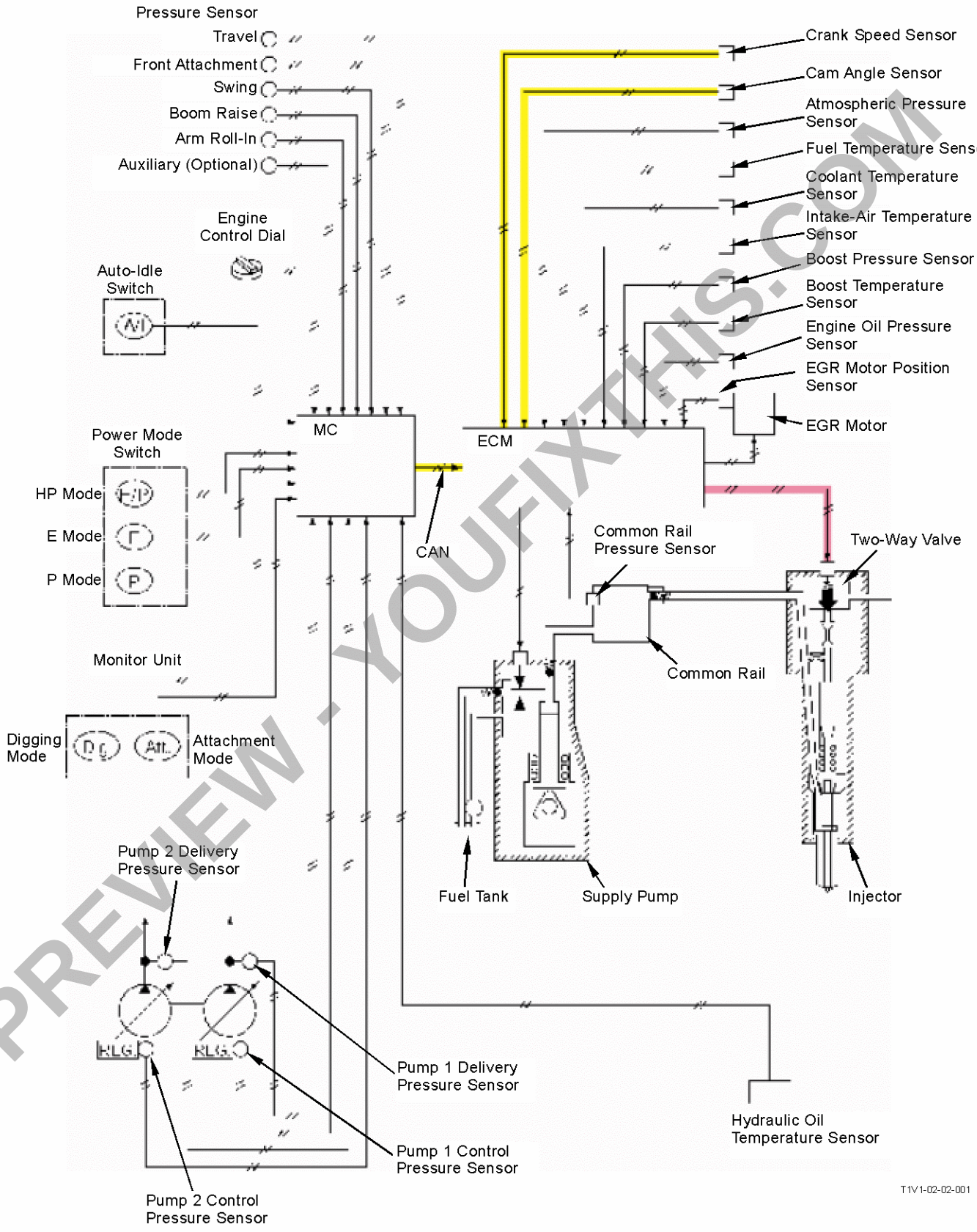
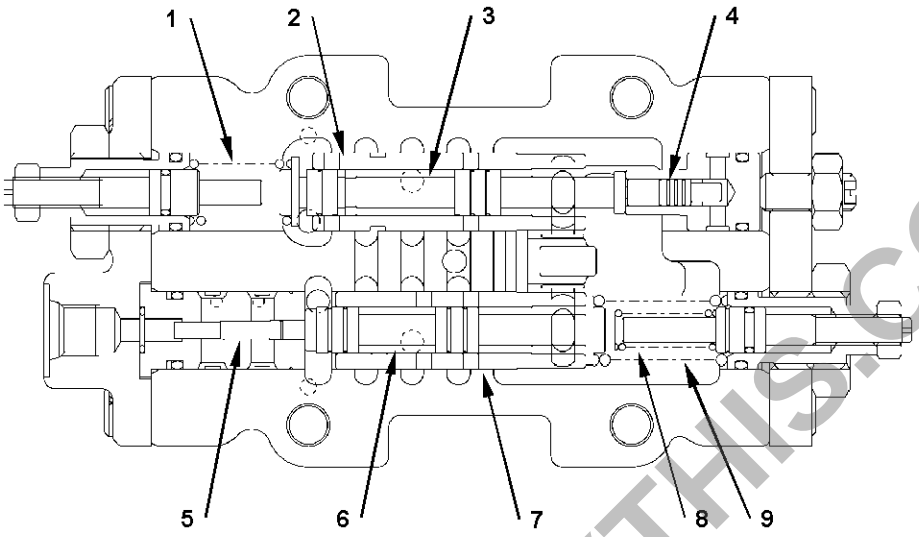
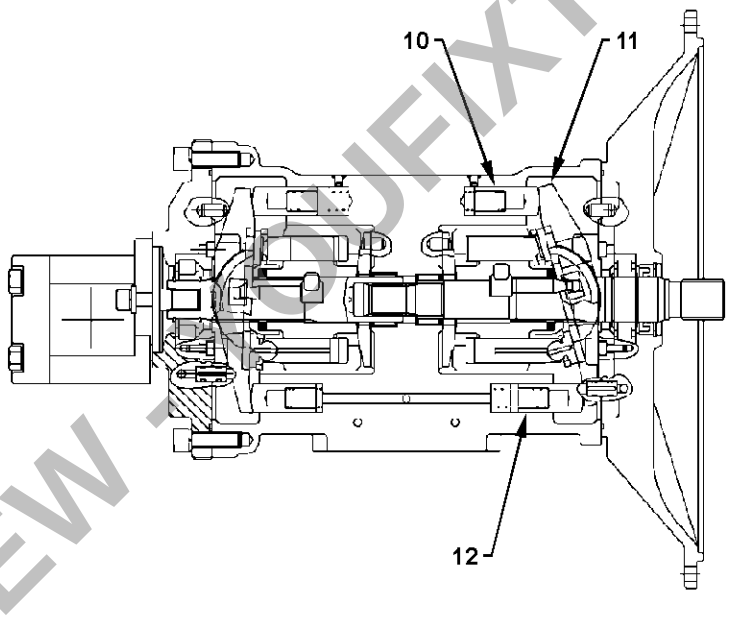


PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



T176-03-01-006



T176-03-01-004

1 - Spring
2 - Sleeve 1
3 - Spool 1
4 - Piston
5 - Load Piston
6 - Spool 2
7 - Sleeve 2
8 - Inner Spring
9 - Outer Spring
10 - Servo Piston 1
11 - Swash Plate
12 - Servo Piston 2

PREVIEW - YOUFIXTHIS.COM

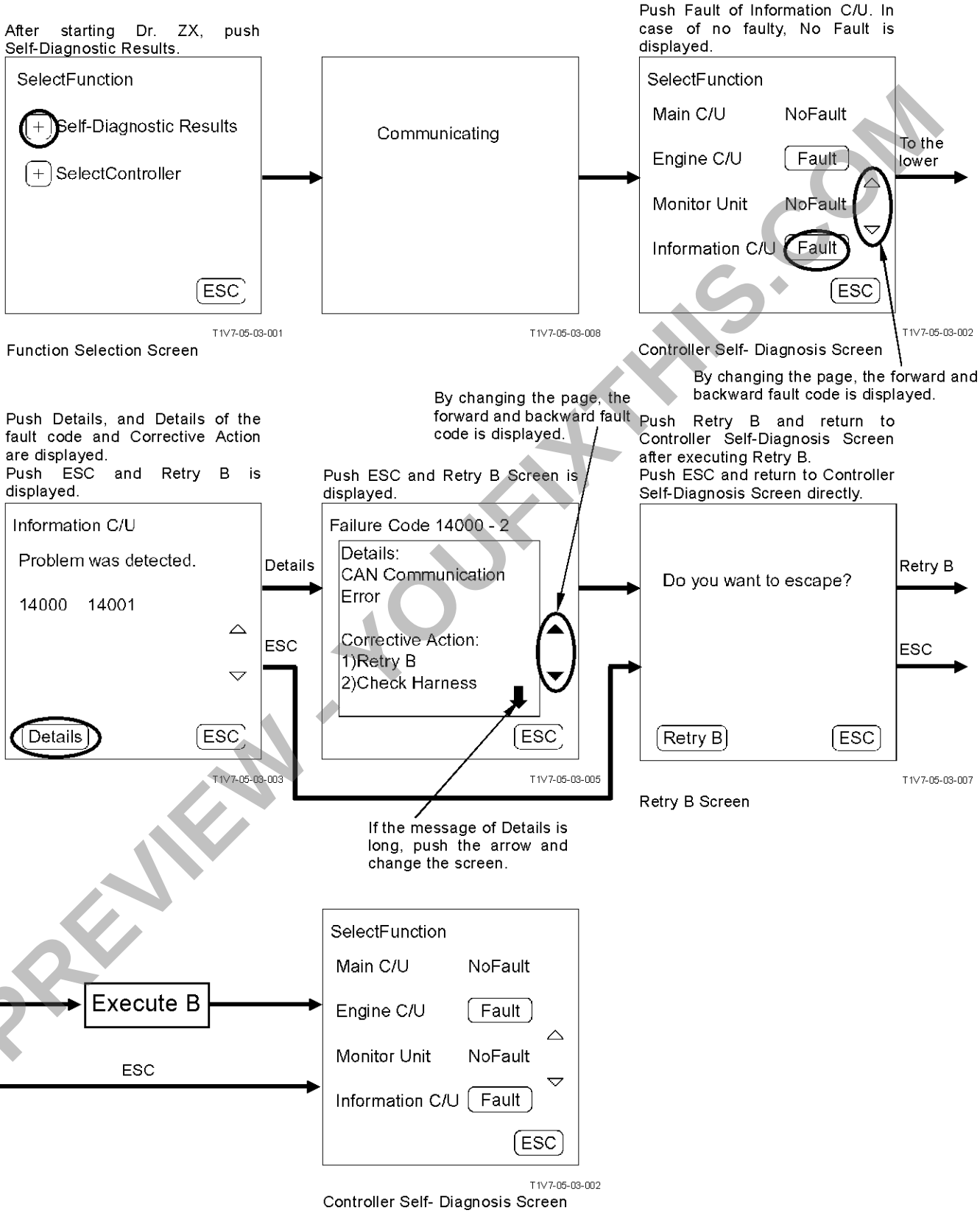
Download full manual at youfixthis.com

PERFORMANCE TEST DESIGNATION	ZX110-3 class (Performance Standard)	Remarks	Reference Page
CONTROL LEVER OPERATING FORCE N (kgf, lbf)		HITACHI lever pattern	T4-4-20
Boom Lever	16 (1.6, 3.6) or less		
Arm Lever (ISO Lever Pattern: Swing Lever)	13 (1.3, 2.9) or less		
Bucket Lever	13 (1.3, 2.9) or less		
Swing Lever (ISO Lever Pattern: Arm Lever)	16 (1.6, 3.6) or less		
Travel Lever	28 (2.8, 6.3) or less		
CONTROL LEVER STROKE mm		HITACHI lever pattern	T4-4-21
Boom Lever	97±10		
Arm Lever (ISO Lever Pattern: Swing Lever)	82±10		
Bucket Lever	82±10		
Swing Lever (ISO Lever Pattern: Arm Lever)	97±10		
Travel Lever	120±10		
COMBINED OPERATION OF BOOM RAISE/SWING sec	3.1±0.4	2.26 m arm 0.45 m^3 (PCSA heaped) bucket, bucket: empty	T4-4-22
