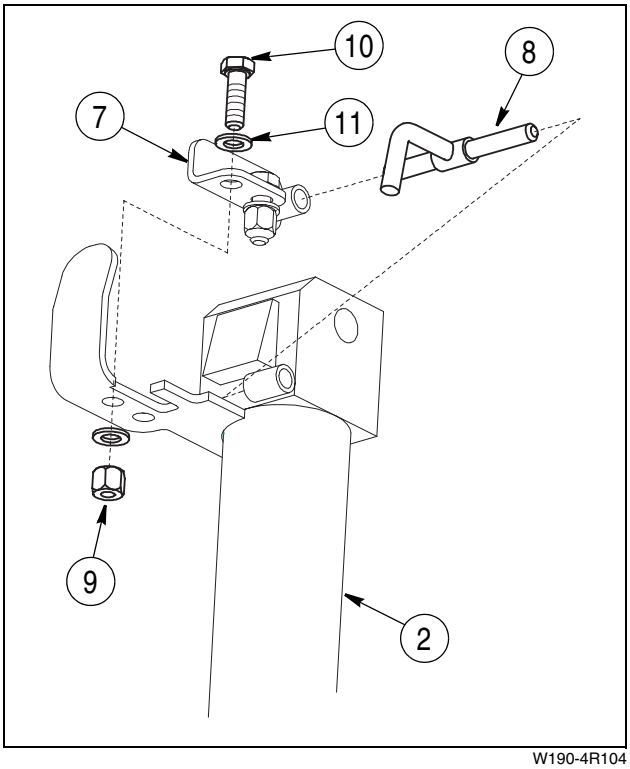
STEP 37



W190-4R032

Connect the line for the “LS” (5) on the valve PVG32 (4) and on the valve PVFC (1). Tighten the line 14 N m (10 pound feet).

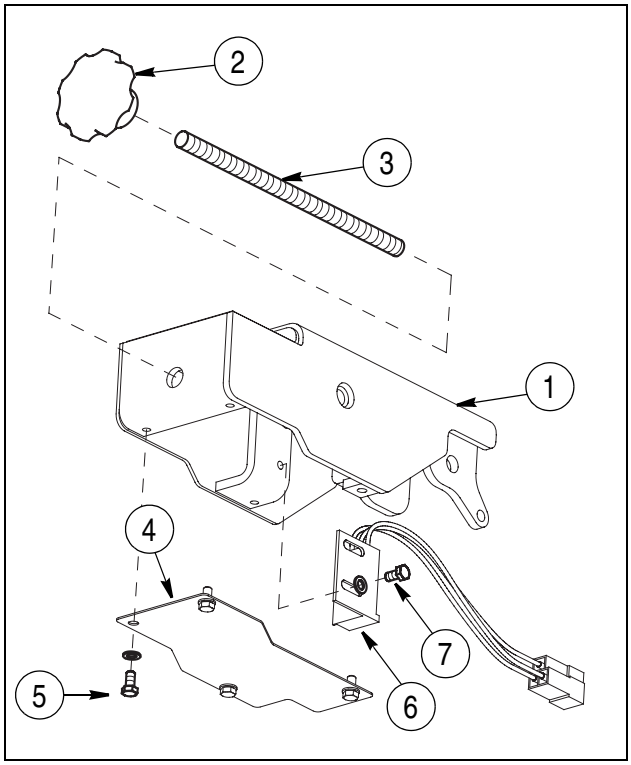
STEP 13



W190-4R104

Remove the locking bracket (7) with pin (8) from the armrest height/angle adjustment (2). Unscrew the two nuts (9), capscrews (10) and the washers (11). Remove the pin (8) from inside the seat of the bracket (7).

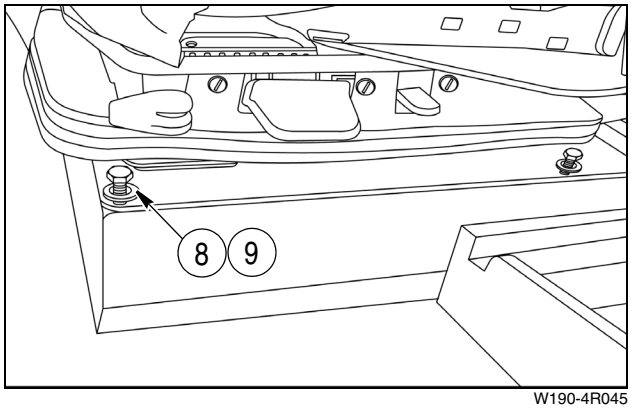
STEP 14



W190-4R044

Unscrew the knob (2) from the support (1) and extract the armrest height/angle adjustment pin (3). Remove the plate (4) from the support (1) by removing the four capscrews (5) with washers. Remove the armrest position switch (6) from the inside of the support (1) by removing the two screws (7) and washers.

STEP 15

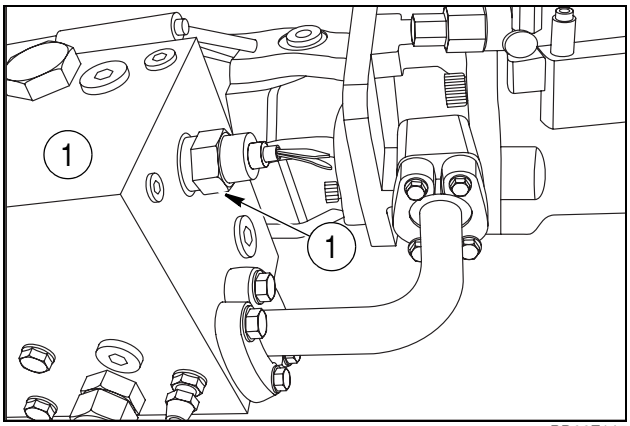


W190-4R045

Disconnect the wiring harness from the operator's seat (if equipped with air seat). Remove the four capscrews (8), washers (9) from the base of the seat. Remove the seat.

Pressure Setting Adjustment

1. Turn the adjusting screw clockwise to increase the pressure setting. Turn the adjusting screw counterclockwise to decrease the pressure setting.
2. Repeat pressure test procedure.
3. If necessary, adjust the limit valve again until within the specified range.
4. Stop the engine before removing the pressure gauge.



BD06F147

1. STEERING PRIORITY VALVE
2. LIMIT VALVE

Steering Times

IMPORTANT: *When performing the following procedure check that the articulation of the unit is NOT locked.*

The speed of steering is not constant but depends on the speed reached by the vehicle. On reaching 20 km/h the steering sensitivity is reduced by 80% compared to the normal speed of steering.
The JSS can be set on three different levels of steering speed.

The three speed levels are:
1. from 4.5 to 5.5 sec.*
2. from 3.2 to 4.5 sec.*
3. from 2.8 to 3.2 sec.*

*(time to take the unit from full right to full left turn).

The purpose of these settings is to make steering the unit similar to the standard steering system.

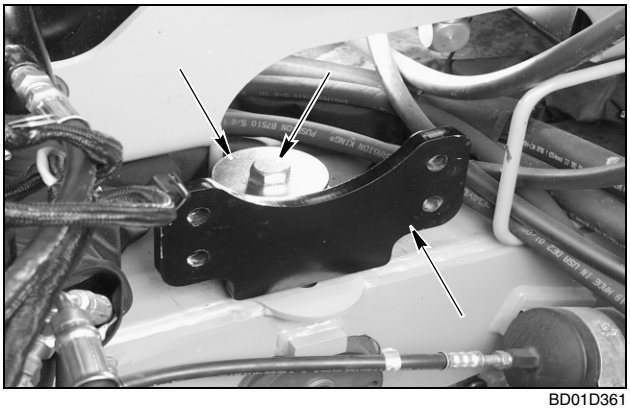
1. With the engine at low idle, with all the controls in neutral and JSS **ON**, steer the unit completely to the left.
2. Set a speed level (e.g. 1, 2 or 3).
3. Move the joystick to the right, time the steering rate from full left to full right. Compare the time with the time specified in the table of speed levels.
4. Move the joystick to the left, time the steering rate from full right to full left. Compare the time with the time specified in the table of speed levels.
5. If the times are not in the range shown in the table, calibrate the system, see page 47.
6. Repeat tests 1 through 4 with the engine at high idle.

Installation

STEP 23

Check isolators for deterioration, tears, deformation, or other damage. Replace as necessary: refer to mounting illustration.

STEP 24

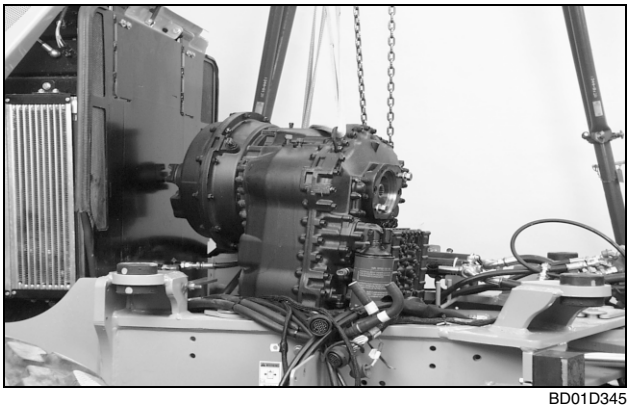


BD01D361

If top mounting bracket was removed, put bracket on rear chassis trunnion and secure using washer and bolt. Do not tighten bolt.

NOTE: *Mounting hole use is based upon 4-speed or 5-speed installation. The 5-speed transmission installation uses rear mounting hole.*

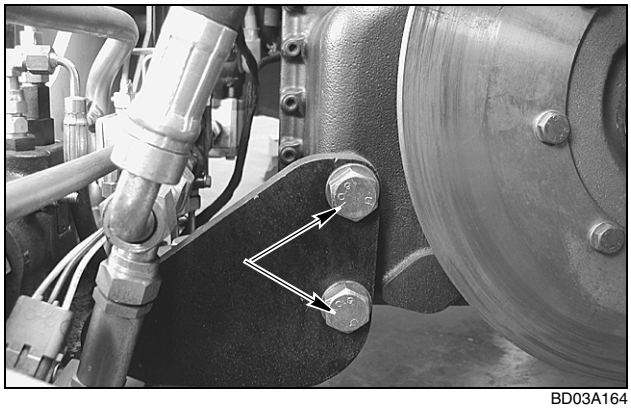
STEP 25



BD01D345

Move transmission into position above loader. Slowly lower transmission into loader.

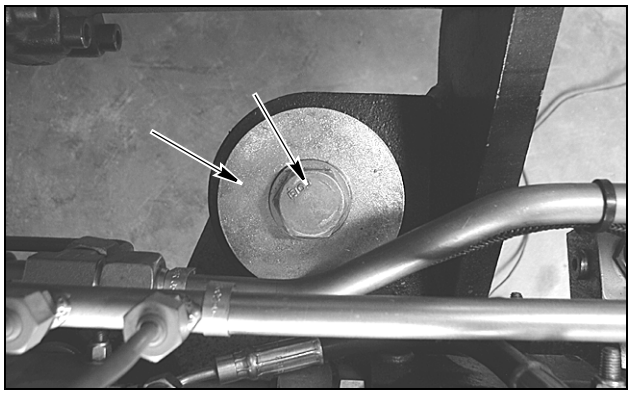
STEP 26



BD03A164

Install RH and LH mounting brackets on transmission using two washers and bolts. Do not tighten bolts.

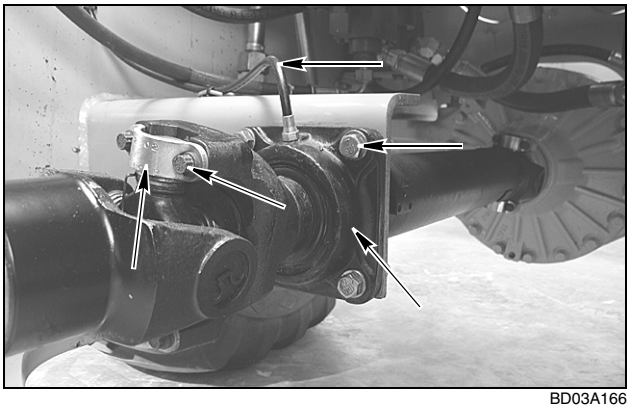
STEP 27



BD03A163

Loosely install washers and bolts to secure RH and LH mounting brackets to rear chassis. Tighten bolts securing RH and LH mounting brackets to transmission to a torque of 481 to 590 Nm (355 to 435 pound feet).

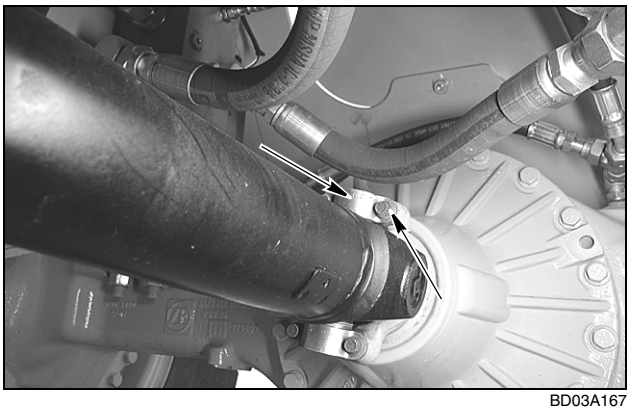
STEP 24



BD03A166

Position and support center bearing and front drive shaft and install eight washers and four bolts and nuts. Tighten bolts to a torque of 99 to 128 Nm (73 to 94 pound feet). Install two straps and four bolts. Tighten bolts to a torque of 61 to 81 Nm (45 to 60 pound feet). Secure lubrication hose to machine using clamp; secure opposite end of hose using nut.

STEP 25



BD03A167

Secure drive shaft to front axle using two straps and four bolts. Tighten bolts to a torque of 61 to 81 Nm (45 to 60 pound feet).

STEP 26

If necessary, fill axle with Standard Multi-G Hydraulic oil.

STEP 27

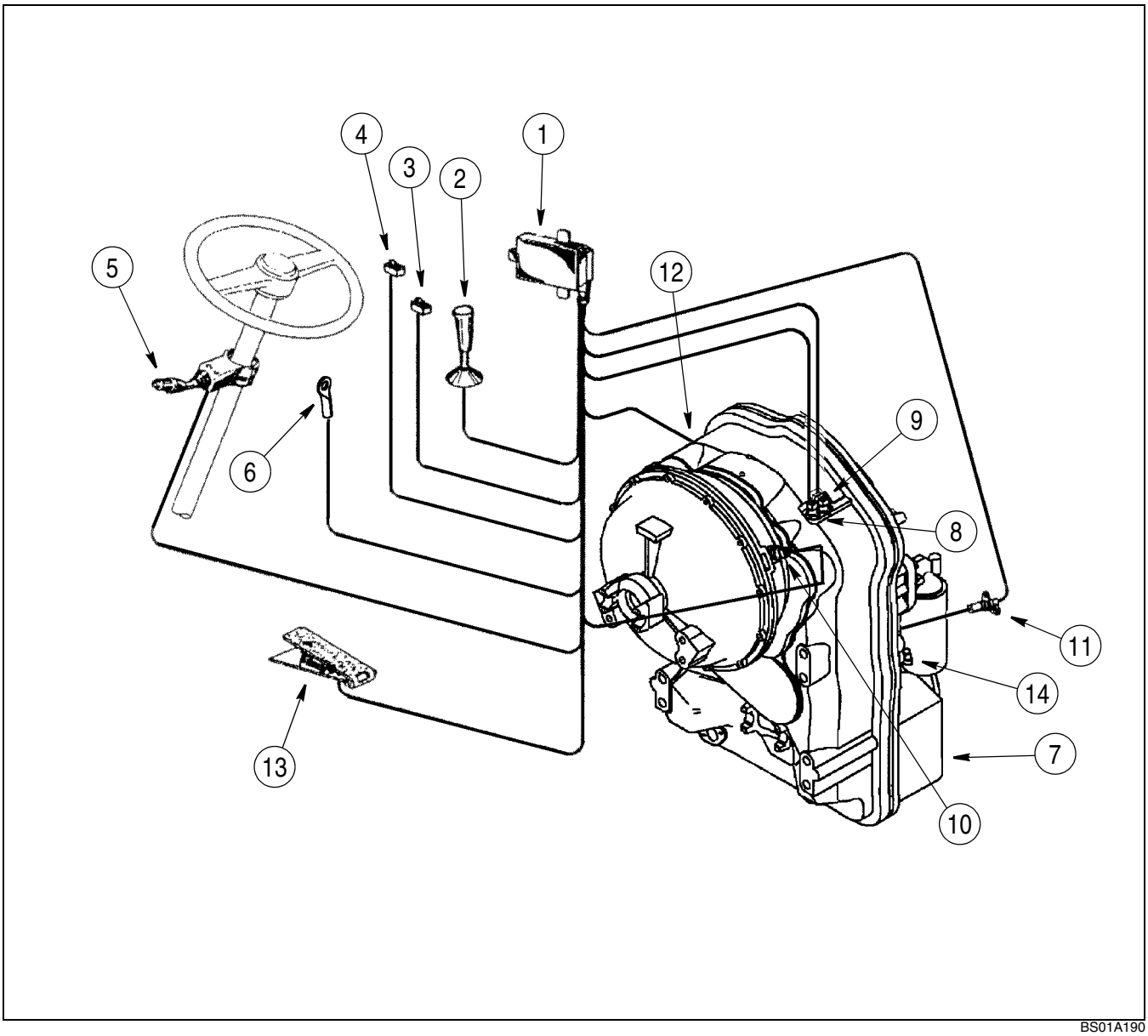
Refer to Section 7002 and bleed brakes.

STEP 28

Start engine and raise bucket. Have assistant remove safety link. Lower bucket to ground and stop engine.

STEP 29

Put articulation lock in OPERATING position.



