CX130D
Crawler Excavator

SERVICE MANUAL

Part number 51436799
English
February 2018

CASE
CONSTRUCTION

Shoe

Item	Weight or Quantity
600 grouser, including seal (standard)	**796.9 kg** (**1756.864 lb**)
Link	1 pair
Shoe	43
Bolt	172
Nut	172
500 grouser, including seal, with pad hole	**710.9 kg** (**1567.266 lb**)
Link	1 pair
Shoe	43
Bolt	172
Nut	172
500 link chain, including seal	**749.6 kg** (**1652.585 lb**)
Link	1 pair
Shoe	43
Bolt	172
Nut	172
700 grouser, including seal	**974.4 kg** (**2148.184 lb**)
Link	1 pair
Shoe	43
Bolt	172
Nut	172

Upper component

Swing unit

Swing motor assembly		
Swing motor		
	Manufacturer	TOSHIBA MACHINE CO.LTD
	Motor type	Fixed displacement piston motor
		With parking brake
	Absorption amount	**65 cm³/rev** (**3.97 in³/rev**)
	Operating pressure	**27.9 MPa** (**4047 psi**)
	Operating flow	**130 l/min** (**34.3424 US gpm**)
	Mechanical brake torque	**336.1 N·m** (**247.895 lb ft**) min.
	Brake off pressure	**2.9 MPa** (**421 psi**) max.
	Relief valve set pressure	**27.9 MPa** (**4047 psi**) at **108 l/min** (**28.531 US gpm**) **27.3 MPa** (**3960 psi**) at **40 l/min** (**10.567 US gpm**)
Swing reduction gear		
	Reduction gear type	Planetary gear 2-stage reduction gear
	Reduction ratio	17.03
Dry weight		**99 kg** (**218.258 lb**)
Turntable bearing		
	Number of teeth	98
	Weight	**177.7 kg** (**391.7614 lb**)
Counterweight		
	Weight	**1970 kg** (**4343.107 lb**)

NOTE: *The weights shown here are approximate values.*

Stand alone part weight

	Part name	Weight
1	Travel unit (travel motor)	**147 kg** (**324.080 lb**)
2	Take-up roller	**65 kg** (**143.300 lb**)
3	Upper roller	**14 kg** (**30.865 lb**)
4	Lower roller	**22 kg** (**48.502 lb**)
5	Swing unit	**99 kg** (**218.258 lb**)
6	Turntable bearing	**171 kg** (**376.990 lb**)
7	Engine	**406 kg** (**895.077 lb**)
8	Radiator	**73 kg** (**160.937 lb**)
9	Hydraulic pump	**86 kg** (**189.598 lb**)
10	Fuel tank	**132 kg** (**291.010 lb**)
11	Hydraulic oil tank	**126 kg** (**277.782 lb**)
12	Urea solution tank	**9.2 kg** (**20.283 lb**)
13	Control valve	**160 kg** (**352.740 lb**)
14	Center joint	**29 kg** (**63.934 lb**)
15	Boom	**1050 kg** (**2314.854 lb**)

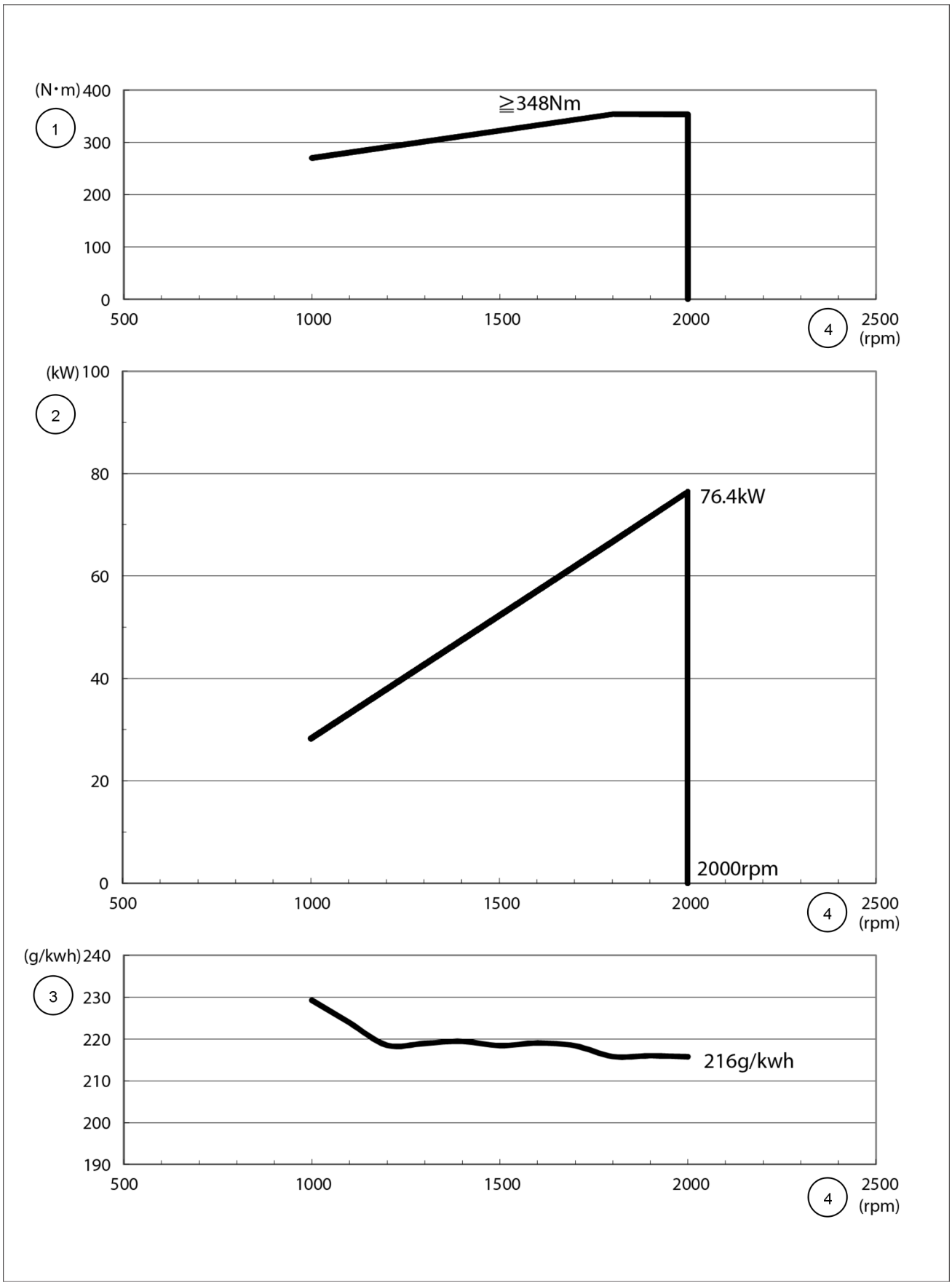
Shoe weight (per side)

	Part name	Weight
1	**600 mm** (**23.62 in**) grouser shoe (M seal, without hole)	**852 kg** (**1878.338 lb**)
2	**700 mm** (**27.56 in**) grouser shoe (M seal)	**1009 kg** (**2224.464 lb**)

Arm weight

	Part name	Weight
1	Ultra-long arm (EM3)	**587.2 kg** (**1294.554 lb**)
2	Ultra-long arm (EM3 01)	**591.6 kg** (**1304.255 lb**)
3	Ultra-long arm (EM3 02)	**589.9 kg** (**1300.507 lb**)
4	Ultra-long arm (EM3 QC)	**588.7 kg** (**1297.861 lb**)
5	Ultra-long arm (EM3 01 QC)	**593.1 kg** (**1307.562 lb**)
6	Ultra-long arm (EM3 02 QC)	**591.4 kg** (**1303.814 lb**)

Engine - General specification - Performance curves

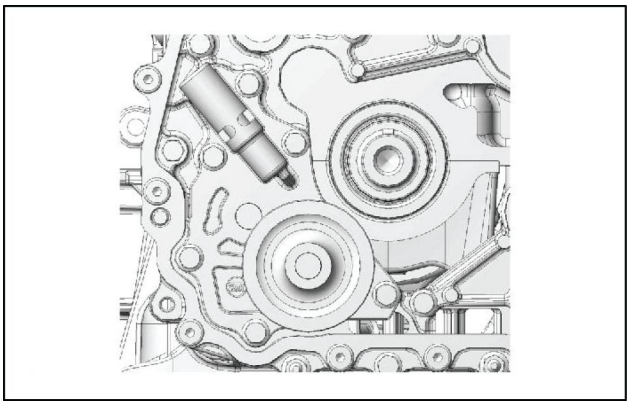


SMIL17CEX0086HA 1

NOTE: *Performance detected at engine test bench.*

Oil pump assembly removal

1. Remove the oil pump assembly from the timing gear case.



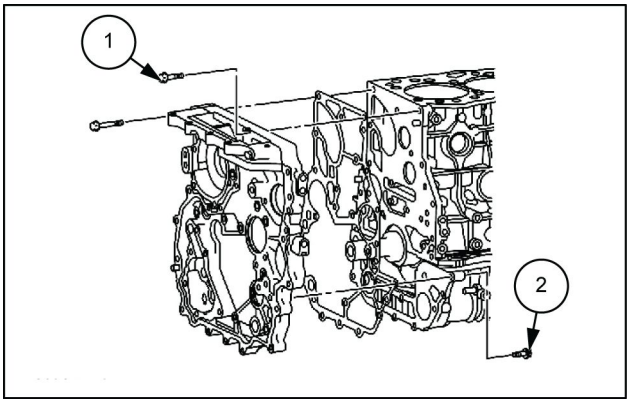
LPIL12CX00756AA 54

Timing gear case removal

1. Remove the timing gear case from the cylinder block.
   - Install bolt **(1)** in the diagram to the inside of timing gear case and bolt **(2)** from the crankcase side.

NOTICE: *Do not forget to remove the bolt.*

2. Remove the gasket from the cylinder block.



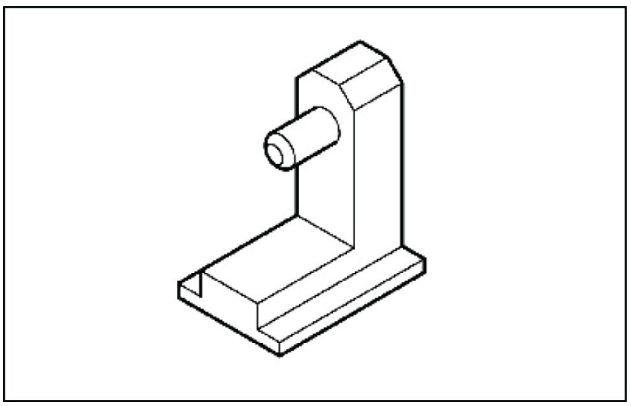
LPIL12CX00757AB 55

Flywheel removal

1. Fasten special tool to flywheel housing.
   - Install the crankshaft stopper to the flywheel housing starter installation section and ensure the crankshaft does not rotate.

NOTE: *Verify that the stopper is installed and securely bites into the ring gear.*

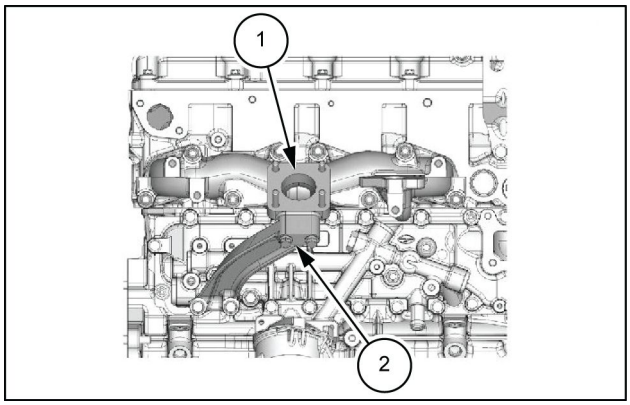
Special tool: Crankshaft stopper (Refer to **Crankshaft - Special tools (10.103)**)



LPIL12CX00758AA 56

2. Install the exhaust manifold bracket **(2)** to the exhaust manifold **(1)** and the oil cooler assembly.

   Tightening torque: **27 N·m** (**20 lb ft**)



LPIL12CX00668AB 93

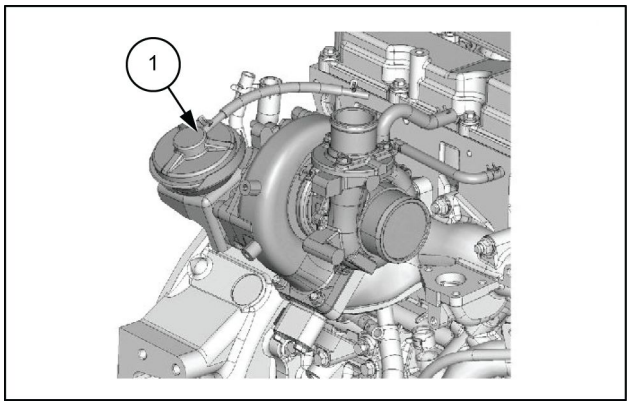
Turbocharger assembly installation

1. Install the turbocharger assembly (1) to the exhaust manifold.

   Tightening torque: **35 N·m** (**26 lb ft**)

NOTE: *Do not hold the actuator rod.*

- Fill with **0.5 cm³** (**0.031 in³**) of engine oil from the fuel filler.



LPIL12CX00669AB 94

2. Install the water feed pipe to the oil cooler.

   Tightening torque: **41 N·m** (**30 lb ft**)

3. Connect the water feed pipe to the turbocharger assembly.

   Tightening torque: **35 N·m** (**26 lb ft**)

4. Install the oil feed pipe **(1)** to the oil cooler assembly.

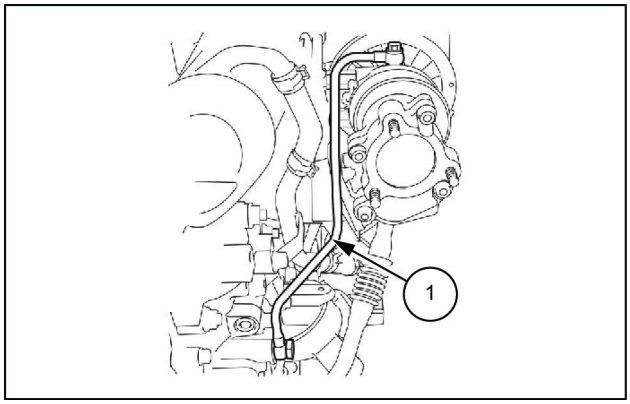
5. Connect the oil feed pipe **(1)** to the turbocharger assembly.

   Tightening torque: **35 N·m** (**26 lb ft**)

6. Install the oil feed pipe **(1)** to the oil cooler assembly.

7. Connect the oil feed pipe **(1)** to the turbocharger assembly.

   Tightening torque: **23 N·m** (**17 lb ft**) Eyebolt

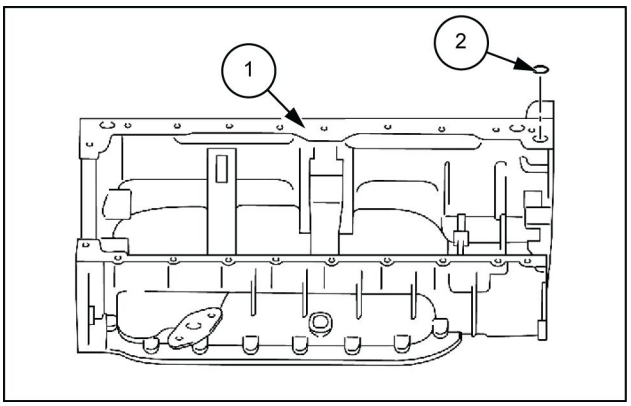


LPIL12CX00670AB 95

Engine oil pan - Install

Crankcase installation

1. Apply the engine oil to the O-ring **(2)**.
2. Install the O-ring **(2)** to the crankcase **(1)**.

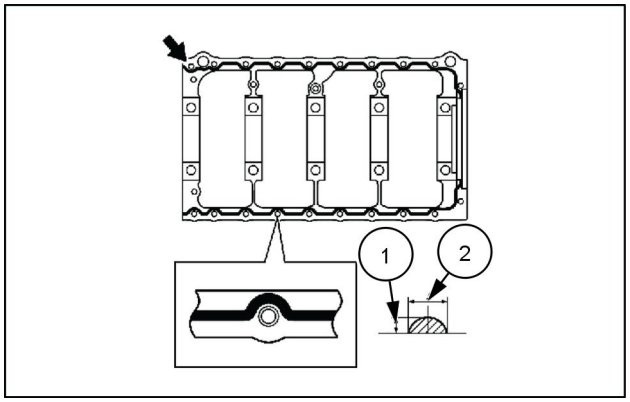


LPIL12CX00790AB 1

3. Apply the liquid gasket to the crankcase.
   - As shown in the diagram, apply ThreeBond 1207B or equivalent liquid gasket.
     1. **2.0 – 3.0 mm** (**0.08 – 0.12 in**)
     2. **4.0 – 5.0 mm** (**0.16 – 0.20 in**)
4. Install the crankcase to the cylinder block.

NOTE: *Install within* ***5 min*** *of applying liquid gasket.*

Tightening torque: **25 N·m** (**18 lb ft**)

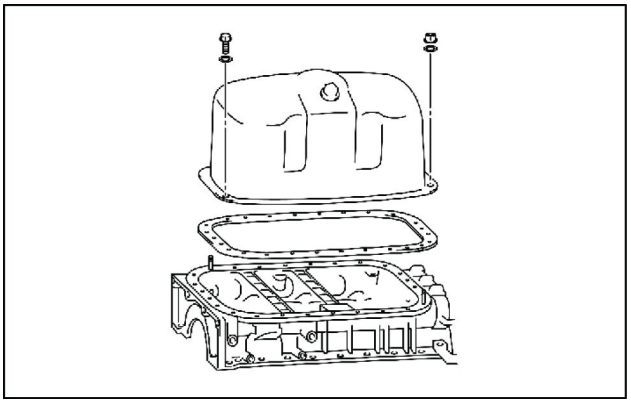


LPIL12CX00791AA 2

Oil pan installation

1. Install the oil pan to the crankcase.

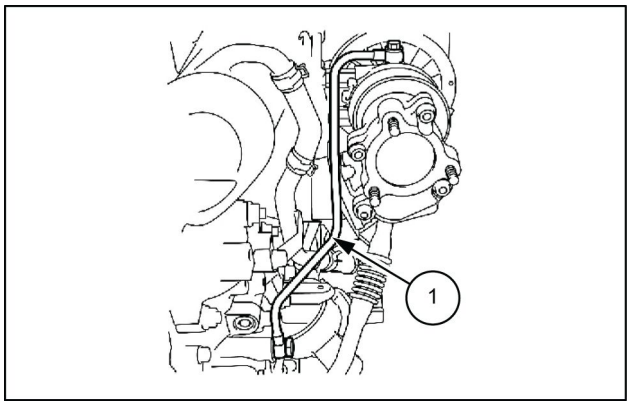
   Tightening torque: **23 N·m** (**17 lb ft**)



LPIL12CX00792AA 3

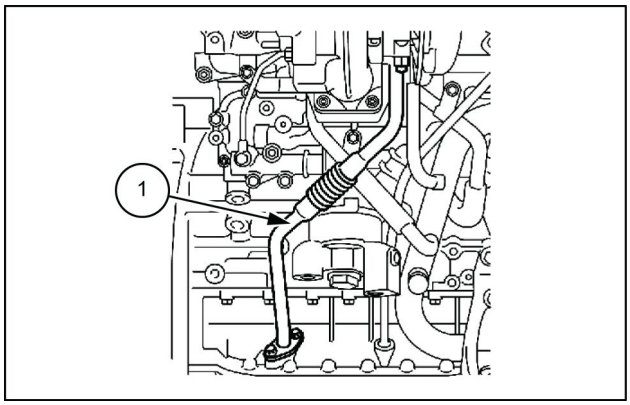
Turbocharger assembly removal

1. Remove the water feed pipe from the oil cooler assembly.
2. Disconnect the oil feed pipe **(1)** from the turbocharger assembly.
3. Remove the oil feed pipe **(1)** from the oil cooler assembly..



LPIL12CX00709AB 13

4. Disconnect the oil return pipe **(1)** from the turbocharger assembly.
5. Remove the oil return pipe **(1)** from the crankcase.

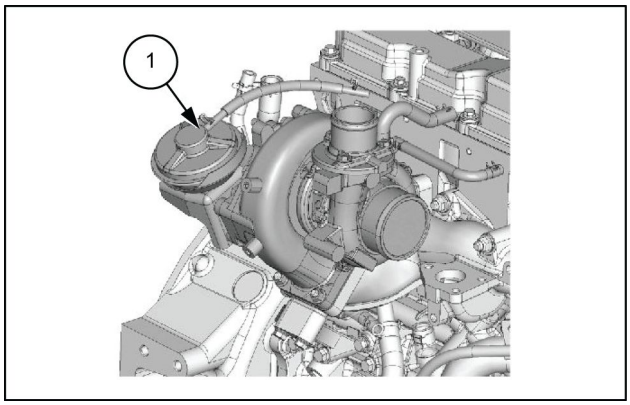


LPIL12CX00710AB 14

6. Remove the turbocharger assembly **(1)** from the exhaust manifold.
   - Remove the water feed hose and water return hose together.

NOTE: *Do do not hold the actuator rod.*

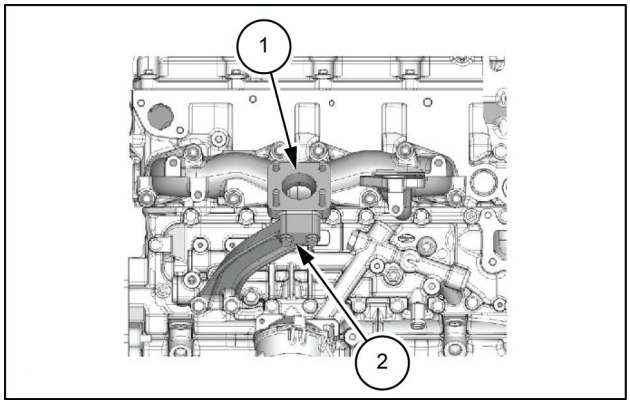
NOTICE: *Do not reuse the gasket.*



LPIL12CX00711AB 15

Exhaust manifold removal

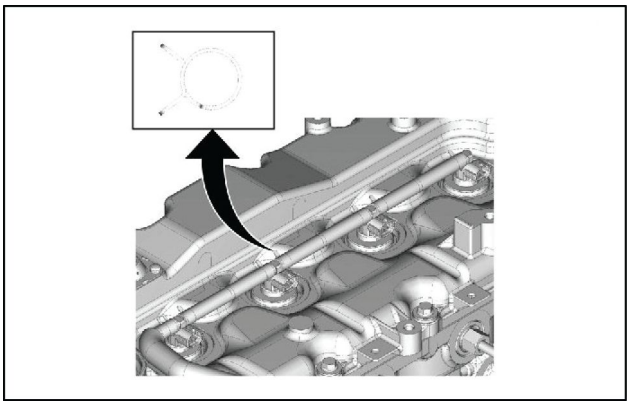
1. Remove the exhaust manifold bracket **(2)** from the exhaust manifold **(1)** and the oil cooler assembly.
2. Remove the exhaust manifold from the cylinder head.
   - Do not reuse the gasket.



LPIL12CX00712AB 16

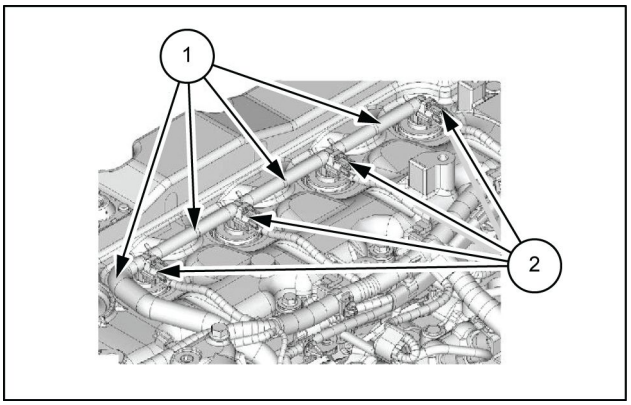
Fuel hose installation

1. Install the nozzle leak off pipe to the injector.
   - If the nozzle leak off hose has been removed, install with the clip knob facing the exhaust side as shown in the diagram.



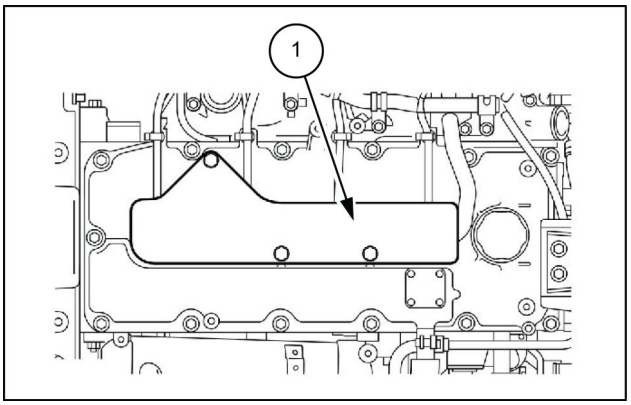
LPIL12CX00677AA 67

2. Connect the harness connector to the injector.
   1. Nozzle leak off pipe
   2. Injector harness



LPIL12CX00678AB 68

3. Install the cover **(1)** to the cylinder head cover.



LPIL12CX00679AB 69

Cooling fan belt installation

1. Install the cooling fan belt to the pulley.

Crankshaft pulley installation

NOTICE: *Do not reuse the crankshaft pulley bolt or washer.*

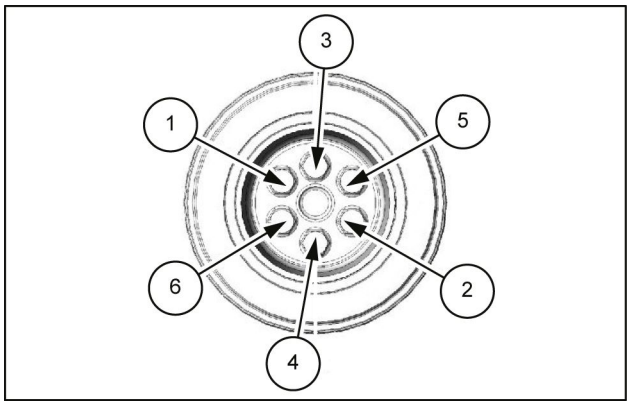
1. Apply the engine oil to the bolt.
   - Apply engine oil to the threaded portion and seat surface of the bolt.
2. Install the crankshaft pulley to the crankshaft.
   - Tighten at the specified torque in the order of the numbers in the diagram.

     Tightening torque: **30 N·m** (**22 lb ft**)
3. Tighten the bolt using special tool.

     Specified angle: **180°**
   - Tighten again at the specified angle in the order shown in the diagram.

     Specified angle: **60°**

NOTICE: *The total rotational angle for the second and third times will be between **240°** and **270°**.*



LPIL12CX01113AB 9

Idle gear D installation

1. Apply engine oil to the idle gear shaft.
   - Apply to the gear sliding section of the idle gear shaft.
2. Install the idle gear shaft to the camshaft brackets.
3. Install idle gear D to the idle gear shaft.
   - Tighten the idle gear fixing bolts after installing the sprocket.

Camshaft installation

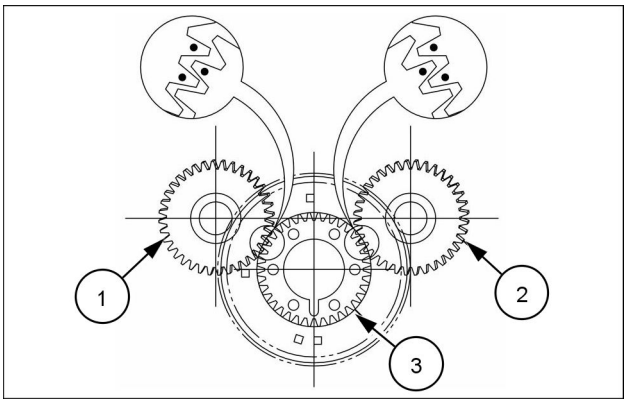
1. Apply engine oil to the camshaft journal.
2. Install the exhaust camshaft **(1)** to the camshaft brackets.
3. Install the inlet camshaft **(2)** to the camshaft brackets.
   - Align the timing marks with idle gear D **(3)** and install.

NOTICE: *Loosen the rocker arm adjust nut in advance and loosen the adjust screw by 2 pitches or more.*

NOTICE: *Face the marking on the camshaft upward and install to the camshaft brackets.*

4. Apply engine oil to the camshaft upper bracket.
   - Apply to the camshaft upper bracket sliding surface.
5. Apply engine oil to the camshaft journal.
6. Install the camshaft upper bracket to the cylinder head.