Bucket Teeth Height: H mm	5400 or more		
COMBINED OPERATION OF BOOM RAISE/ARM ROLL-IN sec	5.3±0.5	2.26 m arm 0.45 m^3 (PCSA heaped) bucket	T4-4-23
HYDRAULIC SYSTEM			
PRIMARY PILOT PRESSURE MPa (kgf/cm^2, psi)			T4-5-1
Engine: Fast Idle	$4.0^{+1.0}_{-0.5}$ (40^{+10}_{-5}, 580^{+142}_{-71})		
Engine: Slow Idle	$3.8^{+1.0}_{-0.5}$ (38^{+10}_{-5}, 550^{+145}_{-71})		
SECONDARY PILOT PRESSURE MPa (kgf/cm^2, psi)			T4-5-3
(Engine: Fast Idle (noraml) and Slow Idle)	3.4 to 4.0 (34 to 40, 483 to 570)	Value indicated on Dr. ZX (Lever: Full stroke)	

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Self-Diagnosis



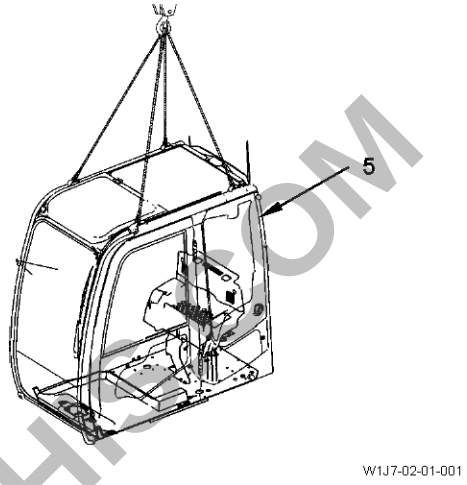
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Installation

CAUTION: Cab (5) weight: 330 kg (730 lb)

1. Attach a nylon sling onto the bracket in cab (5). Hoist cab (5). Align cab (5) with the mounting hole on main frame (30).

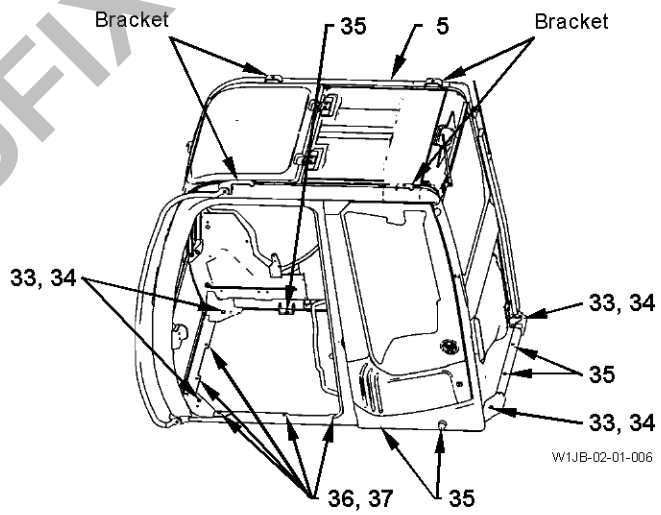


W1J7-02-01-001

2. Install cab (5) to main frame (30) with nuts (33) (4 used) and washers (34) (4 used).
   : 24 mm
   : 210 N·m (21 kgf·m, 155 lbf·ft)