BS01A190

1. TRANSMISSION ELECTRONIC CONTROL MODULE
2. DOWNSHIFT BUTTON
3. DECLUTCH ROCKER SWITCH
4. MANUAL/AUTOMATIC ROCKER SWITCH
5. SHIFTER
6. SUPPLY SYSTEM CONNECTIONS B+ AND RETURN
7. TRANSMISSION
8. INDUCTIVE TRANSMITTER - INTERMEDIATE SPEED SENSOR
9. INDUCTIVE TRANSMITTER - TURBINE SPEED SENSOR
10. INDUCTIVE TRANSMITTER - ENGINE SPEED SENSOR
11. HALL SENSOR - OUTPUT SPEED SENSOR
12. TRANSMISSION CONTROL VALVE CABLE
13. DECLUTCH LIMIT SWITCH (APPLIES TO 4-SPEED TRANSMISSION ONLY)
14. PLUG

COMPONENT LOCATIONS SYSTEMS

TRANSMISSION PRESSURE TEST POINTS DIAGRAM

No.	IDENTIFICATION/LOCATION	CONNECTION	DESIGNATION ON VALVE BLOCK
	Measuring Points for Pressure Oil and Temperature		
51	Before the Converter - Opening Pressure 8 bar (116 psi)	M10x1	H
52	Behind the Converter - Opening Pressure 2.5 bar (36 psi)	M14x1.5	
53	Clutch Forward 16+2 bar (232 + 29 psi)	KV M10x1	B
55	Clutch Reverse 16+2 bar (232 + 29 psi)	KR M10x1	E
56	Clutch 16+2 bar (232 + 29 psi)	K1 M10x1	D
57	Clutch 16+2 bar (232 + 29 psi)	K2 M10x1	A
58	Clutch 16+2 bar (232 + 29 psi)	K3 M10x1	C
60	Clutch 16+2 bar (232 + 29 psi)	K4 M10x1	F
63	Behind the Converter Temperature 100° C, Short Time 120° C	M14x1/5	
65	System Pressure 16+2 bar (232 + 29 psi)	M10x1	K
	Measuring Points for Delivery Rates		
15	Connection to the Heat Exchanger	1 5/16” - 12 UNF-2B	
16	Connection from the Heat Exchanger	1 5/16” - 12 UNF-2B	
	Inductive Transmitter and Speed Sensor		
21	Inductive Transmitter for Turbine Speed	M18x1.5	
34	Output Speed Sensor		
47	Inductive Transmitter for Central Gear Train Speed	M18x1.5	
48	Inductive Transmitter for Engine Speed	M18x1.5	
	Connections		
49	Plug Connection on the Hydraulic Control Unit		
68	System Pressure	M16x1.5	G
69	Pilot Pressure	M16x1.5	J

NOTE: *See next page for Measuring Point, Transmitter, Sensor and Connection locations.*

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STEP 10

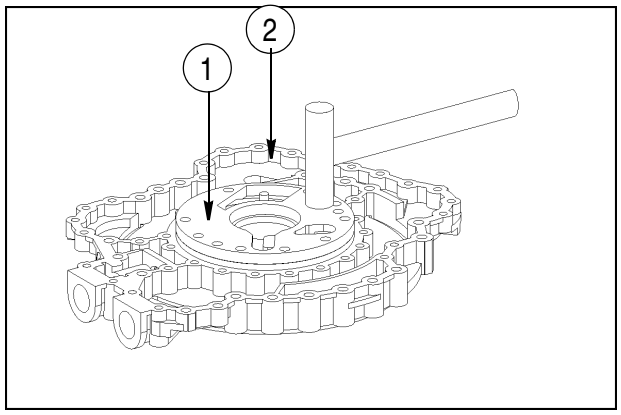


BILD-12

Separate oil pressure pump (1) from oil feed housing (2).

STEP 11

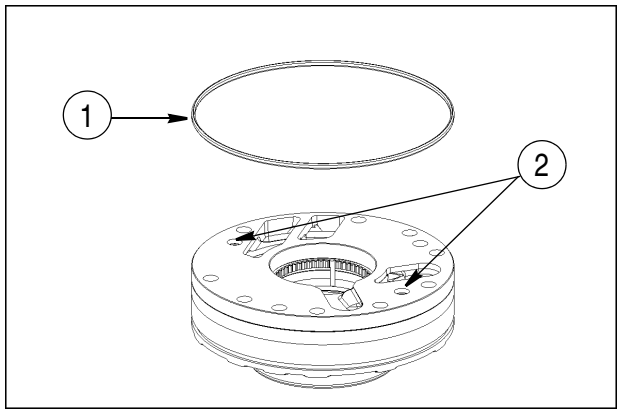


BILD-13

Remove O-ring (1) and cylindrical bolts (2).

STEP 12

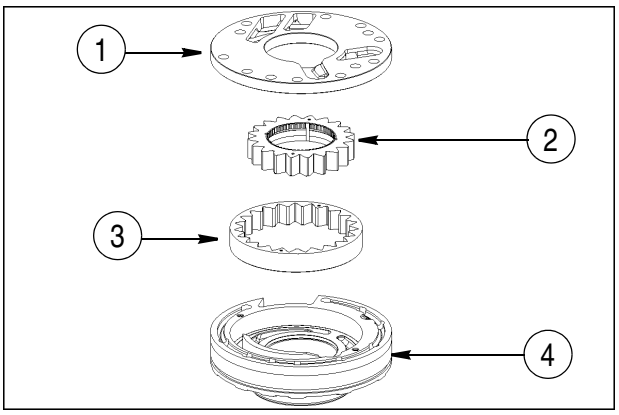


BILD-14

Check oil gear pump for wear. In case of wear marks on the pump housing, cover, inner rotor, or outer rotor; replace the oil pressure pump.

1. Cover
2. Inner rotor
3. Outer rotor
4. Pump housing

STEP 13

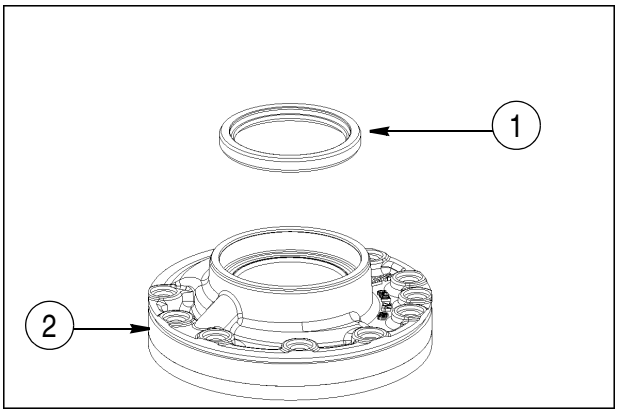


BILD-15

Remove shaft seal (1) from the pump housing (2).

STEP 2

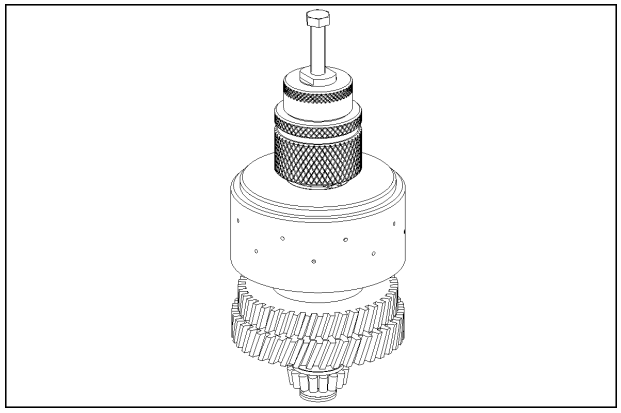


BILD-02

Pull tapered roller bearing off the shaft with special tool CAS2798.

STEP 3

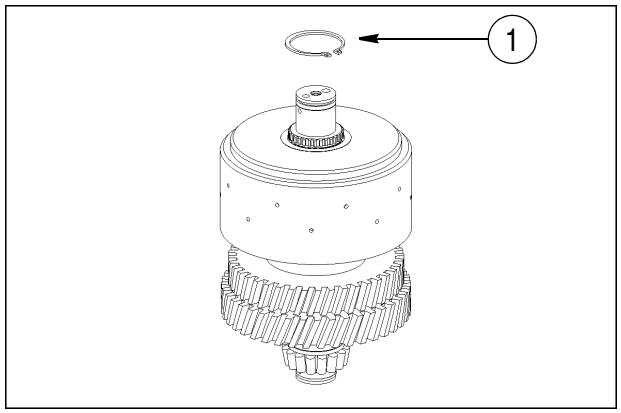


BILD-03

Snap out retaining ring (1).

STEP 4

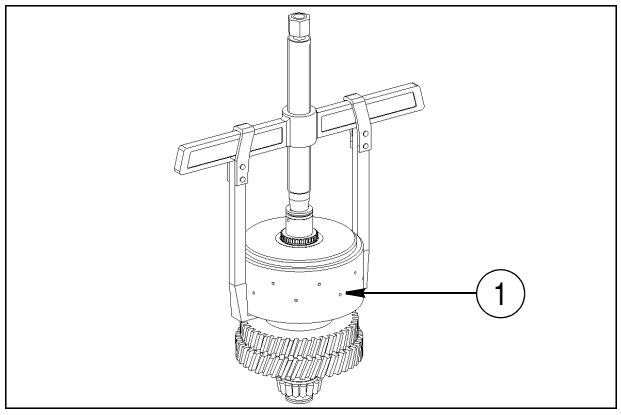


BILD-04

Pull clutch (1) off the shaft.

NOTE: *For disassembly of clutch see Steps 10-15.*

STEP 5

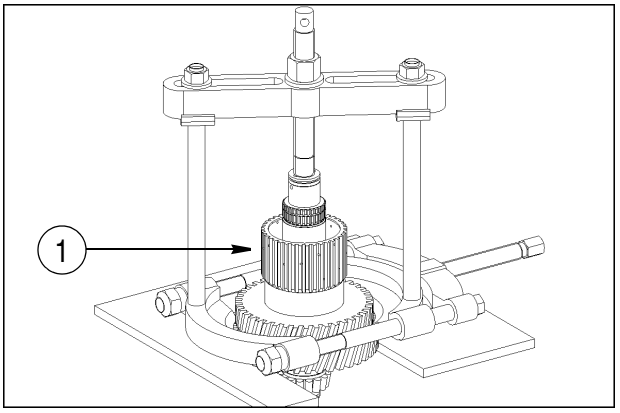


BILD- 05

Secure idler gear (1) using a cut-off device and pull it off the clutch shaft.

STEP 6

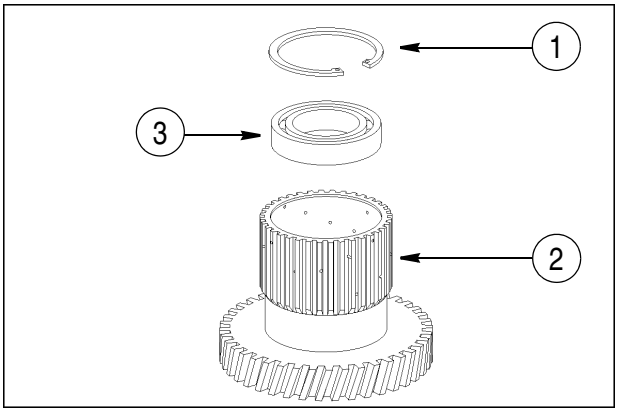


BILD-06

Snap retaining ring (1) out of the idler gear (2) and remove ball bearing (3).

STEP 7

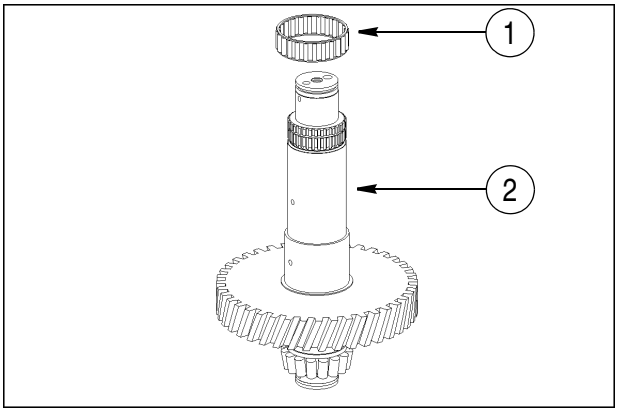


BILD-07

Remove needle cage (1) from the shaft (2).

STEP 6

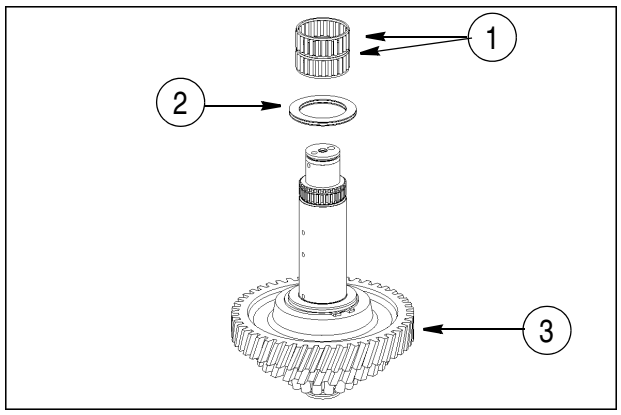


BILD-06

Remove needle cage (1) and axial bearing assembly (2).

NOTE: *The gear (3) cannot be removed, it is a shrink fit.*

STEP 7

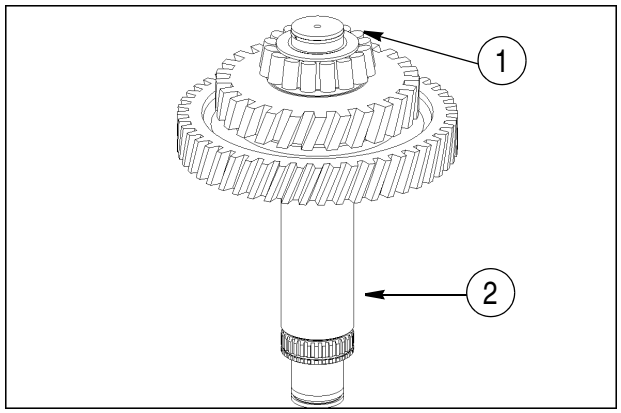


BILD-07

Turn shaft (2) by 180 degrees and snap out piston ring (1).

STEP 8

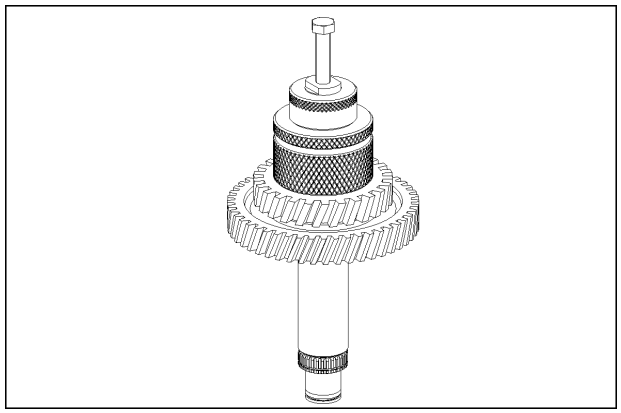


BILD-08

Pull tapered roller bearing off the shaft using special tool CAS2798.

STEP 9

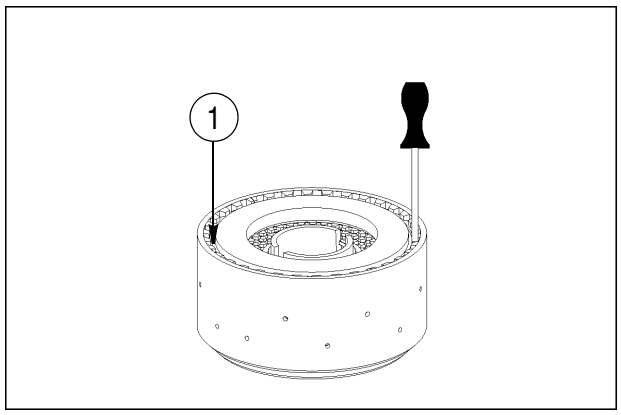


BILD-09

Unsnap snap ring (1).

STEP 10

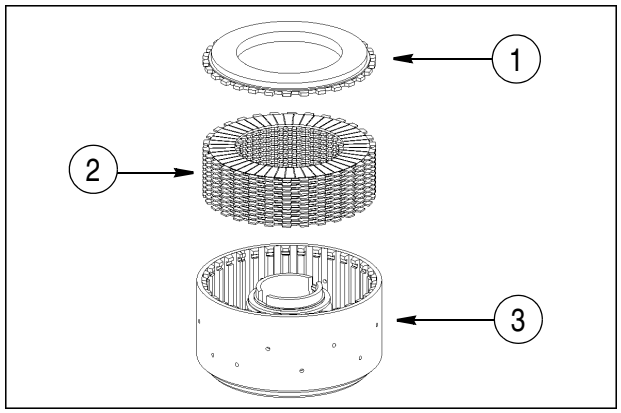


BILD-10

Remove end shim (1) and disc set (2) out of the disc carrier (3).

STEP 11

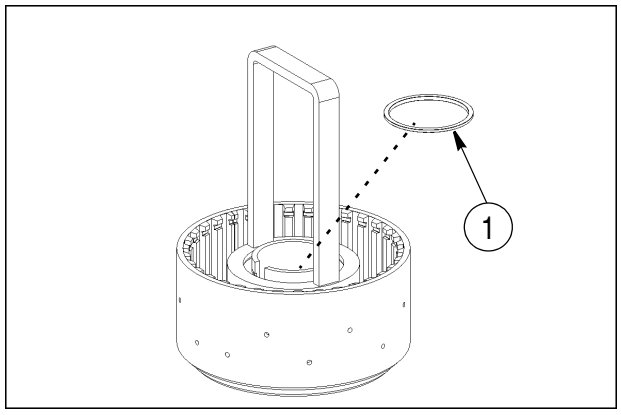


BILD-11

Preload cup springs using special tool 380001556 and unsnap L-ring (1).

STEP 12

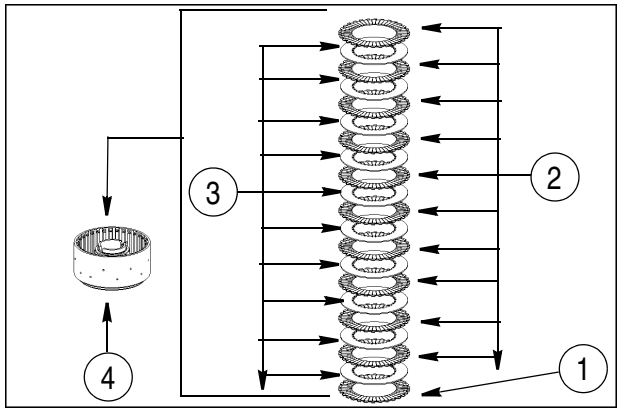


BILD-12

Install outer and inner discs into the disc carrier (4).