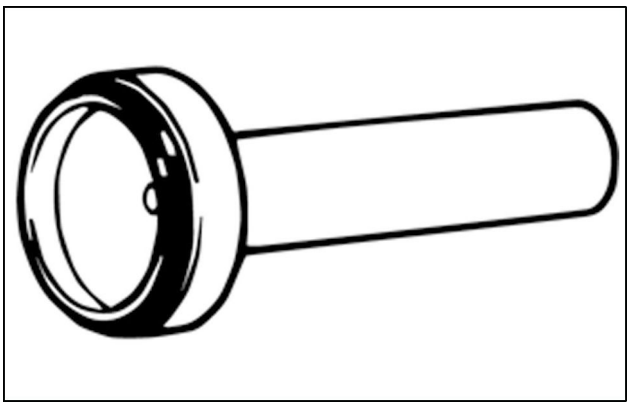
NOTICE: *Check the marking on the top surface and install.*



SMIL17CEX3454AB 10

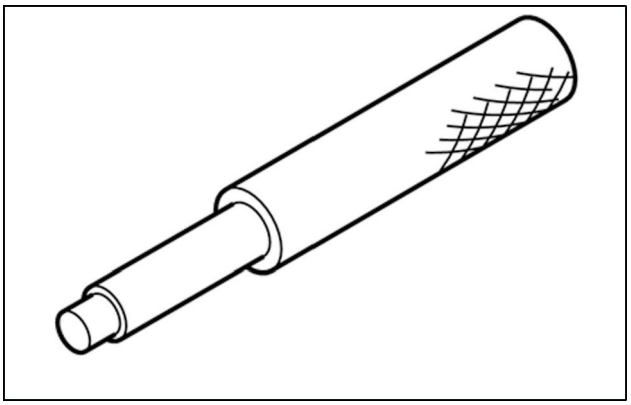
Cylinder head - Special tools

Isuzu reference	CASE CONSTRUCTION tool number	Description
5-8840-2222-0	Common tool	Sealing cup installer



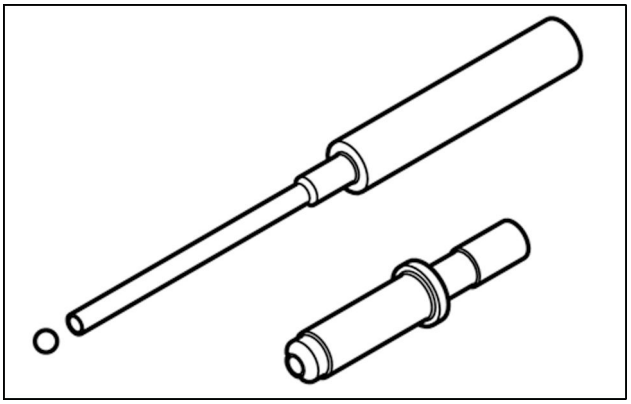
SMIL14CEX2686AA 1

Isuzu reference	CASE CONSTRUCTION tool number	Description
5-8840-2623-0	Common tool	Nozzle sleeve remover



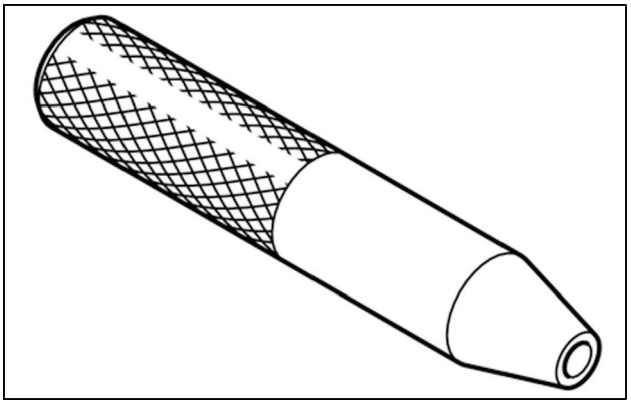
SMIL14CEX2687AA 2

Isuzu reference	CASE CONSTRUCTION tool number	Description
5-8840-2624-0	**380001721**	Nozzle sleeve installer



SMIL14CEX2688AA 3

Isuzu reference	CASE CONSTRUCTION tool number	Description
5-8840-2626-0	Common tool	Bridge guide setting tool



SMIL14CEX2689AA 4

Cylinder head assembly installation

1. Install the cylinder head assembly to the cylinder block.
   - Gently place the cylinder head while aligning with the cylinder block dowel.

NOTICE: *When installing, be careful not to damage the cylinder head gasket.*

2. Apply engine oil to the head bolt.
   - Apply engine oil to the threaded portion of the head bolt and seat surface.

NOTICE: *Use a new head bolt.*

3. Tighten the head bolts using a torque wrench.
   - Tighten the head bolts in the order shown in the diagram.

     Tightening torque: **70 N·m** (**52 lb ft**) first time

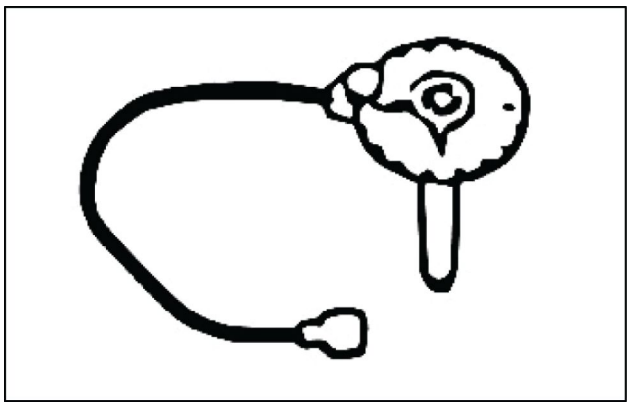
     Tightening torque: **70 N·m** (**52 lb ft**) second time

4. Tighten the head bolt using the special tool.
   - Tighten the head bolts in the order shown in the diagram using an angle gauge.

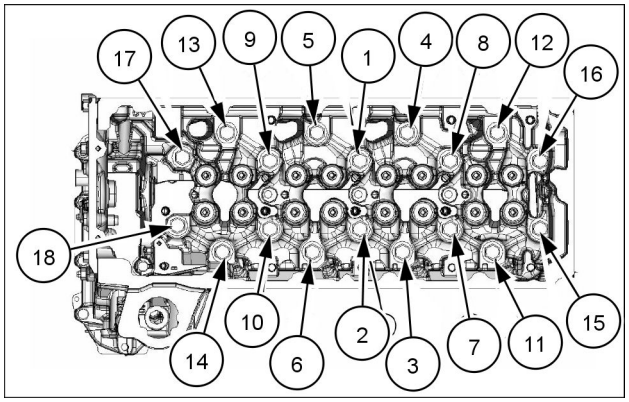
     Special tool: Angle gauge (Refer to **Cylinder heads - Special tools (10.101)**)

     Specified angle: **60 – 75°** third time

     Specified angle: **60 – 75°** fourth time



LPIL12CX00629AA 6



SMIL17CEX3328A 7

Contents

Engine - 10

Connecting rods and pistons - 105

SERVICE

Crank gear installation

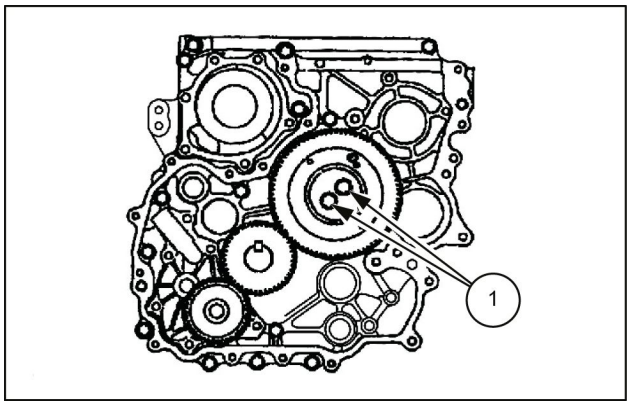
1. Install the crank gear to the crankshaft.
   - Press-fit the crank gear until it makes contact with the crankshaft end surface.
   - Install by aligning with the alignment mark for the idle gear.

Idle gear installation

1. Final tighten idle gear A to the idle gear A shaft.

   Tightening torque: **32 N·m** (**24 lb ft**)

   1. Idle gear A bolt

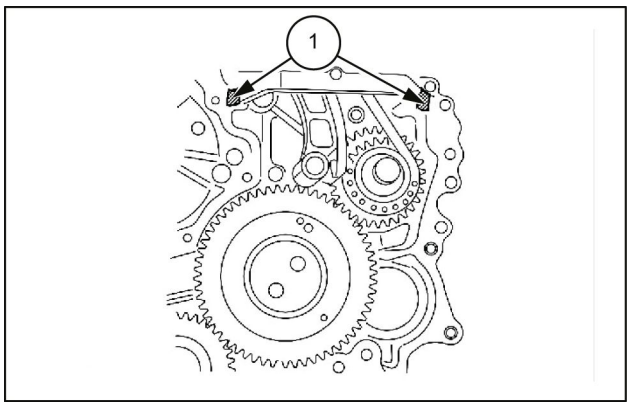


LPIL12CX01108AB 25

Gear case cover installation

1. Apply liquid gasket to the timing gear case.
   - Apply liquid gasket, ThreeBond 1207B to the area shown in the diagram.

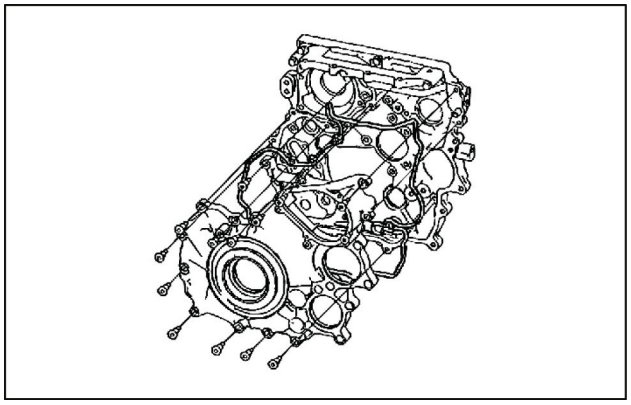
   1. Liquid gasket application area



LPIL12CX01109AB 26

2. Install the gasket to the gear case cover.
3. Install the gear case cover to the timing gear case.

   Tightening torque: **8 N·m** (**5.90 lb ft**)



LPIL12CX01110AA 27

5. Use the special tool to tighten the bolts.

NOTE: *Use an angle gauge to tighten in the order shown in the diagram.*

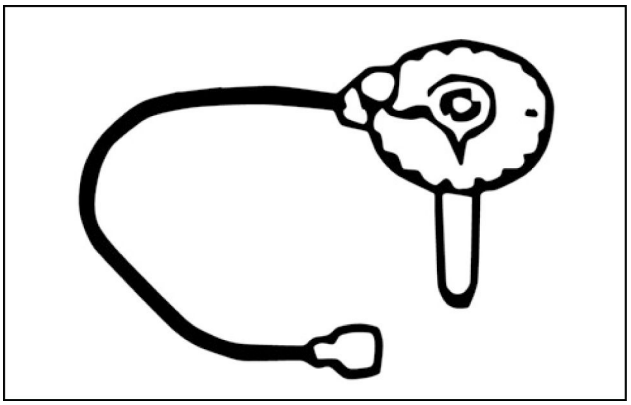
Specified angle: **60 – 90°**

6. Tighten the bolt using the special tool.

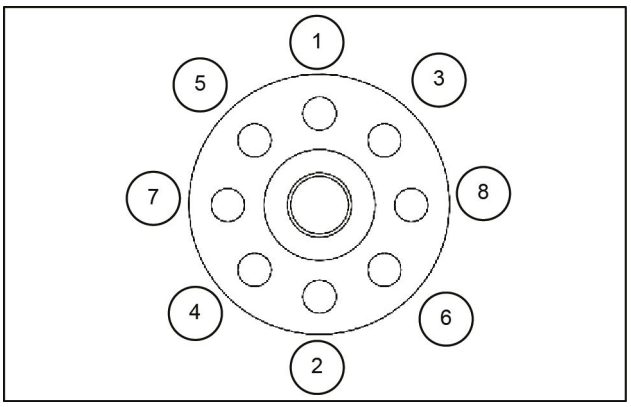
Special tool: Angle gauge (Refer to **Cylinder heads - Special tools (10.101)**)

Tightening angle: **120°**

Special tool: Crankshaft stopper (Refer to **Crankshaft - Special tools (10.103)**)



SMIL14CEX3073AA 4



LPIL12CX00800AB 5

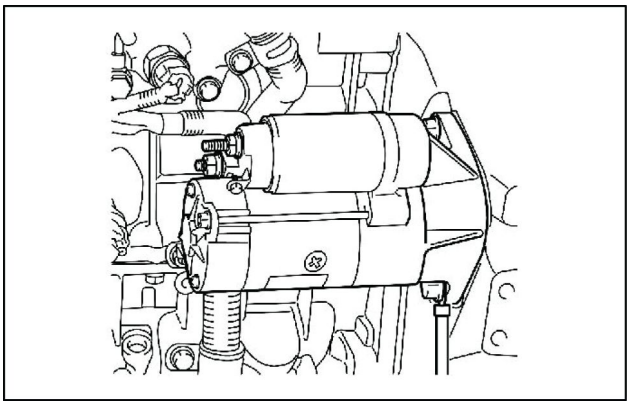
Starter motor installation

1. Install the starter motor on the flywheel housing.

NOTE: *Install the ground cable at the same time.*

Tightening torque: **97 N·m** (**71.5 lb ft**)

2. Connect the S terminal to the starter motor.
3. Connect the B terminal to the starter motor.



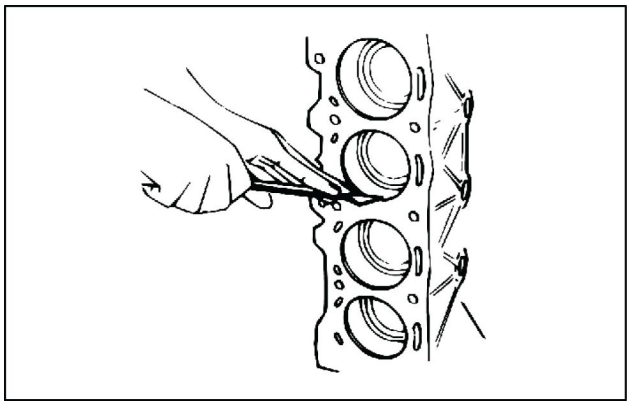
LPIL12CX00737AA 6

Battery ground cable connect

1. Connect the battery ground cable to the battery.

3. Clean the cylinder liner using a scraper.
   - Remove carbon from the top of the cylinder bore using a scraper.
4. Remove the piston from the cylinder block.
   - Pull out the piston and connecting rod to the cylinder head side.

NOTICE: *When pushing out the connecting rod, be careful not to damage the oil jet or cylinder block.*

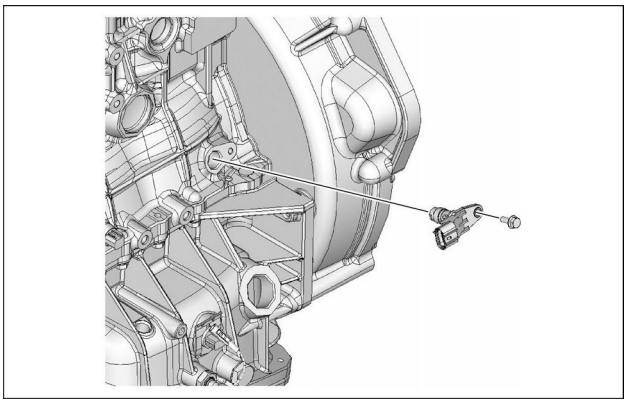


LPIL12CX00767AA 63

CKP sensor removal

1. Disconnect the harness connector from the CKP sensor.
2. Remove the CKP sensor from the cylinder block.

NOTICE: *The CKP sensor is sensitive to shock, so do not throw or drop it.*



SMIL17CEX3327A 64

Crankshaft removal

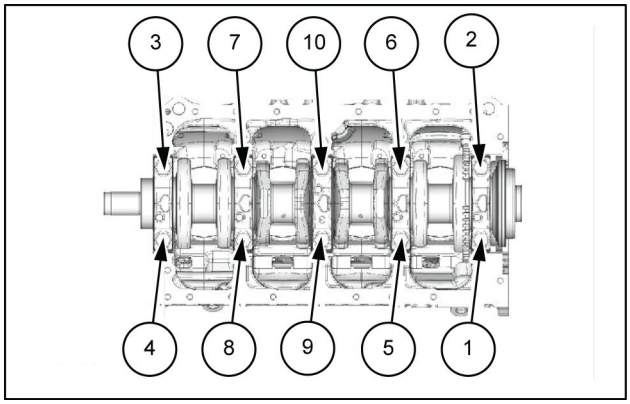
1. Remove the bearing cap bolt from the cylinder block.
   - Gradually loosen the bolts in the order of the numbers indicated in the diagram.
2. Remove the crankshaft bearing from the bearing cap.
   - Remove the crankshaft lower bearing.
   - The removed crankshaft lower bearing should be lined in the order of the number.
3. Remove the crankshaft from the cylinder block.

NOTICE: *Make sure to slightly lift the crank angle sensor rotor when laying the crankshaft.*

NOTICE: *Do not hit nor drop crank angle sensor rotors.*

NOTICE: *Do not reuse crank angle sensor rotors that have been hit or dropped.*

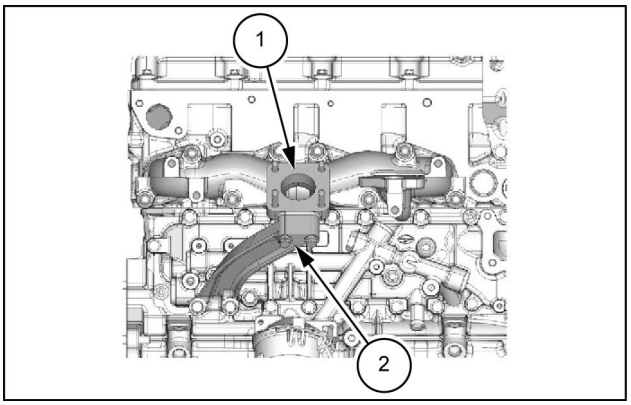
4. Remove the thrust bearing from the cylinder block.
5. Remove the crankshaft bearing from the cylinder block.
   - Remove the crankshaft upper bearing.
   - The removed crankshaft upper bearing should be lined in the order of the number.



LPIL12CX00769AB 65

2. Install the exhaust manifold bracket **(2)** to the exhaust manifold **(1)** and the oil cooler assembly.

   Tightening torque: **27 N·m** (**20 lb ft**)



LPIL12CX00668AB 88

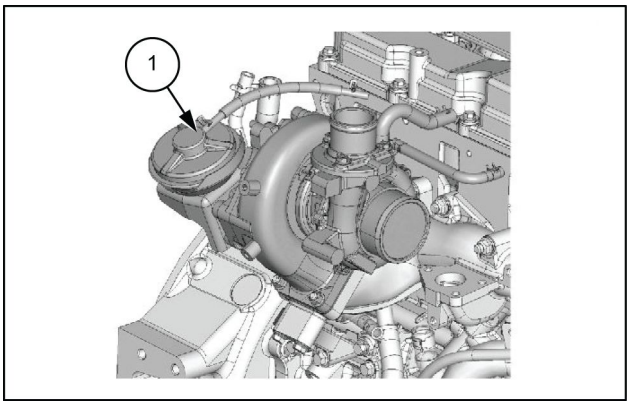
Turbocharger assembly installation

1. Install the turbocharger assembly **(1)** to the exhaust manifold.

   Tightening torque: **35 N·m** (**26 lb ft**)

NOTICE: *Do not hold the actuator rod.*

- Fill with **0.5 cm³** (**0.031 in³**) of engine oil from the fuel filler.



LPIL12CX00669AB 89

2. Install the water feed pipe to the oil cooler.

   Tightening torque: **41 N·m** (**30 lb ft**)

3. Connect the water feed pipe to the turbocharger assembly .

   Tightening torque: **35 N·m** (**26 lb ft**)

4. Install the oil feed pipe **(1)** to the oil cooler assembly.

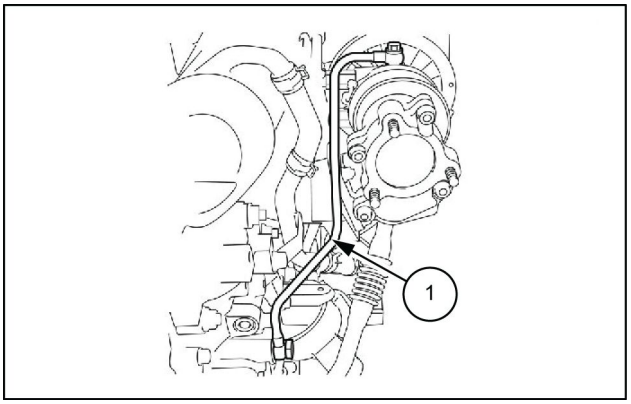
5. Connect the oil feed pipe **(1)** to the turbocharger assembly.

   Tightening torque: **35 N·m** (**26 lb ft**)

6. Install the oil feed pipe **(1)** to the oil cooler assembly.

7. Connect the oil feed pipe **(1)** to the turbocharger assembly.

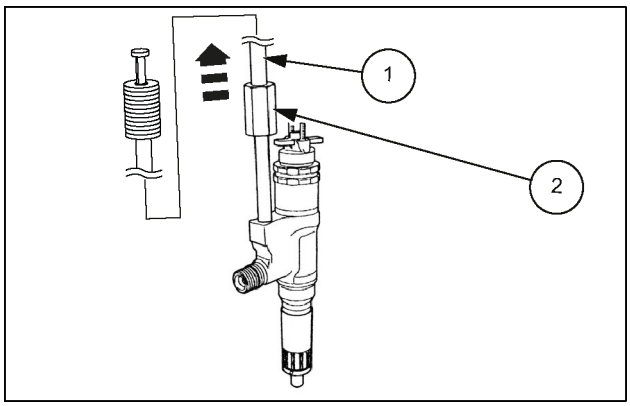
   Tightening torque: **23 N·m** (**17 lb ft**) Eyebolt



LPIL12CX00670AB 90

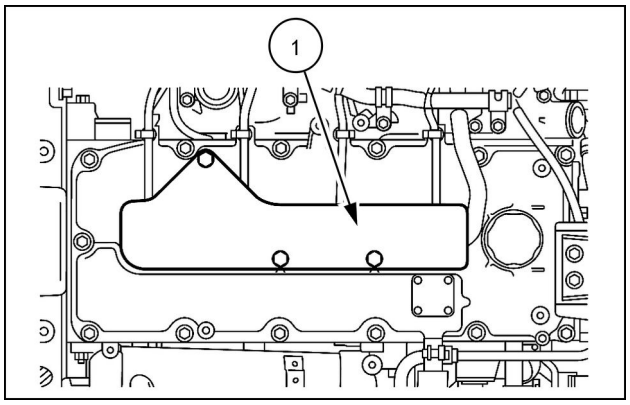
Fuel injectors - Special tools

Item	Isuzu reference	CASE CONSTRUCTION tool number	Description
1	5-8840-0019-0	**380002602**	Sliding hammer
2	5-8840-2826	**380002601**	Injector remover



SMIL14CEX2679AB 1

3. Install the cover **(1)** to the cylinder head cover.



SMIL15CEX9795AB 8

Battery ground cable connect

1. Connect the battery ground cable to the battery.

Engine - 10

Selective Catalytic Reduction (SCR) exhaust treatment - 500

CX130D Crawler excavators LC version (TIER4 FINAL) - EU Market
CX130D Crawler excavators Standard w/Blade version (TIER 4 FINAL) - EU market
CX130D Long Reach Crawler excavators LC Long Reach (Tier 4 FINAL) - EU Market

Index

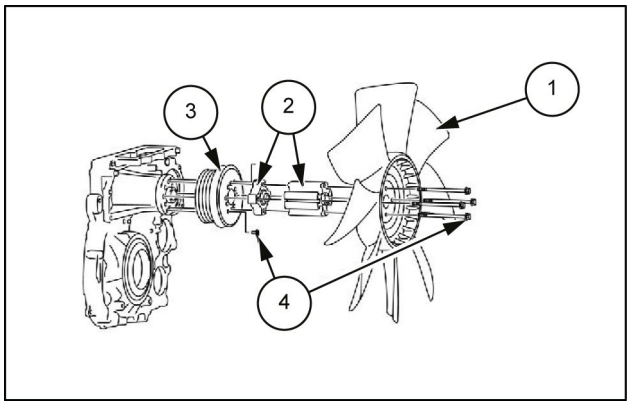
Engine - 10

Selective Catalytic Reduction (SCR) exhaust treatment - 500

Cooling fan removal

1. Remove the cooling fan **(1)** from the fan pulley **(3)**.
   - Remove the spacer **(2)** at the same time.
2. Remove the fan pulley **(3)** from the water pump assembly.

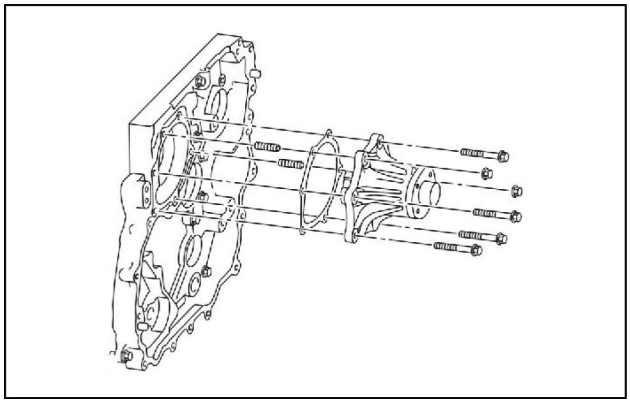
4. Bolt



LPIL12CX00204AB 3

Water pump assembly removal

1. Remove the water pump from the timing gear case.
   - Remove the water pump installation nut and bolt.
   - Remove the water pump assembly and gasket.