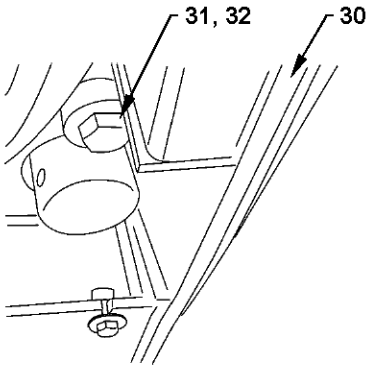
3. Install cab (5) to main frame (30) with socket bolts (35) (6 used).
   : 8 mm
   : 50 N·m (5 kgf·m, 37 lbf·ft)

4. Install cab (5) to main frame (30) with bolts (36) (5 used) and washers (37) (5 used).
   : 17 mm
   : 50 N·m (5 kgf·m, 37 lbf·ft)



W1JB-02-01-006

5. Install cab (5) to main frame (30) with anchor bolts (32) (2 used) and spacers (31) (2 used).
   : 30 mm
   : 550 N·m (56 kgf·m, 410 lbf·ft)



W1R7-02-01-002

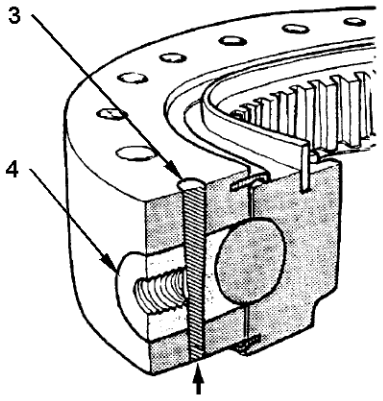
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Disassembly of Swing Bearing

1. Tap and remove pin (3) of plug (4) upward from outer race (1).

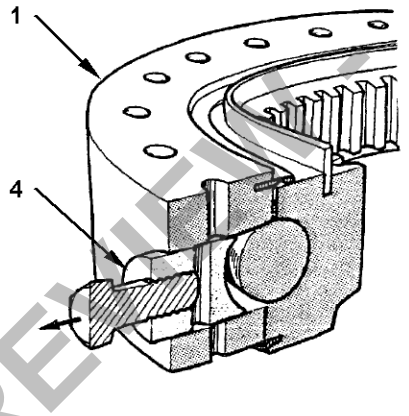
NOTE: After installing pin (3), pin (3) was crimped. Grind off the crimped part.



W105-03-01-007

2. Remove plug (4) from outer race (1).

NOTE: Install the bolt into the screw hole (M10, Pitch 1.5 mm) of plug (4). Tap or pull the bolt from the inner side.

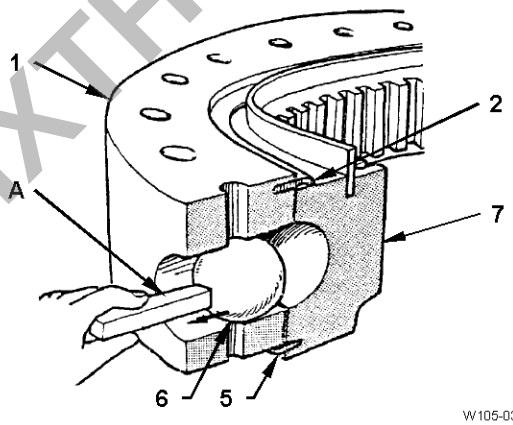


W105-03-01-008

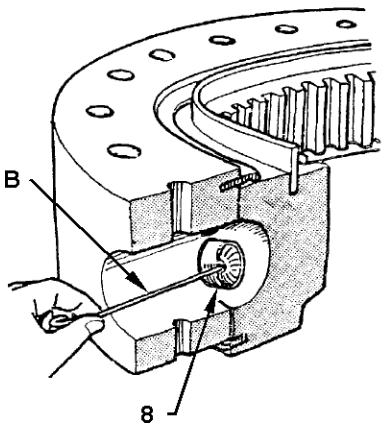
CAUTION: Swing bearing weight: 160 kg (355 lb)

3. Place inner race (7) of the swing bearing onto a wooden block by using the special tool (ST 0050). Hoist and hold outer race (1) slightly. Remove seals (2, 5) from outer race (1) and inner race (7) respectively by using a scrapper.

4. Remove balls (6) (99 used) and supports (8) (99 used) from the plug (4) hole while rotating outer race (1).
   Remove ball (6) by using magnet (A). Use wire (B) and remove support (8).