1. Friction disc - coated on one side (1 pcs)
2. Outer discs (10 pcs)
3. Inner discs (10 pcs)

NOTE: *Make sure that the uncoated (blank) side of the friction disc (1) is showing towards the piston. Number of friction surfaces is 20.*

NOTE: *Different clutch disc arrangements with relevant disc clearance can be installed depending on the parts list version.*

NOTE: *The actual installed clutch and disc arrangement must be taken from the corresponding spare parts list. The spare parts list is binding.*

STEP 13

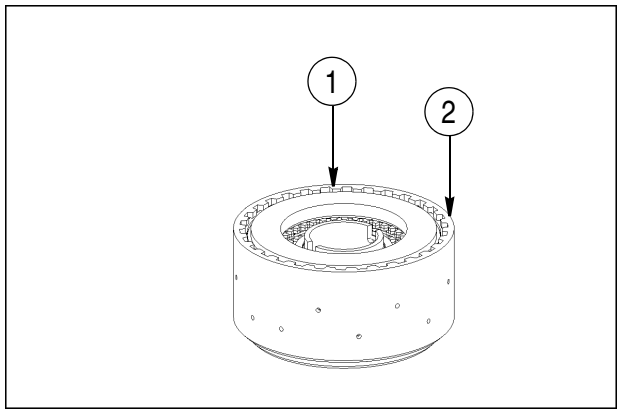


BILD-15

Mount end plate (1) and secure disc package using snap ring (2) e.g. thickness = 2.65 mm(0.104 in.)/recommended value.

STEP 14

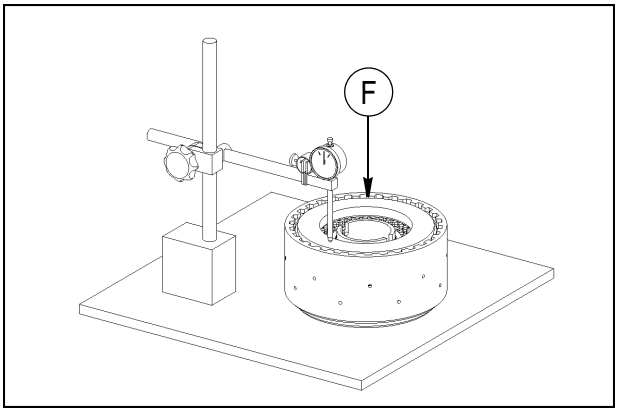


BILD-16

Press on end plate (F) approximately 100 N = 10 kg and set dial indicator to “zero”.

STEP 15

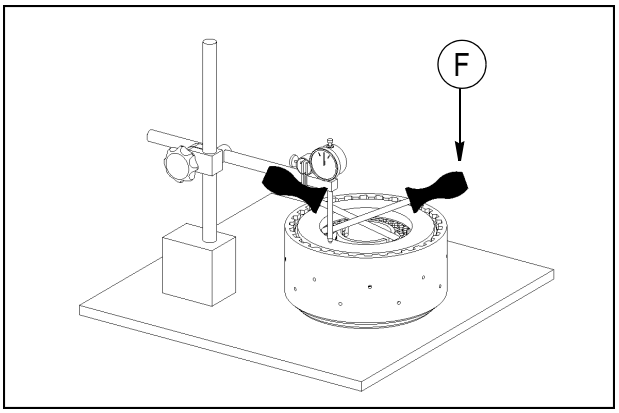


BILD-17

Press end plate against the snap ring (upwards) and read disc clearance. Disc clearance should be 2.65 to 2.95 mm (0.104 to 0.116 in.).

NOTE: *In cases of deviation, the disc clearance must be corrected with an appropriate snap ring. Optional thicknesses range from 2.1 to 4.2 mm (0.083 to 0.165 in.).*

STEP 13

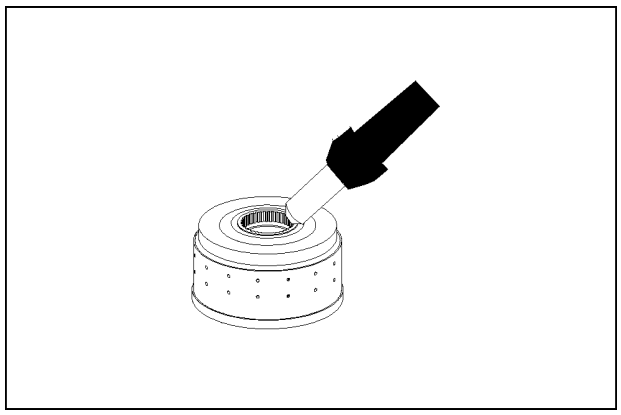


BILD-14

Heat clutch to approximately +120° C (+248° F).

STEP 14

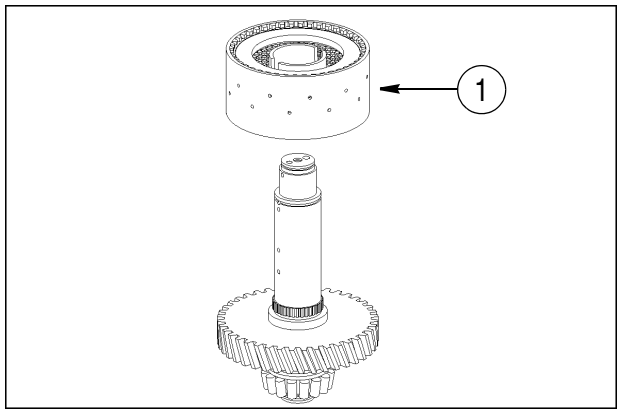


BILD-15

Mount clutch (1) until contact is made.

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

STEP 15

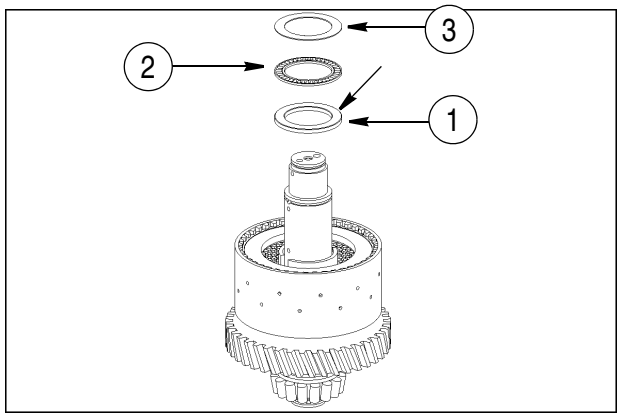


BILD-16

Mount running disc (1), axial cage (2) and axial washer (3) and oil it.

NOTE: *Install chamfer (see arrow) of running disc (1) showing towards the axial cage.*

STEP 16

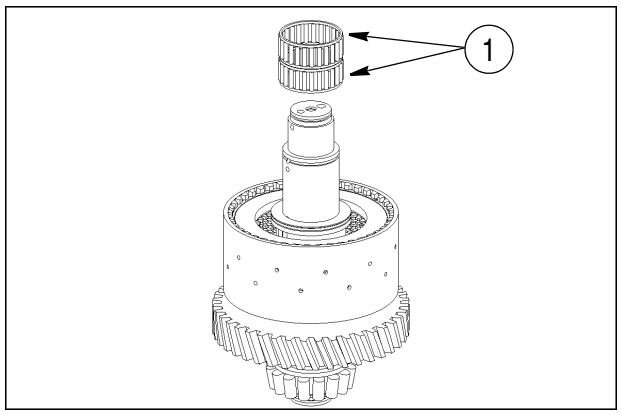


BILD-17

Mount needle bearing (1) and oil it.

STEP 17

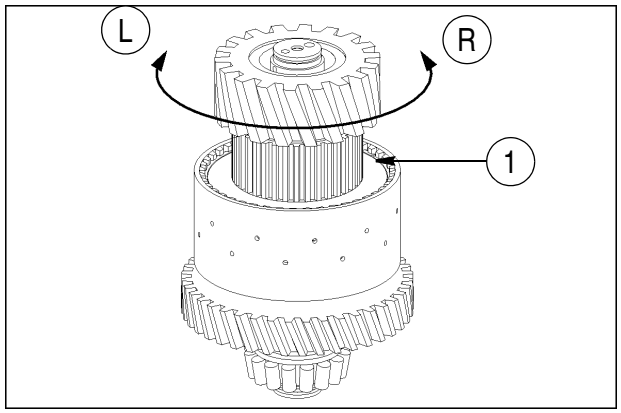


BILD-18

Install (1) idler. Mount inner discs onto the inner discs carrier (idler) by using short left/right rotations.

STEP 18

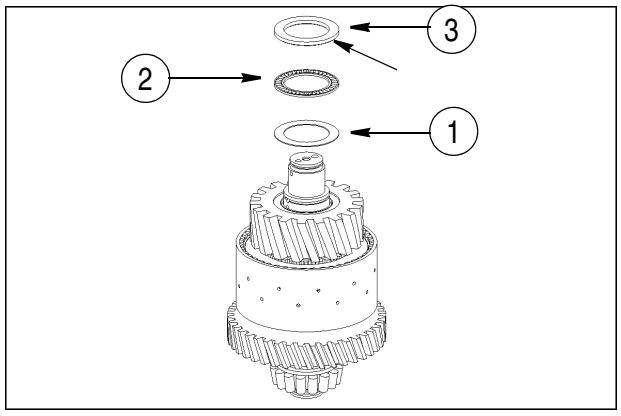


BILD-19

Mount axial washer (1), axial cage (2) and running disc (3) and oil it.

NOTE: *Install chamfer (see arrow) of running disc (3) showing towards the axial cage.*

STEP 17

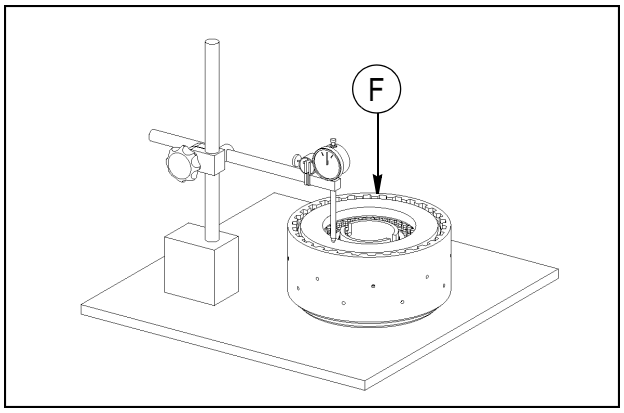


BILD-17

Press on end plate with (F) approximately 100 N = 10 kg and set dial indicator to “zero”.

STEP 18

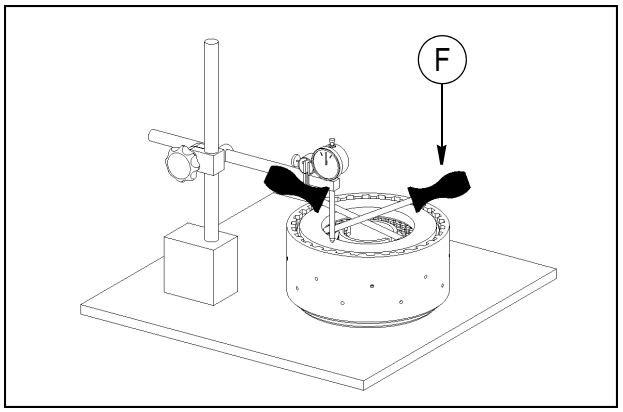


BILD-18

Press end plate against the snap ring (upwards) and read disc clearance. Disc clearance should be 1.35 to 1.65 mm (0.053 to 0.065 in.) see step 15.

NOTE: *In cases of deviation, the disc clearance must be corrected with an appropriate snap ring. Optional thickness range from 2.1 to 4.2 mm (0.083 to 0.165 in.).*

STEP 19

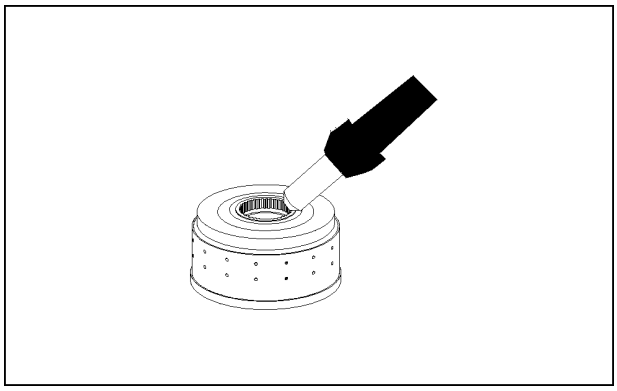


BILD-19

Heat clutch inner diameter to approximately +120° C (+248° F).

STEP 20

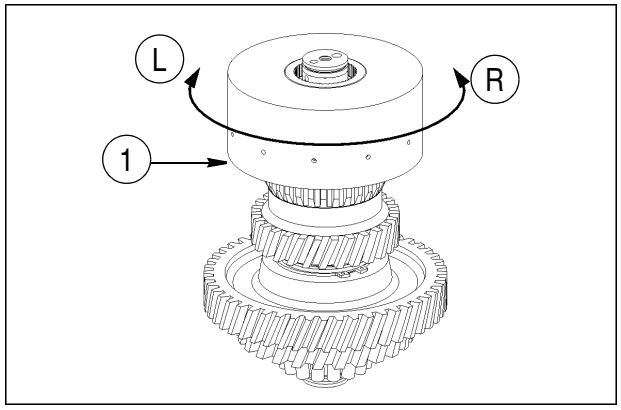


BILD 20

Mount clutch (1) until contact is made. Mount inner discs onto the inner disc carrier using short left/right rotations.

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

STEP 21

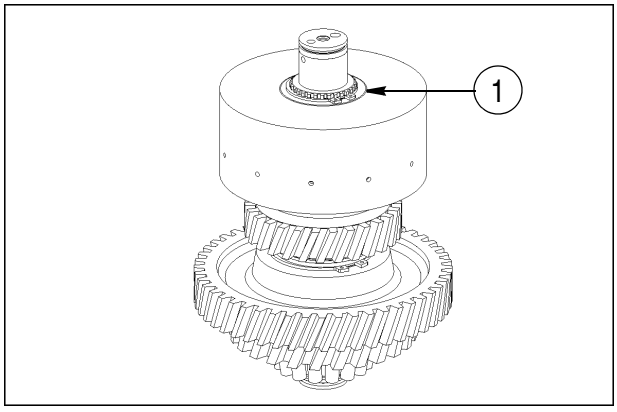


BILD-21

Secure clutch using retaining ring (1).

10.0 Outputs and closure parts pump shaft (PTO-shaft)

STEP 1

10.1 Output flange output side with brake FSG-88

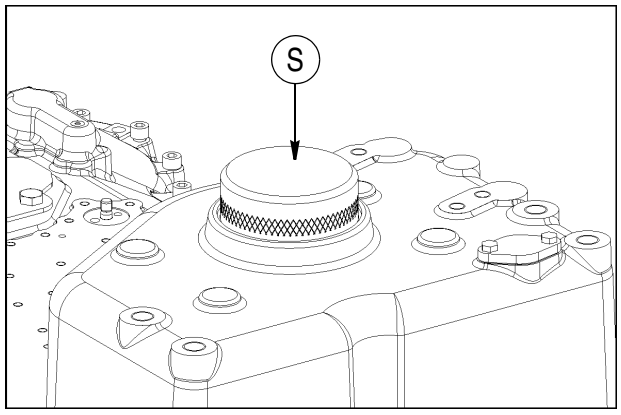


BILD-14

Use driver tool 380001560 (S) to mount shaft seal with the sealing lip showing to the oil sump. Fill space between sealing lip and dust lip with grease. Wet outer diameter (rubber-coated) with mineral spirit.

NOTE: *Use of specified driver (S) ensures the exact installation position.*

NOTE: *For installation position of shaft seal see Step 4.*

STEP 2

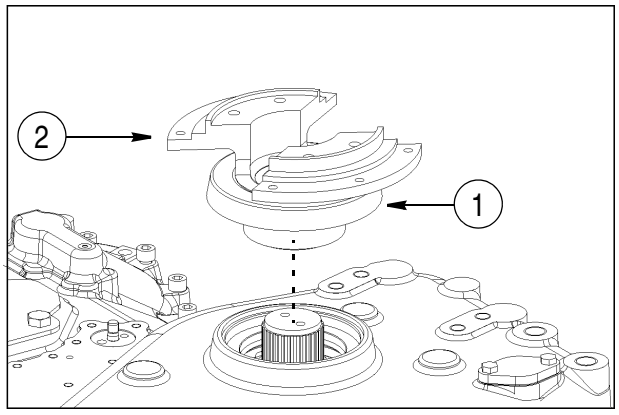


BILD-15

Press screen sheet (1) onto the output flange (2). Mount output flange (2) until contact is made.

STEP 3

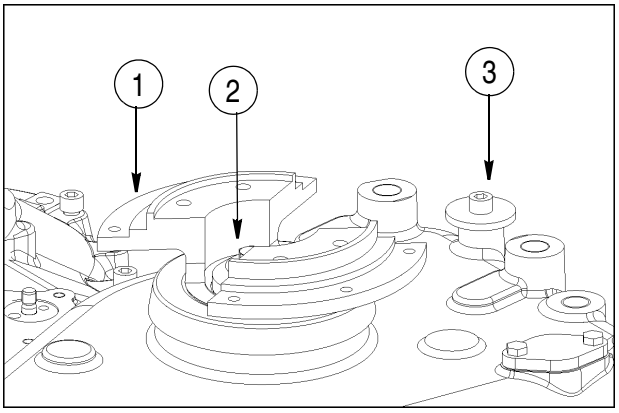


BILD-16

Insert O-ring into the space between output flange and shaft. Attach output flange (1) using washer (2) and hex bolts. Oil hex bolts before the assembly. Torque to 46 Nm (34 pound feet). Mount cylindrical bolt with washer (3) for stop of the parking brake set screw. Tightening torque 48 Nm (35 pound feet).