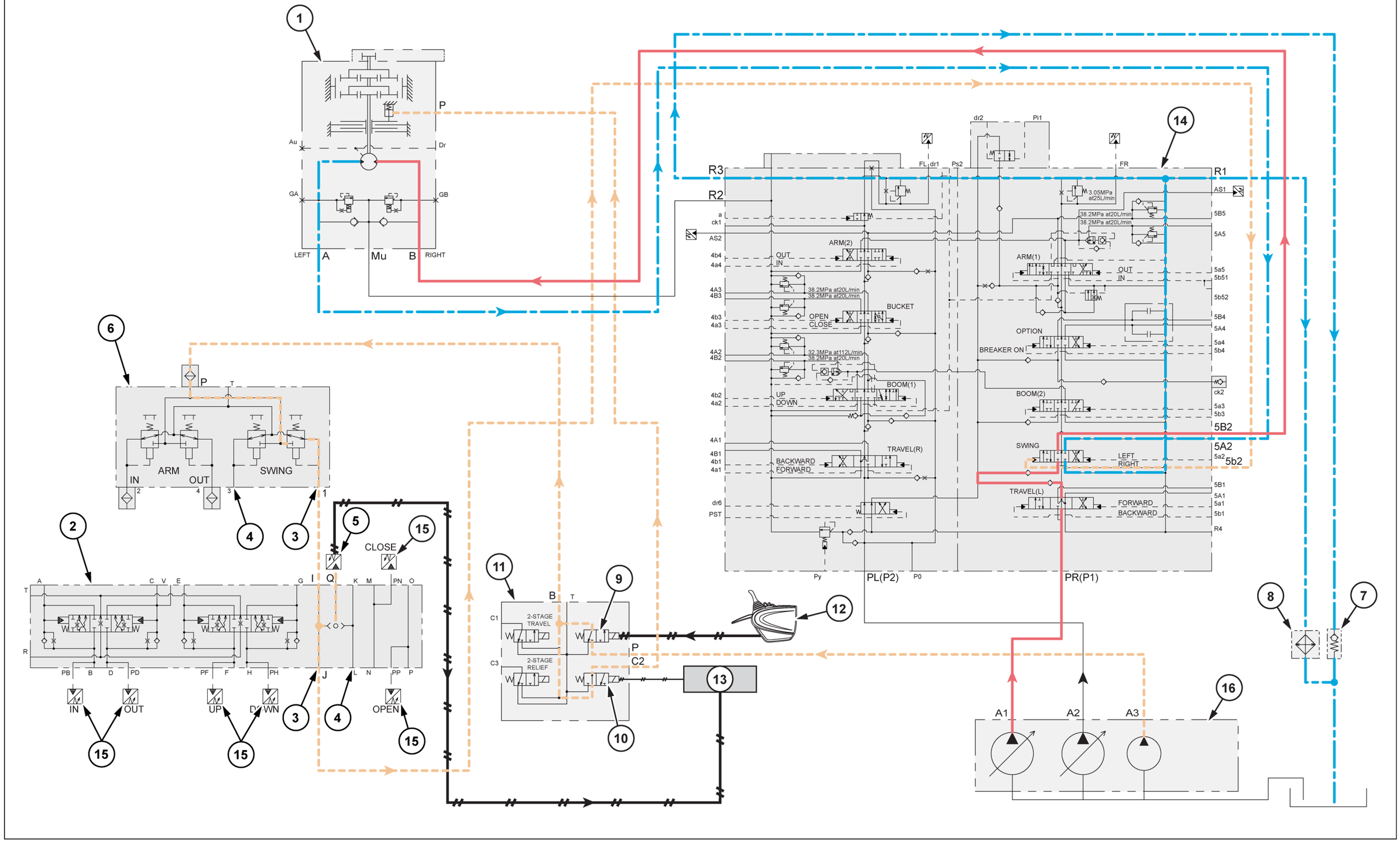


LPIL12CX00243AA 4

Index

Engine - 10

Engine lubrication system - 304


1
P
Au
Dr
GA
GB
LEFT
A
Mu
B
RIGHT
14
R3
R2
R1
dr2
Pi1
FL
dr1
Ps2
FR
AS1
AS2
a
ck1
3.05MPa at25L/min
38.2MPa at20L/min
38.2MPa at20L/min
5B5
5A5
ARM(2)
OUT
IN
4b4
4a4
ARM(1)
5a5
5b51
5b52
4A3
4B3
38.2MPa at20L/min
38.2MPa at20L/min
BUCKET
OPEN
CLOSE
4b3
4a3
5B4
5A4
OPTION
BREAKER ON
5a4
5b4
4A2
4B2
32.3MPa at112L/min
38.2MPa at20L/min
ck2
BOOM(1)
UP
DOWN
4b2
4a2
BOOM(2)
5a3
5b3
5B2
4A1
TRAVEL(R)
SWING
LEFT
RIGHT
5A2
5a2
5b2
4B1
4b1
4a1
BACKWARD
FORWARD
5B1
TRAVEL(L)
5A1
5a1
FORWARD
BACKWARD
5b1
dr6
PST
R4
Py
PL(P2)
P0
PR(P1)
6
P
T
ARM
SWING
IN
OUT
2
4
3
1
2
A
C
V
E
G
I
K
M
PN
O
T
R
W
PB
B
D
PD
PF
F
H
PH
J
L
N
PP
P
IN
OUT
UP
DOWN
OPEN
CLOSE
5
15
3
4
15
15
15
11
B
T
C1
2-STAGE TRAVEL
C3
2-STAGE RELIEF
9
P
C2
10
12
13
8
7
16
A1
A2
A3

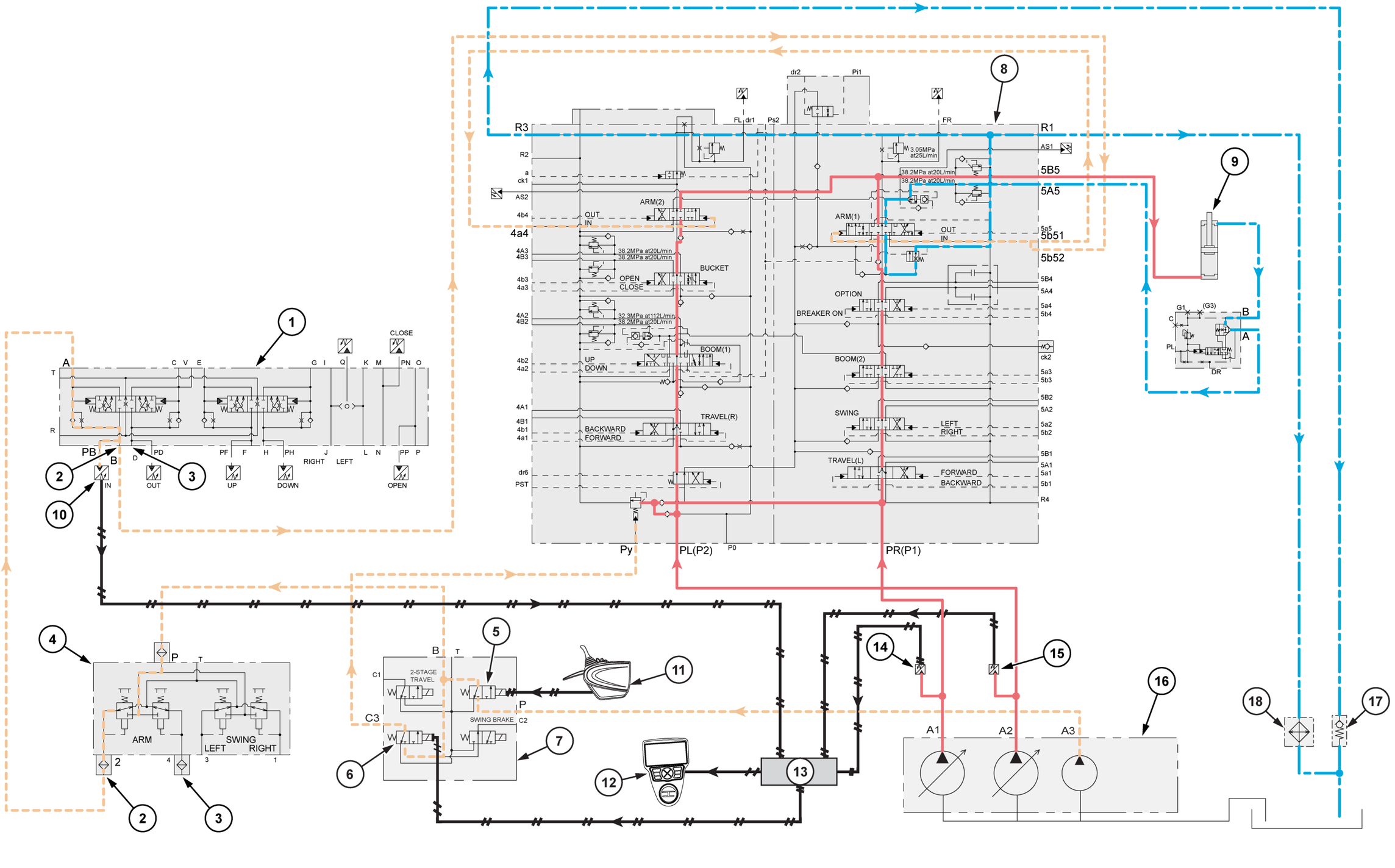
Hydraulic systems - Hydraulic schema - Arm circuit

CX130D Crawler excavators LC version (TIER4 FINAL) - EU Market	WE
CX130D Crawler excavators Standard w/Blade version (TIER 4 FINAL) - EU market	WE

1. Arm (in)
2. Arm (out)
3. Cushion valve
4. Remote control valve (arm, swing)
5. Lever lock
6. Boost pressure relief
7. 4 stack solenoid valve
8. Control valve
9. Console lever lock switch
10. Monitor display
11. Main computer
12. Arm HBCV spool
13. Arm HBCV poppet
14. Hydraulic pump
15. Oil cooler
16. Check valve
17. Arm cylinder
18. Load holding valve check

ARM-OUT CIRCUIT (WITH HBCV)

By operating the remote control valve to the arm-out side, the pilot pressure oil is fed via the cushion valve to the control valve 5a5 port and 4b4 port and switches the arm **(1)** and **(2)** spools to the out side.
The discharge oil from hydraulic pump A1 enters the control valve PR (P1) port and is fed from the center bypass oil path to the arm **(1)** spool and merges downstream of the arm **(1)** spool.
The discharge oil from hydraulic pump A2 enters the control valve PL (P2) port and is fed from the center bypass oil path to the arm **(2)** spool.
Switching the arm spool lets the oil flow through the load holding valve check valve and into the arm cylinder rod side, carrying out the arm-out operation.
When the circuit has an HBCV , switching the arm spool lets the oil flow through the load holding valve check valve, push open the arm cylinder HBCV check valve, and flow into the rod side, then the arm-out operation is carried out.
The arm cylinder bottom side return oil goes through the arm **(1)** **(2)** spools and returns to the hydraulic tank.



SMIL15CEX4326JB 5

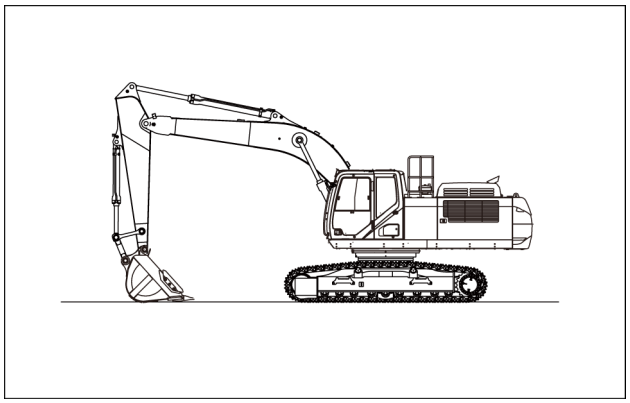
Hydraulic systems - Service instruction Measurement method

ENGINE SPEED

Measurement method

1. No load operation mode at high idle: SP mode, H mode and A mode speed.
2. Operation mode at low idle: SP mode speed.

NOTE: *Bucket on ground.*



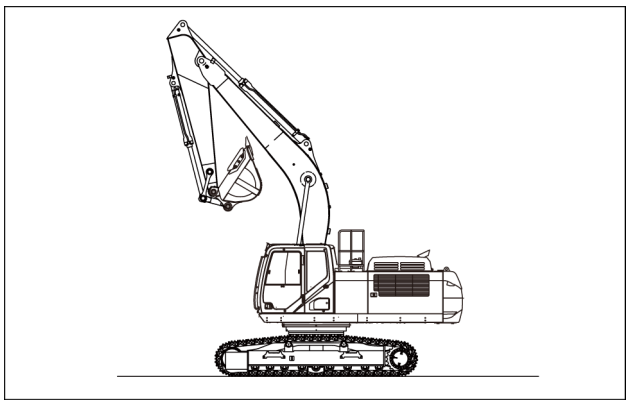
SMIL14CEX6641AA 1

PRESSURE AT EACH PART

Measurement method

1. Engine at high idle.
2. Oil temperature is at **45 – 55 °C** (**113 – 131 °F**).
3. During traveling or swinging, measure at the position between the counter balance - motor.
4. When measuring the overload pressure, measure the main relief pressure before the adjustment. Then, increase the main pressure to the value higher than the overload pressure, and measure the overload pressure. After the measurement, reset the main pressure to the pre-determined pressure.

NOTE: *Operate each attachment in a traveling posture.*

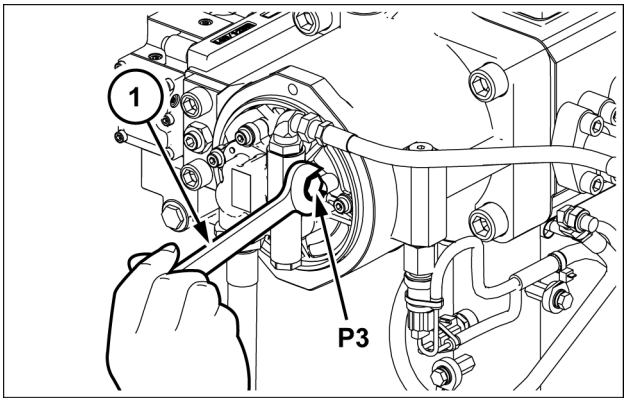


SMIL14CEX6642AA 2

PILOT PRESSURE MEASUREMENT

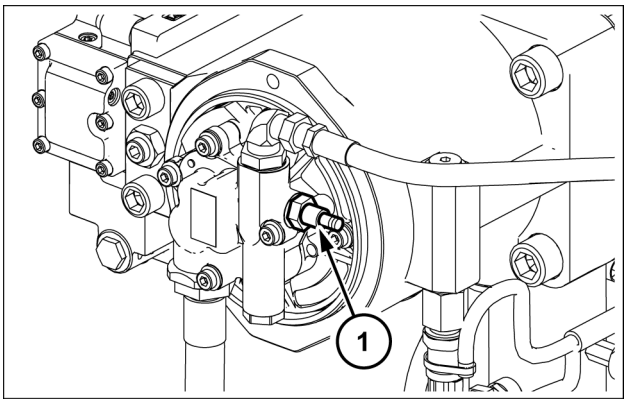
Pressure gauge installation

Remove the plug using the wrench **(1)** in order to install a pressure gauge to the pressure measuring port **(P3)** of the pump.



SMIL14CEX5084AB 26

Install the adapter **(1)**.

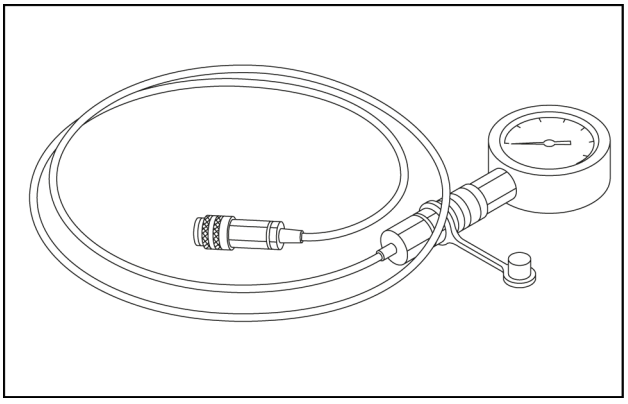


SMIL14CEX5085AB 27

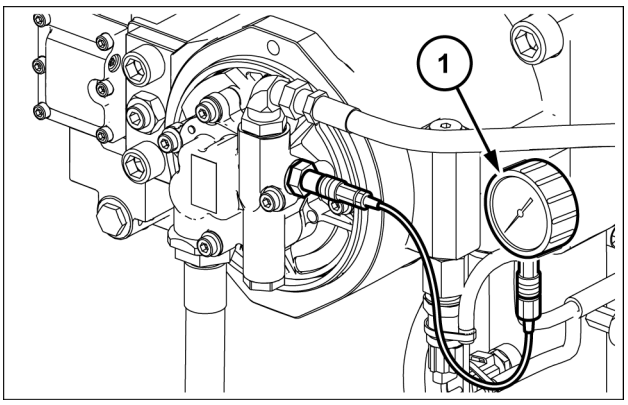
Install the pressure gauge **(1)** to measure the pressure.

Engine speed	**2000 RPM**
Work mode	SP mode
Oil temperature	**45 – 55 °C** (**113.0 – 131.0 °F**)
Measuring port	P3 port
Set pressure	**3.92 MPa** (**568.60 psi**)

Pressure gauge port size	G1/4 for **10 MPa** (**1450 psi**)



SMIL14CEX2094AA 28



SMIL14CEX5086AB 29

Contents

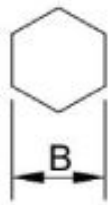
Hydraulic systems - 35

Reservoir, cooler, and filters - 300

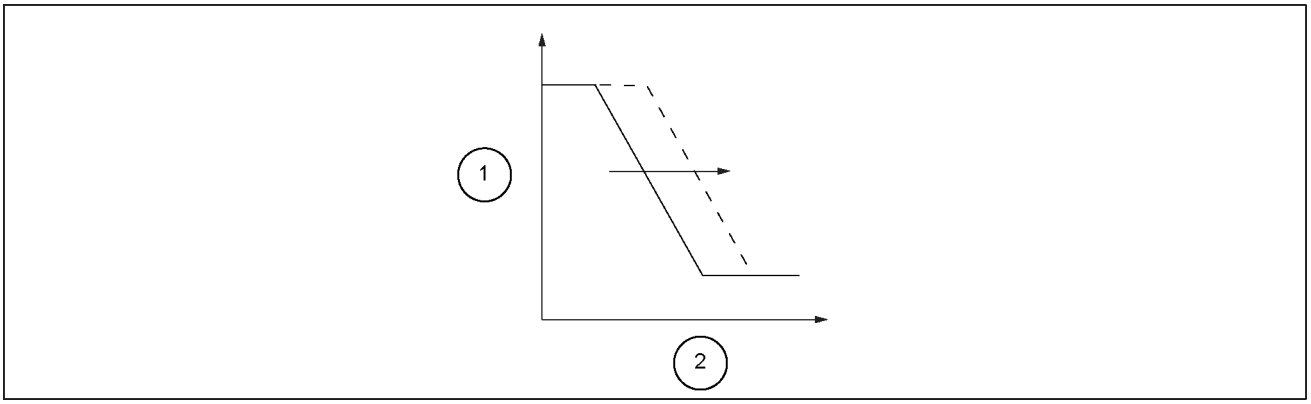
Pump - Tool description

The following table indicates tools necessary for assembly and disassembly of the K7V pump.

Tool name	B	Hexagon socket head bolt	ROH plug VP plug (PF screw)	Hexagon socket head locking screw
Hexagon wrench	4	M5	-	M8
	5	M6	-	M10
	6	M8	G1/4	M12 M14
	8	M10	G3/8	M16 M18
	10	M12	G1/2	M20
	14	M16 M18	G3/4	-
Closed wrench Socket wrench Double-head (single-head) wrench	19	M12	G1/4	-
	24	M16	-	-
	41	M18	G1	-
Monkey wrench	-	Medium size x1		
Screwdriver	-	Medium-sized screwdriver x2		
Hammer	-	Plastic hammer x1		
Pliers	-	For stop ring, TSR-160		
Steel rod	-	Diameter **4 mm** (**0.157 in**) 4 or less Lenght **100 mm** (**3.937 in**)		
Torque wrench	-	With adjustable specified torque tightening		



4. Flow control feature adjustment
   1. Discharge flow Q
   2. Command current I



SMIL14CEX2196EB 5

Loosen the hexagonal nut **(801)** and adjust by tightening (or loosing) the hexagon socket head retaining screw **(924)**.
The control diagram shifts right when the hexagon socket head retaining screw is tightened as shown in the foregoing figure.

Appendix table 1. List of regulator adjustment amounts

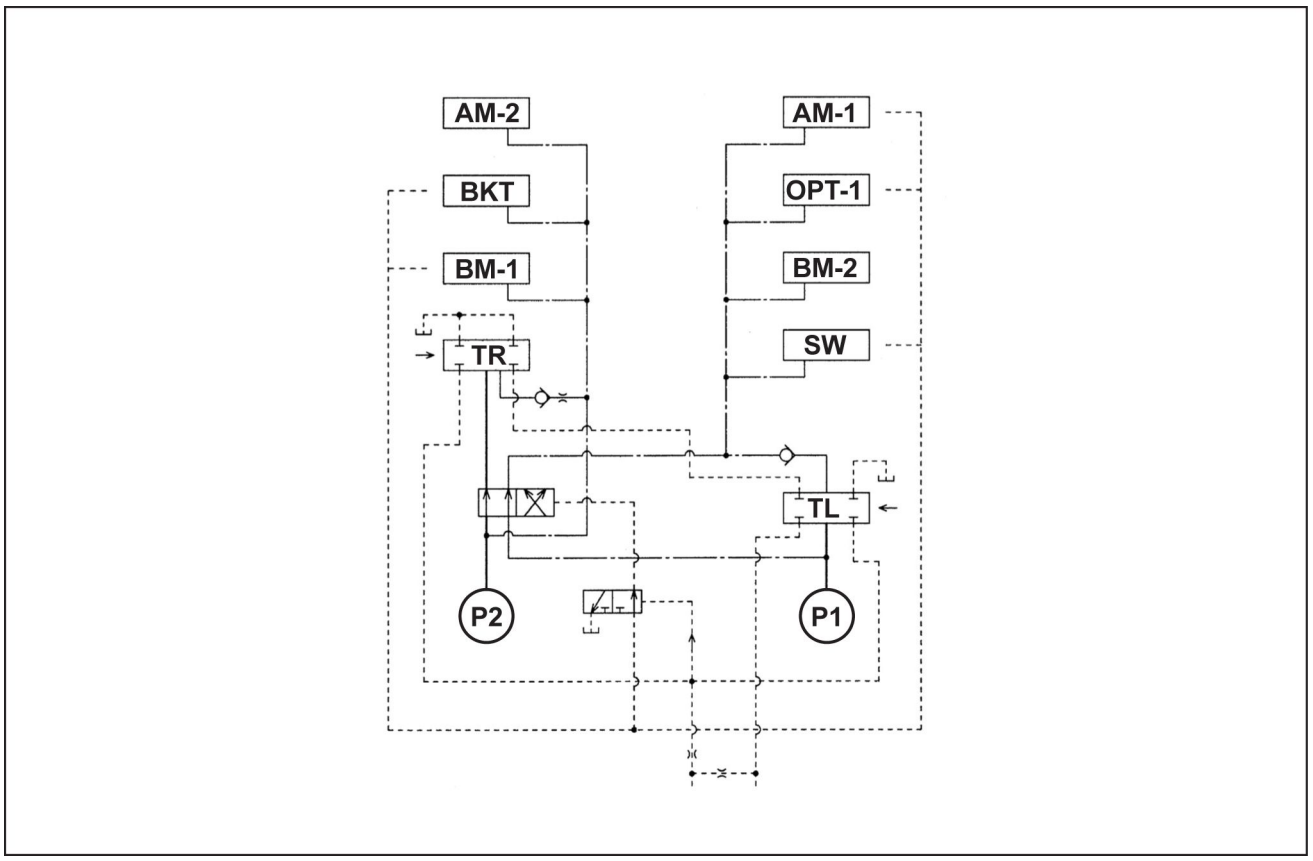
Number of rotation			**2000 RPM**
Maximum flow adjustment		Adjusting screw **(954)** tightening amount (rotation) For details see **Pump - Sectional view (35.106)**	+1/4
		Flow change amount	**-5.40 L/min** (**-1.43 US gpm**)
Minimum flow adjustment		Adjusting screw **(953)** tightening amount (rotation) For details see **Pump - Sectional view (35.106)**	+1/4
		Flow change amount	**-3.90 L/min** (**-1.03 US gpm**)
Input horsepower adjustment	Outer spring adjustment	Adjusting screw **(628)** tightening amount (rotation) For details see **Pump - Sectional view (35.106)**	+1/4
		Compensation control start pressure change amount	**+1.88 MPa** (**272.69 psi**)
		Input torque change amount	**50.00 N·m** (**36.88 lb ft**)
		A	1.59
	Inner spring adjustment	Adjusting screw **(627)** tightening amount (rotation) For details see **Pump - Sectional view (35.106)**	+1/4
		Flow change amount	**13.80 L/min** (**3.65 US gpm**)
		Input torque change amount	**53.30 N·m** (**39.31 lb ft**)
Flow control feature adjustment		Adjusting screw **(924)** tightening amount (rotation) For details see **Pump - Sectional view (35.106)**	+1/4
		Flow control start current value change amount (mA) (proportional valve secondary pressure)	**26.0 MPa** (**3771.3 psi**)
		Flow change amount	**-18.50 L/min** (**-4.89 US gpm**)

Main control valve - Dynamic description

Straight travel circuit

This circuit is for maintaining straight travel even if there is compound operation of an actuator other than travel (AM, BM, BKT, SW, OPT-1) during straight travel.

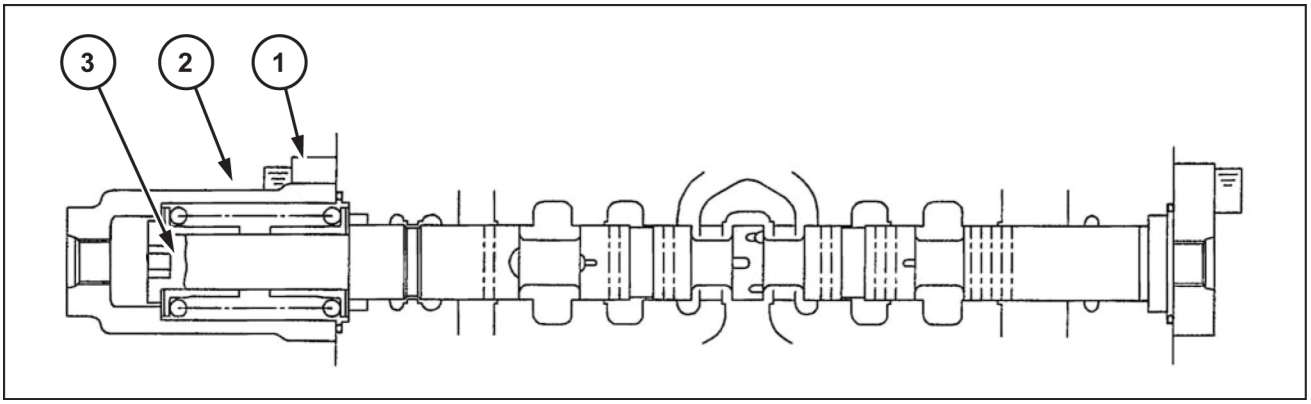
1. When operating the left and right travel plungers and travelling straight (See Fig. **3**)
   The travel signal line is blocked by the plunger switchover and the PST pilot pressure operates on the straight travel signal switchover spool. This switches the spool and connects the plunger switching pilot signal path for other than travel and the straight travel switchover valve pilot chamber. For the sake of neutrality for operations other than travel, the pilot pressure is not raised, the straight travel switchover valve does not operate, the oil flowing in from the P1 pump is supplied to TL and the oil flowing in from the P2 pump is supplied to TR, and the vehicle travels straight.



SMIL15CEX6196FB 1

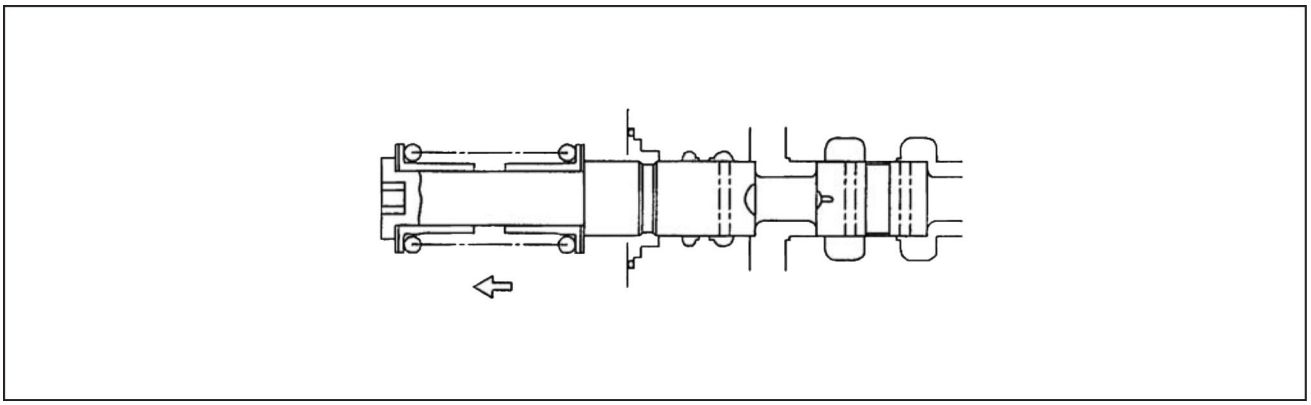
Stacked control valves - Disassemble

Main plunger section



SMIL15CEX6039EB 1

1. Remove the socket head bolt **(1)** and remove the cover **(2)**.
   - Socket head bolt
     Hex socket diameter: **6 mm** (**0.236 in**)
     Tightening torque: **30 N·m** (**22.127 lb ft**)
   - Be careful as the cover varies depending on the installation location.
   - Before installing the cover for reassembly, confirm that there is an O-ring mounted at the housing opening.



SMIL15CEX6040EB 2

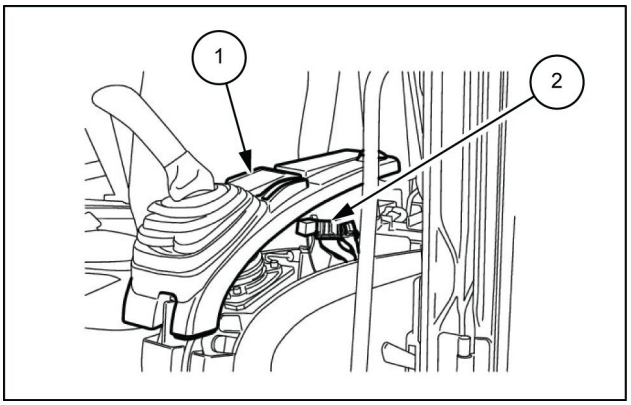
2. Remove the plunger as a subassembly. Do not remove the plunger all at once. Slowly rotate it while checking the states of contact with the housing to remove it.