W105-03-01-009



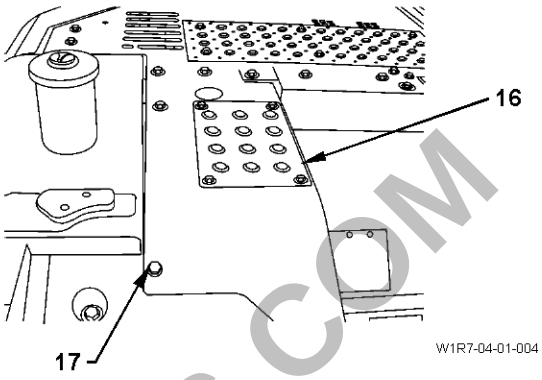
W105-03-01-010

PREVIEW - YOUFIXTHIS.COM

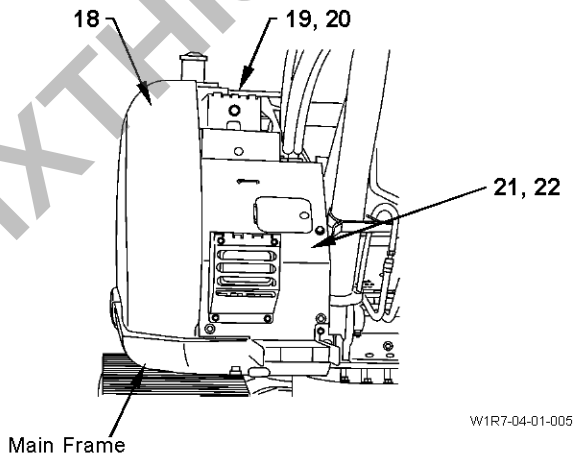
Download full manual at youfixthis.com

NOTE: Steps 11 and 12 are required for removal of ZX135US-3 class.

11. Remove bolts (17) (5 used). Remove cover (16) from the upper side of the upperstructure side.
    : 17 mm



12. Open cover (18). Remove bolts (20) (5 used) and (22) (7 used) from covers (19, 21). Remove covers (19, 21) from the main frame.
    : 17 mm



PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

SAFETY ALERT SYMBOL AND HEADLINE NOTATIONS

In this manual, the following safety alert symbol and signal words are used to alert the reader to the potential for personal injury of machine damage.

⚠ This is the safety alert symbol. When you see this symbol, be alert to the potential for personal injury.
Never fail to follow the safety instructions prescribed along with the safety alert symbol.
The safety alert symbol is also used to draw attention to component/part weights.
To avoid injury and damage, be sure to use appropriate lifting techniques and equipment when lifting heavy parts.

- ⚠ **CAUTION:**
  Indicated potentially hazardous situation which could, if not avoided, result in personal injury or death.

- **IMPORTANT:**
  Indicates a situation which, if not conformed to the instructions, could result in damage to the machine.

- *NOTE:*
  Indicates supplementary technical information or know-how.

UNITS USED

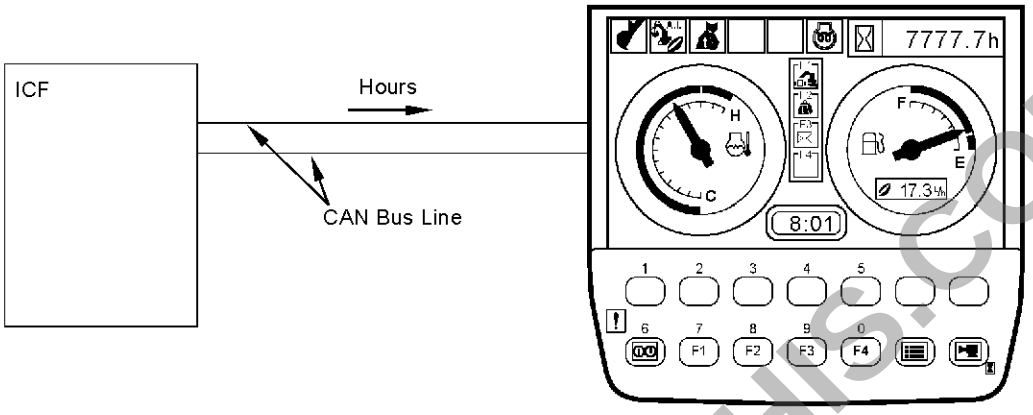
- SI Units (International System of Units) are used in this manual.
  MKSA system units and English units are also indicated in parenthheses just behind SI units.
  Example : 24.5 MPa (250 kgf/cm^2, 3560 psi)

  A table for conversion from SI units to other system units is shown below for reference purposees.