NOTE: *Always use new hex bolts.*

STEP 4

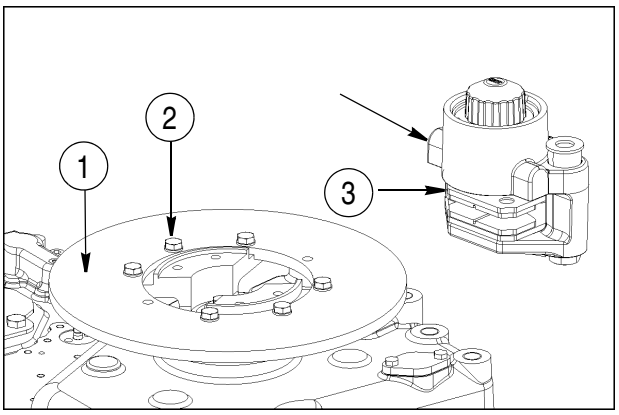
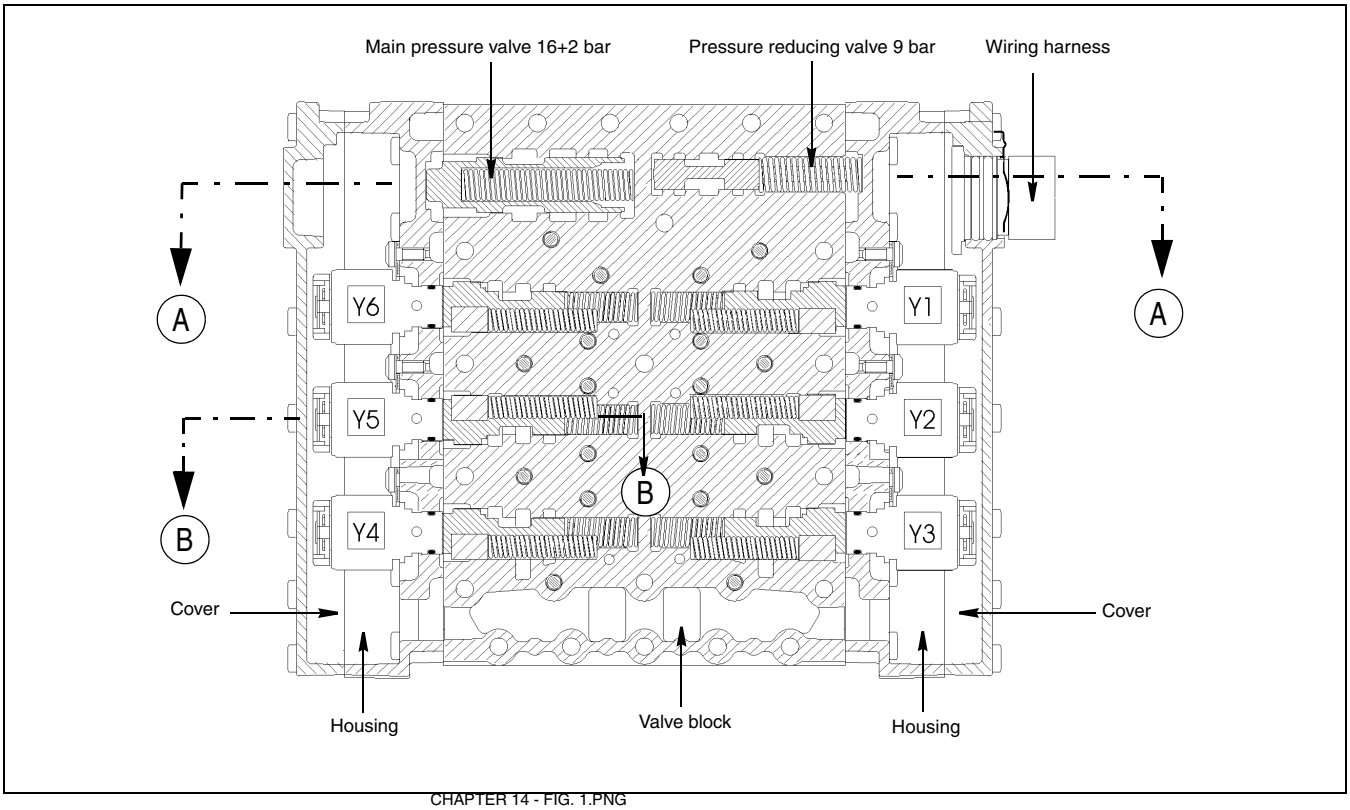


BILD-17

Secure brake disc (1) at output flange (2) using hex bolts and washers. Torque to 68 Nm (50 pound feet). Connect a hand-operated pump at port (see arrow) and apply approximately 80 bar (1160 PSI) pressure to the parking brake (3) and bring it in contact position.

14.0 Reassembly Electro-hydraulic control with proportional valves

STEP 1



CHAPTER 14 - FIG. 1.PNG

Electro-hydraulic Control

NOTE: *Different versions regarding the wiring harness position are possible. Please observe the vehicle manufacturer's specifications.*

The following sketches show the sectional views of the electro-hydraulic control.

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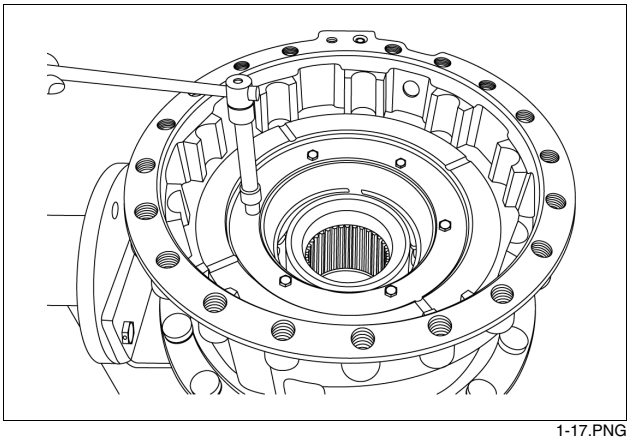
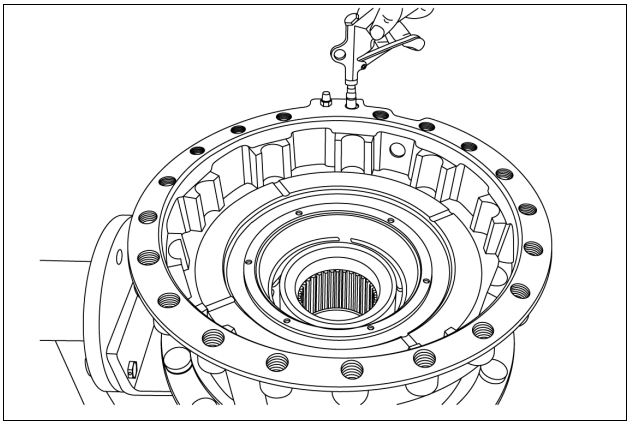
STEP 17



1-17.PNG

Remove hex bolts, releasing cover and cup spring.

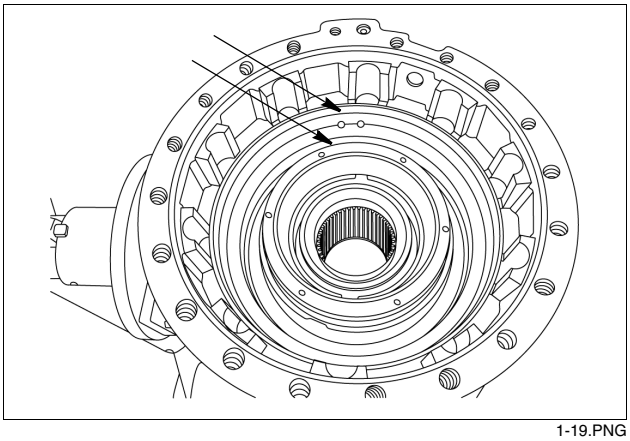
STEP 18



1-18.PNG

Mount bleeder valve. Use compressed air to remove piston from brake housing.

STEP 19

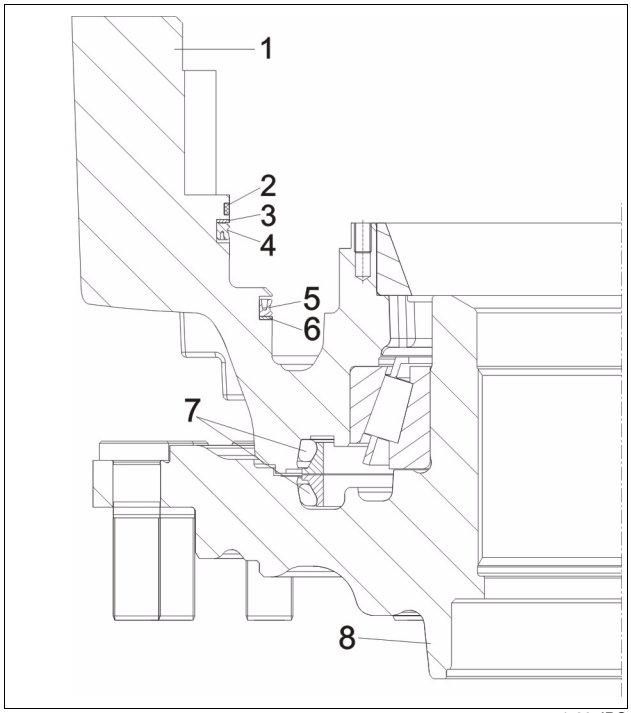


1-19.PNG

If necessary, remove guide ring, back-up rings and grooved rings from annular grooves of brake housing (arrows).

NOTE: *For installation position of single parts, see Step 20.*

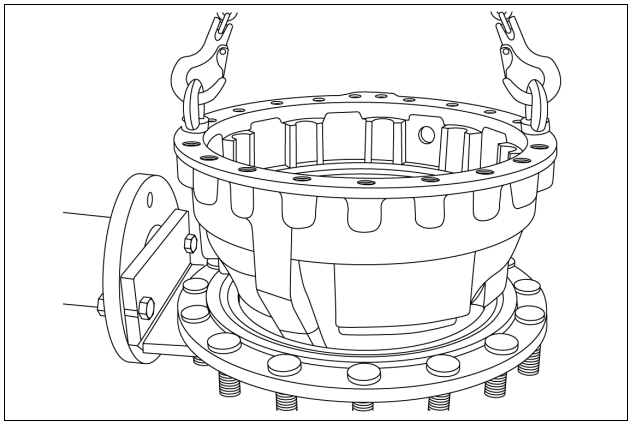
STEP 20



1-20.JPG

1. Brake housing
2. Guide ring
3. Back-up ring
4. Piston seal
5. Piston seal
6. Back-up ring
7. Slide ring seal (Metal face seal - HD option only or combi seal standard version)
8. Output shaft

STEP 21



1-21.PNG

Use a suitable lifting device. Lift brake housing from output shaft.

STEP 24

4-24.PNG

Remove axle bevel gear with pressure ring, disc package and thrust washers from differential housing.

STEP 25

4-25.PNG

Remove spider shafts and axle bevel gears from differential housing.

STEP 26

4-26.PNG

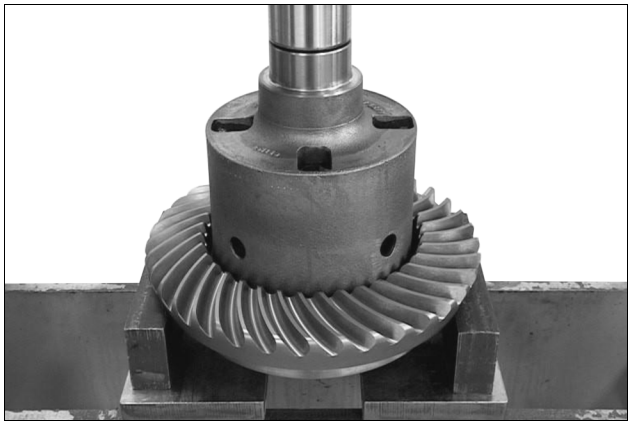
Remove second axle bevel gear.

STEP 27

4-27.PNG

Remove pressure ring, disc package and thrust washers from the differential housing.

STEP 28



4-28.PNG

Press crown wheel from the differential carrier.

STEP 41

5-41.PNG

Measure Dimension II, from the contact face of the outer disc to the mounting face on the housing cover. Dimension II e.g. 43.95 mm (1.730 in.)

Calculation Example:

Dimension I - 44.30 mm (1.744 in.)

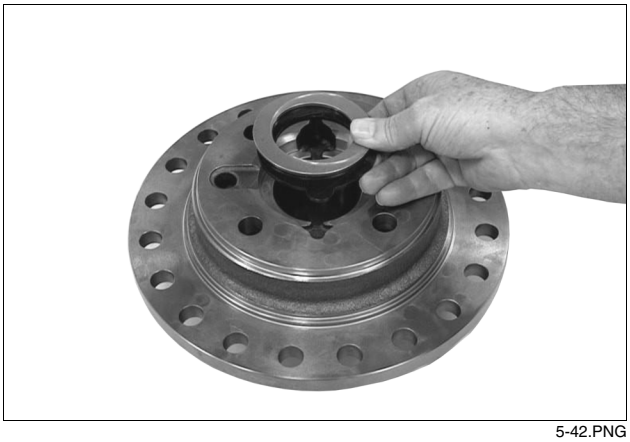
Dimension II - 43.95 mm (1.730 in.)

Difference + disc clearance - 0.35 mm (0.013 in.)

NOTE: *Any deviation from the required installation clearance must be corrected with corresponding outer discs: s = 2.7 mm (0.106 in.), s = 2.9 mm (0.114 in.), s = 3.0 mm (0.118 in.), s = 3.1 mm (0.122 in.), s = 3.2 mm (0.126 in.), s = 3.3 mm (0.130 in.), s = 3.5 mm (0.138).*

NOTE: *Make sure the difference in thickness between the left and right disc package is less than 0.1 mm (0.004 in.).*

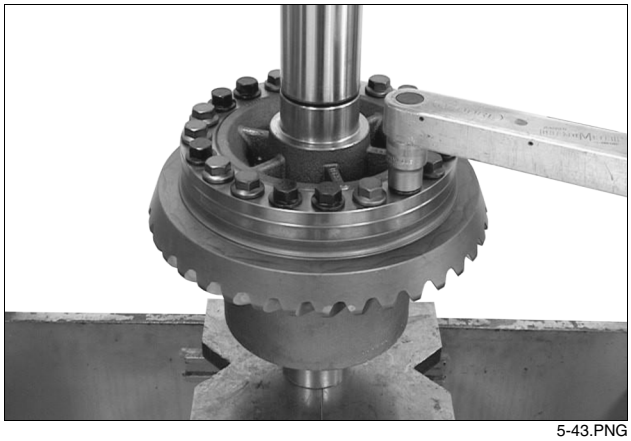
STEP 42



5-42.PNG

Secure thrust washers into housing cover with grease.

STEP 43



5-43.PNG

Mount two M16 x 1.5 adjusting bolts and insert housing cover until contact with differential housing is made. Preload differential with a press. Secure with new locking bolts and torque to 400 Nm (295 lb ft.)

STEP 44

5-44.PNG

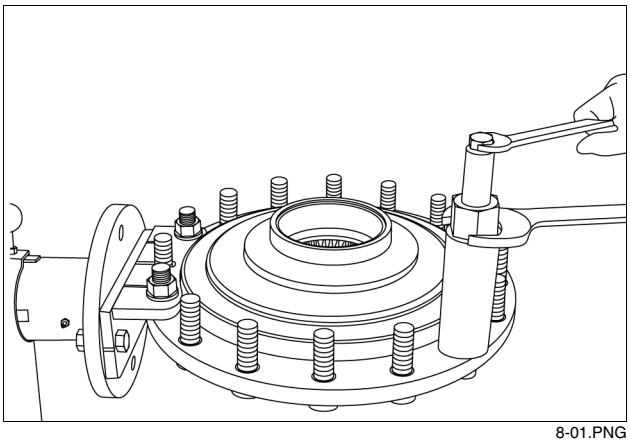
Heat both tapered roller bearings and insert until contact is made. Adjust tapered roller bearing after cooling down.

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

OUTPUT AND BRAKE

Reassembly

STEP 1



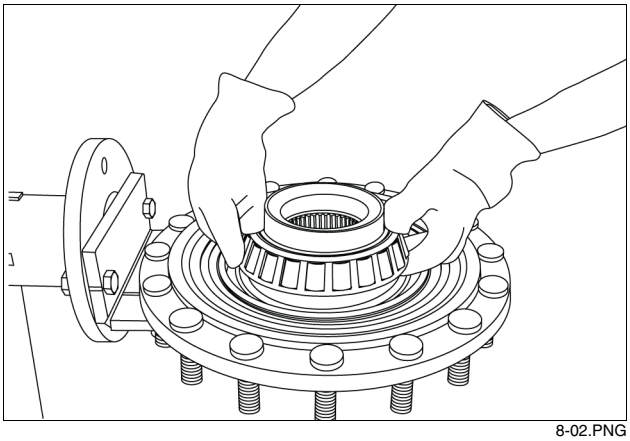
8-01.PNG

Pull wheel stud into output shaft until contact is made.

NOTE: *Special tool may only be used for repairs when exchanging individual wheel studs with mounted output shaft. For new output shaft, use a press.*

NOTE: *Only heavy duty axle version uses wheel mounting studs.*

STEP 2

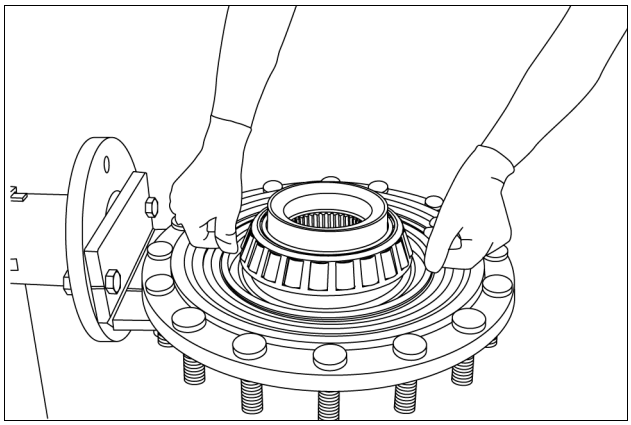


8-02.PNG

Heat tapered roller bearing and insert it onto output shaft until contact is made.

WARNING: *Always wear protective gloves to prevent burning your hands when handling heated or cooled parts.*

STEP 3

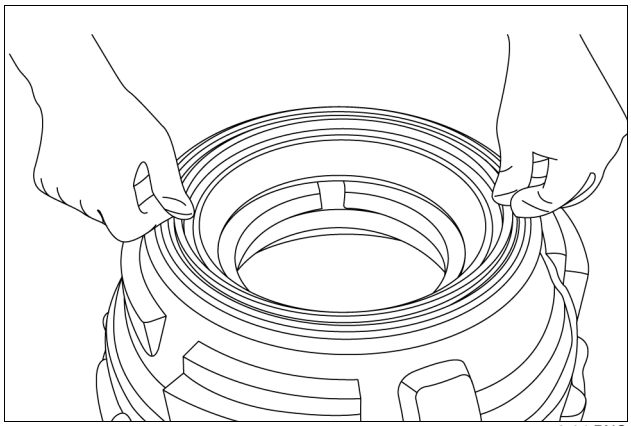


8-03.PNG

Version with slide ring seal shown in Step 3 and 4

Wet O-ring of slide ring seal and locating hole with mineral spirits. Snap new slide ring seal (part 1) into output shaft.