Index

Hydraulic systems - 35

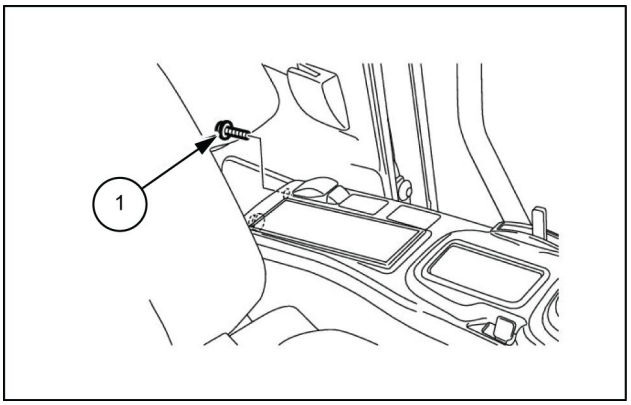
Pilot system - 357

9. Install the 3 connectors **(2)** to mount the console top cover **(1)**.



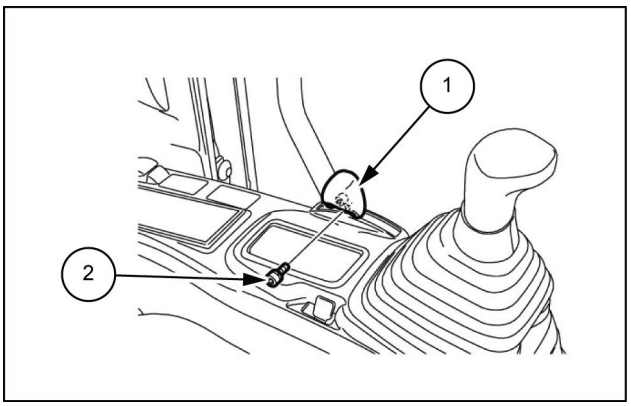
LPIL12CX01909AB 9

10. Tighten the 2 screws **(1)** of the console top cover with a Phillips screwdriver or a box wrench [**10 mm**].



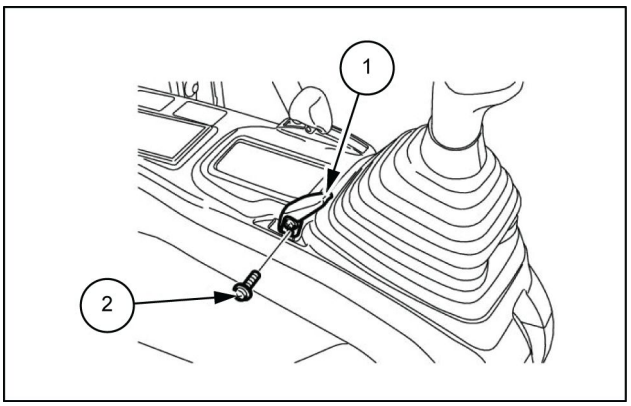
LPIL12CX01908AB 10

11. Tighten the 2 bolts **(2)** with a hexagon wrench [**5 mm**] to mount the grip **(1)** of the gate lock lever.



LPIL12CX01907AB 11

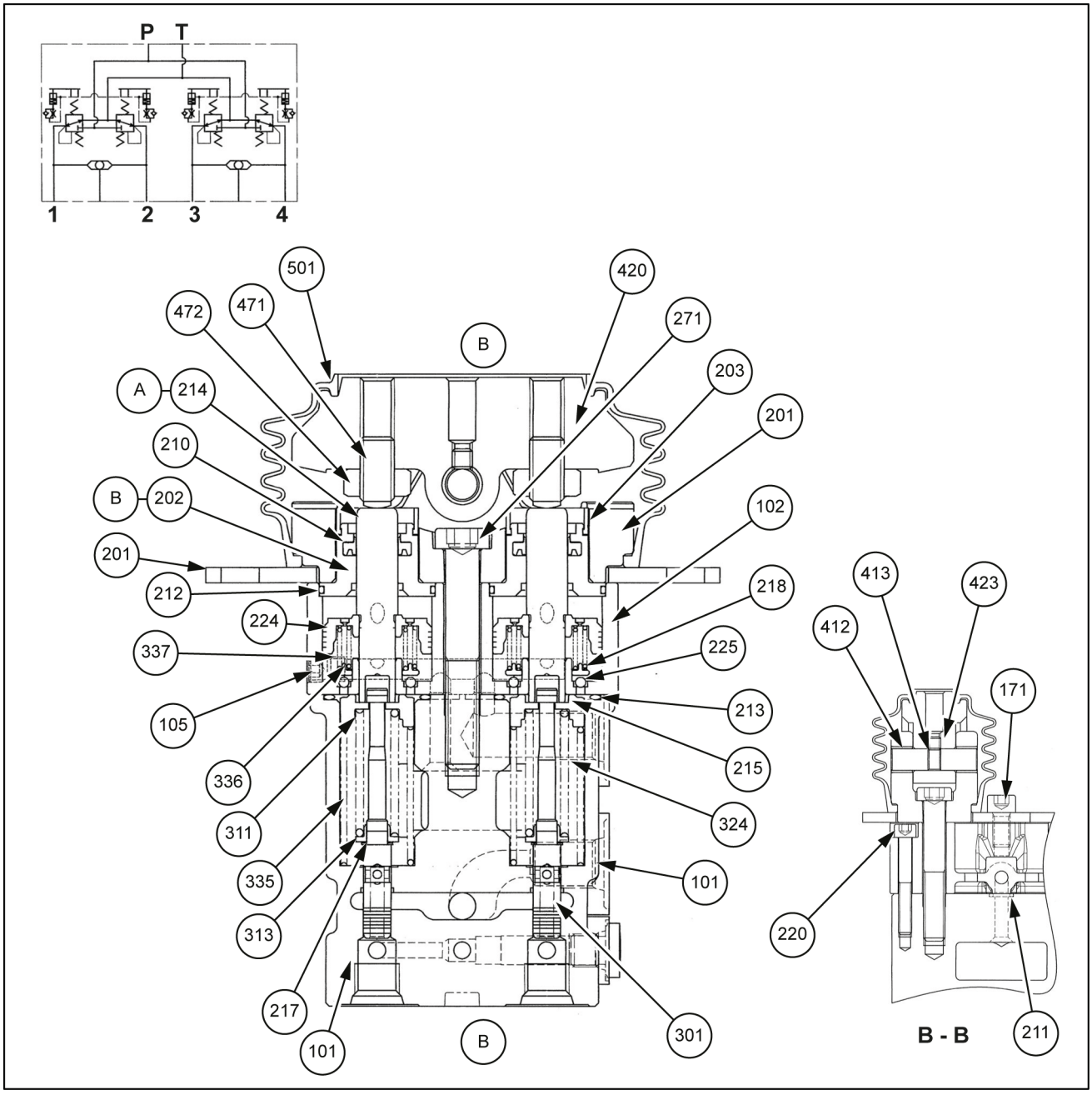
12. Tighten the 2 screw **(2)** with a Phillips screwdriver to mount the handle of the tilt lever **(1)**.



LPIL12CX01906AB 12

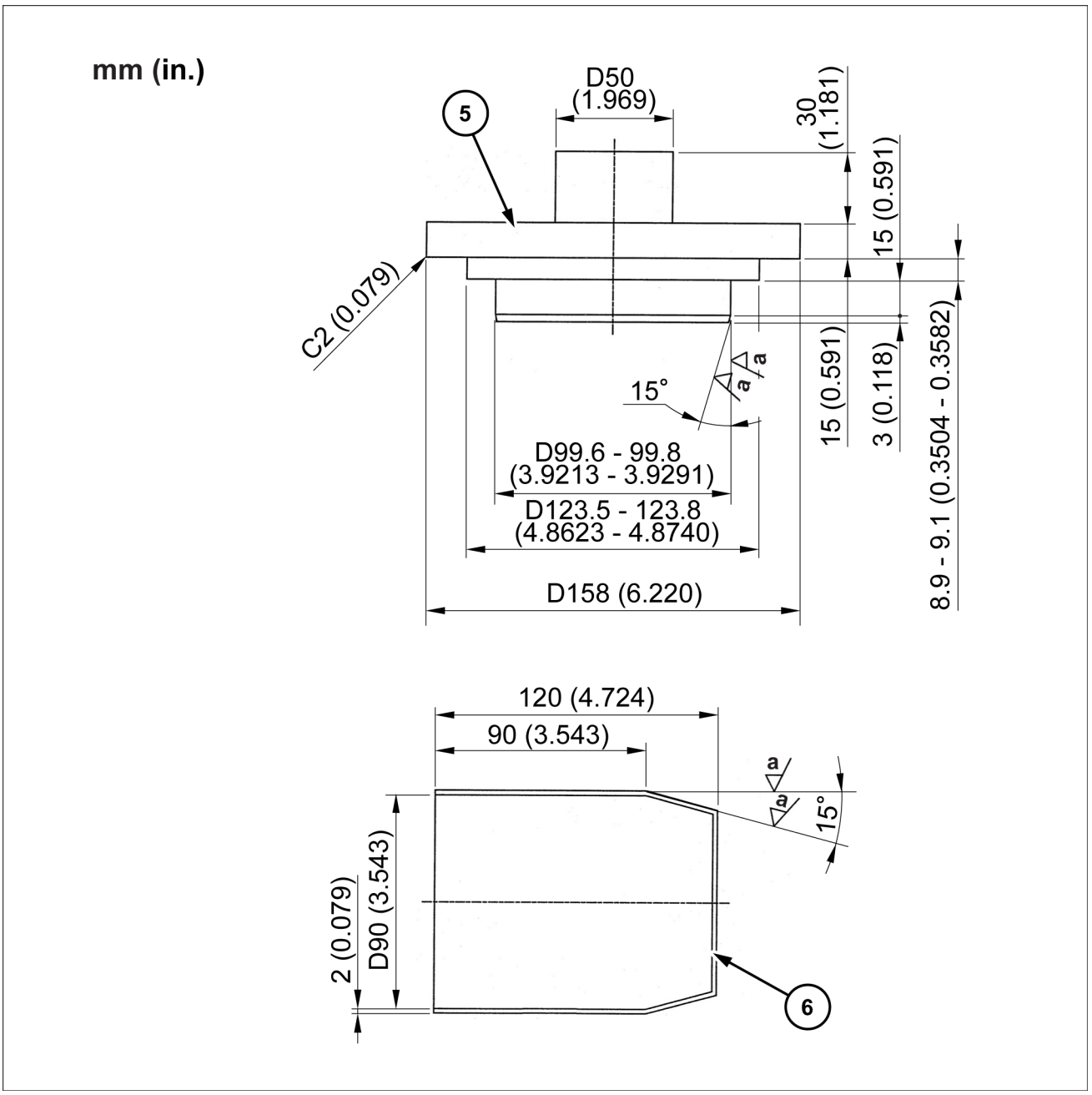
Pedal control - Sectional view

Structural diagram



SMIL14CEX3855GB 1

101. Casing (Quantity 1)
102. Casing (damper) (Quantity 1)
105. Plug (Quantity 1)
171. Hexagon socket head bolt (Quantity 2)
201. Cover (Quantity 2)
202. Plug (Quantity 4)
203. Grease cup (Quantity 4)
204. Cover 2 (Quantity 1)
210. NHU packing (Quantity 4)
211. O-ring (Quantity 2)
212. O-ring (Quantity 4)
213. O-ring (Quantity 4)
225. Steel ball (Quantity 12)
271. Hexagon socket head bolt (Quantity 2)
301. Spool (Quantity 4)
311. Spring seat (Quantity 4)
313. Washer 3 (Quantity 4)
324. Spring (Quantity 4)
335. Spring (Quantity 4)
336. Spring (Quantity 4)
337. Spring (Quantity 4)
412. Bushing (Quantity 4)
413. Camshaft (Quantity 2)
420. Cam (Quantity 2)



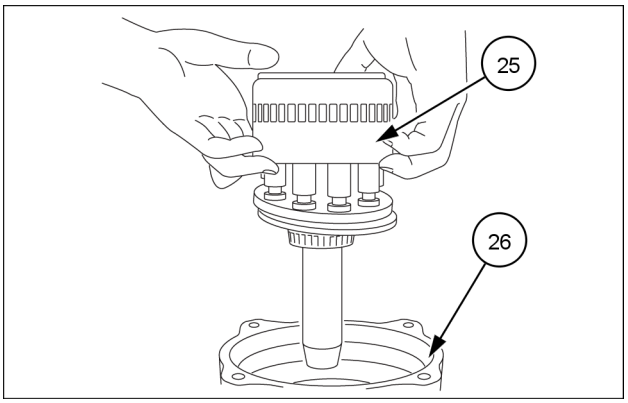
SMIL15CEX2914GB 2

NOTE: *All the dimensions in figure are in mm (in).*

NOTE: *a=* ***0.8 µm***

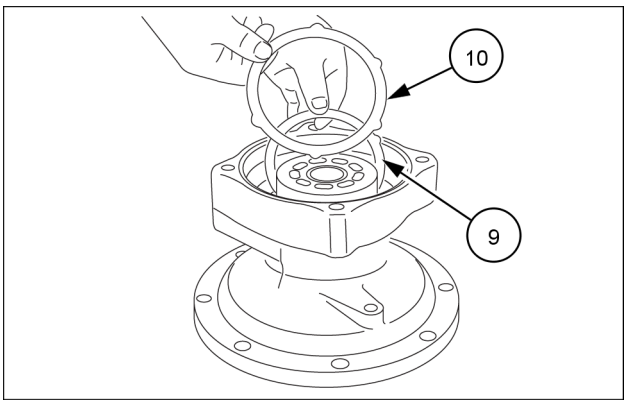
5. Oil seal assembly jig 2
6. Pinion shaft assembly jig

9. Installation of cylinder assembly
   Grasp the end surface of the cylinder **(25)** by hand and gently install the cylinder assembly into the housing **(26)**. At this time, use seal protector on the cylinder spline section.
   - When the cylinder assembly is installed, the spline shaft of the cylinder will stick out from the bottom surface of the housing, so place an object of about **30 – 50 mm** (**1.181 – 1.969 in**) under the surface.
   - Check that the receiving spring **(5)** is down in the spot facing section of the return plate **(7)**.



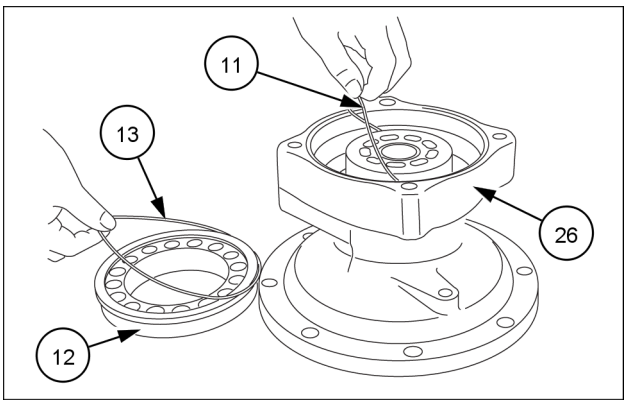
SMIL15CEX4790AA 9

10. Install the friction plates **(9)** and partner plates **(10)**.
    - Apply hydraulic oil to both sides of each of these plates.



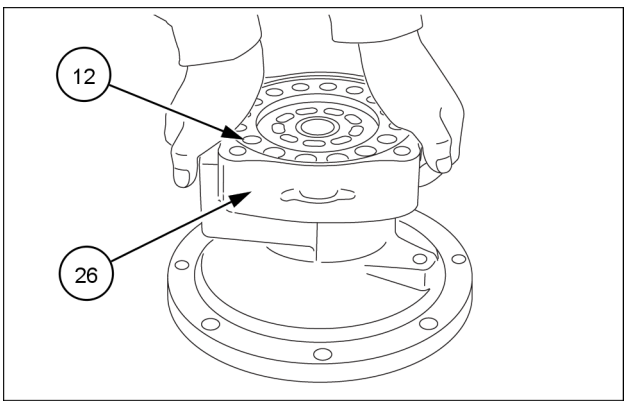
SMIL15CEX4791AA 10

11. Install the O-ring **(11)** in the housing **(26)** and the O-rings **(13)** in the piston **(12)**.
    - Apply grease to the O-rings.

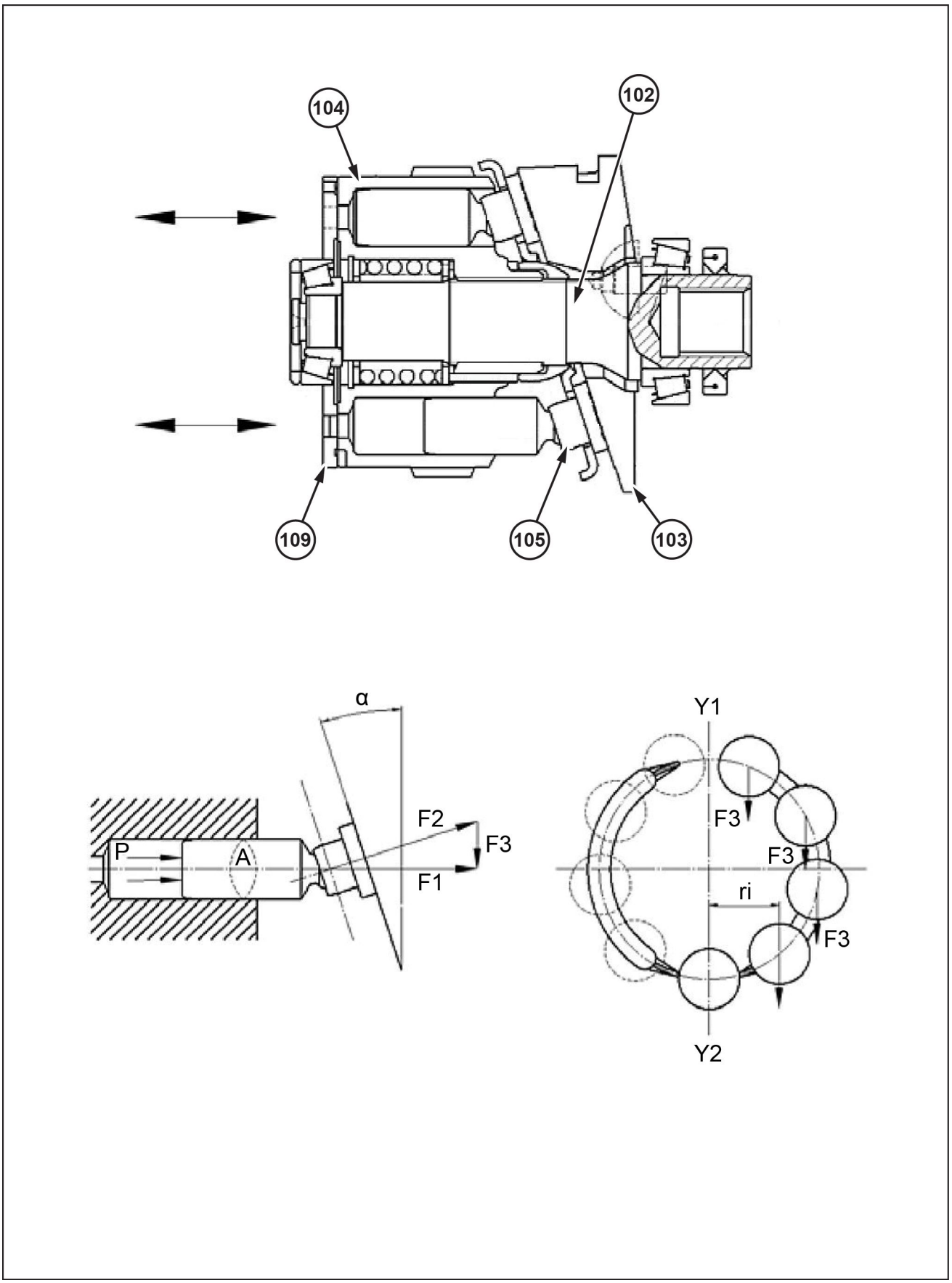


SMIL15CEX4792AA 11

12. Installation of brake piston
    Apply hydraulic oil to the outer circumference sliding section of the piston **(12)** and install it in the housing **(26)**.
    - Stiffness occurs with the piston **(12)** due to the force-fitting effect of O-rings so lay the entire piston **(12)** horizontal and push the piston by hand all at once to install it.



SMIL15CEX4793AA 12



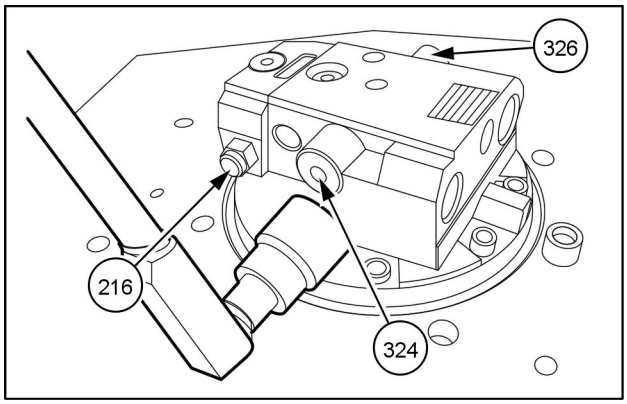
SMIL15CEX4750HB 2

102. Motor shaft
103. Swash plate
104. Cylinder block
105. Piston
109. Timing plate

Removal of rear flange

1. Invert the travel motor.
   (The motor side faces upward.)
2. Loosen the plugs **(324)** (2 pieces) and the plugs **(326)** (3 pieces).

NOTE: *the purpose of this work is to remove the plugs easily when the inside of rear flange is disassembled.*
At this time, make sure that the plugs are loosened so that they may be removed by hand.
If not disassembling the inside of rear flange, do not loosen the plugs.

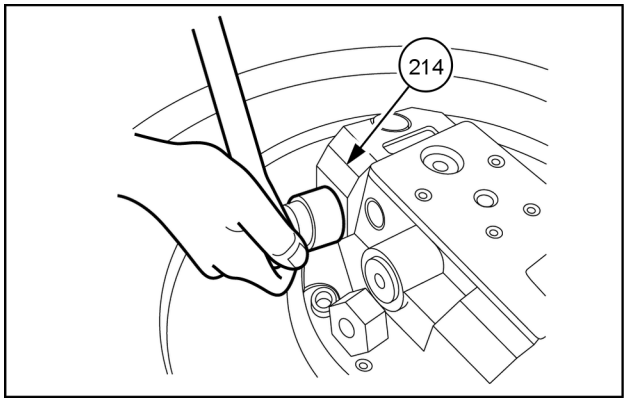


SMIL15CEX4111AA 16

3. Loosen the plug **(216)** (1 piece) of SRV body **(214)** and the sleeves **(203)** (2 pieces) of relief assembly.

NOTE: *the purpose of this work is to remove the plug and the sleeves easily when the SRV body is disassembled.*
At this time, make sure that the plugs are loosened so that they may be removed by hand.
If not disassembling the SRV body, do not loosen the plug.

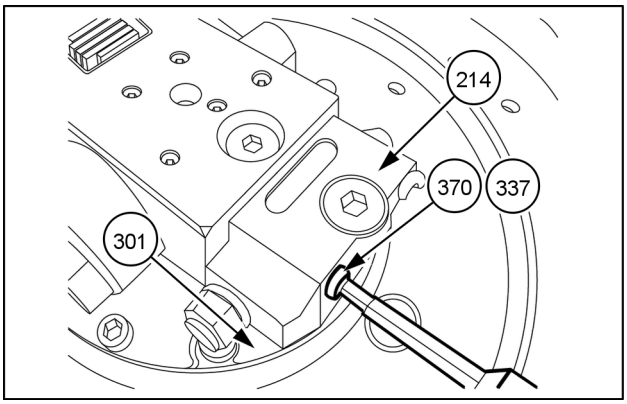
4. Loosen the hexagon socket head bolts **(370)** (4 pieces), and remove the body **(214)** from the rear flange **(301)**.



SMIL15CEX4112AA 17

5. Remove the O-rings **(337)** (2 pieces) from the rear flange.

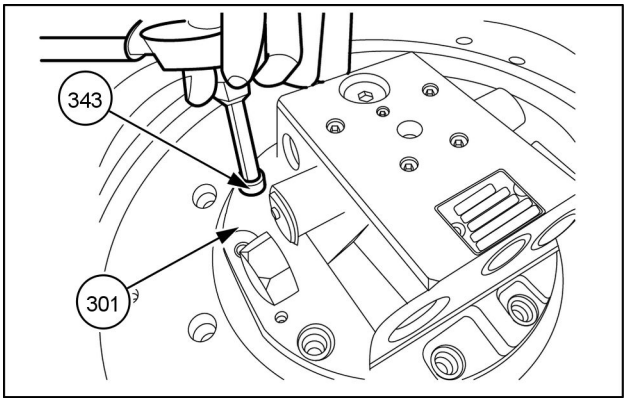
NOTE: *do not reuse the removed O-ring **(337)**.*



SMIL15CEX4113AA 18

6. Loosen the hexagon socket head bolts **(343)** (10 pieces) and remove them from the rear flange **(301)**.

NOTE: *make sure the hexagon socket head bolts **(343)** (10 pieces) are loosened evenly so that the rear flange may not be inclined, because the internal springs **(113)** will make it float gradually from the mating surface.*

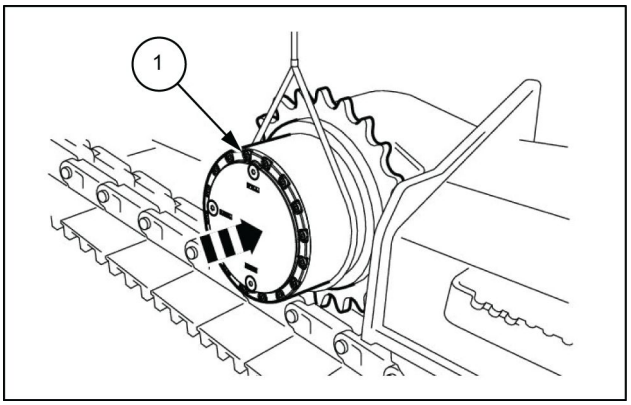


SMIL15CEX4114AA 19

Travel motor - Install

CX130D Crawler excavators Standard w/Blade version (TIER 4 FINAL) - EU market	WE
CX130D Long Reach Crawler excavators LC Long Reach (Tier 4 FINAL) - EU Market	WE

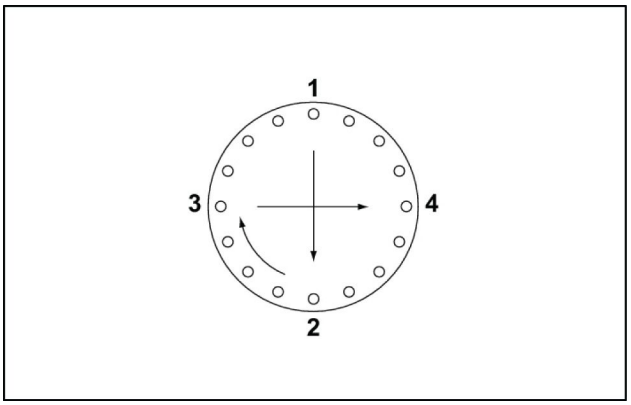
1. Install the travel motor to the lower frame as shown in the figure.
   - Pay attention to installation angle.



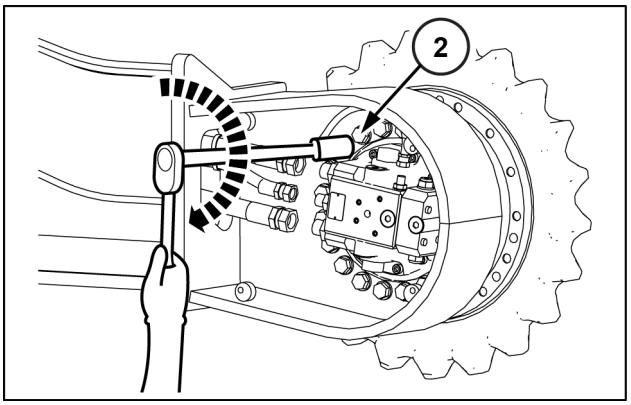
LPIL12CX01325AB 1

2. Apply **LOCTITE® 262™** to the thread area of all the 18 mounting bolts **(2)**.
   Tighten them top to bottom alternately so as to apply even diagonal tightening force with specified torque with a wrench [**24 mm**].

   Tightening torque: **M16**: **267 – 312 N·m** (**196.93 – 230.12 lb ft**)



LPIL12CX01326AB 2



SMIL15CEX4094AB 3

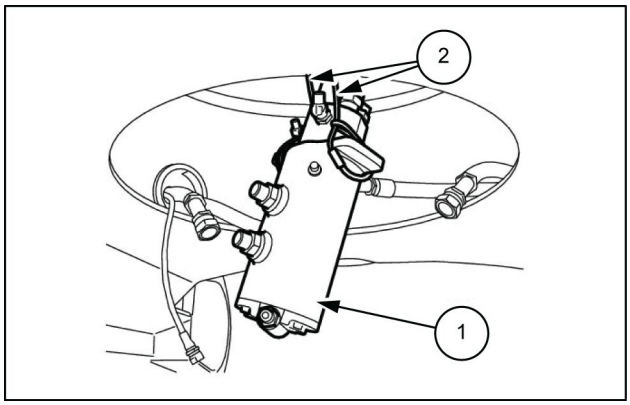
Hydraulic swivel - Install

CX130D Crawler excavators LC version (TIER4 FINAL) - EU Market	WE
CX130D Long Reach Crawler excavators LC Long Reach (Tier 4 FINAL) - EU Market	WE

Tighten bolts being installed to the specified torque.

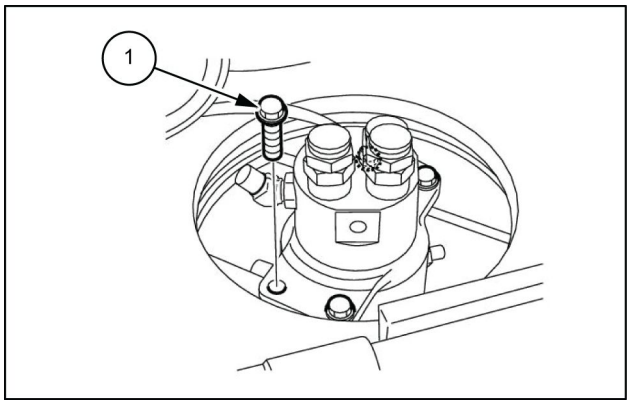
For bolts for which the torque is not specified, check the **Torque - Bolt and nut ()** .