Quantity	To Convert From	Into	Multiply By	Quantity	To Convert From	Into	Multiply By
Length	mm	in	0.03937	Pressure	MPa	kgf/cm^2	10.197
	mm	ft	0.003281		MPa	psi	145.0
Volume	L	US gal	0.2642	Power	kW	PS	1.360
	L	US qt	1.057		kW	HP	1.341
	m^3	yd^3	1.308	Temperature	°C	°F	°C×1.8+32
Weight	kg	lb	2.205	Velocity	km/h	mph	0.6214
Force	N	kgf	0.10197		min^{-1}	rpm	1.0
	N	lbf	0.2248	Flow rate	L/min	US gpm	0.2642
Torque	N·m	kgf·m	1.0197		mL/rev	cc/rev	1.0
	N·m	lbf·ft	0.7375				

PREVIEW - YOUFIXTHIS.COM

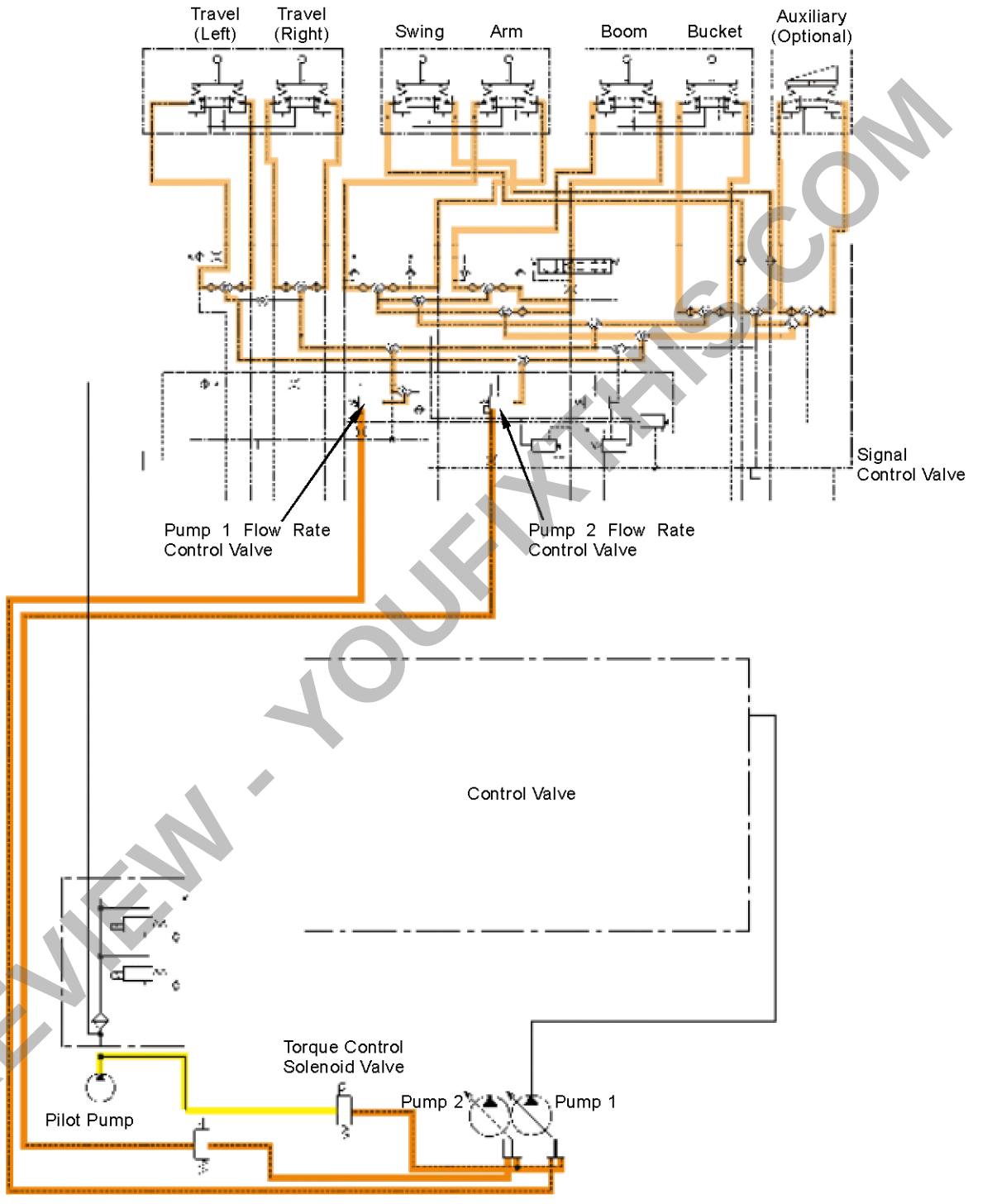
Download full manual at youfixthis.com



T1V1-02-01-062

PREVIEW - YOUFIXTHIS.COM

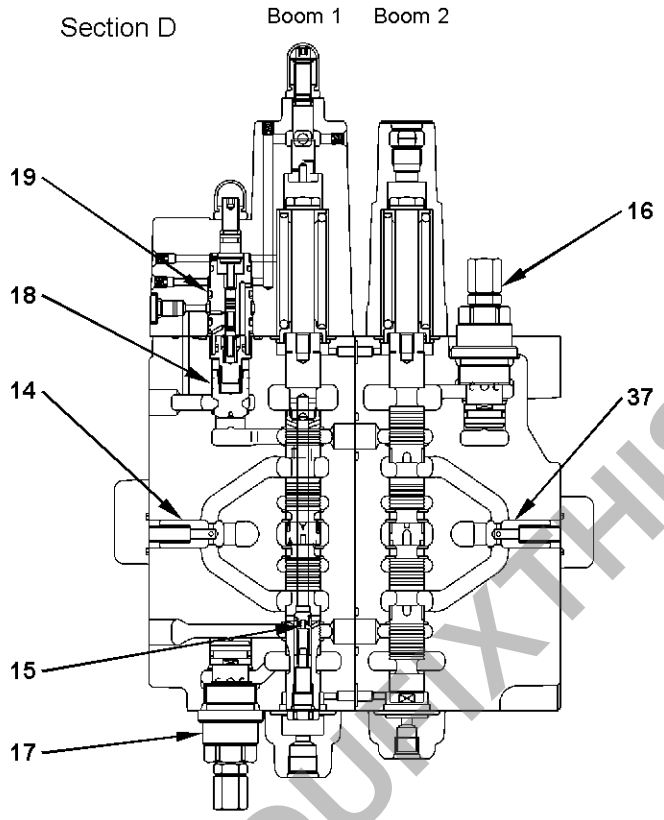
Download full manual at youfixthis.com



PREVIEW - YOUFIXTHIS.COM

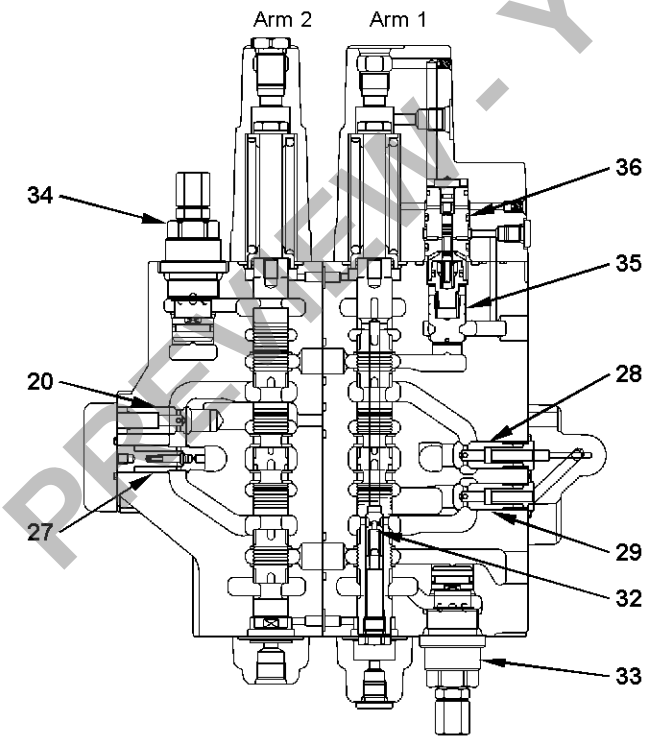
Download full manual at youfixthis.com

Section D