STEP 4



8-04.PNG

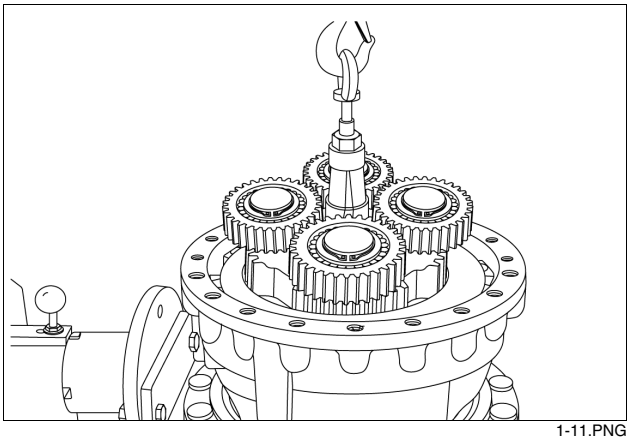
Then mount new slide ring seal (part 2) into brake housing.

NOTE: *For installation position of seal, see Step 12.*

NOTE: *Surface of slide ring seal may not have any grooves, scratches or other damage. Make sure sealing surface is parallel to housing face. O-rings must be mounted evenly into locating hole and must not bulge out.*

WARNING: *Risk of injury - metal rings have extremely sharp edges. Wear protective gloves.*

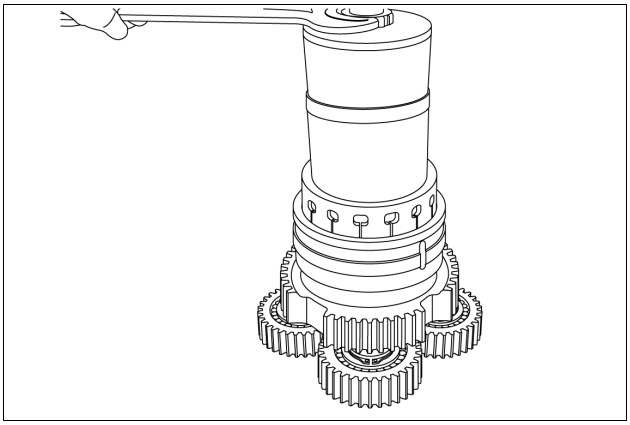
STEP 11



1-11.PNG

Use a suitable lifting device. Lift planetary carrier out of brake housing.

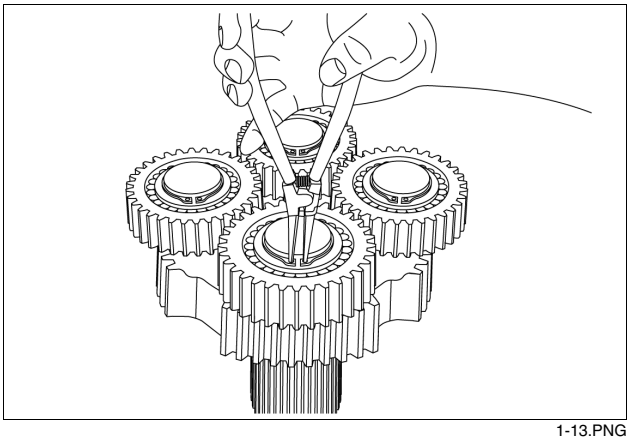
STEP 12



1-12.PNG

Pull tapered roller bearing from planetary carrier.

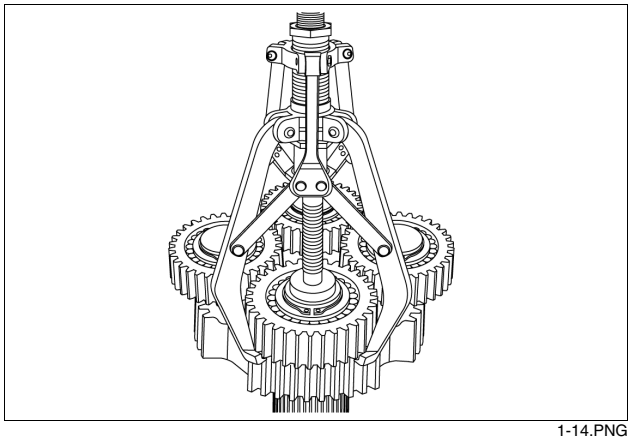
STEP 13



1-13.PNG

Remove retaining rings.

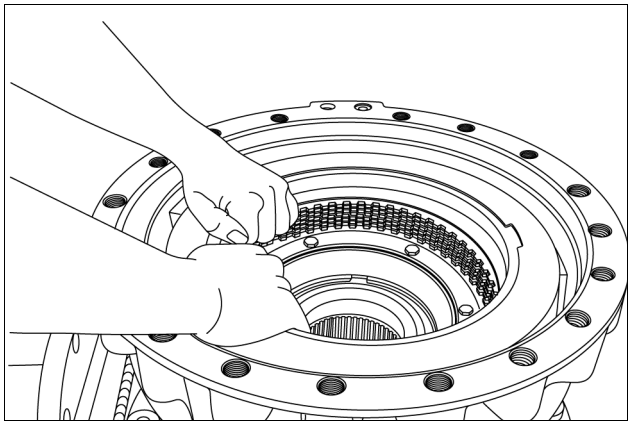
STEP 14



1-14.PNG

Pull off planetary gears.

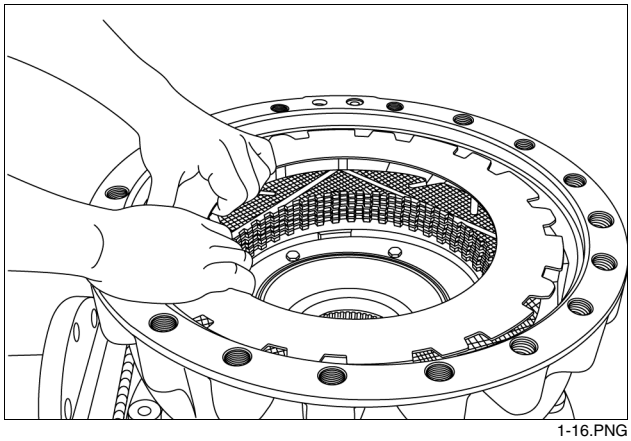
STEP 15



1-15.PNG

Lift end plate out of brake housing.

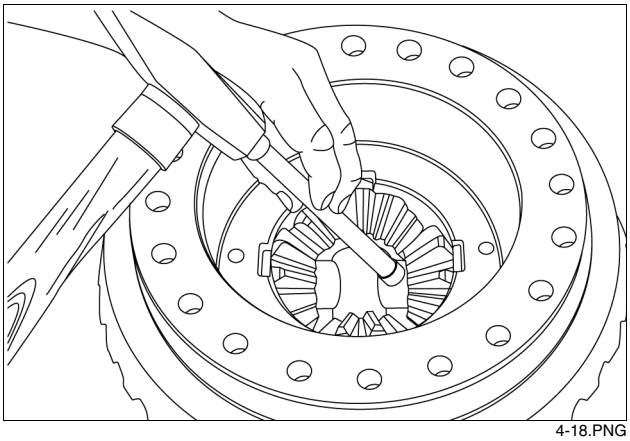
STEP 16



1-16.PNG

Lift disk package out of brake housing.

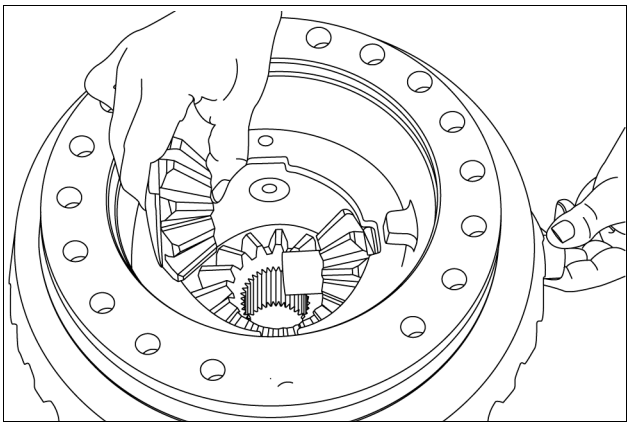
STEP 18



4-18.PNG

Force out both short differential axles. Remove releasing spider gears with thrust washers from differential housing.

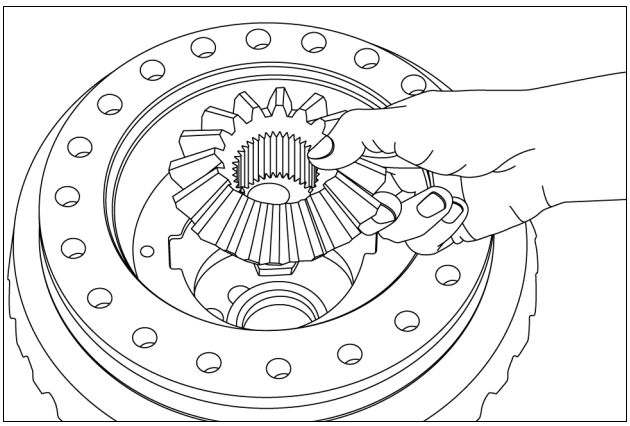
STEP 19



4-19.PNG

Pull long differential axle. Remove releasing spider gears with thrust washers from differential housing.

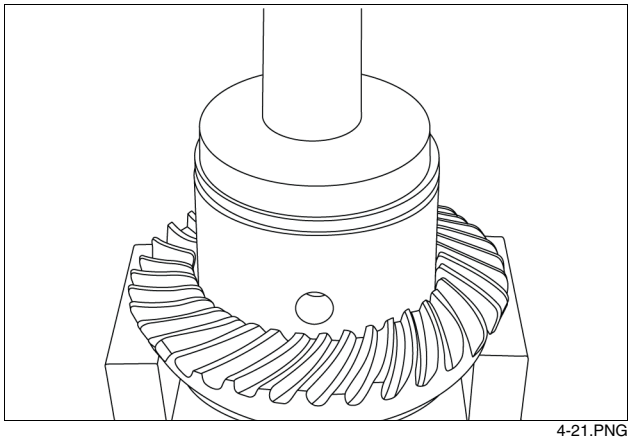
STEP 20



4-20.PNG

Remove axle bevel gear and shim.

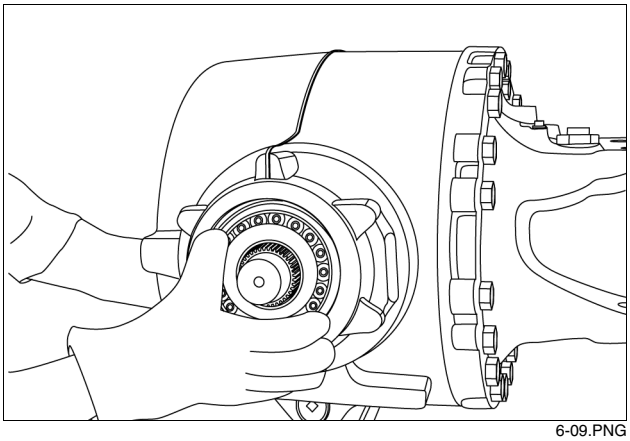
STEP 21



4-21.PNG

Press crown wheel from differential carrier.

STEP 9

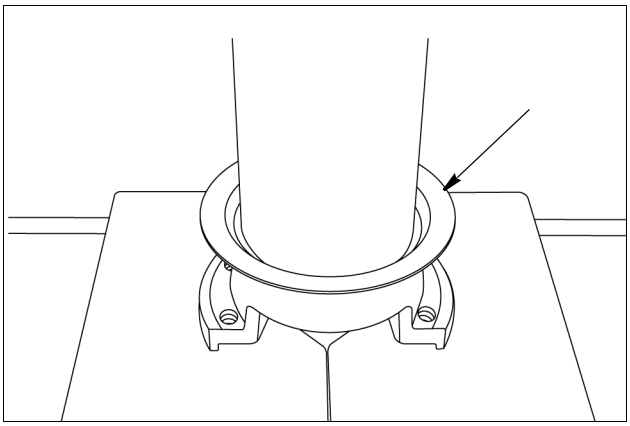


6-09.PNG

Insert preassembled input pinion into axle drive housing. Insert heated tapered roller bearing until contact is made.

WARNING: *Always wear protective gloves to prevent burning your hands when handling heated or cooled parts.*

STEP 10

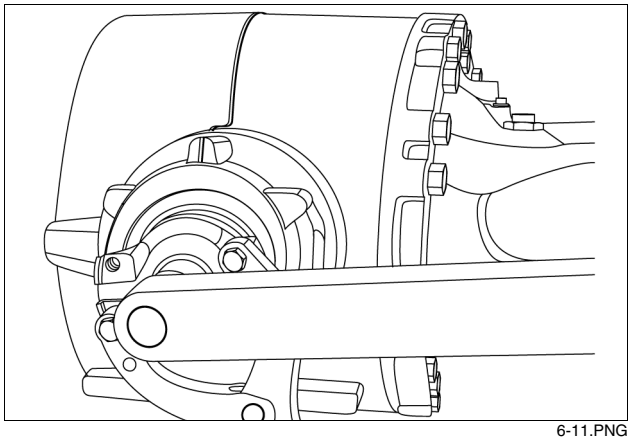


6-10.PNG

Press protection plate onto input flange (arrow) until contact is made.

NOTE: *Do not fit shaft seal until contact pattern has been checked as shown in shown in step 24.*

STEP 11

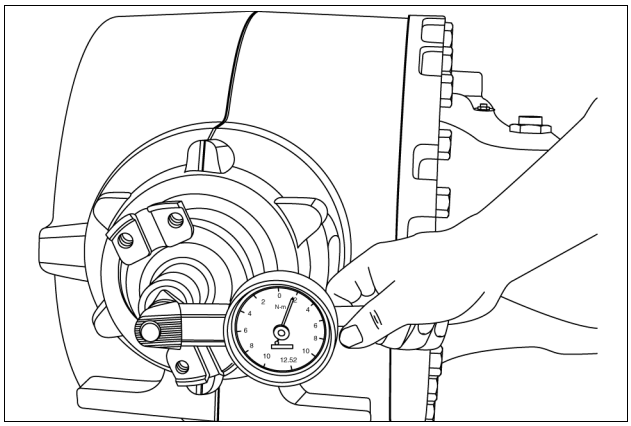


6-11.PNG

Insert input flange and secure it with disk and slotted nut. Torque to 1200 Nm (885 pound feet). Uses slotted nut wrench CAS2842 and clamping device 380001564.

NOTE: *Temporarily mount slotted nut without Loctite. While tightening, rotate input pinion several times in both directions.*

STEP 12



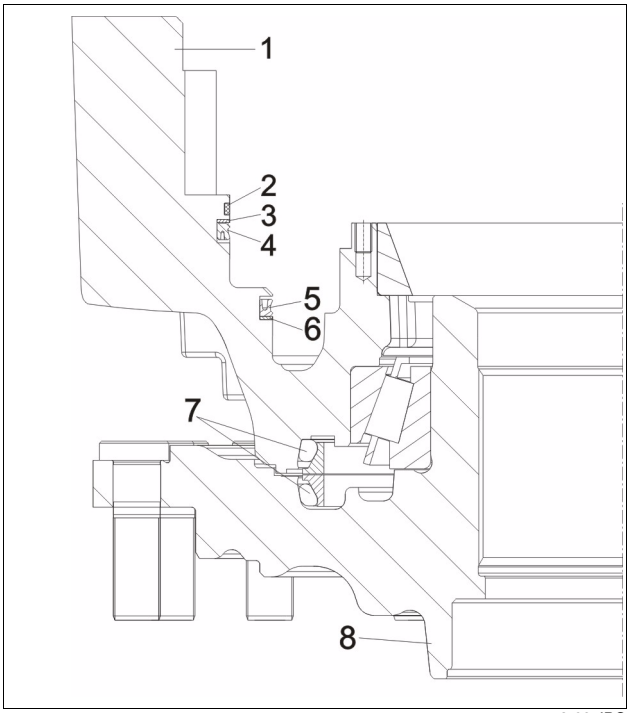
6-12.PNG

Check rolling torque. It should be 1.5 to 3.0 Nm (13.3 to 26.6 pound inches) without shaft seal.

NOTE: *When installing new bearings try to achieve upper value of rolling torque.*

NOTE: *In case of deviations from needed rolling torque, correct with a corresponding spacer as specified in Step 8. For insufficient rolling torque - install thinner spacer ring. Excessive rolling torque - install a thicker spacer ring.*

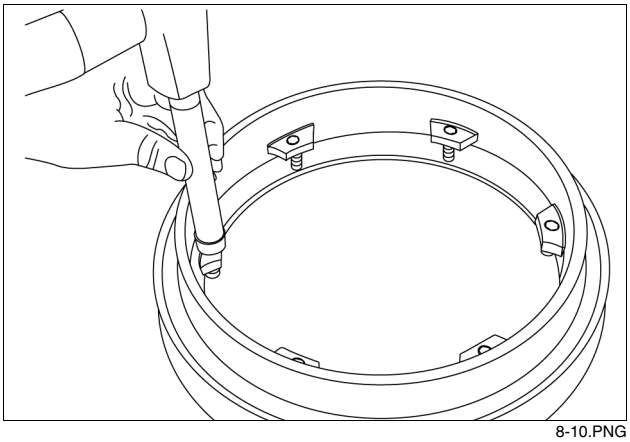
STEP 9



8-09.JPG

1. Brake housing
2. Guide ring
3. Back-up ring
4. Piston seal
5. Piston seal
6. Back-up ring
7. Metal Face Seal (Heavy Duty Option) Combi Seal (Standard)
8. Output shaft

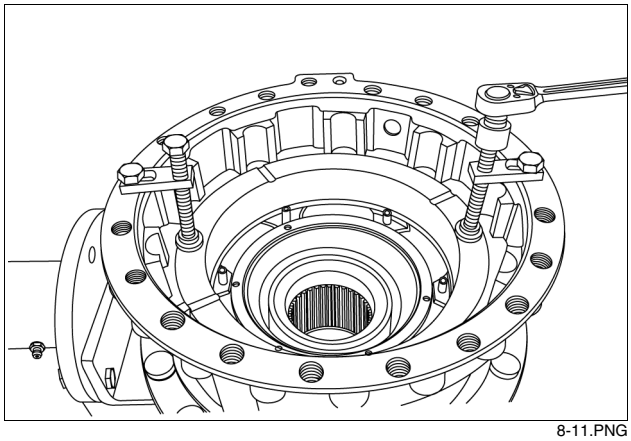
STEP 10



8-10.PNG

Flush-mount slotted pins into holes of piston.