1. Wrap the wire rope **(2)** around the center joint **(1)** and lift it with a liftcrane.



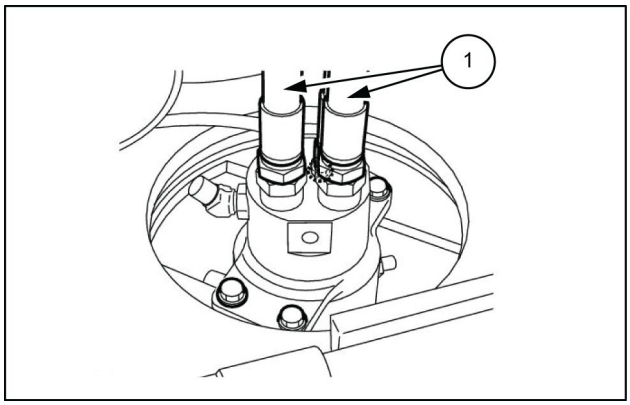
LPIL12CX01595AB 1

2. Use a wrench [**19 mm**] to tighten the 4 bolts **(1)** for the center joint.



LPIL12CX01593AB 2

3. Use a wrench [**36 mm**] to install the 4 travel hoses **(1)**.

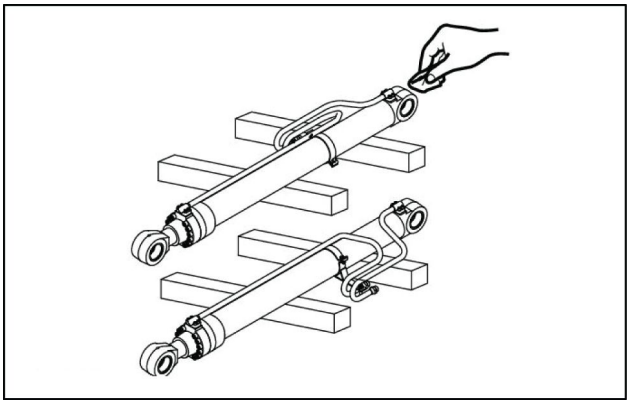


LPIL12CX01591AB 3

Boom cylinder - Install

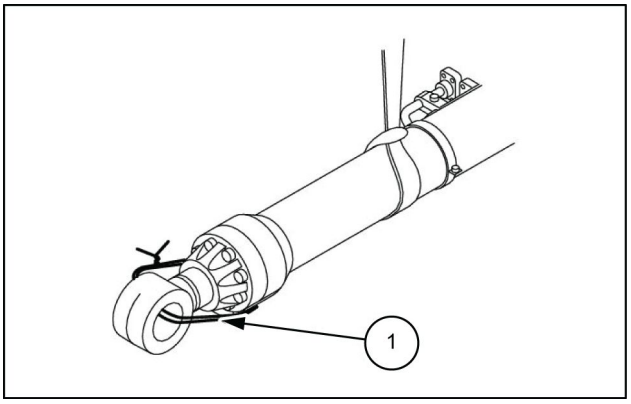
- When installing the bolts, tighten them to the specified torque.
- When the torque is not specified, check the “ **Torque - Bolt and nut ()** ”.

1. Clean each pin and pin hole.



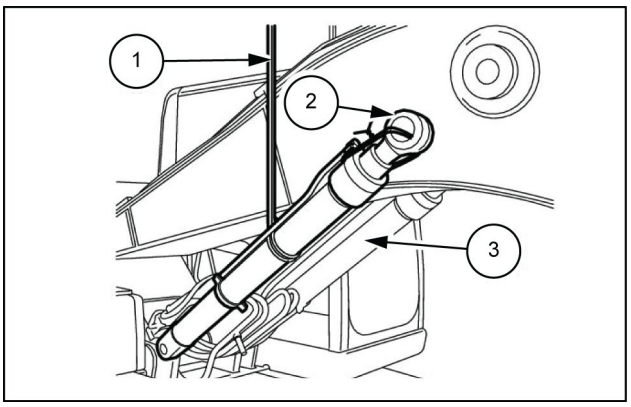
LPIL12CX01579AA 1

2. Tie the cylinder rods on the left and right sides with wire **(1)** so that they cannot come out.



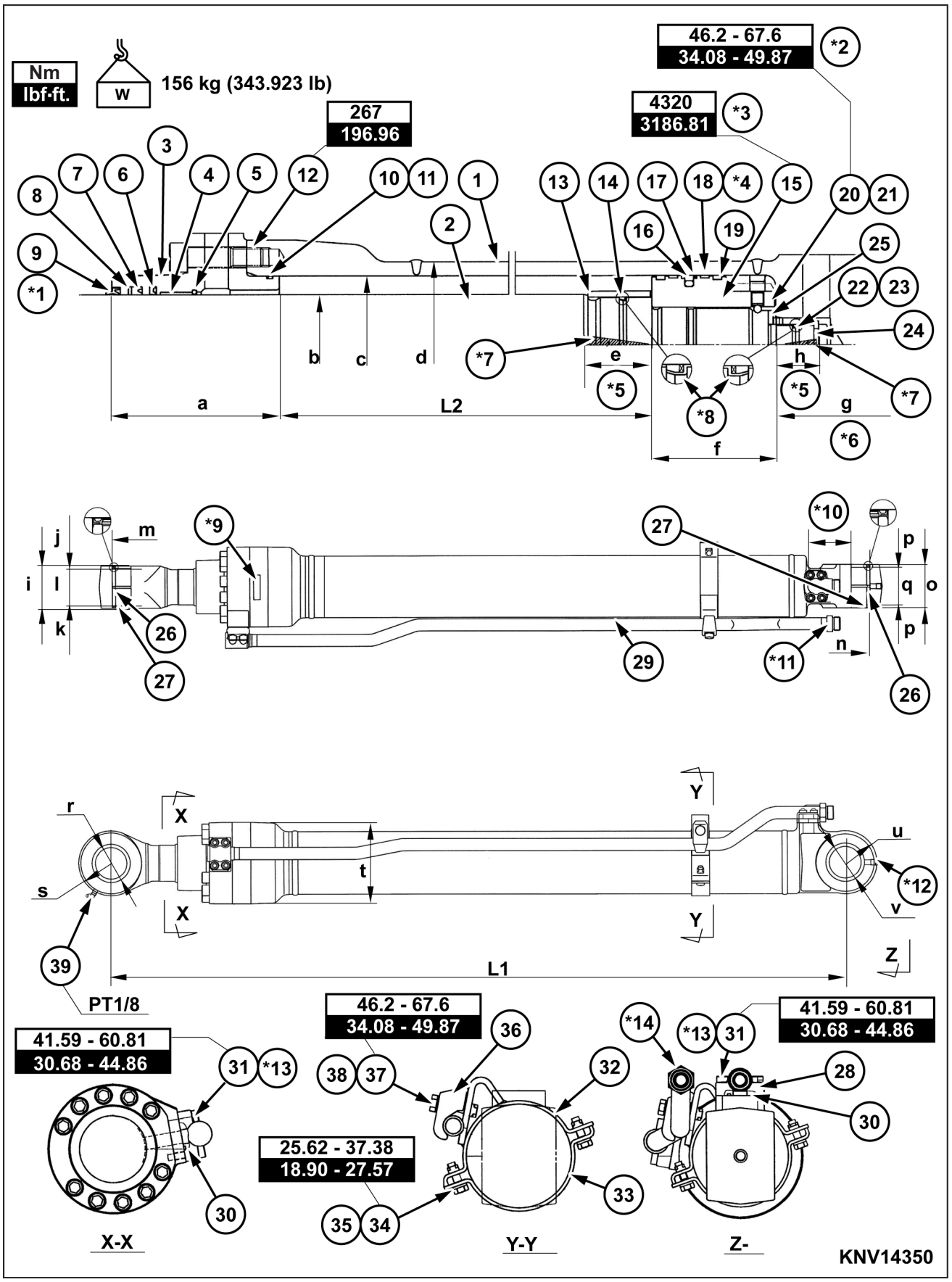
LPIL12CX01580AB 2

3. Use a liftcrane and nylon slings **(1)** to lift the right boom cylinder **(2)** and left boom cylinder **(3)**.



LPIL12CX01578AB 3

Dipper cylinder - Sectional view



SMIL15CEX4609HB 1

Index

Hydraulic systems - 35

Dozer blade cylinders - 741

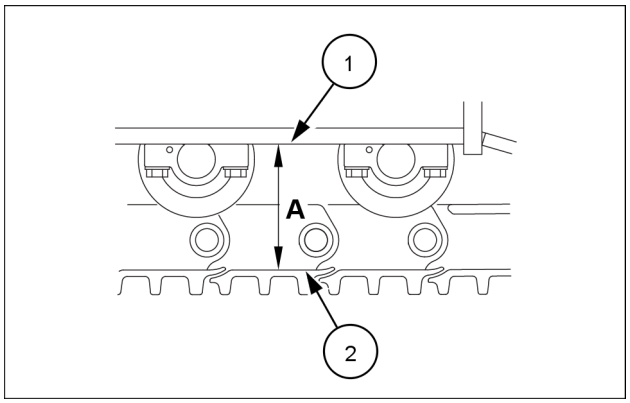
(*) See content for specific models

7. Adjust the tension so that the dimension A between the frame bottom **(1)** and the shoe plate top **(2)** hanging downmost may become as follows at the center of the lower side frame.

   Iron shoe: **260 – 280 mm** (**10.236 – 11.024 in**)

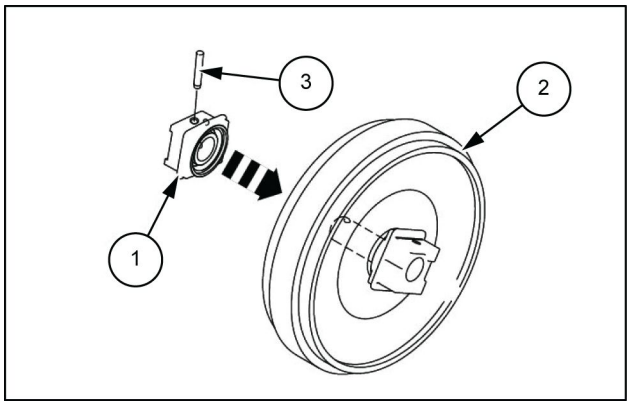
   Link chain: **240 – 260 mm** (**9.449 – 10.236 in**)

   On solid ground, it is best to allow a little more tension (a little less slack) as compared with the above values. On soft ground, sand, or ground with lots of gravel and cobbles, it is best to allow a little less tension (a little more slack) as compared with the above values.



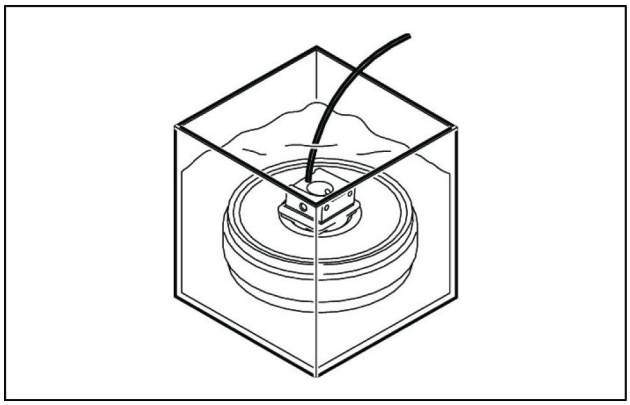
SMIL17CEX4925AA 7

11. Install the opposite side hub **(1)** on the roller **(2)** and fasten with the hub pin **(3)**.



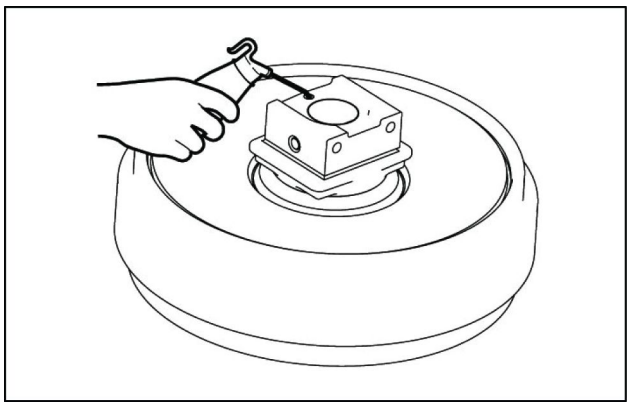
LPIL12CX01193AB 11

12. Inject compressed air [**0.2 MPa** (**29 psi**)] from the oil fill port and immerse in water to check that there are no leaks.



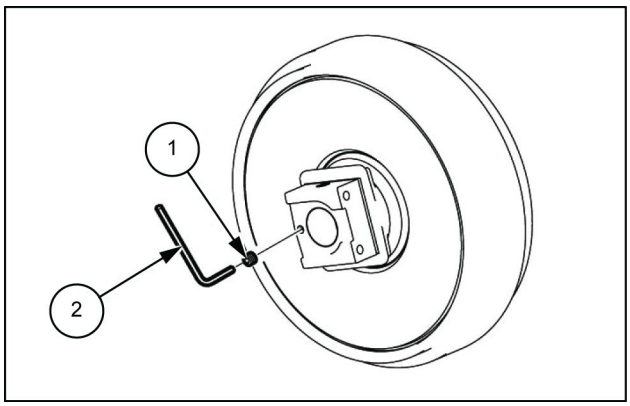
LPIL12CX01194AA 12

13. Fill engine oil (**150 cm³** (**9.15 in³**)) into the roller main unit.
    - The roller main unit can be very unstable, so be careful in securing it.



LPIL12CX01195AA 13

14. After filling the oil, use a hexagon wrench [**6 mm**] **(2)** to tighten the plug **(1)** with the nylon seal applied.
    - To reuse a plug, wrap it with seal tape.

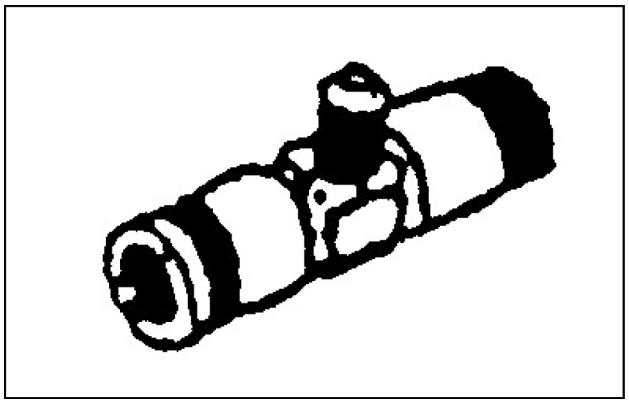


LPIL12CX01196AB 14

Items to prepare:

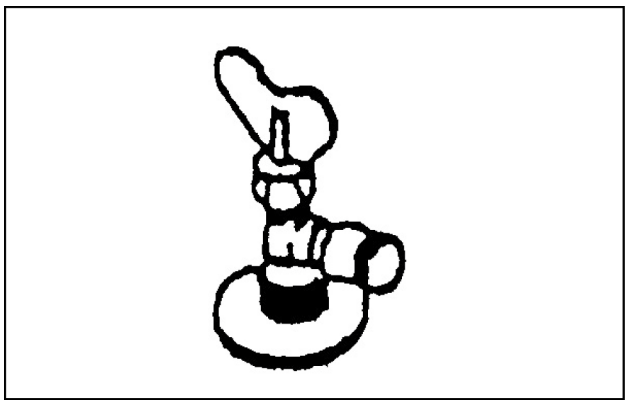
- Hexagon wrench [**6 mm**]
- Hammer
- Wrenches [**13 mm**], [**17 mm**]
- Box wrench [**17 mm**]
- Screwdriver
- Gear oil
- Specialty jigs
- Pressing machine
- **LOCTITE® 262™**
- Special fiber cloth (Kimwipe)
- Marking pen
- Micrometer caliper
- Caliper

Part name: T joint (Quantity 1)
Application: For service can valve



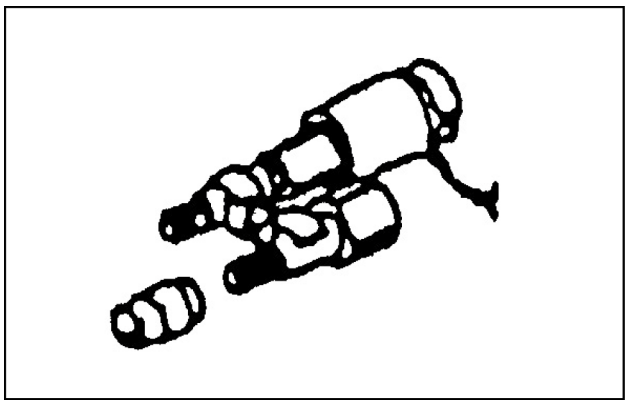
SMIL14CEX1831AA 5

Part name: Service can valve (Quantity 2)
Application: For service can



SMIL14CEX1832AA 6

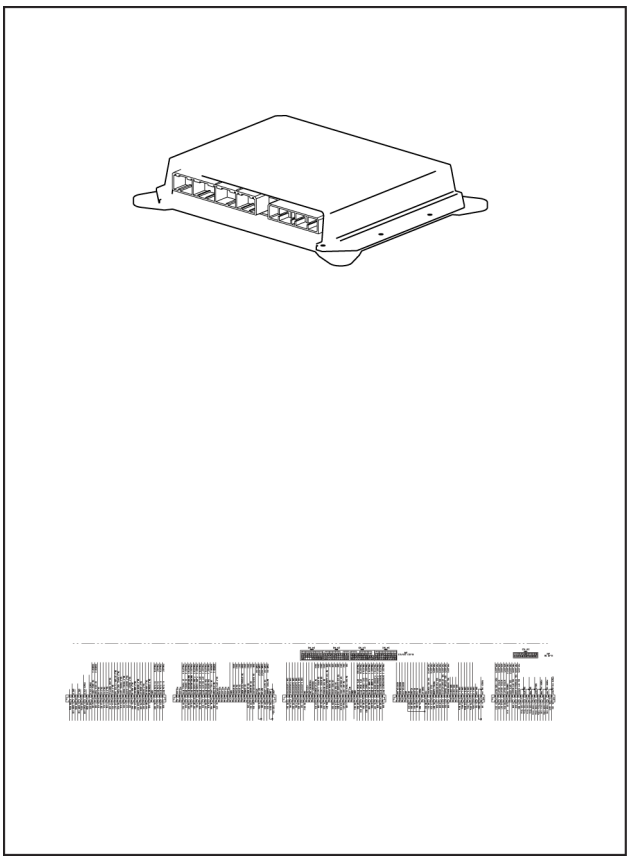
Part name: Vacuum pump adapter (Quantity 1)
Application: For vacuum pump



SMIL14CEX1833AA 7

Main controller

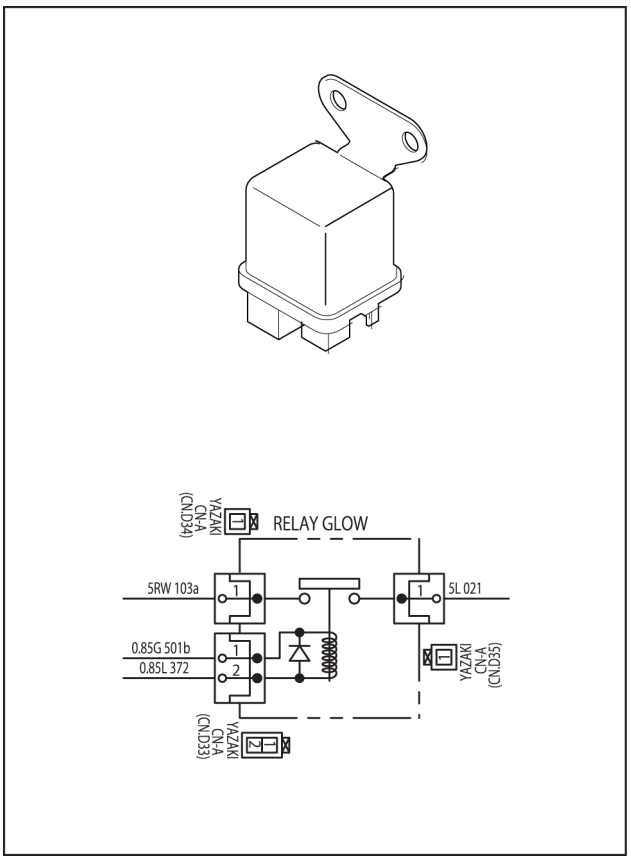
Part No.: KHR34642



SMIL14CEX6914BA 17

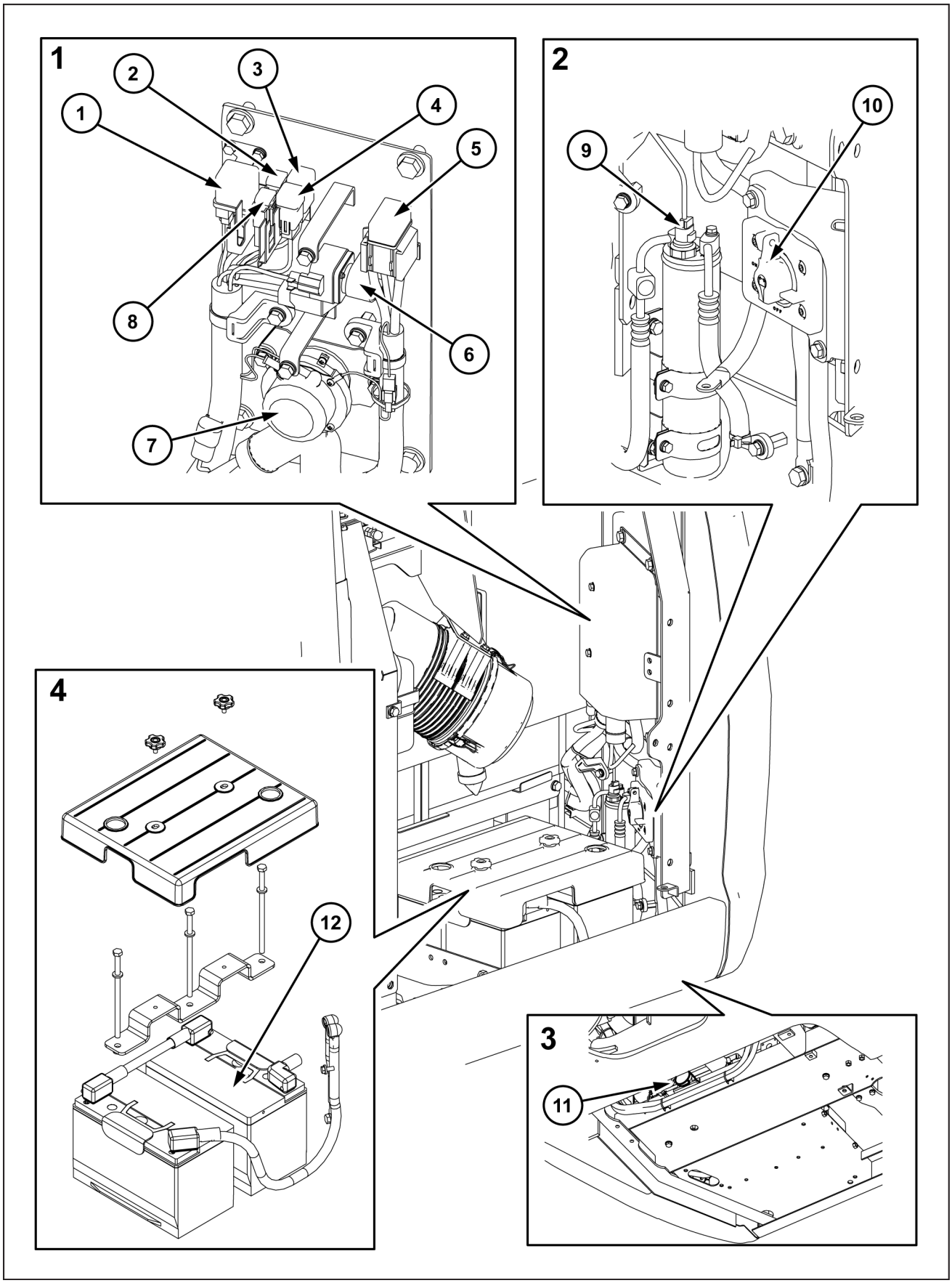
Glow relay

Part No.: KHH20730



SMIL14CEX6915BA 18

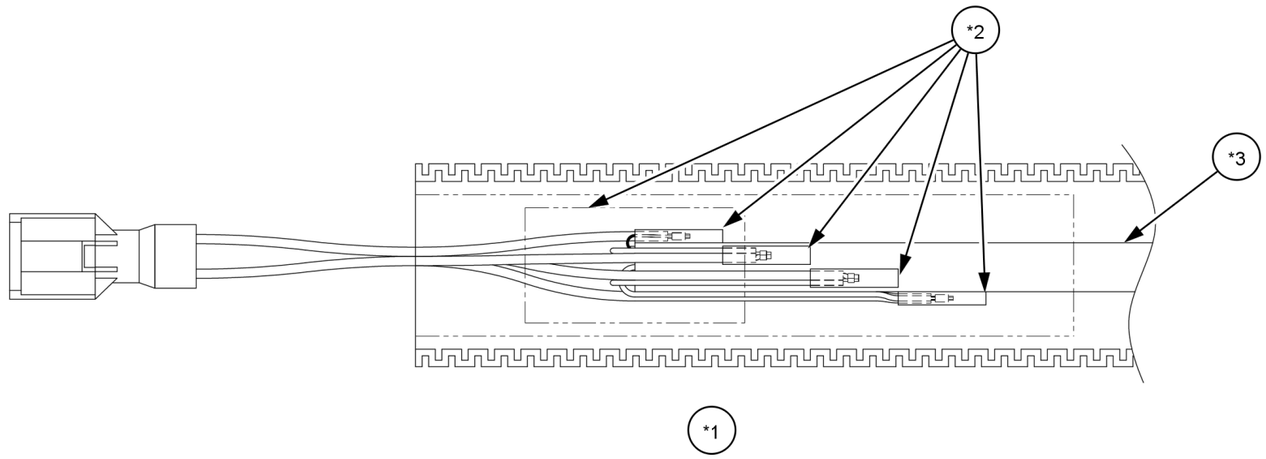
Main unit left-side layout diagram

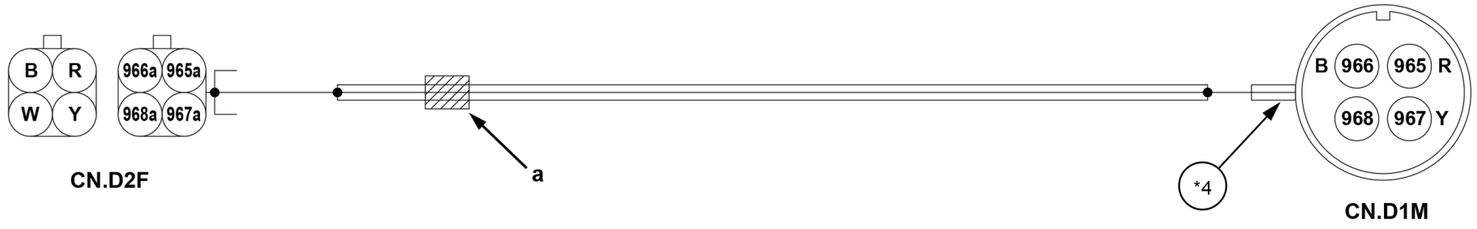


SMIL15CEX4578HB 2

*1. White adhesive tape
*2. Pink adhesive tape
*3. Green adhesive tape
*4. Blue adhesive tape
*5. Yellow adhesive tape
*6. Red adhesive tape
*7. Plate
*8. Computer unit details (ECM)
*9. Computer unit details (DCU)