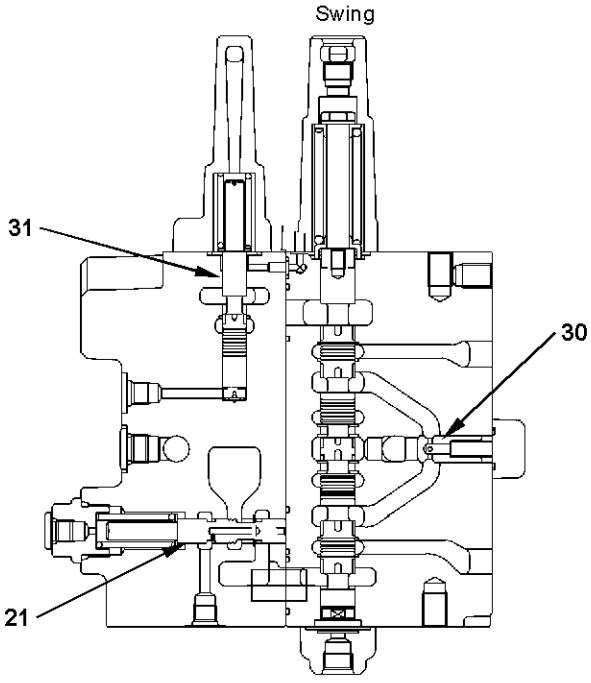
T176-03-03-005

Section E



T176-03-03-006

Section F



T176-03-03-007

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

OPERATE ONLY FROM OPERATOR'S SEAT

- Inappropriate engine starting procedures may cause the machine to runaway, possibly resulting in serious injury or death.

  - Start the engine only when seated in the operator's seat.
  - NEVER start the engine while standing on the track or on ground.
  - Do not start engine by shorting across starter terminals.
  - Before starting the engine, confirm that all control levers are in neutral.
  - Before starting the engine, confirm the safety around the machine and sound the horn to alert bystanders.

012-E01B-0431



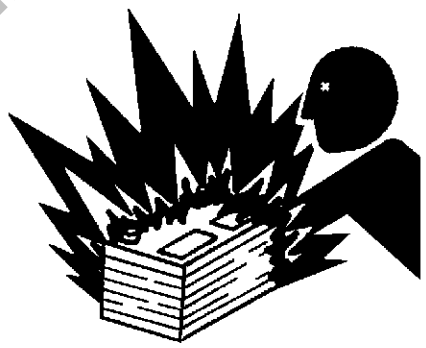
SA-444

JUMP STARTING

- Battery gas can explode, resulting in serious injury.