STEP 11

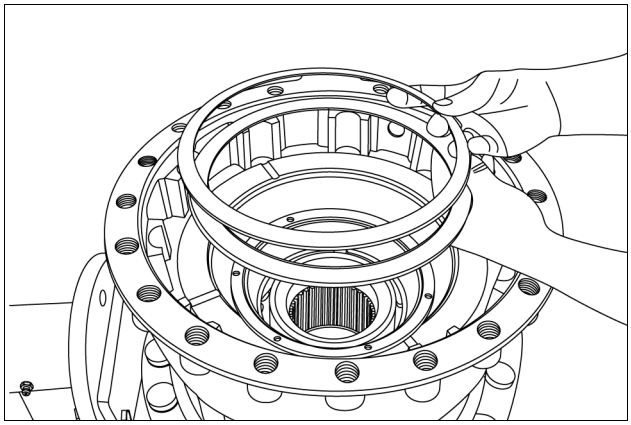


8-11.PNG

Insert piston into brake housing and install with dealer fabricated fixing device until contact is made.

NOTE: *Sufficiently oil seal surface of piston/back-up rings, grooved rings and guide ring with W-10 oils.*

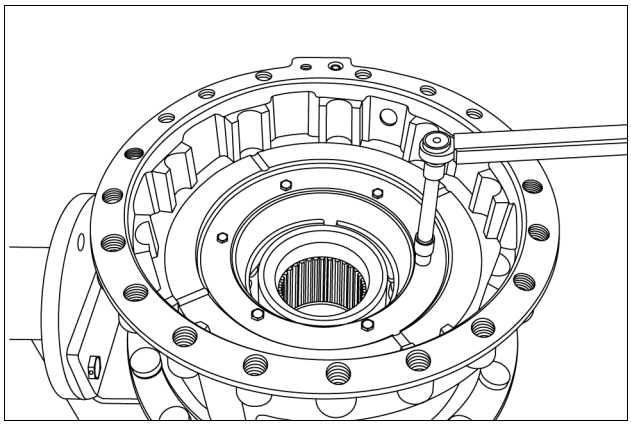
STEP 12



8-12.PNG

Insert disk and cup spring with convex side showing upwards into piston.

STEP 13



8-13.PNG

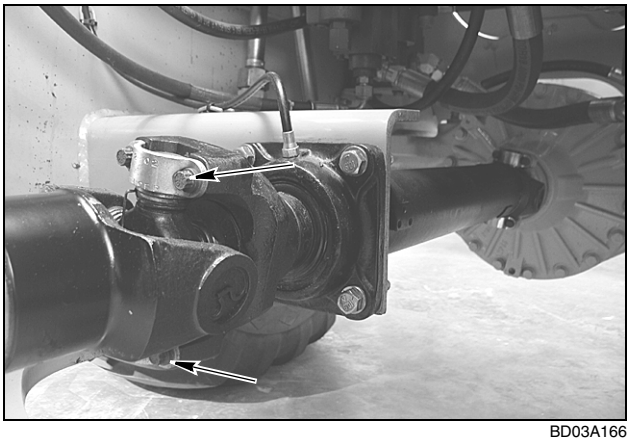
Insert cover and secure it with hex bolts. Torque to 34 Nm (25 pound feet).

FRONT DRIVE SHAFT

Removal

NOTE: *The 921F Series machines use mechanical style yokes (no bearing straps) and may appear different from the machine pictured.*

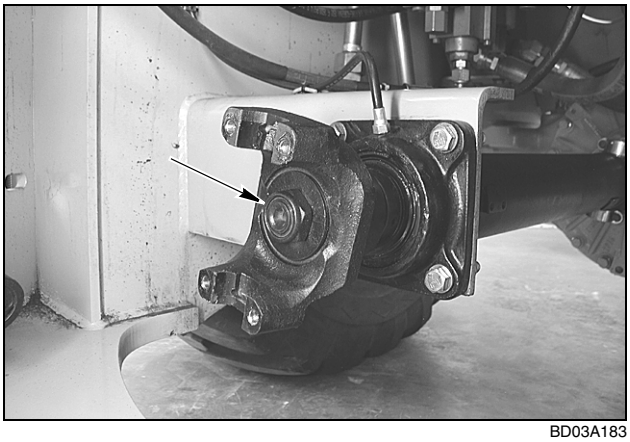
STEP 1



BD03A166

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

STEP 2



BD03A183

Remove the lock nut that fastens the yoke to the front drive shaft.

STEP 3

Make an alignment mark on the yoke and the end of the front drive shaft to make sure that the yoke is installed correctly.

STEP 4

Use an acceptable puller and remove the yoke from the end of the front drive shaft.

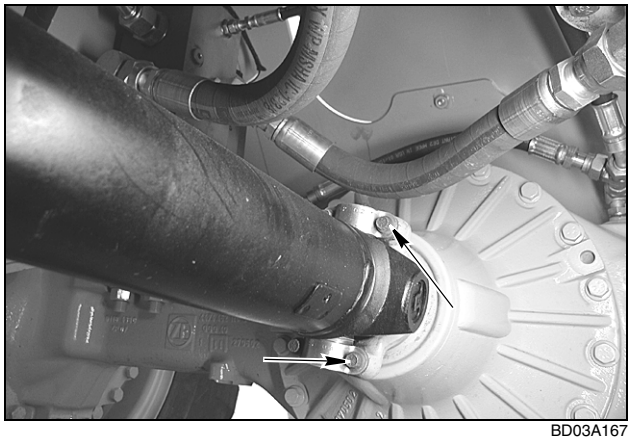
STEP 5

Loosen the set screws that secure the center bearing to the front drive shaft.

STEP 6

Remove any paint or rust from the rear of the front drive shaft and apply WD40 or similar oil to loosen any rust between the inner race and the front drive shaft.

STEP 7



BD03A167

Loosen and remove the bolts and straps that fasten the front drive shaft to the front axle.

STEP 8

Use a prybar to disengage the front drive shaft from the front axle and remove the front drive shaft from the machine.

NOTE: *If necessary, use a brass hammer to drive the front drive shaft out of the center bearing.*

SERVICE BRAKE AND PARKING BRAKE ACCUMULATORS

Removal

NOTE: *821F and 921F machines are now equipped with brake Damping Accumulators located on the front axle (9) and frame (10). See illustration on page 3.*

1. Park the machine on a level surface and lower the loader bucket to the floor. Stop the engine.
2. Put blocks on both sides of each tire to prevent machine movement.
3. Make sure the service brake accumulators (1), the parking brake accumulator (2), and brake damping accumulators (9) and (10) are completely discharged. Push down and release the brake pedal at least 30.
4. Turn the master disconnect switch to the OFF position.
5. Remove the left cab skirt located under the cab or canopy to gain access to accumulators.
6. To release the pressure on the parking brake accumulator, the line at the accumulator must be SLOWLY cracked open. A pan will be needed to catch the hydraulic oil.
7. Connect a drain hose to the quick disconnect couplings in each brake circuit to release any pressure in the brake circuit.
8. Clean the brake accumulators (1), parking brake accumulator (2), brake damping accumulators (9) and (10) and lines. Refer to illustrations on pages 3 and 7.
9. Put identification tags on the line that is connected to the parking brake accumulator (2).
10. Connect a vacuum pump to the hydraulic reservoir. Start the vacuum pump.
11. Disconnect the tubes from both brake accumulators (1).
12. Loosen the clamp stud (8) on the accumulator clamp (7).
13. Remove the accumulators (1) from the accumulator clamps (7).
14. Install plugs in the tubes.
15. Disconnect the hose from parking brake accumulator (2).
16. Remove the nut (3), remove the parking brake accumulator (2).
17. Install a plug in the hose.
18. Disconnect the hose from brake damping accumulators (9) and (10). See illustration on page 3.
19. Remove brake damping accumulators from machine.
20. Install plugs in hoses.

Installation

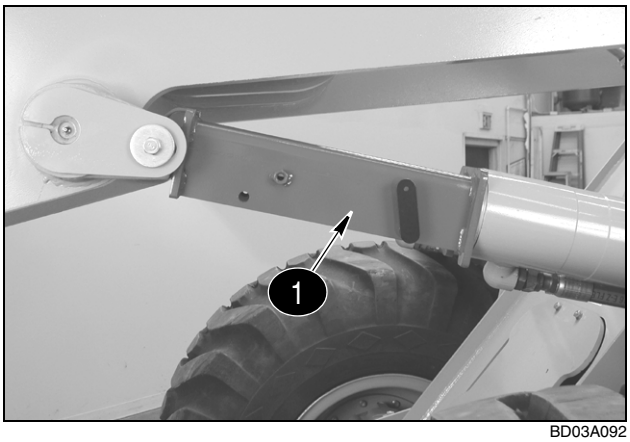
NOTE: *821F and 921F machines are now equipped with brake Damping Accumulators located on the front axle (9) and frame (10). See illustration on page 3.*

1. Mount the accumulators (1) in the accumulators clamps (7), do not tighten clamps at this time. Refer to illustration on page 7.
2. Connect the tubes to both brake accumulators (1) and tighten.
3. Tighten accumulator clamp studs (7) to 17Nm (13 pound feet).
4. Install the parking brake accumulator (2) into the bracket.
5. Install the nut (3) and tighten.
6. Connect the line to the parking brake accumulator (2).
7. Install the brake damping accumulators (9) and (10).
8. Connect the lines to the brake damping accumulators (9) and (10).
9. Stop the vacuum pump and remove.
10. Install the left cab skirt.
11. Turn the master disconnect switch to the ON position.
12. Bleed the brake system. See Section 7002.
13. Refer to Section 7008 and perform the Parking Brake Test Procedure.
14. Check the hydraulic reservoir oil level and add oil as required. See Section 1002 for the correct oil.

BLEEDING THE BRAKE SYSTEM

1. Check the level of hydraulic fluid in the reservoir. Add fluid to the reservoir if necessary.

IMPORTANT: *If machine is equipped with quick-attached components, disconnect them from machine prior to proceeding.*



BD03A092

1. SAFETY LINK

2. Raise loader arms and install the safety link (1) for safe access to the front axle bleed screws.
3. Apply the parking brake.
4. Keep the engine speed at high idle until both brake accumulators are fully charged.

NOTE: *This will be approximately 30 seconds after the low brake pressure light goes out.*

5. Stop the engine.
6. Pump the brake pedal until there is no hydraulic pressure in the brake system (approximately 20 pumps).
7. Remove the plastic and rubber caps from each wheel end and slowly open all four bleed screws.

NOTE: *Attach a hose to the bleed screws to prevent spilling any fluids.*

8. Start the engine and run at low idle.
9. Push the brake pedal all the way down and slowly release for one cycle.
10. Close all four wheel end bleed screws.
11. Fully depress the brake pedal three times in 5 second cycles.
12. With the brake pedal partially depressed, open the bleed screw on the left front axle. Hold the brake pedal in position until the oil is clear (no bubbles). Close the bleed screw.
13. Open the bleed screw on the right front axle. Repeat step 12.
14. Open the bleed screw on the left rear axle. Repeat step 12.
15. Open the bleed screw on the right rear axle. Repeat step 12.
16. Replace all bleed screws, caps and plugs.
17. Check the hydraulic fluid and add as necessary.

BRAKE PUMP

Disassembly

1. Secure the pump by the port end cover (13) in a soft jawed vise.
2. Draw a line the length of the pump to assist during assemble.
3. Loosen and remove bolts (15).
4. Tap the shaft end cover housing (6) with soft hammer to loosen it, remove the shaft end cover housing (6).
5. Remove the backup seal (8), channel seal (9), and thrust plate (11).
6. Remove the drive gear (17) from the gear housing (12).
7. Remove the driven gear (16) from the gear housing (12).
8. Tap the gear housing (12) with a soft hammer to loosen it, remove the gear housing (12).
9. Remove the backup seal (8), channel seal (9), and thrust plate (11).
10. Remove the retaining ring (1) form the shaft end cover housing (6).
11. Remove the seal retainer (2), O-ring (3), and outer lip seal (4) from the shaft end cover housing (6).
12. Remove the inner lip seal (5) from the shaft end cover housing (6).

Inspection

1. Discard all seals and quad rings. Clean all parts in cleaning solvent. Check all machined surfaces for damage or wear.
2. Hold a straightedge across each gear housing and use a feeler gauge to measure the amount of wear caused by the gear teeth in the gear pocket. If the wear in any gear pocket is more than 0.18 MM. (0.007 inch), use a new gear housing.
3. Inspect the thrust plates for scoring, pitting, or other damage.
4. Inspect the gears for wear and damage. There must be no scoring on the gear hubs or on the outside edges of the gear teeth. There must be no more than 0.05 MM. (0.002 inch) wear in the seal area of the drive shaft. If any gear must be discarded, you must use a new hydraulic pump.

Assembly

1. Install a new lip seal (3) into the seal retainer (2) so the lip of the seal will be facing away from the gears when the seal retainer (2) is installed into the shaft end cover housing (6).
2. Install a new lip seal (4) into the shaft end cover housing (6) with the lip of the seal facing towards the gears.
3. Install a new O-ring (3) onto the seal retainer (2), lubricate the O-ring with hydraulic oil.
4. Press the seal retainer (2) into the shaft end cover housing (6) and install the retaining ring (1).
5. Place the shaft end housing (6), facing down, into a soft jawed vise.
6. Install new backup seals (8) and channel seals (9) into the thrust plates (11).
7. Place a thrust plate (11) onto the shaft end cover housing (6).

IMPORTANT: *Be sure to place the thrust plate (11) onto the shaft end cover housing (6) in the position shown in the illustration on page 3.*

8. Lubricate the driven gear (16) with hydraulic oil, slide the driven gear (16) through the thrust plate (11) into the shaft end cover housing (6).
9. Lubricate the drive gear (17) with hydraulic oil, slide the drive gear (17) through the thrust plate (11) into the shaft end cover housing (6).
10. Install a new quad ring (7) into the gear housing (12). Check that dowel pins (10) are in place either in the gear housing (12) or the shaft end cover housing (6).
11. Align the marks made during disassembly, carefully place the gear housing (12) onto the gears.
12. Slide the thrust plate (11) onto the shafts of the gears.

IMPORTANT: *Be sure to place the thrust plate (11) onto the gears in the position shown in the illustration on page 3.*

13. Install a new quad ring (7) into the gear housing (12). Check that dowel pins (10) are in place either in the gear housing (12) or the port end cover housing (13).
14. Align the marks made during disassembly, place the port housing (12) onto the gear housing (12).
15. Install bolts (15) with clean and dry threads, washers (14). Torque bolts to 192 ± 5.5 Nm (141.5 ± 4 pound feet).

STEP 29

Shift the gear selector to third gear reverse and slowly increase the engine speed to wide open throttle.

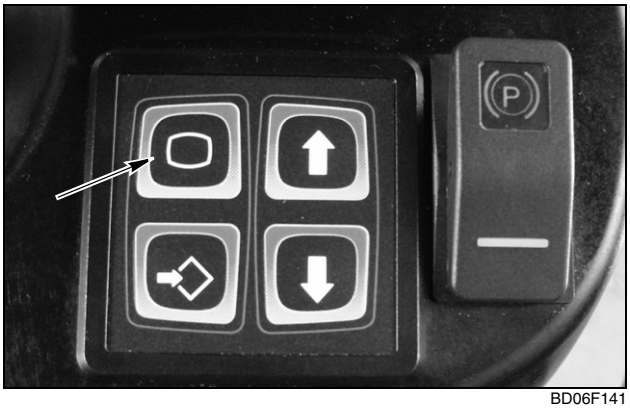
STEP 30

Verify that the machine does not move.

STEP 31

Reduce the engine speed to low idle and return the transmission to neutral.

STEP 32



BD06F141

Press the escape switch on the key pad to exit the test mode.

STEP 33

If any machine movement was detected, the parking brake must be adjusted, see procedures this section.

STEP 54

Check for hydraulic oil leakage at the remote control valve.

STEP 55

Check the level of hydraulic oil in the reservoir and add as required.

STEP 56

BD06F209

Position the access panel on the ROPS cab or the ROPS canopy and install and tighten the screw.

STEP 57

BD06F208

Install and close the access panel.

STEP 58

BD06F207

Close the right hand window.

BUCKET CYLINDER - Z-BAR LOADER

Removal

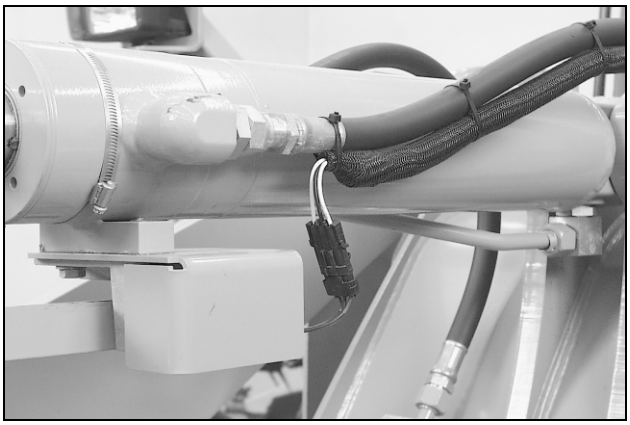
STEP 104

Park the machine on a level surface and lower the bucket to the floor. Stop the engine and apply the parking brake.

STEP 105

With the engine stopped, move the bucket control lever to release pressure in the bucket circuit.

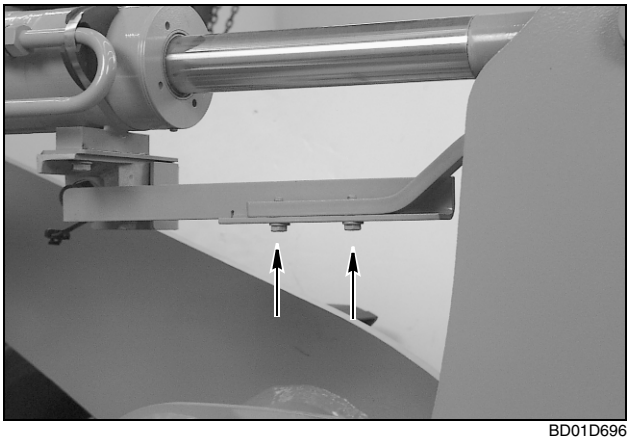
STEP 106



BD01D694

Disconnect the proximity switch connector from the wiring harness connector.

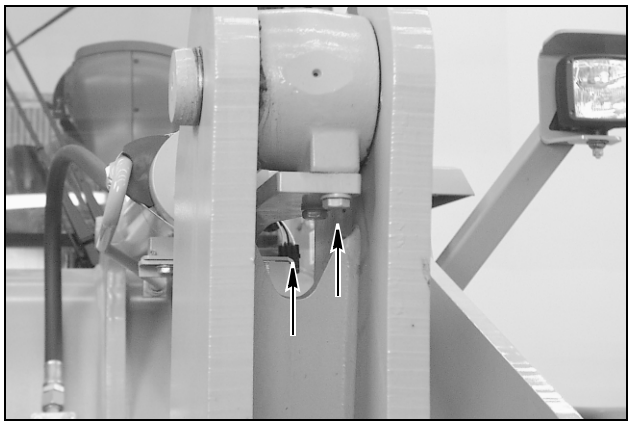
STEP 107



BD01D696

Loosen and remove the two bolts that fasten the target bar to the mounting bracket. Remove the target bar.