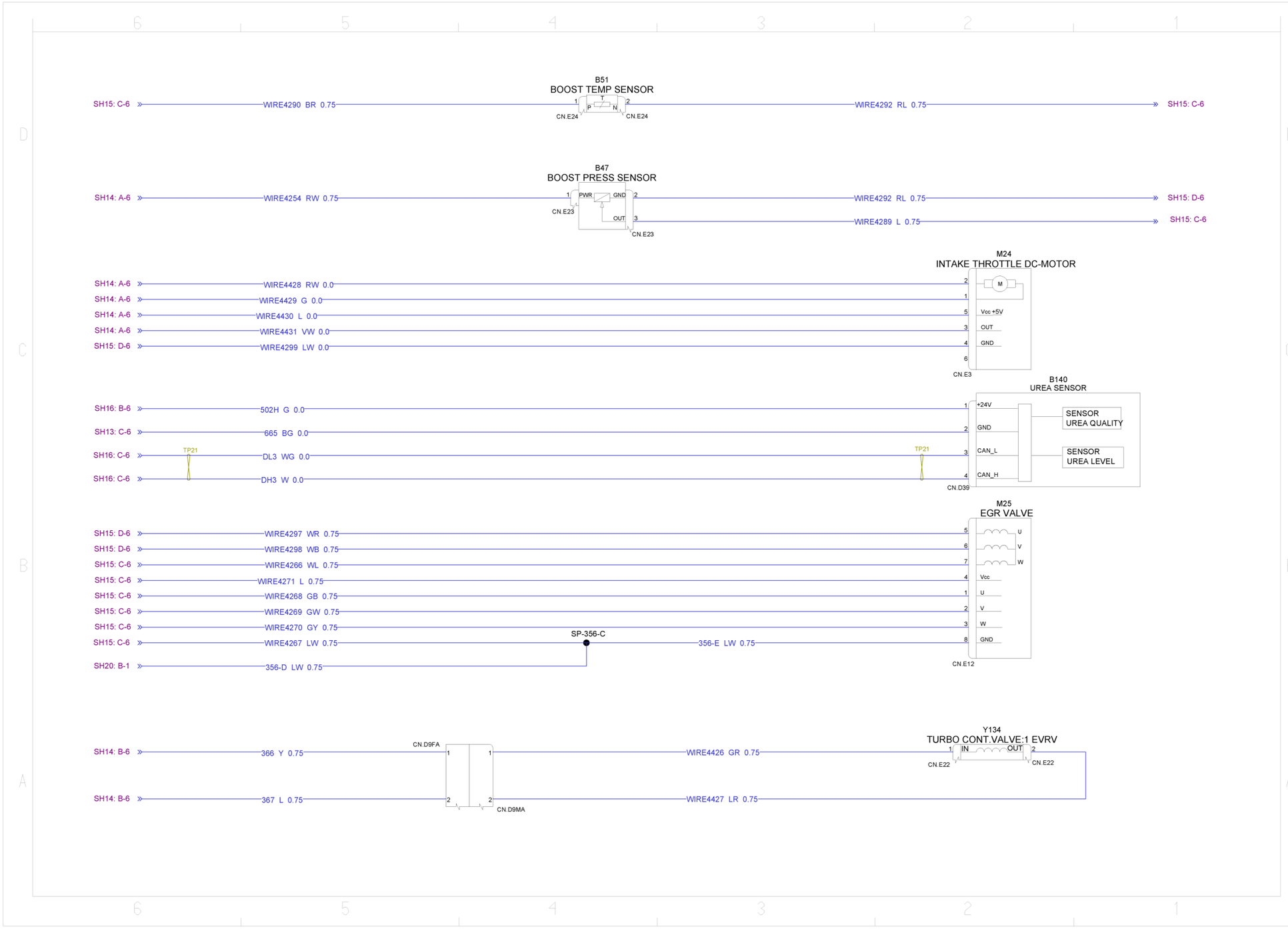
CN.A50F	Cab main harness; A	*CN.D54F	Feed pump harness
CN.A51F	Cab main harness; B	CN.D55F	Horn: L+
CN.A52F	Cab main harness; C	CN.D56F	Horn: L-
CN. A53F	Cab main harness; D	CN.D57F	Horn: H+
CN.A54F	Cab main harness; E	CN.D58F	Horn: H-
CN. A55F	Cab main harness; F	CN.D59F	Washer motor
CN.A56F	Cab main harness; G	CN.D60F	Diode: Washer motor
CN.D1F	DCU; 1	*CN.D61F	Beacon harness
CN.D2F	DCU; 2	*CN.D62F	Signal lamp harness
CN.D3F	ECM; 1	CN.D63F	P1 flow control proportional valve
CN.D4F	ECM; 2	CN.D64F	P2 flow control proportional valve
CN.D5F	Engine harness; A	*CN.D65F	Option proportional valve harness
CN.D6M	Engine harness; B	CN.D67F	P1 pressure sensor
CN.D7M	Engine harness; C	CN.D68F	P2 pressure sensor
CN.D8M	Engine harness; D	CN.D69F	Swing pressure sensor
CN.D9M	Engine harness; H	CN.D70F	Boom-up pressure sensor
#CN.D10	Starter motor; S	CN.D71F	Boom-down pressure sensor
#CN.D11	Alternator; B	CN.D72F	Arm-out pressure sensor
CN.D12F	Alternator; L/R	CN.D73F	Arm-in pressure sensor
CN.D13	Alternator; E	CN.D74F	Bucket-open pressure sensor
CN.D14	Alternator; GND	CN.D75F	Bucket-close pressure sensor
CN.D15	Fuse **100 A**; 1	*CN.D76F	Return room sensor
CN.D16	Fuse **100 A**; 2	*CN.D77F	Boom cylinder (bottom) pressure sensor
CN.D17	Fuse **60 A**; 1	CN.D78F	Oil temperature sensor
CN.D18	Fuse **60 A**; 2	*CN.D79F	Free swing solenoid valve
CN.D19M	Fuse **50 A**; +B	CN.D80F	Fuel level sensor
CN.D20M	Fuse **50 A**; ST	CN.D82F	Floor harness; 1
CN.D21F	Fuse; 1	*CN.D83F	Floor harness; 2
CN.D22F	Fuse; 2	CN.D84F	Reserve tank switch
CN.D24	Battery relay; B1	CN.D85M	Air cleaner switch
CN.D25	Battery relay; B2	CN.D86F	Receiver dryer
CN.D26	Battery relay; IGN	CN.D87F	Air conditioner compressor
#CN.D27	Battery relay; Coil 1	CN.D88M	CCD harness (rear)
#CN.D28	Battery relay; Coil 2	CN.D89F	Cab harness; CCD
CN.D29M	Battery relay; GND	CN.D90F	SCR harness
CN.D30F	Starter relay; B/C	*CN.D91F	Option power supply
CN.D31F	Starter relay; S/E	CN.D93F	Joint connector; GND
CN.D32F	Diode: Starter	CN.D94	GND; G1
CN.D33F	Glow relay; Coil	CN.D95	GND; G2
CN.D34F	Glow relay; 1	CN.D96	GND; G3
CN.D35F	Glow relay; 2	CN.D97F	Cab harness; F
CN.D36F	Fuel pump	*CN.D98F	Light (rear)
CN.D37F	Diode: Pump	*CN.D99F	Light (right)
CN.D38F	Supply module	*CN.D100	F Light (left)
CN.D39F	Urea sensor	CN.D110F	N1 pressure sensor
CN.D40F	Coolant control valve	CN.D111F	N2 pressure sensor
CN.D41F	MAF sensor	CN.D112F	Arm cylinder (rod) pressure sensor
CN.D45F	Lever lock solenoid valve	CN.D113F	Arm cylinder (bottom) pressure sensor
CN.D46F	Swing brake solenoid valve	CN.D114F	Bucket-close solenoid valve


*2
*3
*1


B
R
W
Y
966a
965a
968a
967a
CN.D2F
a
*4
B
966
965
R
968
967
Y
CN.D1M

Wiring harnesses - Electrical schematic sheet 03 - Power distribution

Type	Component	Connector/link	Description
Fuse	F41		Fusible link back up
Fuse	F47		SCR and Spare fuse
Fuse	F56		Fuel pump and refuel pump fuse
Fuse	F60		Fusible link safety relay
Fuse	F75		Battery relay fuse
Fuse	F76		Fuse box
Connector	CN.D15	**CN.D15**	Battery relay fuse
Connector	CN.D16	**CN.D16**	Battery relay fuse
Connector	CN.D17	**CN.D17**	Fuse box
Connector	CN.D18	**CN.D18**	Fuse box
Connector	CN.D19	**CN.D19**	Fusible link back up
Connector	CN.D20	**CN.D20**	Fusible link safety relay
Connector	CN.D21	**CN.D21**	SCR and Spare fuse
Connector	CN.D22	**CN.D22**	Fuel pump and refuel pump fuse
Connector	CN.D91	**CN.D91**	Spare

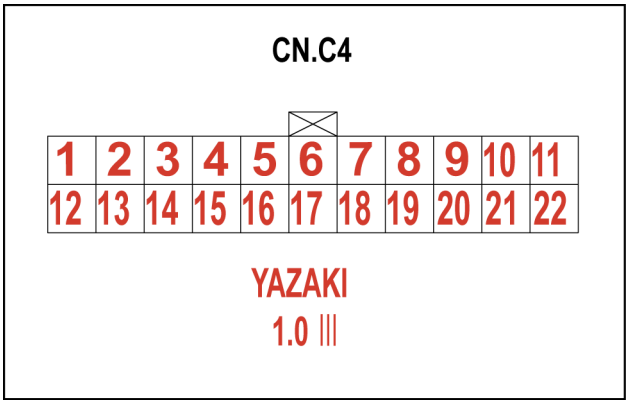


SMIL17CEX7331JA 1

Wiring harnesses - Electrical schematic sheet 40 - Option power / FVM, key switch

Type	Component	Connector/link	Description
Speaker	H12		Speaker
Sensor	R3		Throttle volume
Switch	S1		Key switch
Switch	S51		Limit switch (Gate)
Connector	X36		**12 V** output (For radio)
Connector	X44		Option power/FVM
Connector	CN.B1	**CN.B1**	Key switch
Connector	CN.B2	**CN.B2**	Throttle volume
Connector	CN.B3	**CN.B3**	Limit switch (Gate)
Connector	CN.B4	**CN.B4**	Diode
Connector	CN.B21	**CN.B21**	Diode
Connector	CN.B24	**CN.B24**	**12 V** output (For radio)
Connector	CN.B25	**CN.B25**	**12 V** output (For radio)
Connector	CN.B26	**CN.B26**	**12 V** output (For radio)
Connector	CN.A24	**CN.A24**	Speaker
Connector	CN.A24	**CN.A24**	Speaker
Connector	CN.A25	**CN.A25**	Option power/FVM
Connector	CN.A42	**CN.A42**	
Connector	CN.A45	**CN.A45**	

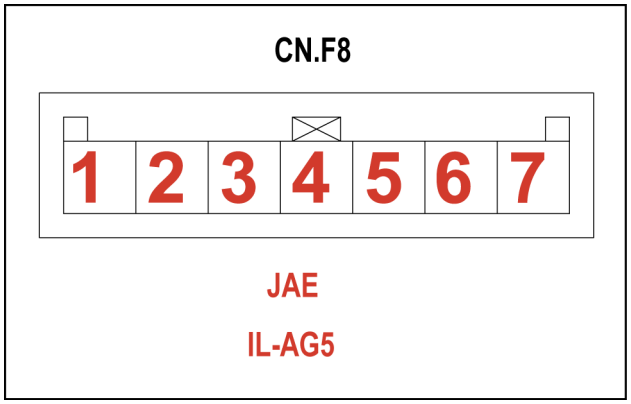
CONNECTOR CN.C4: MONITOR DISPLAY (Male)



SMIL15CEX5229AA 42

Pin	From	Wire	Description	Color-Size	Frame
1	CN.C2-P-1	962A		Y-0.0	**SHEET 36**
2	CN.C2-P-2	967		YB-0.0	
3	CN.C2-P-3	972		YR-0.0	
4	CN.C2-P-4	590		O-0.0	
5	CN.C2-P-5	591C		YL-0.0	
6	CN.C2-P-6	592		V-0.0	
7	CN.C2-P-7	593		OL-0.0	
8	CN.C2-P-8	594C		YG-0.0	
9	CN.C2-P-9	595		VR-0.0	
10	CN.C2-P-10	596		Br-0.0	
11	CN.C5-P-1	949C		WB-0.0	**SHEET 37**
12	CN.C2-P-11	963A		W-0.0	**SHEET 36**
13	CN.C2-P-12	968		WB-0.0	
14	CN.C2-P-13	973		WR-0.0	
15	CN.C2-P-14	820		GR-0.0	
16	CN.C2-P-15	821		Lg-0.0	
17	CN.C2-P-16	822A		VG-0.0	
18	CN.C2-P-17	823		WG-0.0	
19	CN.C2-P-18	824		LY-0.0	
20	CN.C2-P-19	825		LG-0.0	
21	CN.C2-P-20	826		OR-0.0	
22	CN.C5-P-2	950A		BW-0.0	**SHEET 37**

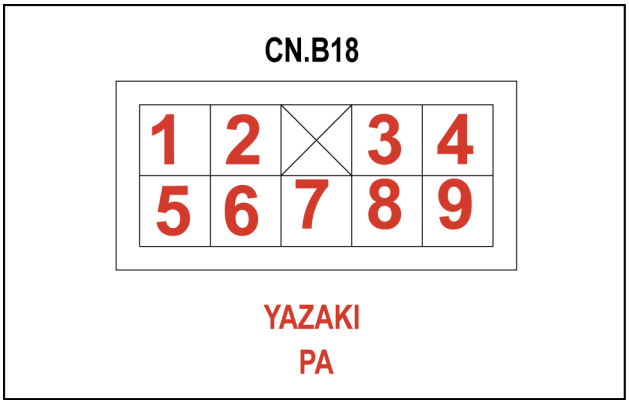
CONNECTOR CN.F8: MOTOR MODE ACTUATOR (Male)



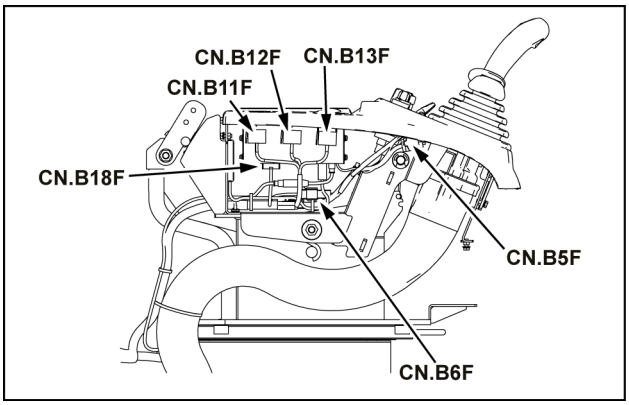
SMIL15CEX5257AA 77

Pin	From	Wire	Description	Color-Size	Frame
2	SP-927-P-X	927		LY-0.0	**SHEET 29**
3	CN.B17F-P-20	930A		YL-0.0	**SHEET 27**
4	SP-933-P-X	933		BL-0.0	**SHEET 29**
6	CN.B17F-P-14	923A		YW-0.0	**SHEET 27**
7	CN.B17F-P-13	922A		YR-0.0	

CONNECTOR CN.B18: RADIO AM/FM STEREO 24V, 2A (Female)



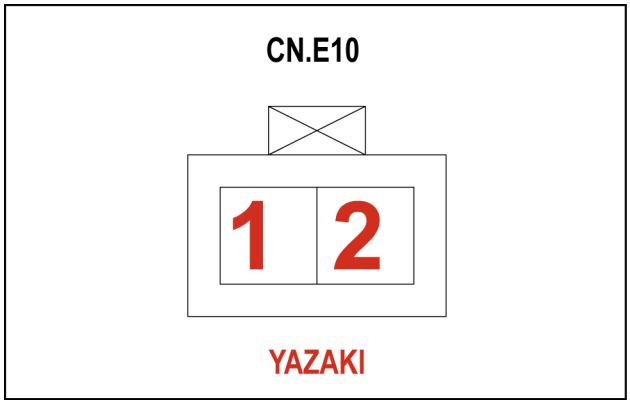
SMIL15CEX5288AA 43



SMIL15CEX5219AA 44

Pin	From	Wire	Description	Color-Size	Frame
2	P15	117		R-0.0	**SHEET 34**
3	P15	980		GrR 0.85	
4	P15	981		GR 0.85	
6	P15	135H		OW 0.0	
7	P15	731		B-1.25	
8	P15	982		Gr 0.85	
9	P15	983		G 0.85	

CONNECTOR CN.E10: MANIFOLD TEMPERATURE SENSOR (INTAKE AND EGR) (Male)



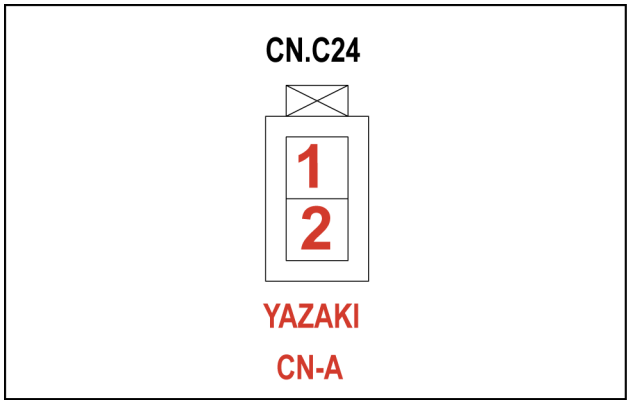
SMIL15CEX5303AA 84

Pin	From	Wire	Description	Color-Size	Frame
1	CN.D5F-P-7	WIRE4264		WR-0.75	**SHEET 15**
2	CN.D5F-P-2	WIRE4294		GY-0.75	

CONNECTOR CN.A28M-4: CAB HEAD LAMP 3 (HALOGEN) (Male)

Pin	From	Wire	Description	Color-Size	Frame
1	E3-B-P-P	875AA		GR-1.25	**SHEET 39**

CONNECTOR CN.C24: ROOM LAMP (Male)



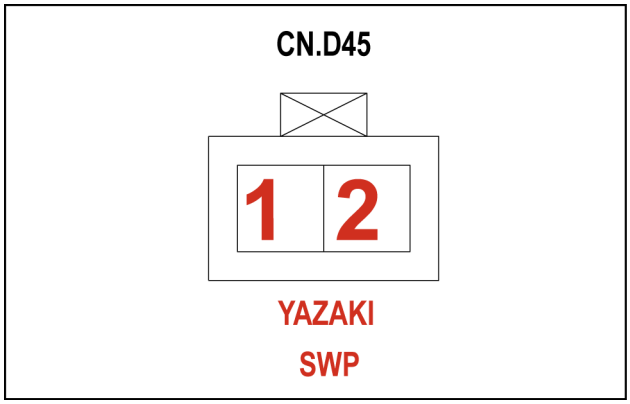
SMIL15CEX5332AA 33

Pin	From	Wire	Description	Color-Size	Frame
1	CN.C8F-P-2	843		Y-0.0	**SHEET 38**
2	CN.C8F-P-1	888B		G-0.0	

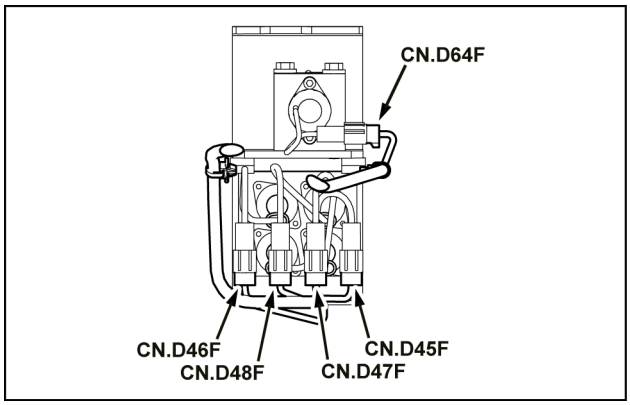
CONNECTOR CN.A33F: WINDOW LIMIT SWITCH (Female)

Pin	From	Wire	Description	Color-Size	Frame
1	CN.C11F-P-3	614D		BG-0.0	**SHEET 38**

CONNECTOR CN.D45: SOLENOID VALVE (SP) (Male)



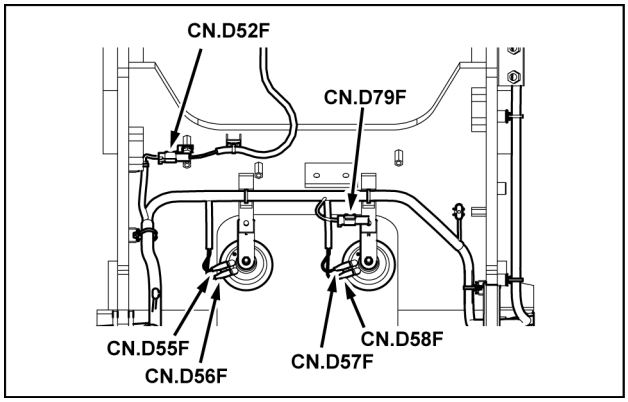
SMIL15CEX5384AA 30



SMIL15CEX5383AA 31

Pin	From	Wire	Description	Color-Size	Frame
1	CN.A52M-P-6	840E		RY-0.75	**SHEET 11**
2	CN.A93M-P-3	754		B-0.75	**SHEET 07**

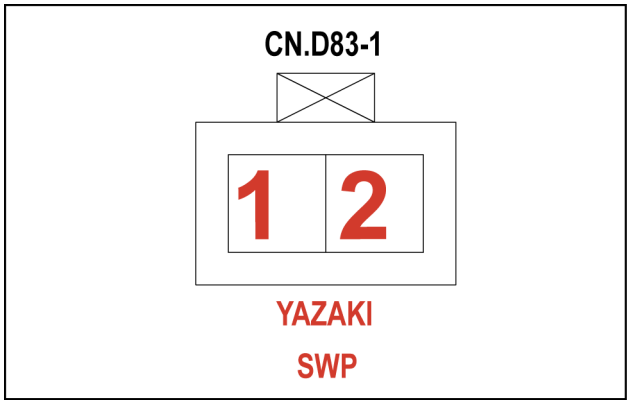
CONNECTOR CN.D55: LEFT HORN LOW 24V, 333HZ, 115DB (Male)



SMIL15CEX5398AA 42

Pin	From	Wire	Description	Color-Size	Frame
1	CN.A51M-P-2	880F		LR-0.85	**SHEET 32**

CONNECTOR CN.D83-1: BLADE PRESSURE SWITCH (0.45MPa) (Male)



SMIL15CEX5438AA 13

Pin	From	Wire	Description	Color-Size	Frame
1	SP-543B-P-X	543C		GY-0.85	**SHEET 11**
2	SP-543H-P-X	653J		BG-0.85	

Index

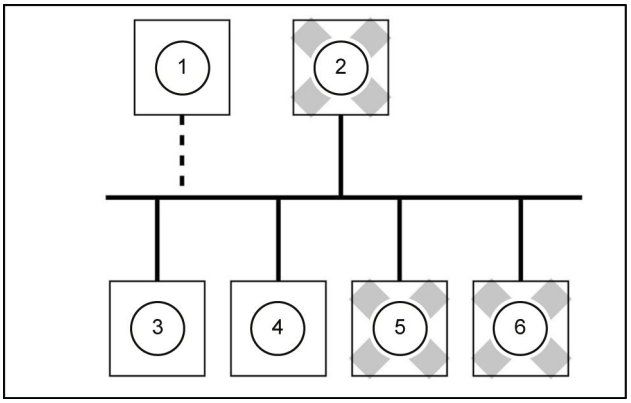
Electrical systems - 55

Harnesses and connectors - 100

CAN communication

When CAN controller does not exist on the machine side

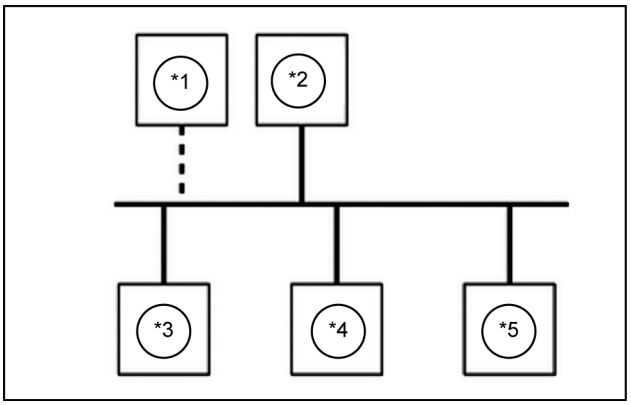
*1. Diagnostic scan tool
*2. MCX
*3. ECM
*4. LCD
*5. TCM
*6. Shift Control



SMIL14CEX3980AB 11

When CAN controller exists on the machine side

*1. Diagnostic scan tool
*2. MCX
*3. ECM
*4. TCM
*5. Shift Control



SMIL14CEX0567AB 12

Engine speed/RPM sensor - Inspect

1. Inspect the crankshaft position sensor.

NOTE: *Inspect whether the crankshaft position sensor is securely installed.*

NOTE: *Inspect the sensor and connector sections for damage or debris.*

High fuel consumption - symptoms

Fuel consumption is markedly more than what is listed in the manual for the machine.

High fuel consumption - diagnosis

Preliminary inspection

Before using this section, perform a functional inspection and OBD system check to check all of the following items.

Check the estimated fuel consumption of the machine manufacturer **(A)** as fuel consumption will vary widely depending on the handling of the machine.

Estimated fuel consumption (L (qt)/hr.).

Check the actual fuel consumption **(B)**.

Actual fuel consumption (L (qt)/hr.).

If B is larger than A, see the manual for the machine and check the settings on the machine.

Check whether there is an excessive load on the machine.

See the service list table in the Operator's Manual and perform inspection according to the machine usage time.

For a machine in which the usage time is over **3000 h**, see the manual for the machine and perform the inspections.

The ECM and monitor are operating correctly.

Check DTCs.

Check the condition of the machine and find applicable symptoms.

Confirm with the customer that the stipulated engine oil and fuel are being used.

Check whether engine oil replacement and periodic maintenance for the air cleaner filter and fuel filter have been implemented.

Visual inspection

Some symptoms detection procedures require careful visual inspection.

This allows for problems to be repaired without performing further inspection, which saves valuable time.

The following items are included in this inspection.

Check for correct wiring connections, tightness, and disconnections.

Check whether the ECM ground is dirty and check that it is securely installed in the correct location.

Check that pipes and hoses for fuel, air, and oil are not broken or twisted and that they are correctly connected. Thoroughly check for any leaking or clogging.

The L -terminal output voltage of the alternator is checked by the **10 V** comparator.

ON when L -terminal voltage $\geqq$ **10 V**

OFF when L -terminal voltage < **10 V**

* The threshold **10 V** has a tolerance of ± **1 V**.

Detection of power generation failure

If, although the engine is running, the **10 V** comparator input turns OFF, it is judged as a power generation failure.

Refer to **Engine Control Unit (ECU) - Fault code index (55.015)** for the details on judgment criteria.

Warning

When the monitor receives the command for a battery charge failure, the following operation will be triggered.

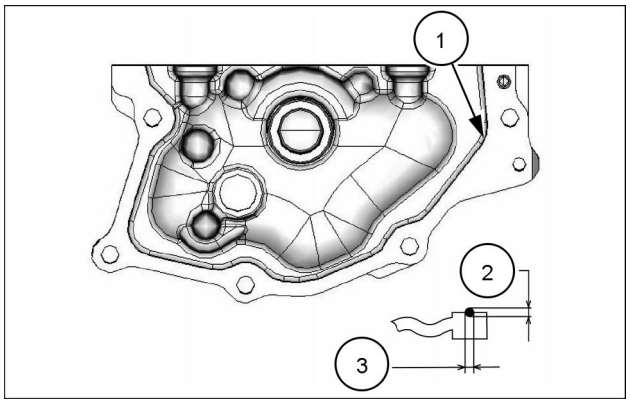
1. Message: "ALTERNATOR" appears.
2. Buzzer: It starts to sound simultaneously with the message display, and stops in **5 s**.

Timing chain upper cover installation

1. Apply liquid gasket **(1)** to the timing chain upper cover.
   - Apply ThreeBond 1207B.

NOTICE: *Install the cover within five minutes of applying liquid gasket.*

2. Bead height: **1.0 – 1.5 mm** (**0.039 – 0.059 in**)
3. Bead width: **2 – 2.5 mm** (**0.079 – 0.098 in**)



SMIL17CEX3342A 15

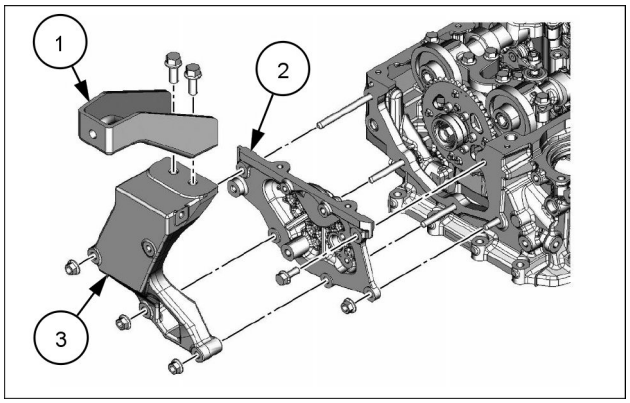
2. Install the timing chain upper cover **(1)** to the cylinder head.

NOTICE: *Wipe off any excess liquid gasket.*

Tightening torque: **25 N·m** (**18.439 lb ft**)

2. Fan shroud bracket
3. Fan shroud stay

3. Connect the harness connector to the CMP sensor.

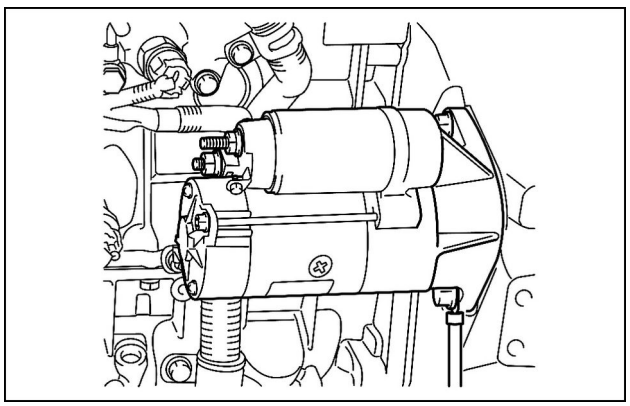


SMIL17CEX3317A 16

Starter motor installation

1. Install the starter motor to the flywheel housing.
   - Install the earth cable at the same time.

   Tightening torque: **97 N·m** (**71.544 lb ft**)
2. Connect the S-terminal to the starter motor.
3. Connect the B-terminal to the starter motor.



SMIL15CEX9791AB 17

I/O table

<table>
<tr><td rowspan="4">Sensor inputs
• DEF (Urea fluid) tank temperature sensor (CAN)
• DEF (Urea fluid) level sensor (CAN)
• DEF (Urea fluid) quality sensor (CAN)
• DEF (Urea fluid) pump temperature sensor
• DEF (Urea fluid) pump pressure sensor
• Exhaust gas temperature (EGT) sensor 3
• NOx sensor 1 (CAN)
• NOx sensor 2 (CAN)</td><td rowspan="4">→</td><td rowspan="4">DCU</td><td>→</td><td>DEF (Urea fluid) injection control output
• Dosing module</td></tr>
<tr><td rowspan="2">→</td><td>Actuator control outputs
• DEF (Urea fluid) supply module
• DEF (Urea fluid) reverting valve
• NOx sensor heater</td></tr>
<tr><td>→</td><td>Relay control outputs
• DEF (Urea fluid) tank heater coolant control valve relay</td></tr>
<tr><td>→</td><td>Communication (CAN)
• ECM
• DEF (Urea fluid) sensor
• NOx sensor 1
• NOx sensor 2
• Scan tool</td></tr>
</table>

6. Check all of the ECUs for DTC codes that have not yet been diagnosed.

NOTE: *Inspect the applicable DTC if a DTC is set.*

7. Check whether the customer's concern is related to the engine.

NOTE: *If there is a concern relating to the engine, inspect the engine control system.*

8. Check for excessive urea fluid consumption.
9. Check for a significant ammonia odor.
10. Check for the adherence of white crystal powder.