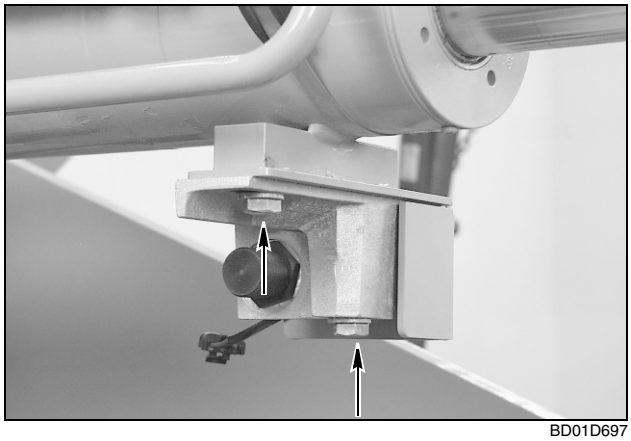
STEP 108



BD01D695

Loosen and remove the two bolts that fasten the mounting bracket to the machine. Remove the mounting bracket.

STEP 109



BD01D697

Loosen and remove the two bolts that fasten the mounting bracket for the proximity switch to the bucket cylinder. Remove the mounting bracket and switch.

FAN REVERSING VALVE

Removal

STEP 185

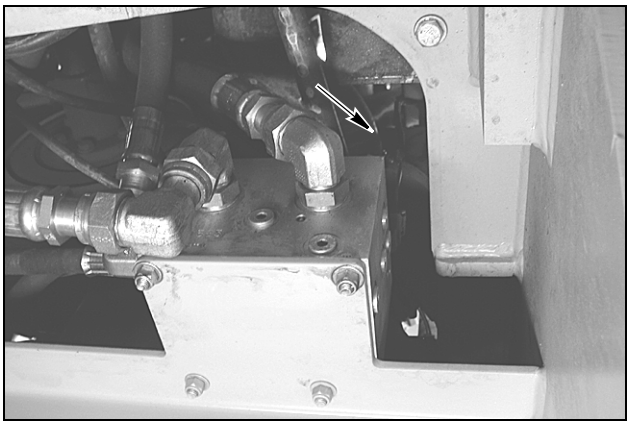
Park the machine on a level surface and lower the bucket to the ground. Stop the engine and apply the parking brake.

IMPORTANT: *With the engine NOT running, pump the brake repeatedly to be sure the brake accumulators have no hydraulic pressure, put the ignition switch in the ON position then move the loader control valve back and forth several times to release any hydraulic pressure in the pilot control circuit, turn ignition switch OFF.*

STEP 186

Loosen the filler cap on the hydraulic reservoir to release the air pressure in the reservoir. Connect a vacuum pump to the hydraulic reservoir, turn on the pump.

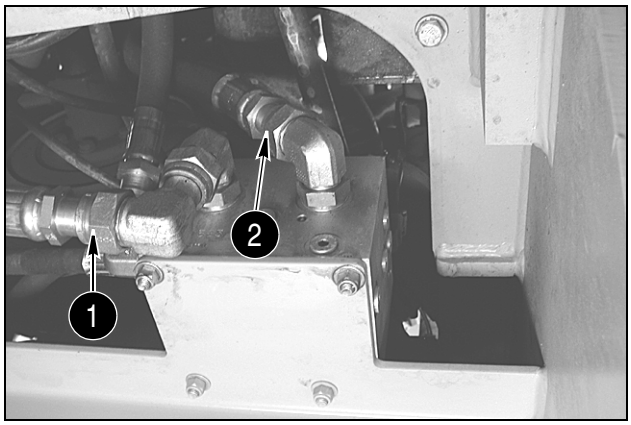
STEP 187



BD03A174

Disconnect the electrical connector for the fan reversing valve.

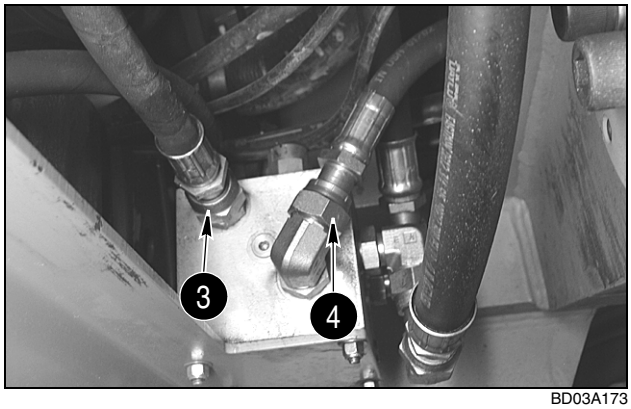
STEP 188



BD03A174

Tag and disconnect the fan forward hose (1) from the fan reversing valve. Install a plug in the hose and a cap on the fitting. Tag and disconnect the fan reverse hose (2) from the fan reversing valve. Install a plug in the hose and a cap on the fitting.

STEP 189



BD03A173

Tag and disconnect the fan valve return hose (3) from the fan reversing valve. Install a plug in the hose and a cap on the fitting. Tag and disconnect the fan valve supply hose (4) from the fan reversing valve. Install a plug in the hose and a cap on the fitting.

STEP 190

Loosen and remove the nuts, washers and bolts.

STEP 191

Remove the fan reversing valve from the machine.

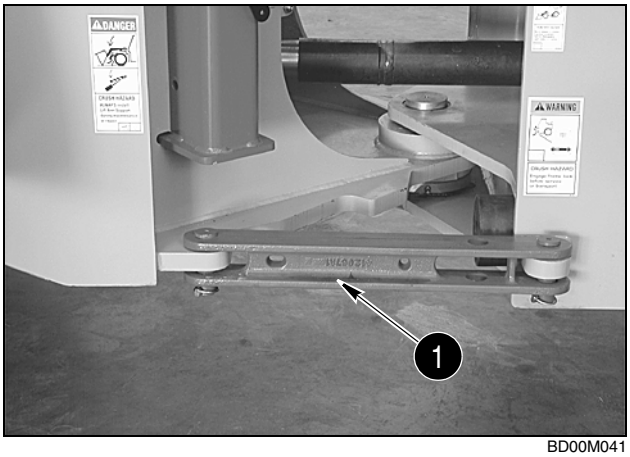
STEP 192

Remove and discard all O-rings from the fittings.

TESTING AND ADJUSTING THE HIGH PRESSURE PUMP DIFFERENTIAL PRESSURE

Pressure Check

STEP 1



BD00M041

1. ARTICULATION LOCK

Install articulation lock (1).

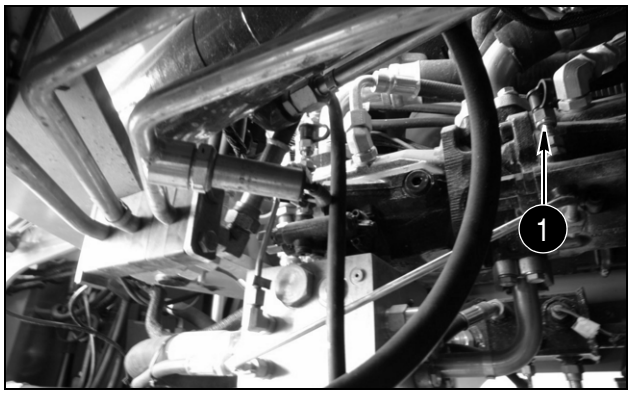
STEP 2

Make sure that the temperature of the hydraulic oil is at least 54°C to 57°C (129°F to 135°F). The following is the procedure for heating the hydraulic oil.

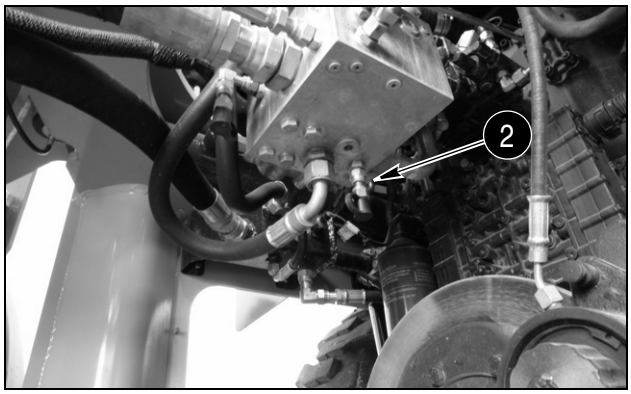
- To measure the oil temperature with the instrument cluster:
  - A. Press the up or down arrow key.
  - B. Stop at the info screen with the temperatures that need to be monitored are on.
- To heat the hydraulic oil do the following:
  - A. Start the engine and run at full throttle.
  - B. Hold the bucket control lever in the ROLLBACK position while raising and lowering the lift arms from ground level to full height.
  - C. Continue this procedure until the temperature of the hydraulic oil is 54° to 57°C (129° to 135°F).

After heating oil to operating temperature, lower bucket to the ground, turn off the engine, and relieve all pressure in the hydraulic system.

STEP 3



BD06G180



BD06F148

1. TEST PORT (LOAD SENSE)
2. TEST PORT (PUMP PRESSURE)

Connect two 69 bar (1000 psi) test gauges, one to the test port (2) located on the priority valve, and one on the pump load-sense pressure tap (1 closest to transmission).

IMPORTANT: *Do not steer or operate loader controls while the gauges are connected, gauges could be damaged.*

STEP 4

Start the engine and run at low idle.

STEP 5

Make sure all of the controls are in the neutral position and record the readings on the test gauges (1) and (2).

STEP 6

Subtract the reading of the test port (1) from the reading of the test port (2).

TESTING THE HYDAULIC CONTROLLER PILOT SUPPLY PRESSURE

NOTE: *This pressure is factory preset and is not adjustable.*

Pressure Check

STEP 1

Make sure that the temperature of the hydraulic oil is at least 54°C to 57°C (129°F to 135°F). The following is the procedure for heating the hydraulic oil.

- To measure the oil temperature with the instrument cluster:
  - A. Press the up or down arrow key.
  - B. Stop at the info screen with the temperatures that need to be monitored are on.
- To heat the hydraulic oil do the following:
  - A. Start the engine and run at full throttle.
  - B. Hold the bucket control lever in the ROLLBACK position while raising and lowering the lift arms from ground level to full height.
  - C. Continue this procedure until the temperature of the hydraulic oil is 54° to 57°C (129° to 135°F).

STEP 2

Raise lift arms to the top and turn off the engine. Turn the ignition switch to the “RUN” position.

STEP 3

Repeatedly put the loader control lever into “FLOAT” position and back to neutral.

STEP 4

The system should allow a minimum of 10 actuations into float and still cause the lift arms to come down.

NOTE: *If 10 full actuations cannot be made, an internal hydraulic leak exists, proceed to next step.*

STEP 5

Start machine and lower the bucket to the ground and turn off the engine. Turn the ignition switch to the “RUN” position, operate the pilots controls a minimum of 30 strokes to relieve any pressure in the system.

STEP 6

Open the right side compartment to gain access to the loader control handle.

STEP 7

Attach a gauge capable of reading 70 bar (1000 psi) to the test port under loader control handle.

STEP 8

Start and run the machine at low idle, hold the bucket control lever in the ROLLBACK position to increase the system pressure.

STEP 9

A pressure reading of 29.5 to 39.5 bar (425 to 575 psi) should be obtained, if pressure is not as specified do the following steps.

STEP 10

Lower the bucket to the ground and turn off the engine. Turn the ignition switch to the “RUN” position.

STEP 11

Operate the pilot controls several times until the gauge pressure suddenly drops to zero. The last pressure reading before the drop to zero is the nitrogen charge pressure in the accumulator. If the pressure is below 13 to 15 bar (188 to 218 psi), replace the accumulator. If accumulator test is good, go to next step.

STEP 12

Replace the pilot controls, see section 8001, retest the system, if test fails go to next step.

STEP 13

Replace the loader control valve, see section 8001, retest the system.

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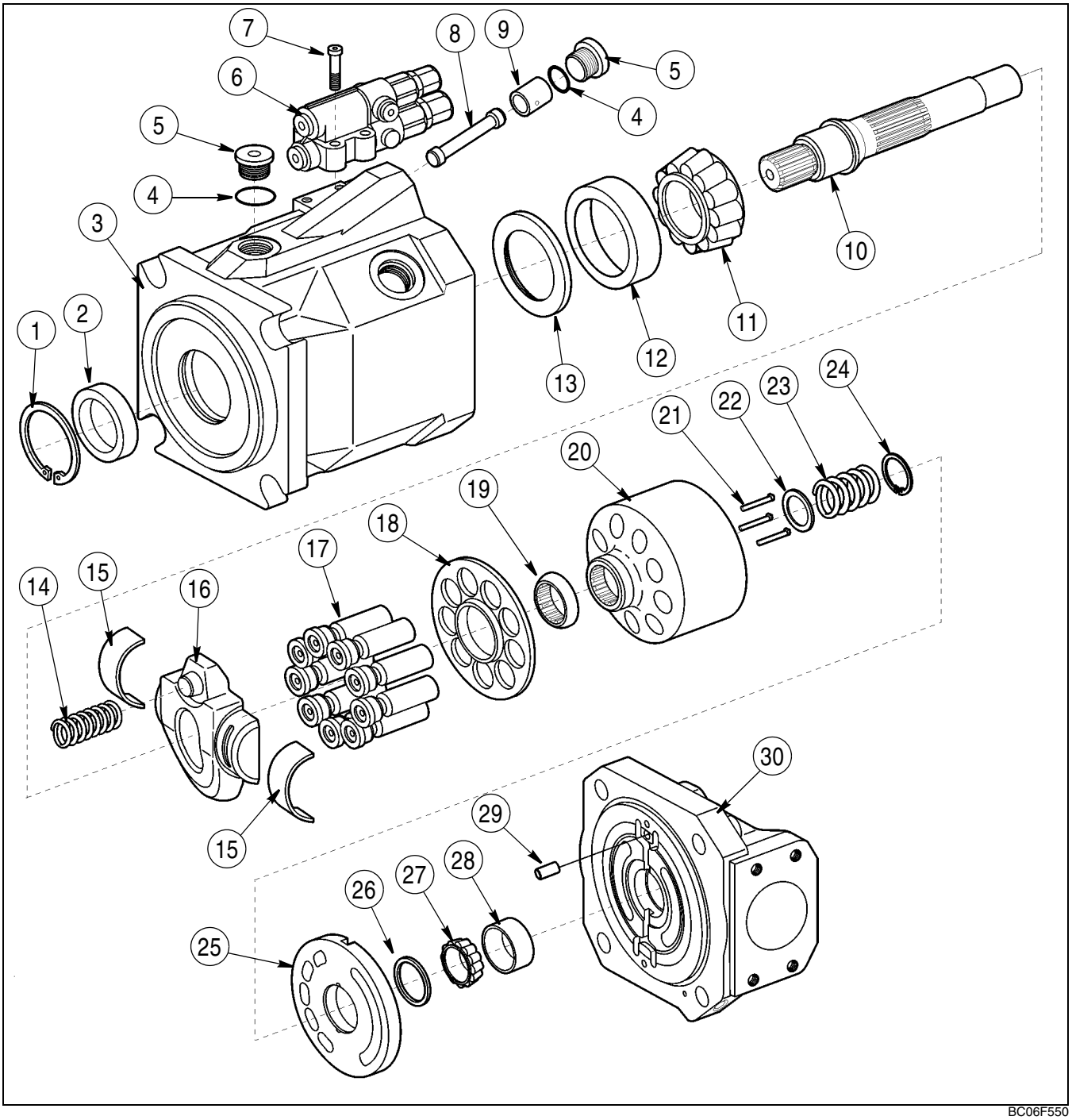
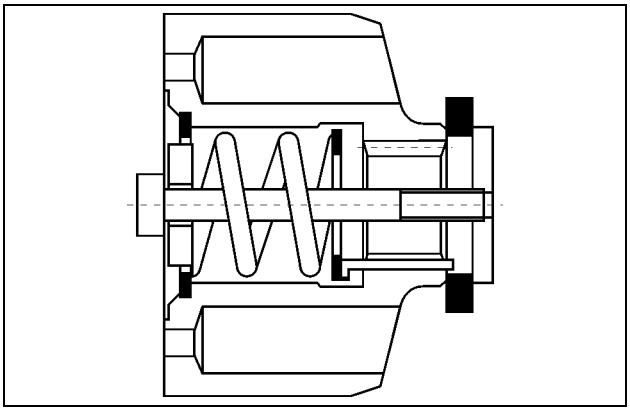
EQUIPMENT PUMP



BC06F550

1. SNAP RING
2. SEAL
3. MAIN BODY
4. O-RING
5. PLUG
6. CONTROL VALVE
7. CAP SCREW
8. PISTON ROD
9. CONTROL PISTON
10. SHAFT
11. TAPERED BEARING
12. BEARING RACE
13. SHIM
14. SPRING
15. HALF BEARING
16. SWASH PLATE
17. PISTONS
18. RETAINING PLATE
19. BALL
20. CYLINDER
21. PRESSURE PINS
22. BACKUP PLATE
23. SPRING
24. SNAP RING
25. PORT PLATE
26. SHIM
27. TAPERED BEARING
28. BEARING RACE
29. DOWEL PIN
30. END COVER

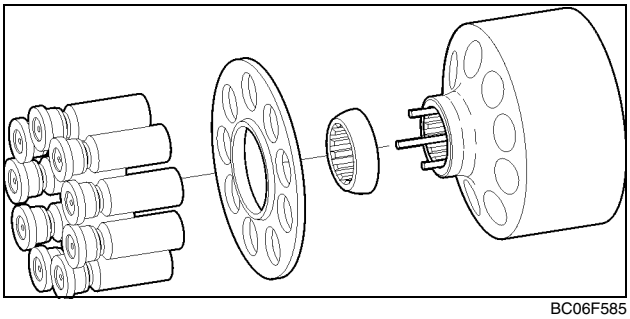
STEP 36



BC06F584

Use a suitable compressor, compress the spring and install the snap ring.