Intermittent conditions of urea selective catalytic reduction system description of symptom

NOTE: *Important preliminary inspections before starting.*

Before using the symptom list, inspect the urea SCR control system and verify all of the following items.

The warning light and indicator light operate normally.

The trouble diagnosis scan tool data is within the normal range of operation values.

Verify the customer's complaint, and locate the appropriate symptom in the table of contents. Inspect the items presented for the symptom.

NOTE: *Visual inspection and actual inspection.*

Careful visual inspection and actual inspection are required for some symptom procedures. This procedure is extremely important. By conducting visual and actual inspections, it is possible to save valuable time by fixing problems without performing further inspections. Check for the following items.

The GND of the DCU should be clean and firmly secured in the correct position.

The exhaust pipe should not be crushed or damaged.

The wiring and terminals of the urea SCR system harness should be appropriately connected, and they should not be pinched or disconnected.

NOTE: *Intermittent conditions.*

If an intermittent condition exists, inspect for improper installation of electronic equipment. Inspect for any additionally installed electronic equipment, lights, mobile phones, wireless devices, etc.

Verify that any device that was additionally installed is not connected to a serial data circuits such as CAN.

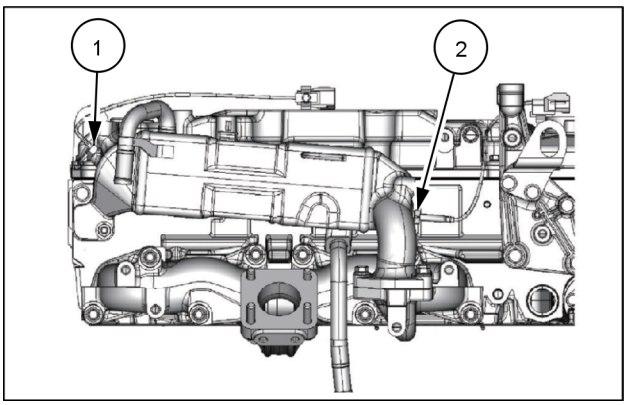
Depending on the problem, the warning light may illuminate or DTCs may be recorded. An intermittent condition is often caused by an improper electrical connection or wiring. Conduct a careful visual inspection, or conduct an actual inspection to see whether the following conditions exist in the suspected connector.

Exhaust Gas Recirculation (EGR) temperature sensors - Remove - Temperature sensor 2

1. Disconnect the battery ground cable from the battery.

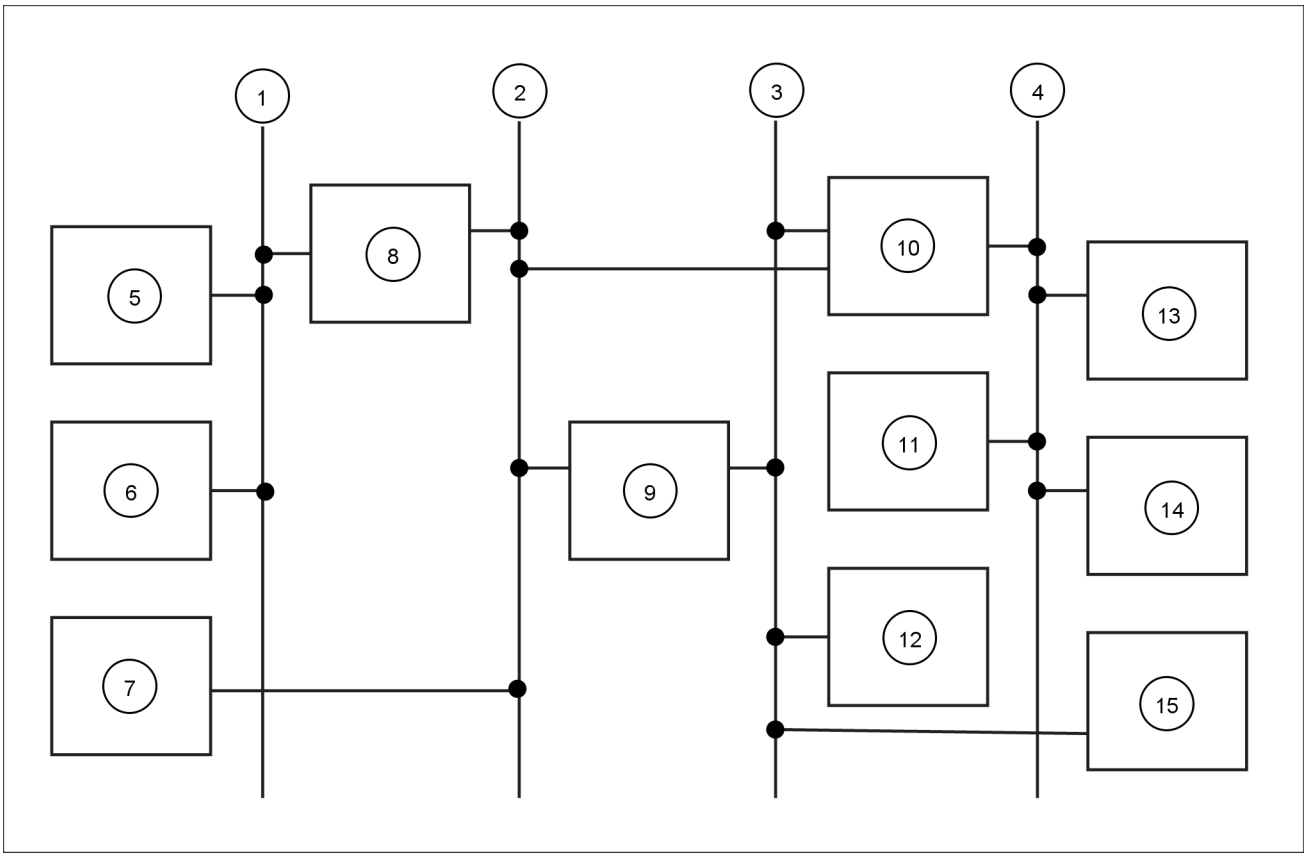
NOTICE: *While the indicator (LED) of the battery disconnect switch is lit, do not turn OFF the battery disconnect switch or disconnect its negative cable from the battery. (After key OFF, lit for a maximum duration of **3 min**)*

2. Disconnect the harness connector from EGR gas temperature sensor 2 **(1)**.
    1. EGR gas temperature sensor 2
    2. EGR gas temperature sensor 1
3. Remove EGR gas temperature sensor 2 **(1)** from the EGR cooler.



SMIL15CEX9632AB 1

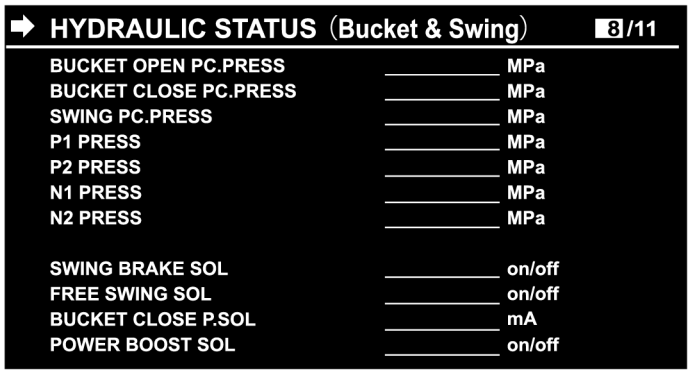
CAN connection of electrical parts



SMIL17CEX1134FA 3

1. ISUZU Local (LOCA-CAN) 250 kbps
2. BUS-A (ISO-CAN) 500 kbps
3. BUS-B (J1939-CAN) 250 kbps
4. BUS-C (-) 250 kbps
5. DEF sensor (LEVEL, TEMP, DENS)
6. NOX sensor 1
7. E-IDSS
8. DCU
9. ECM
10. MCM-MAIN
11. MCM-SUB
12. Telematics
13. Monitor
14. A/C panel
15. EST

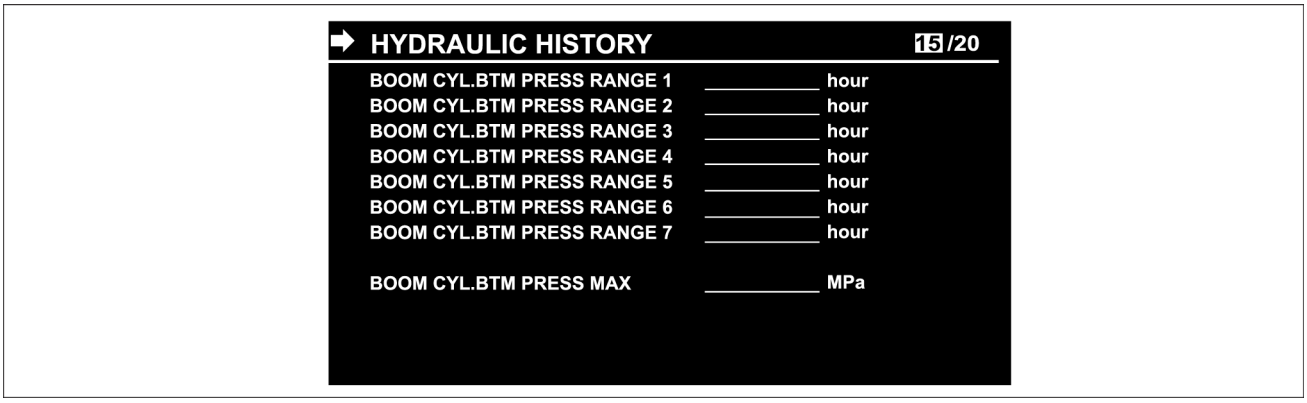
8/11



SMIL17CEX1716EA 20

Display	Explanation	Range
BUCKET OPEN PC.PRESS	Bucket-open pilot pressure	**0 – 5 MPa** (**0 – 725 psi**)
BUCKET CLOSE PC.PRESS	Bucket-close pilot pressure	**0 – 5 MPa** (**0 – 725 psi**)
SWING PC.PRESS	Swing pilot pressure	**0 – 5 MPa** (**0 – 725 psi**)
P1 PRESS	P1 pressure	**0 – 50 MPa** (**0 – 7253 psi**)
P2 PRESS	P2 pressure	**0 – 50 MPa** (**0 – 7253 psi**)
N1 PRESS	N1 pressure	**0 – 5 MPa** (**0 – 725 psi**)
N2 PRESS	N2 pressure	**0 – 5 MPa** (**0 – 725 psi**)
SWING BRAKE SOL	Swing brake solenoid	ON/OFF
FREE SWING SOL	Free swing solenoid	ON/OFF
BUCKET CLOSE P.SOL	Bucket-close pilot pressure proportional valve	**0 – 1000 mA**
POWER BOOST SOL	Pressure boost solenoid	ON/OFF

15/20



SMIL17CEX1761EA 57

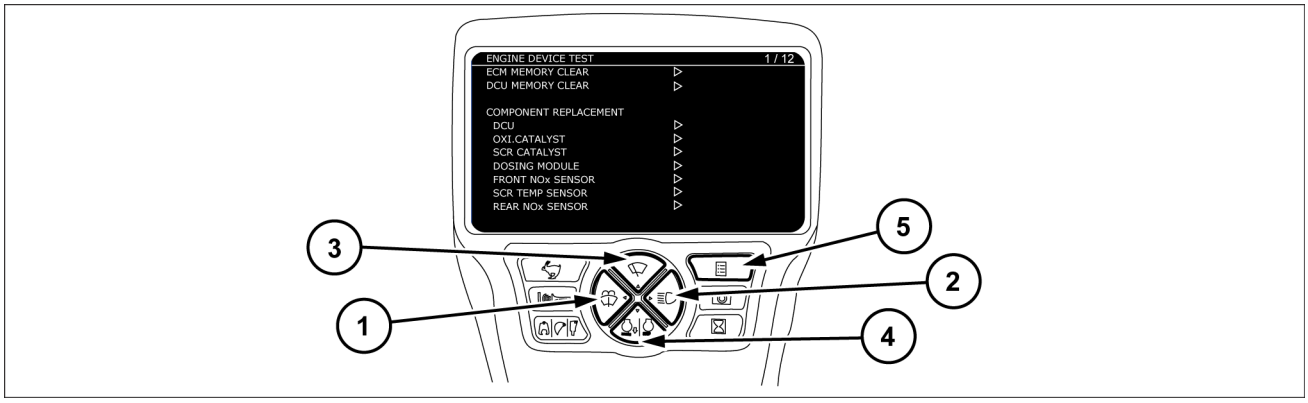
Display	Explanation	Unit	Judgment condition	Judgment start condition
BOOM CYL.BTM PRESS RANGE 1	Boom CYL bottom pressure; distribution 1	hour	Less than **10 MPa** (**1450 psi**)	Engine in operation
BOOM CYL.BTM PRESS RANGE 2	Boom CYL bottom pressure; distribution 2	hour	Less than **15 MPa** (**2176 psi**)	Engine in operation
BOOM CYL.BTM PRESS RANGE 3	Boom CYL bottom pressure; distribution 3	hour	Less than **20 MPa** (**2901 psi**)	Engine in operation
BOOM CYL.BTM PRESS RANGE 4	Boom CYL bottom pressure; distribution 4	hour	Less than **25 MPa** (**3626 psi**)	Engine in operation
BOOM CYL.BTM PRESS RANGE 5	Boom CYL bottom pressure; distribution 5	hour	Less than **30 MPa** (**4352 psi**)	Engine in operation
BOOM CYL.BTM PRESS RANGE 6	Boom CYL bottom pressure; distribution 6	hour	Less than **35 MPa** (**5077 psi**)	Engine in operation
BOOM CYL.BTM PRESS RANGE 7	Boom CYL bottom pressure; distribution 7	hour	**35 MPa** (**5077 psi**) or more	Engine in operation
BOOM CYL.BTM PRESS MAX	Maximum boom CYL bottom pressure	MPa (psi)	–	Engine in operation

DEVICE TEST

ECM/DCU memory clear

Purpose

- To reset the DIAG mode, and delete the engine diagnostic trouble codes in ECM.



SMIL17CEX0333EB 94

Display	Explanation	Unit	Remarks
ECM MEMORY CLEAR	ECM memory clear	–	The ECM memory is cleared
DCU MEMORY CLEAR	DCU memory clear	–	The DCU memory is cleared
COMPONENT REPLACEMENT	–	–	
DCU	DCU replacement notice	–	Items selectable. Initialization can be performed after the component is replaced.
OXI. CATALYST	Oxidation catalyst replacement notice	–	Items selectable. Initialization can be performed after the component is replaced.
SCR CATALYST	SCR filter replacement notice	–	Items selectable. Initialization can be performed after the component is replaced.
DOSING MODULE	Dosing module replacement notice	–	Items selectable. Initialization can be performed after the component is replaced.
FRONT NOx SENSOR	SCR temperature sensor replacement notice	–	Items selectable. Initialization can be performed after the component is replaced.
SCR TEMP SENSOR	SCR temperature sensor replacement notice	–	Items selectable. Initialization can be performed after the component is replaced.
REAR NOx SENSOR	REAR NOx sensor replacement notice	–	Items selectable. Initialization can be performed after the component is replaced.

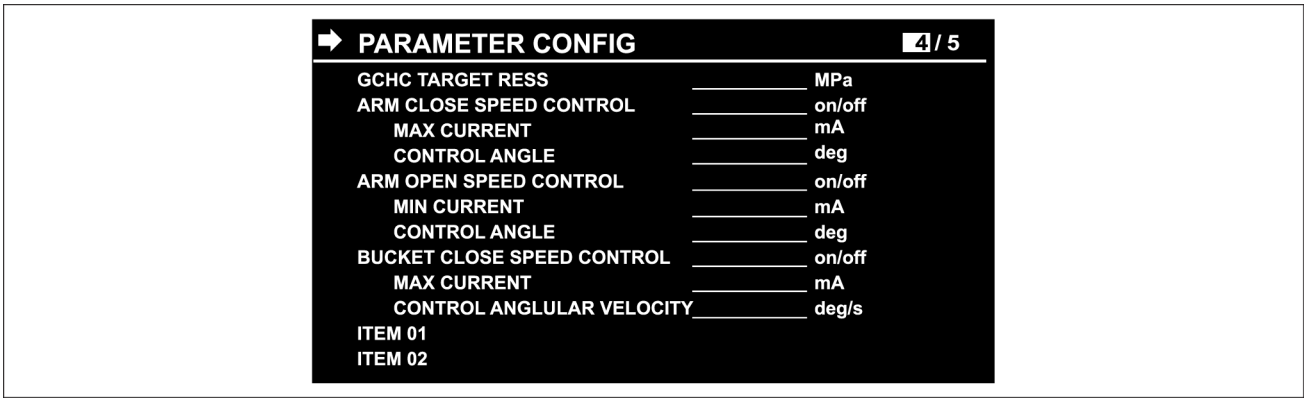
Condition for the test

- The key is ON.

Execution

- Select “ECM MEMORY CLEAR” (ECM memory clear) or “DCU MEMORY CLEAR” (DCU memory clear) using SW **(3)** and **(4)**.
- Hold down SW **(2)** for **3 s**, and “▷” changes to “▶”.
- The engine diagnostic trouble codes in ECM will be deleted right away.

4/5



SMIL17CEX0345EA 10

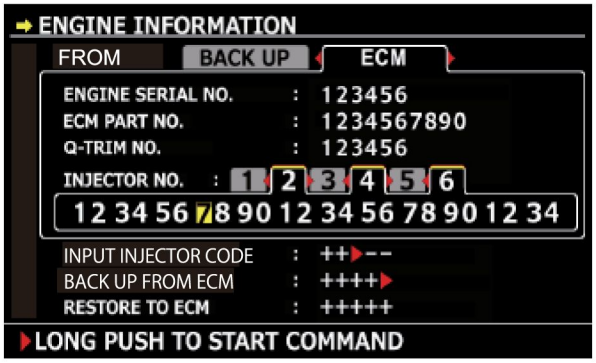
Display	Explanation	Range
GCHC TARGET PRESS*	Target pressure for grapple close holding circuit	**15 – 35 MPa** (**2176 – 5077 psi**)
ARM CLOSE SPEED CONTROL	ON/OFF of arm in start shock reduction Displayed when the following two conditions are satisfied. (1) Anti-interference = Yes (2) Offset = None	on/off
MAX CURRENT	Maximum current of ARM CLOSE SPEED CONTROL	**153 – 1000 mA**
CONTROL ANGLE	Maximum control angle of ARM CLOSE SPEED CONTROL	**0 – 180°**
ARM OPEN SPEED CONTROL	ON/OFF of arm out end shock reduction Displayed when the following two conditions are satisfied. (1) Anti-interference = Yes (2) Offset = None	on/off
MIN CURRENT	Minimum current of ARM OPEN SPEED CONTROL	**300 – 740 mA**
CONTROL ANGLE	Control angle of ARM OPEN SPEED CONTROL	**0 – 10°**
BUCKET CLOSE SPEED CONTROL	ON/OFF of bucket close end shock reduction Displayed when the following three conditions are satisfied. (1) Anti-interference = Yes (2) Offset = None (3) Bucket angle sensor = Yes	on/off
MAX CURRENT	Maximum current of BUCKET CLOSE SPEED CONTROL	**300 – 700 mA**
CONTROL ANGLE VELOCITY	Minimum control angular speed of BUCKET CLOSE SPEED CONTROL	**10 – 80°**
ITEM01		
ITEM02		

* A value and a unit are displayed when MACHINE SELECT > GCHC = 1.

Instrument cluster - Dynamic description - Engine information

Engine information

- When ECM is replaced, the data on the old ECM can be transferred to the new ECM.
- When the controller is replaced, the engine information can be obtained again.
- When the injector is replaced, the injector code can be updated.

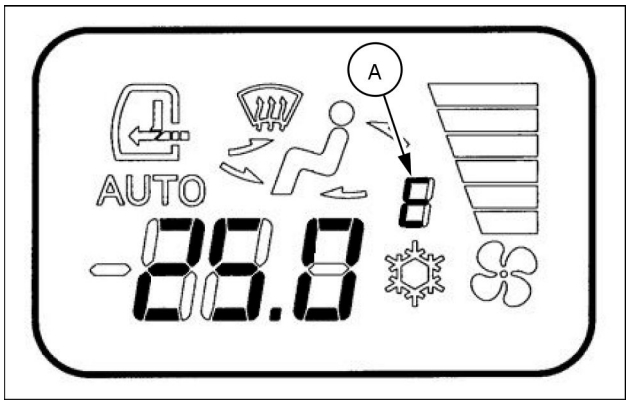


SMIL14CEX1057EA 1

Display	Detail
FROM	• Source of the information displayed (Two types including “BACK UP” and “ECM”)
ENGINE SERIAL NO	• 6-digit engine serial number • When the FROM tab is set to "BACK UP" and the backup has not been obtained, entire digits are displayed as zero. • When the FROM tab is set to “ECM” and communication is established with ECM, entire digits are displayed as zero.
ECM PART NO.	• 10-digit ECM part number • When the FROM tab is set to “BACK UP” and the backup has not been obtained, entire digits are displayed as zero. • When the FROM tab is set to “ECM” and communication is established with ECM, entire digits are displayed as zero.
Q-TRIM NO.	• 6-digit Q resistance code • When the FROM tab is set to “BACK UP” and the backup has not been obtained, entire digits are displayed as zero. • When the FROM tab is set to “ECM” and communication is established with ECM, entire digits are displayed as zero.
INJECTOR NO.	• Injector number
INJECTOR CODE (Not displayed on screen)	• 24-digit injector code • The cursor moves to this line only during the injector code edit mode. (FROM tab set to “BACK UP”) • When the FROM tab is set to “BACK UP” and the backup has not been obtained, entire digits are displayed as zero. • When the FROM tab is set to “ECM” and communication is established with ECM, entire digits are displayed as zero.
INPUT INJECTOR CODE	• Edit the injector code (Backup value). • This line is displayed when the FROM tab is set to “BACK UP”. • This line is not displayed when the FROM tab is set to “ECM”.
BACK UP FROM ECM	• Obtain the engine information from ECM again. • This line is displayed when the FROM tab is set to “BACK UP”. • This line is not displayed when the FROM tab is set to “ECM”.

Signal communication error between the computer and the control panel

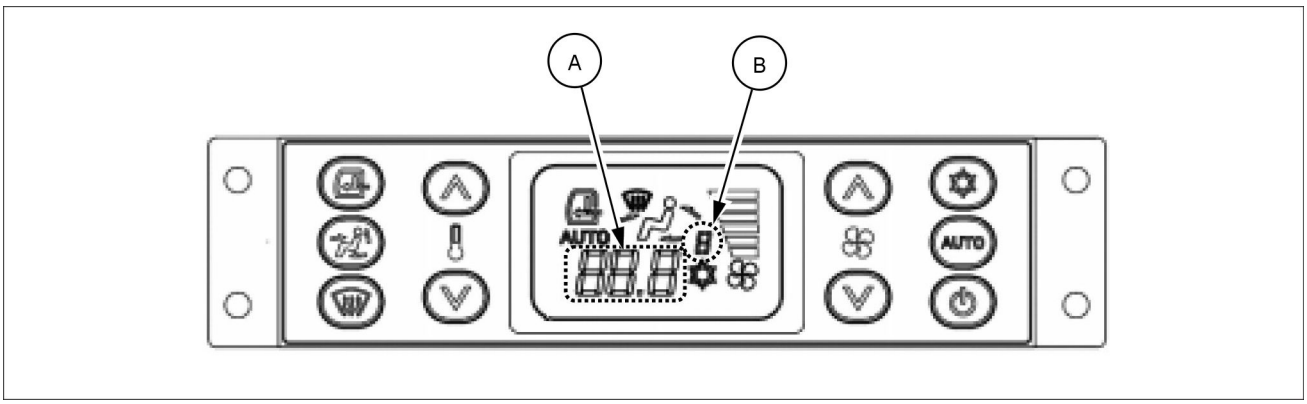
1. “E” **(A)** is displayed at this location, the wire between the Central Processing Unit (CPU-A/C computer) and control panel may have a short circuit, break or connector problem.



SMIL17CEX7658AA 7

II. Monitor mode

The sensor status (normal, disconnection, short) can be checked in the monitor mode.



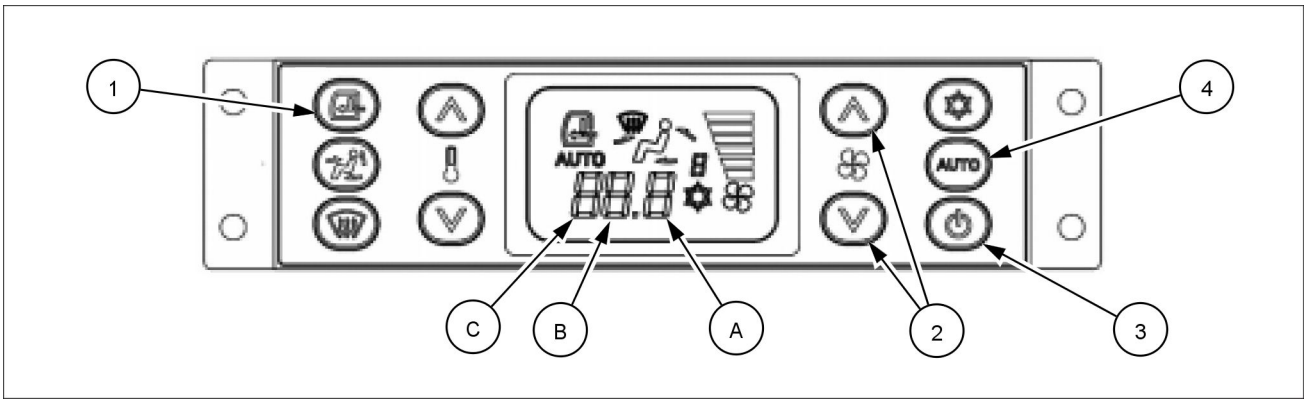
SMIL17CEX1142EA 8

A. 3-digit segment

B. Monitor mode segment display

Abnormalities are indicated with the numbers and letters displayed on the 3-digit segment display and monitor mode segment display.

Monitor mode display operating method



SMIL17CEX1143EA 9

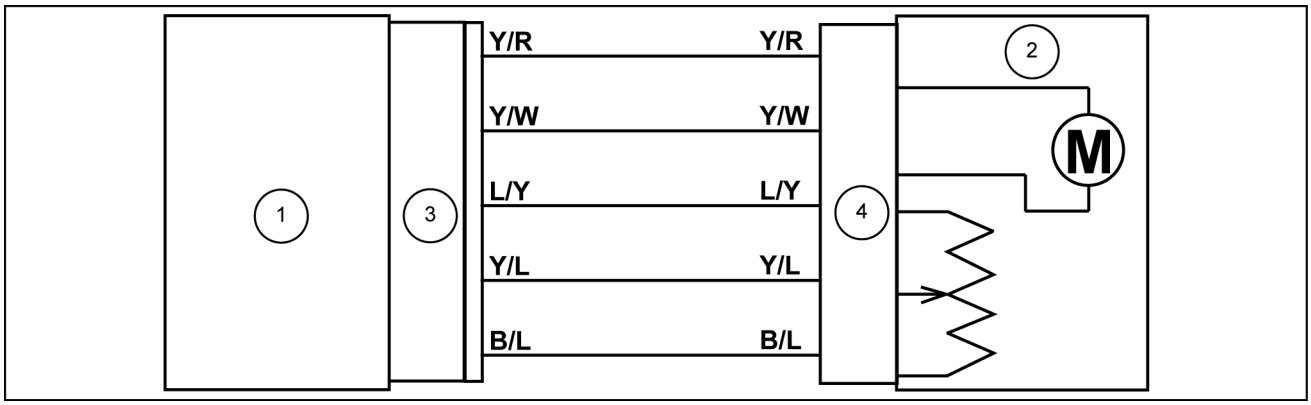
1. Refresh/recirculate select switch
2. Fan UP/DOWN switch
3. Panel ON/OFF switch

A. First digit

B. Second digit

C. Third digit

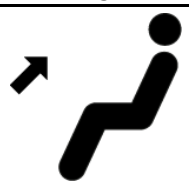
Mode motor actuator inspection

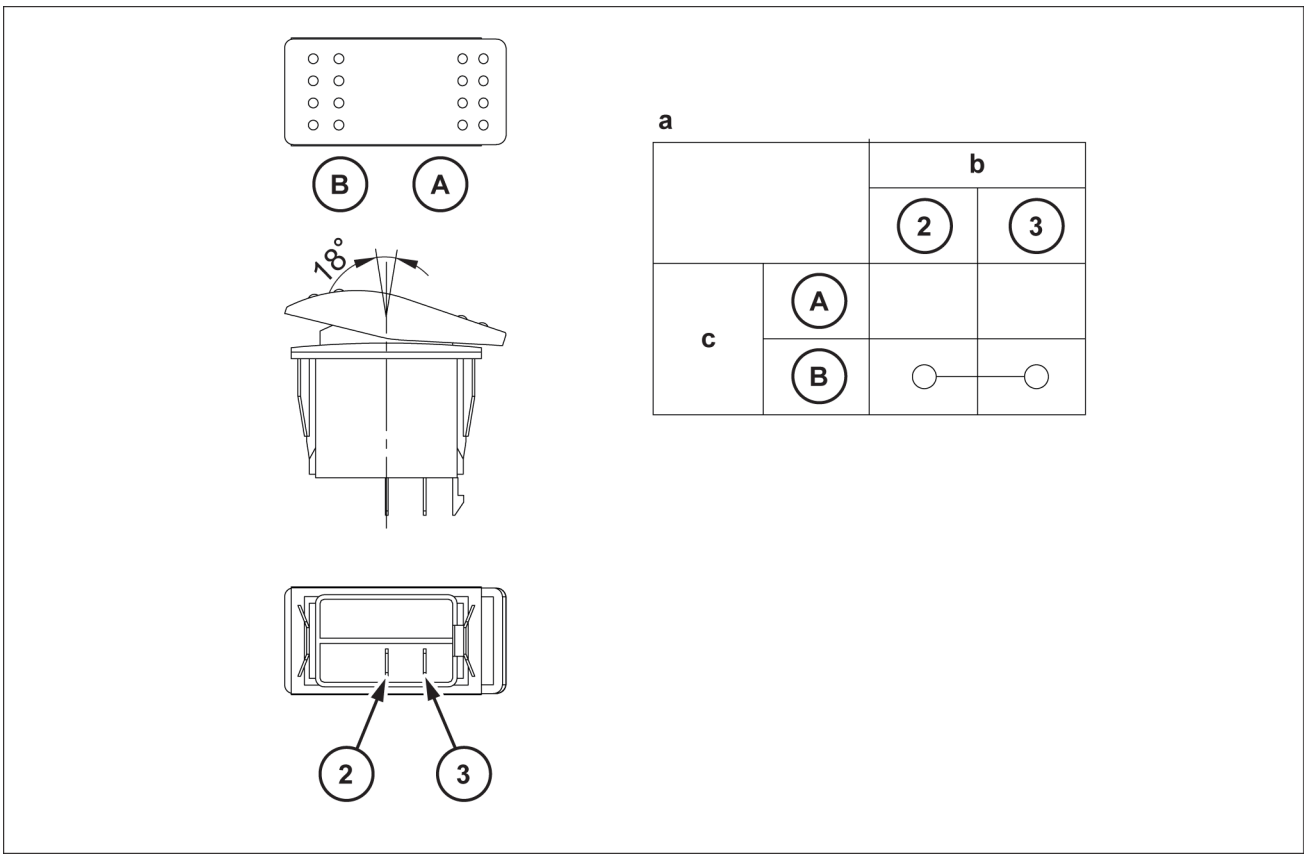


SMIL14CEX1952EB 3

1.	Control panel	3.	Connector 1
2.	Mode motor actuator	4.	Connector 10

Step	Action	Standard value	Yes	No
1	Press the refresh/recirculate switch. Does the actuator operate at all?		Go to Step 4	Go to Step 2
2	Is an error displayed?		Go to Step 3	Control panel defect
3	Is there continuity in harness between the actuator and control panel?		Actuator defect or damper lock or link defect	Harness defect
4	Is an error displayed?		Go to Step 5	Damper lock or link defect
5	Remove the actuator connector **(10)**.Is the resistance between L/Y and B/L of the actuator about **4.7 kΩ**?	About **4.7 kΩ**	Go to Step 6	Actuator defect
6	Is there continuity between the Y/L and L/Y and between Y/L and B/L of the actuator?		Control panel defect	Actuator defect

Blow mode	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5
Blow mode motor actuator degree of opening	**90°**	**67°**	**48°**	**26°**	**0°**
Panel display	FACE 	VENT 	B/L 	FOOT 	DEF 



SMIL15CEX5801FB 2

Code 2: Rocker switch (ON)-OFF (setting mode switch)

a. Connection table
b. Terminal
c. Select position

Index

Electrical systems - 55

Warning indicators, alarms, and instruments - 408

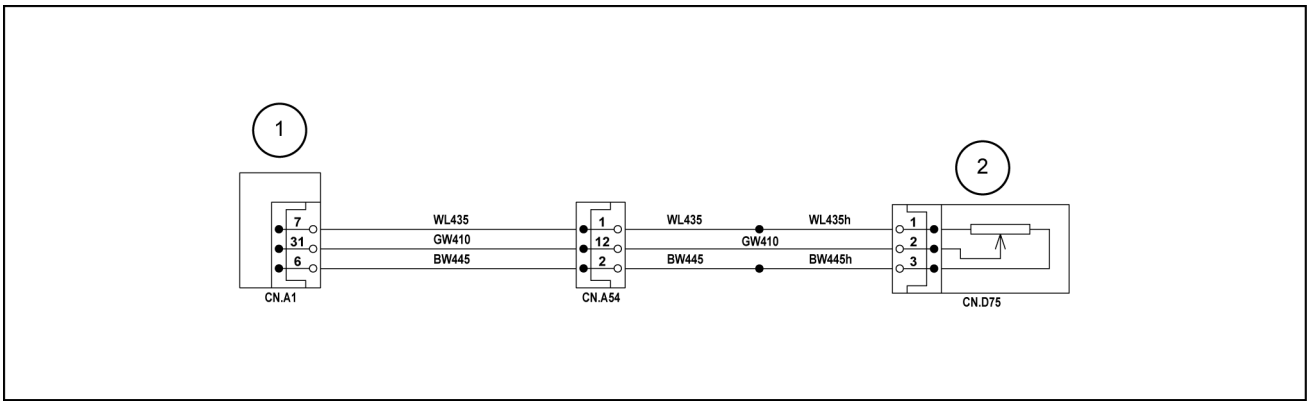
7067 - Bucket-close pilot pressure sensor signal abnormality

CX130D Crawler excavators LC version (TIER4 FINAL) - EU Market	WE
CX130D Crawler excavators Standard w/Blade version (TIER 4 FINAL) - EU market	WE

Control Module: MCM

Solution:

1. Use the below image for the fault code resolution process:



SMIL17CEX7589AA 1

1. Main controller
2. Pressure sensor (bucket close pilot)

Turn the key switch ON.

Inspect the connection status of each connector. Make sure that all the connectors are secured.

A. If diagnostic trouble code 7067 is displayed, proceed to Step **2**.

2. Check the bucket close pilot pressure sensor **(2)** voltage on the service support screen.

A. If the voltage is more than or equal to **4.75 V**, proceed to Step **3**.

B. If the voltage is less than or equal to **0.25 V**, proceed to Step **6**.

3. Turn the key switch OFF and disconnect the bucket close pilot pressure sensor **(2)** connector (3-pin) **CN.D75**.

Turn the key switch ON.

Measure the voltage between the ground and terminal 1 of the bucket close pilot pressure sensor **(2)** connector (3-pin) **CN.D75** (harness side).

A. If the voltage is not about **5 V**, find and replace the short circuit on the wire ID WL435h and WL435.

B. If the voltage is about **5 V**, proceed to Step **4**.

4. Measure the voltage between the ground and terminal 2 of the bucket close pilot pressure sensor **(2)** connector (3-pin) **CN.D75** (harness side).

A. If the voltage is more than **4.75 V**, find and replace the short circuit on the wire ID GW410.

B. If the voltage is less than or equal to **4.75 V**, proceed to Step **5**.

5. Measure the voltage between the ground and terminal 3 of the bucket close pilot pressure sensor **(2)** connector (3-pin) **CN.D75** (harness side).

A. If the voltage is more than **0.25 V**, find and replace the short circuit on the wire ID BW445h and BW445.

B. If the voltage is less than or equal to **0.25 V**, replace the main controller **(1)**.

B. If there is no continuity, repair or replace the VR902a and O902a harnesses.

7. Inspect for continuity between the terminals 2 of the connector **CN.D65** harness side and 11 of the connector **CN.A2** harness side.

   A. If there is continuity, replace the main controller **(1)**.

   B. If there is no continuity, repair or replace the VG902b and BO902b harnesses.

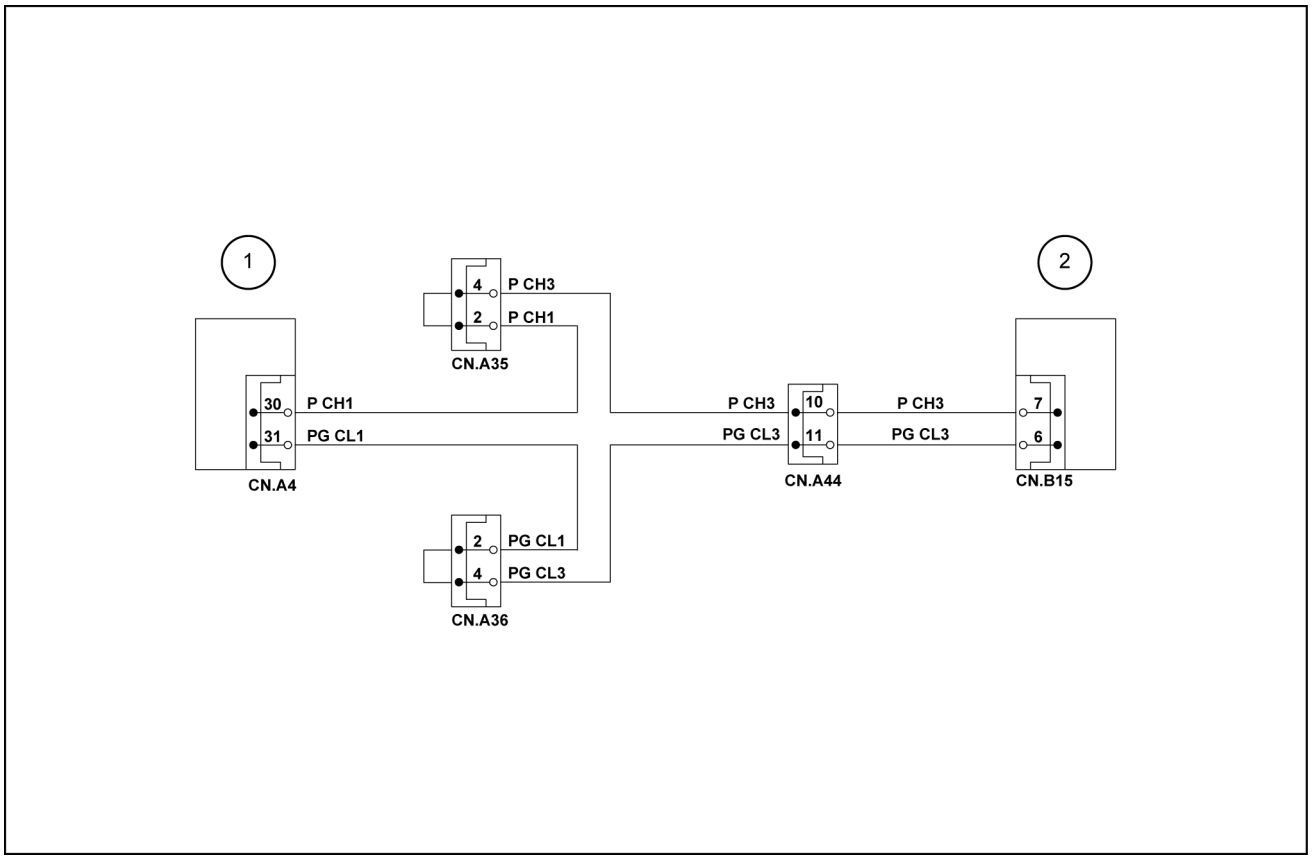
7612 - Air-conditioner communication abnormality

CX130D Crawler excavators LC version (TIER4 FINAL) - EU Market	WE
CX130D Crawler excavators Standard w/Blade version (TIER 4 FINAL) - EU market	WE

Control Module: MCM

Solution:

1. Use the below image for the fault code resolution process:



SMIL17CEX7597AA 1

1. Main controller
2. Air conditioner panel

a. CAN communication

2. Turn the key switch ON.

   Inspect the connection status of each connector.

   A. If diagnostic trouble code 7612 is displayed, proceed to Step **3**.

3. Turn the key switch OFF.

   Disconnect the connectors **CN.A4** and **CN.B15**.

   Inspect the continuity between terminal 30 of the connector **CN.A4** harness side and terminal 7 of the connector **CN.B15** harness side.

   A. If there is no continuity, repair or replace the P CH1 and P CH3 harnesses.

   B. If there is continuity, proceed to Step **4**.

A. If a problem is found, repair the signal circuit.

B. If there are no problems, proceed to Step **7**

7. Inspect the ECM harness connector **CN.D4** for a poor connection.

   A. If a problem is found, repair the harness connector **CN.D4**.

   B. If the harness connector **CN.D4** is normal, replace the ECM. (Refer to " **Engine Control Unit (ECU) - Remove (55.015)** and **Engine Control Unit (ECU) - Install (55.640)**")

8. Set the Injector ID Code, fuel delivery rate and engine number for the ECM.
9. Confirm resolution:

   1. Clear the diagnostic trouble code using the trouble diagnosis scan tool.
   2. Turn OFF the ignition switch for at least **30 s**.
   3. Start the engine.
   4. Perform a test-run under the conditions for running the diagnostic trouble code.

      NOTE: *Conditions for setting engine run time or coolant temperature vary depending on the diagnostic trouble codes.*

   5. Use the trouble diagnosis scan tool to confirm that a diagnostic trouble code has not been detected.

Wiring harnesses - Electrical schematic sheet 19 (55.100)
Wiring harnesses - Electrical schematic sheet 14 (55.100)

P0380 - Glow plug circuit

CX130D Crawler excavators LC version (TIER4 FINAL) - EU Market	WE
CX130D Crawler excavators Standard w/Blade version (TIER 4 FINAL) - EU market	WE

Control Module: ECM

Solution:

1. Turn OFF the ignition switch.

   Replace the glow relay with a starter relay or a known good relay.

   Perform the glow relay test with the trouble diagnosis scan tool.

   Command the glow relay ON and OFF.

   Check whether an operation sound is heard from the glow relay upon execution of each command.

   If the operating sound of the glow relay can be heard, remove the glow relay.

   Inspect for poor connections at the glow relay terminal.

   A. If a problem is found, repair the glow relay terminal.

   B. If the glow relay terminal is normal, replace the glow relay.

   C. If there are no problems, proceed to Step **2**.
2. Turn OFF the ignition switch.

   Inspect between the ignition switch and the glow relay coil side for an open circuit or high resistance.

   A. If a problem is found, repair the circuit between the ignition switch and glow relay coil side.

   B. If there are no problems, proceed to Step **3**.
3. Inspect the control circuit between the ECM and glow relay.

   NOTE:
   • Make sure that there is no open circuit or high resistance.
   • Make sure that there is no short to GND.

   A. If a problem is found, repair the control circuit.

   B. If there are no problems, proceed to Step **4**.
4. Inspect for poor connections at the ECM harness connector **CN.D3**.

   A. If a problem is found, repair the harness connector **CN.D3**.

   B. If the harness connector **CN.D3** is normal, replace the ECM. (Refer to " **Engine Control Unit (ECU) - Remove (55.015)** and **Engine Control Unit (ECU) - Install (55.640)**")
5. Set the Injector ID Code, fuel delivery rate and engine No. for the ECM.
6. Confirm resolution:

   1. Clear the diagnostic trouble code using the trouble diagnosis scan tool.

   2. Turn OFF the ignition switch for at least **60 s**.

   3. Start the engine.

   4. Perform a test-run under the conditions for running the diagnostic trouble code.

NOTE:
• After clearing the DCU diagnostic trouble code, observe whether ECM diagnostic trouble code P20C9 is set.
• If diagnostic trouble code P20C9 is set, clear it.

2. Turn OFF the ignition switch until communication with the trouble diagnosis scan tool is discontinued.

3. Turn ON the ignition switch without starting the engine.

4. Observe the diagnostic trouble code information with the trouble diagnosis scan tool. A diagnostic trouble code should not be set.

Wiring harnesses - Electrical schematic sheet 15 (55.100)

NOTE:
• After clearing the DCU diagnostic trouble code, observe whether ECM diagnostic trouble code P20C9 is set.
• If diagnostic trouble code P20C9 is set, clear it.

2. Turn OFF the ignition switch until communication with the trouble diagnosis scan tool is discontinued.

3. Turn ON the ignition switch without starting the engine.

4. Observe the diagnostic trouble code information with the trouble diagnosis scan tool. A diagnostic trouble code should not be set.

Wiring harnesses - Electrical schematic sheet 20 (55.100)

B. If there are no problems, replace the urea fluid supply module. (Refer to " **Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA supply module - Remove (55.988)** and **Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA supply module - Install (55.988)**")

6. Turn OFF the ignition switch.

   Disconnect the DCU harness connector **CN.D2**.

   Inspect the DCU harness connector **CN.D2**.

   NOTE:
   • Make sure that there is no intermittent conditions, poor connections, or corrosion.
   • Make sure that there is no water intrusion or adhering foreign material.

   A. If a problem is found, repair the connector **CN.D2**.

   B. If there are no problems, replace the DCU. (Refer to " **Dosing control unit - Remove (55.988)** and **Dosing control unit - Install (55.988)**")

7. Confirm resolution:

   1. Clear the diagnostic trouble code using the trouble diagnosis scan tool.

   NOTE:
   • After clearing the DCU diagnostic trouble code, observe whether ECM diagnostic trouble code 20C9 is set.
   • If diagnostic trouble code 20C9 is set, clear it.

   2. Turn OFF the ignition switch until communication with the trouble diagnosis scan tool is discontinued.

   3. Turn ON the ignition switch without starting the engine.

   4. Observe the diagnostic trouble code information with the trouble diagnosis scan tool. A diagnostic trouble code should not be set.

Wiring harnesses - Electrical schematic sheet 15 (55.100)

P20B3 - Urea fluid tank heater coolant control valve circuit low voltage

CX130D Crawler excavators LC version (TIER4 FINAL) - EU Market	WE
CX130D Crawler excavators Standard w/Blade version (TIER 4 FINAL) - EU market	WE

Control Module: DCU

Solution:

1. Turn OFF the ignition switch.

   Disconnect the coolant control valve harness connector **CN.D40**

   Inspect the coolant control valve harness connector **CN.D40**

   NOTE:
   • Make sure that there is no intermittent conditions, poor connections, or corrosion for any of the terminals.
   • Make sure that there is no open circuit, high resistance, or short to any of the circuits.
   • Make sure that there is no water intrusion or adhering foreign material.

   A. If a problem is found, repair the connector **CN.D40**

   B. If there are no problems, proceed to Step **2**.
2. Disconnect the DCU harness connector **CN.D2**

   Inspect the DCU harness connector **CN.D2**

   NOTE:
   • Make sure that there is no intermittent conditions, poor connections, or corrosion for any of the terminals.
   • Make sure that there is no water intrusion or adhering foreign material.

   A. If a problem is found, repair the connector **CN.D2**

   B. If there are no problems, proceed to Step **3**.
3. Inspect the power supply circuit between the DCU and the coolant control valve for an open circuit or high resistance.

   A. If a problem is found, repair the power supply circuit.

   B. If there are no problems, proceed to Step **4**.
4. Inspect the control circuit between the DCU and the coolant control valve.

   NOTE:
   • Make sure that there is no short to the GND circuit.
   • Make sure that there is no short to metallic parts such as the frame.

   A. If a problem is found, repair the control circuit.

   B. If there are no problems, proceed to Step **5**.
5. Turn ON the ignition switch without starting the engine.

   Observe the diagnostic trouble code information with a trouble diagnosis scan tool.

   A. If diagnostic trouble code 20B1 is set but 20B3 is not set, replace the coolant control valve. (Refer to " **Coolant control valve - Remove (10.500)** and **Coolant control valve - Install (10.500)**")
6. Turn OFF the ignition switch.

   replace the DCU. (Refer to " **Dosing control unit - Remove (55.988)** and **Dosing control unit - Install (55.988)**")
7. Confirm resolution:

P242C - Exhaust gas temperature (EGT) sensor 3 circuit low voltage

CX130D Crawler excavators LC version (TIER4 FINAL) - EU Market	WE
CX130D Crawler excavators Standard w/Blade version (TIER 4 FINAL) - EU market	WE

Control Module: DCU

Solution:

1. Turn OFF the ignition switch.

   Disconnect the exhaust gas temperature sensor 3 harness connector **CN.D90-4**.

   Inspect the exhaust gas temperature sensor 3 harness connector **CN.D90-4**.

   NOTE:
   • Make sure that there should be no intermittent conditions, poor connections, or corrosion.
   • Make sure that there should be no water intrusion or adhering foreign material.

   A. If a problem is found, repair the connector **CN.D90-4**.

   B. If there are no problems, proceed to Step **2**.
2. Turn ON the ignition switch without starting the engine.

   Observe the diagnostic trouble code information with a trouble diagnosis scan tool.

   A. If diagnostic trouble code 242D is set but 242C is not set, replace exhaust gas temperature sensor 3. (Refer to " **Exhaust Gas Recirculation (EGR) temperature sensors - Remove - Temperature sensor 3 (55.989)** and **Exhaust Gas Recirculation (EGR) temperature sensors - Install - Temperature sensor 3 (55.989)**")

   NOTE: *If exhaust gas temperature sensor 3 is replaced, reset the exhaust gas temperature sensor 3 data with the trouble diagnosis scan tool.*
3. Inspect the signal circuit between the DCU and exhaust gas temperature sensor 3.

   NOTE:
   • Make sure that there should be no short to the GND circuit.
   • Make sure that there should be no short to metallic parts such as the frame.

   A. If a problem is found, repair the signal circuit.

   B. If there are no problems, proceed to Step **2**.
4. Turn OFF the ignition switch.

   Disconnect the DCU harness connector **CN.D2**.

   Inspect the DCU harness connector **CN.D2**.

   NOTE:
   • Make sure that there should be no intermittent conditions, poor connections, or corrosion.
   • Make sure that there should be no water intrusion or adhering foreign material.

   A. If a problem is found, repair the connector **CN.D2**.

   B. If there are no problems, proceed to Step **2**.
5. replace the DCU. (Refer to " **Dosing control unit - Remove (55.988)** and **Dosing control unit - Install (55.988)**")
6. Confirm resolution:

   1. Clear the diagnostic trouble code with the trouble diagnosis scan tool.

(*) See content for specific models

Boom - Remove

CX130D Crawler excavators LC version (TIER4 FINAL) - EU Market	WE
CX130D Crawler excavators Standard w/Blade version (TIER 4 FINAL) - EU market	WE

Remove the bucket. (For details, see **Bucket - Remove (84.100)**)

Remove the bucket link. (For details, see **Link and rod - Remove (84.100)**)

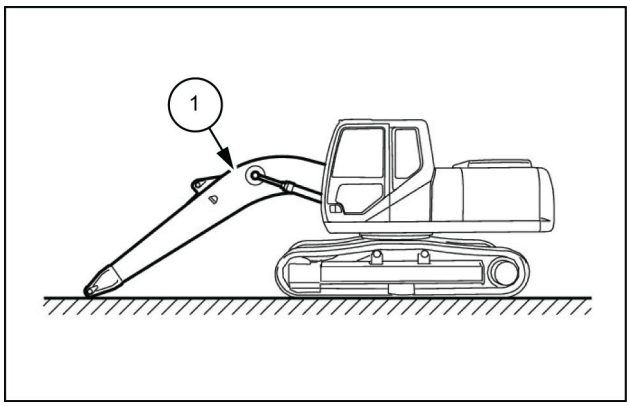
Remove the bucket cylinder. (For details, see **Bucket cylinder - Remove (35.738)**)

Remove the arm cylinder. (For details, see **Dipper cylinder - Remove (35.737)**)

Remove the arm. (For details, see **Dipper - Remove (84.912)**)

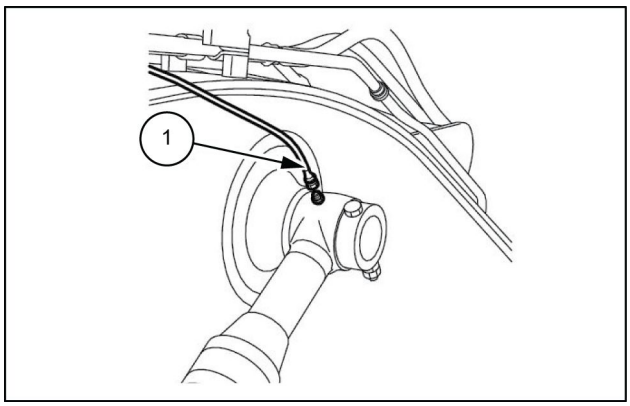
This section explains the procedure for when attaching the boom cylinder to the frame.
When removing the boom cylinder too, see **Boom cylinder - Remove (35.736)**.

1. Bring the boom **(1)** top in contact with the ground.



SMIL13CEX1079AB 1

2. Use a wrench [**19 mm**] to remove the grease hoses on the left and right sides **(1)**.
   - Use caps or plugs to prevent any entry of water, dust or dirt.



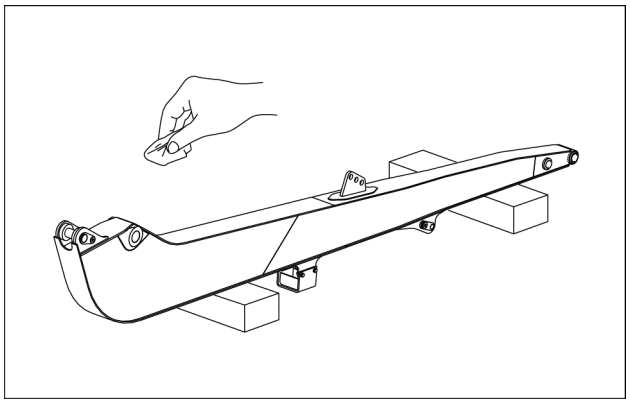
LPIL12CX02860AB 2

Dipper - Install

CX130D Long Reach Crawler excavators LC Long Reach (Tier 4 FINAL) - EU Market	WE

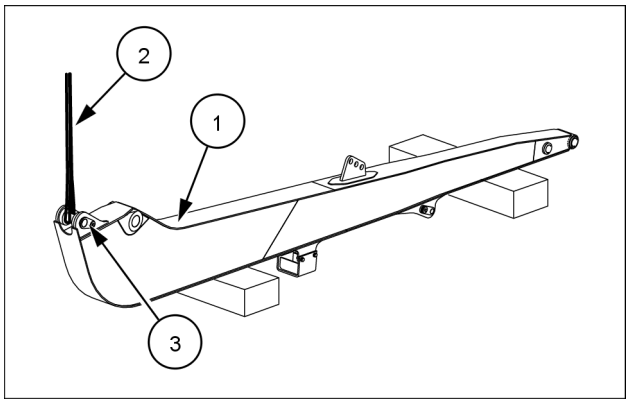
- Tighten bolts being installed to the specified torque.
- When the torque is not specified, check the **Torque - Bolt and nut ()** .

1. Clean pins and pin holes in respective parts.



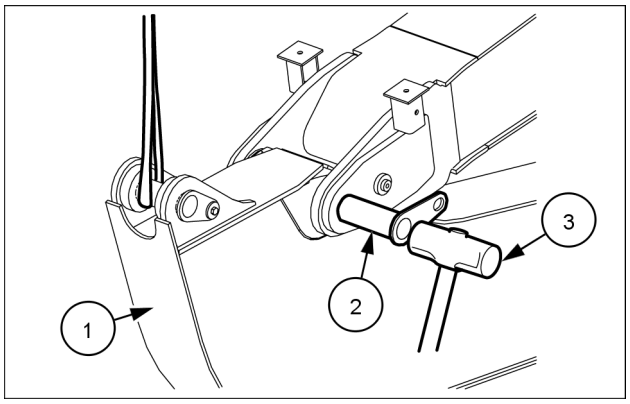
SMIL17CEX5164AA 1

2. Insert the pin **(3)** of the arm cylinder in the arm **(1)**, and hold it with a liftcrane and a nylon sling **(2)**.



SMIL17CEX5165AA 2

3. Align a hole in the arm **(1)** with that in the boom, and use a hammer **(3)** to push the pin **(2)** in and install the arm **(1)**.
   - If it is hard to put in the pin, load is applied to the pin.
   - When inserting the pin, be careful not to damage the attached dust seal.



SMIL17CEX5166AA 3

Cab and platform - Prepare

⚠ WARNING

Avoid injury!
Shut off the engine, remove the key, and make sure all motion is stopped before servicing the machine. Failure to comply could result in death or serious injury.

W1128A

⚠ WARNING

Crushing hazard!
The lifting systems must be operated by qualified personnel who are aware of the correct procedures to follow. Make sure all lifting equipment is in good condition, and all hooks are equipped with safety latches.
Failure to comply could result in death or serious injury.

W0256A

⚠ WARNING

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.
Failure to comply could result in death or serious injury.

W0398A

Items to prepare:

- Wrenches [**10 mm**, **12 mm**, **13 mm**, **19 mm**, **24 mm**, **41 mm**]
- Box wrenches [**10 mm**, **13 mm**, **19 mm**]
- Long-nose pliers
- Screwdriver
- Phillips screwdriver
- Eyebolts (M24 x 4)
- Chains (wire ropes) (with the required breaking load)
- Lifting equipment (with the required lifting capacity)
- Lubricant
- Rag
- Cleaning fluid
- Wood planks, etc.