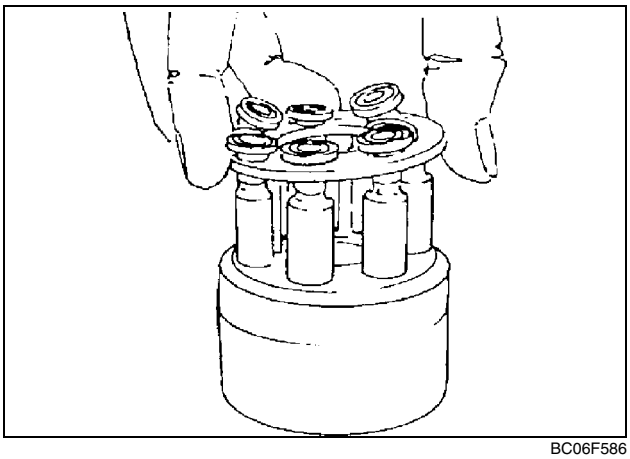
STEP 37



BC06F585

Place the ball onto the pressure pins, install the pistons into the retaining plate.

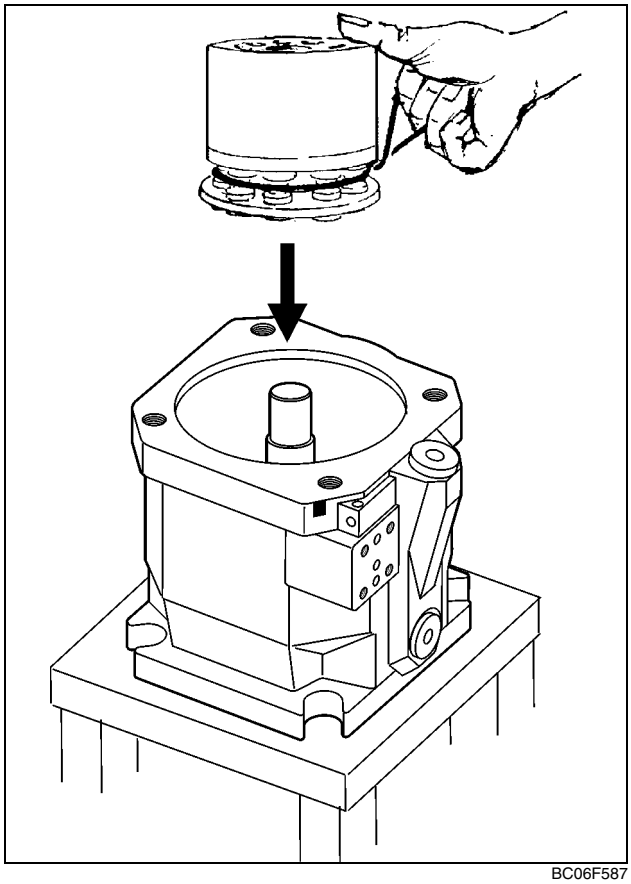
STEP 38



BC06F586

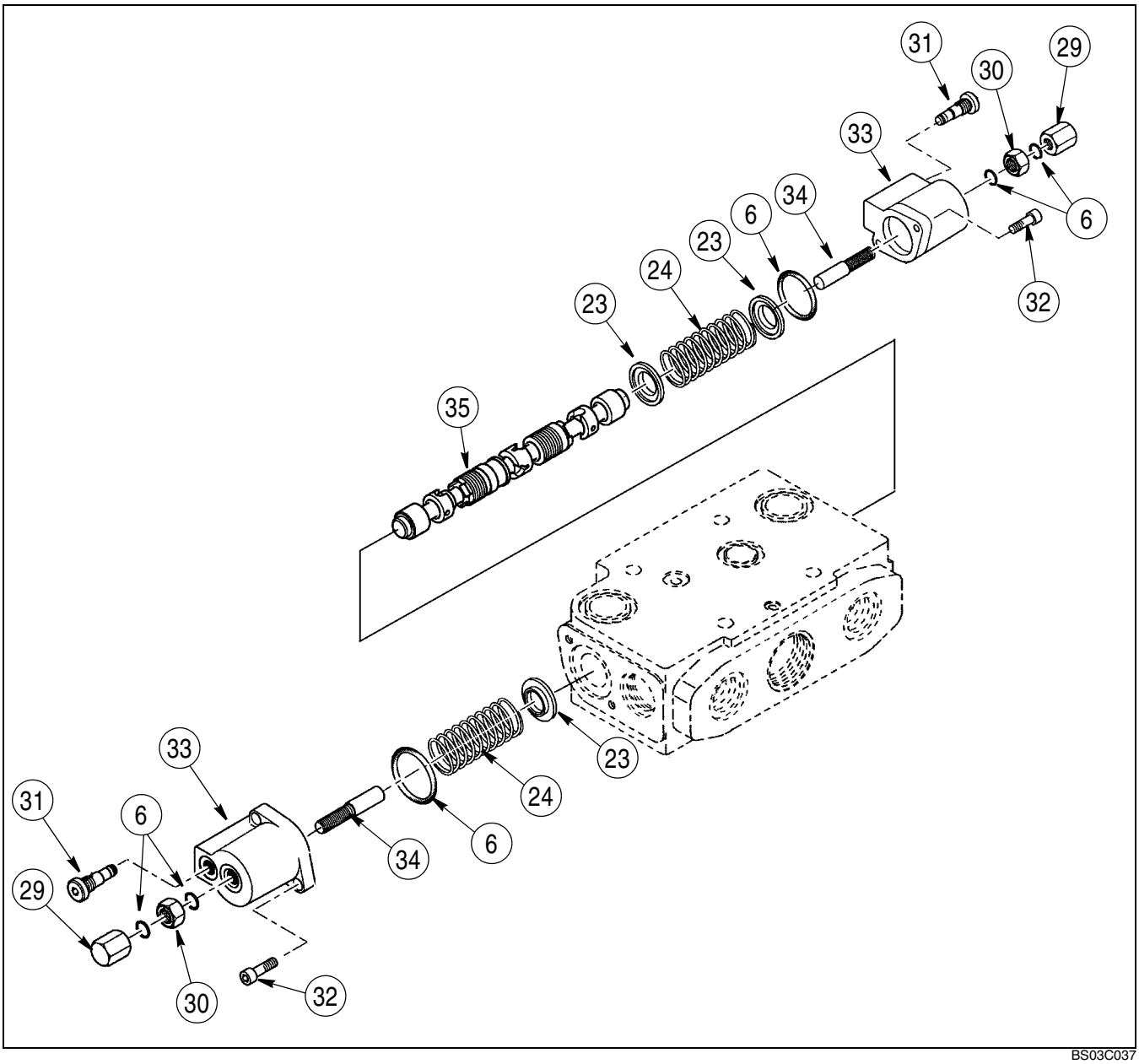
Lubricate the piston and retaining plate with clean oil, install the piston into the rotating housing.

STEP 39



BC06F587

Hold the pistons in the rotating housing using an O-ring, install the rotating group into the housing, remove the O-ring.



BS03C037

3 AND 4 SPOOL VALVE SPOOL CONFIGURATION

6. O-RINGS
23. SPRING RETAINER
24. SPRING
29. CAP NUT
30. JAM NUT
31. PISTON
32. BOLT
33. COVER
34. ADJUSTING ROD
35. SPOOL

STEP 16

Install anticavitation valves (8) and torque to 200 Nm (147.5 pound feet).

STEP 17

Install and torque flow limit valve (19) to 20 to 25 Nm (177 to 221 pound inches).

STEP 18

Install cone (18), spring (17), locking screw (16). Torque locking screw to 100 Nm (73.7 pound feet).

STEP 19

Install cone (21) and locking screw (22). Torque locking screw to 40 Nm (30 pound feet).

STEP 20

Lubricate spools with hydraulic oil and push spools (35) into housing (11).

IMPORTANT: *Do not force spools into housing.*

STEP 21

Install spring retainers (23), springs (24), covers (33), and bolts (32). Torque bolts to 10.4 Nm (92 pound inches).

NOTE: *Repeat steps 18 and 19 for a 3 and 4 spool valve configuration.*

STEP 22

Install spring retainers (23), spring (24 and 25), cover (26), and bolts (27). Torque bolts to 6 Nm (53 pound inches).

NOTE: *Prior to installation in the machine, circuit reliefs can be tested.*

STEP 23

Install valve in machine, see section 8001.

STEP 24

Check loader limit pressure, see section 8002.

Circuit Relief Pressure Test

STEP 1

Connect the hand pump to the port for anticavitation and circuit relief valves (21).

NOTE: *Repeat steps for machines that are configured with a 3 or 4 spool valve.*

STEP 2

Make sure that the hand pump is full of hydraulic oil and that the temperature of the oil is approximately 21°C (70°F).

STEP 3

Operate the handle of the hand pump and read the highest pressure. Repeat this step several times to be sure of the reading.

STEP 4

Compare the reading to the specifications on Page 3.

STEP 5

If the pressure is not correct, adjust the circuit relief valve.

Circuit Relief Adjustment

STEP 1

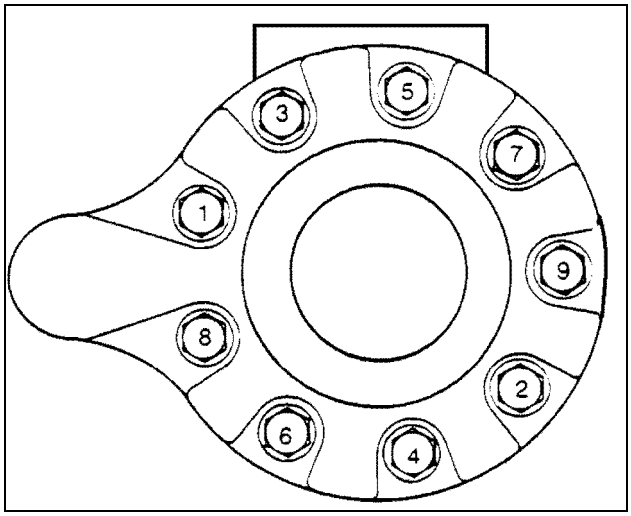
Loosen the lock nut. Turn the adjustment screw clockwise to increase the pressure or counterclockwise to decrease the pressure.

NOTE: *One turn of the adjusting screw will change the pressure approximately 138 bar (2000 psi).*

STEP 2

Check the pressure again. Repeat the adjustment as necessary.

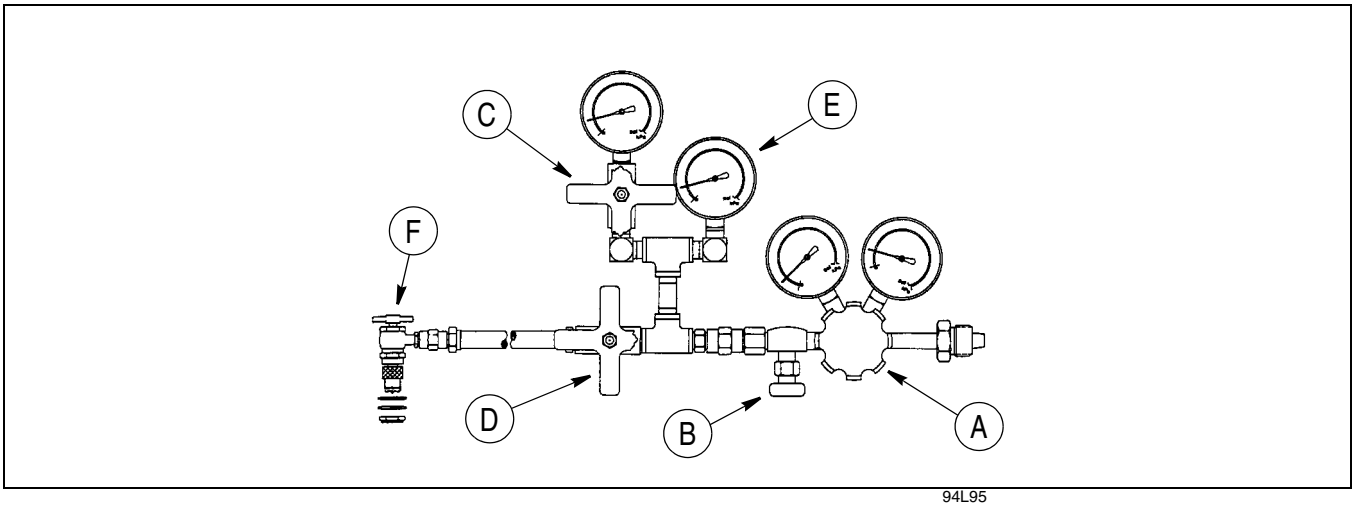
19. Install a new wear ring (5) in the wide groove on the OD of the piston (7).
20. Install a new seal (6) in the groove on the OD of the piston (7).
21. Fasten the tube (1) in an acceptable repair stand or other holding equipment. Be careful to prevent damage to the tube (1).
22. Lubricate the inside of the tube (1) and the outside of the piston (7) with clean oil.
23. Push the piston (7) straight into the tube (1).
24. Lubricate the O-ring (16) on the gland (3) with clean oil.
25. Push the gland into the tube (1) and align the holes in the tube (1).
26. Install the cap screws (2) and hardened washers (18).
27. Tighten the cap screws (2) in the sequence shown. Torque to 420 to 500 Nm (310 to 368.8 pound-feet).



BC05M027

TUBE AND GLAND HOLE ALIGNMENT

DISCHARGING THE NITROGEN CHARGE ON AN ACCUMULATOR



94L95

CAS10899 NITROGEN CHARGING KIT

1. Use the CAS-10899 Nitrogen Charging Kit to discharge the accumulator, refer to the illustration above. The tool must be disconnected from the nitrogen tank.
2. Close valves B, C and D.
3. Adjust the regulator A to the minimum pressure setting by turning the knob counterclockwise.
4. Turn the T-handle on valve F fully out.
5. Remove the guard and valve assembly cap from the accumulator.
6. Connect valve F to the valve stem on the accumulator.
7. Turn the T-handle inward on valve F to engage the pin in the valve stem.
8. Open valve D and check the charge pressure on gauge E.
9. To discharge the accumulator, partially open valve B. The accumulator charge will bleed down through the regulator.
10. Once the accumulator is fully discharged, disconnect valve F from the valve stem.
11. The accumulator can now be disassembled.

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Evaporator/Heater Core Check

Make sure heater valve is closed

Evaporator/Heater Core

Evaporator/Heater Core →

1. See Section 9004 for access to the evaporator/heater core.
2. Inspect the fins on the evaporator/heater core. All the fins that have bends or damage must be made straight.
3. Inspect the evaporator/heater core for restrictions. If the core is dry, use compressed air or a brush and vacuum cleaner. If the core is wet or filled with mud, flush the core with water using a hose without pressure. Make sure the water drains freely from the evaporator/heater core. DO NOT USE STEAM.

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

↓

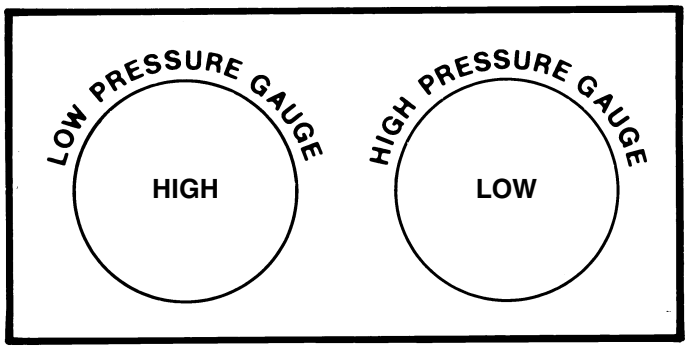
Evaporator/Heater Core Sealing →

1. See Section 9004 for access to the evaporator/heater core.
2. Make sure seals are in place so blower will pull air only through the evaporator/heater core and not around the evaporator/heater core.

↓

Filters →

1. Make sure the filters are clean.



SEE THE PRESSURE - TEMPERATURE CHART ON PAGE 14 476L7

Compressor Turning But Not Pumping Properly - Indications:

A. System is fully charged. B. Cool discharge air from evaporator.	→	1. Discharge refrigerant from system. See Section 9003. 2. Remove the compressor from the machine. See Section 9004. 3. Remove and replace compressor because there is indication of internal leak in compressor. 4. Replace compressor. 5. Replace receiver-drier if: A. System has been opened before. B. Receiver-drier has been used two or more years. See Section 9004 for receiver-drier replacement. 6. Charge the system with refrigerant. See Section 9003.

Expansion Valve Stuck Open

Expansion Valve Stuck Open	→	1. Replace expansion valve. See Section 9004.

STEP 5

A22112

Connect the main power plug to a 115 volt AC outlet. Move the main power switch to the ON position and depress the recovery start switch.

The compressor will shut OFF automatically when recovery is complete. Wait for 5 minutes and observe the manifold pressure gauges for a pressure rise. If pressure rises above 0 psi (0 bar), depress the hold/cont switch. Then wait for the compressor to automatically shut OFF.

STEP 6

A22108

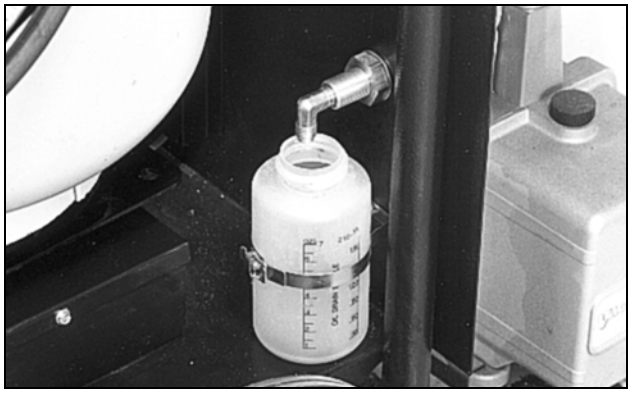
Drain the oil separator of the A/C system oil. Open the air purge valve long enough to let some of the compressor discharge pressure back into the separator.

STEP 7

A22110

Slowly open the oil drain valve and drain the oil into the reservoir. When the oil stops draining, close the oil drain valve completely.

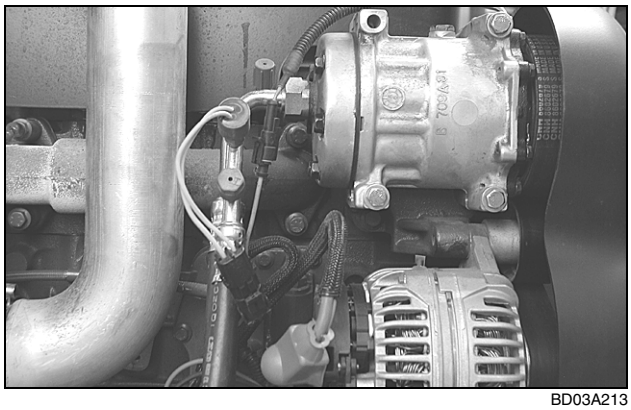
STEP 8



A22111

Fill the A/C compressor with fresh SP-20 PAG oil equal to the amount in the reservoir.

STEP 9



BD03A213

Remove the hoses from the service ports and install the caps.