  - If the engine must be jump started, be sure to follow the instructions shown in the "OPERATING THE ENGINE" chapter in the operator's manual.
  - The operator must be in the operator's seat so that the machine will be under control when the engine starts. Jump starting is a two-person operation.
  - Never use a frozen battery.
  - Failure to follow correct jump starting procedures could result in a battery explosion or a runaway machine.

S013-E01A-0032



SA-032

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

1-4. Measurement of the cycle time of blade cylinder:
Raise the machine by using the front attachment in order to be able to move the blade cylinder to fully stroke.

2. Maintain hydraulic oil temperature at 50±5 °C (122±9 °F).

Measurement:

1. Select the following switch positions:

Engine Control Dial	Power Mode Switch	Auto-Idle Switch	Work Mode
Fast Idle	P Mode	OFF	Digging Mode

2. Measure the cylinder cycle times as follows.
(Cylinder full stroke includes cylinder cushioning zone.)

2-1 Boom cylinder:
Operate the boom control lever to full stroke. Measure the time to raise and lower the boom.

2-2 Arm cylinder:
Operate the arm control lever to full stroke. Measure the time to roll in and roll out the arm.

2-3 Bucket cylinder:
Operate the bucket control lever to full stroke. Measure the time to roll in and roll out the bucket.

2-4 Blade cylinder (optional):
Operate the blade control lever to full stroke. Measure the time to raise and lower the blade.



T191-04-03-009

Evaluation:

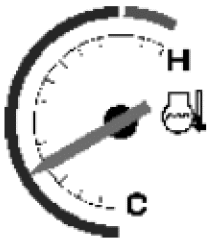
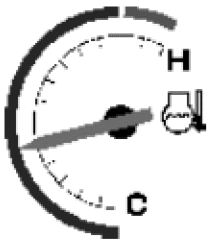
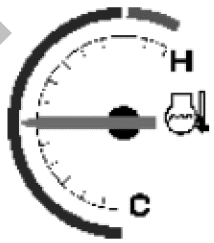
Refer to Operational Performance Standard in T4-2.

Remedy:

Refer to Troubleshooting B in T5-7.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Coolant Temperature	Primary Screen
45°C or more Less than 50°C	 T1V1-05-02-042
50°C or more Less than 60°C	 T1V1-05-02-045
60°C or more Less than 80°C	↑
80°C or more Less than 96°C	 T1V1-05-02-047
96°C or more Less than 98°C	↑

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

ZX120-3 class, ZX135US-3 class

Adjustment Data	Min. Adjustment Value	Adjustable Range	Standard Adjustment	Remarks
ATT1				
ATT1 ATT Type/No.	-	0 to 5	Breaker 1	
ATT1 P1 Max Swash Angle Adjustment	0.5 L/min	35 to 105 L/min	105 L/min	
ATT1 P2 Max Swash Angle Adjustment	0.5 L/min	35 to 105 L/min	105 L/min	
ATT1 Engine Speed Increase/Decrease	10 min^{-1}	-500 to 200 min^{-1}	0 min^{-1}	
ATT1 Secondary Pilot Relief Pressure Selection	-	ON/OFF	ON	
ATT1 Selector Valve Selection	-	C/V or O/T	O/T	
ATT1 Accumulator Selection	-	ON/OFF	OFF	
ATT1 2-Speed Selection	-	ON/OFF	OFF	
ATT2				
ATT2 ATT Type/No.	-	0 to 5	Breaker 2	
ATT2 P1 Max Swash Angle Adjustment	0.5 L/min	35 to 105 L/min	105 L/min	
ATT2 P2 Max Swash Angle Adjustment	0.5 L/min	35 to 105 L/min	105 L/min	
ATT2 Engine Speed Increase/Decrease	10 min^{-1}	-500 to 200 min^{-1}	0 min^{-1}	
ATT2 Secondary Pilot Relief Pressure Selection	-	ON/OFF	OFF	
ATT2 Selector Valve Selection	-	C/V or O/T	O/T	
ATT2 Accumulator Selection	-	ON/OFF	ON	
ATT2 2-Speed Selection	-	ON/OFF	OFF	
ATT3				
ATT3 ATT Type/No.	-	0 to 5	Secondary Crusher 1	
ATT3 P1 Max Swash Angle Adjustment	0.5 L/min	35 to 105 L/min	105 L/min	
ATT3 P2 Max Swash Angle Adjustment	0.5 L/min	35 to 105 L/min	105 L/min	
ATT3 Engine Speed Increase/Decrease	10 min^{-1}	-500 to 200 min^{-1}	200 min^{-1}	
ATT3 Secondary Pilot Relief Pressure Selection	-	ON/OFF	OFF	
ATT3 Selector Valve Selection	-	C/V or O/T	C/V	
ATT3 Accumulator Selection	-	ON/OFF	OFF	
ATT3 2-Speed Selection	-	ON/OFF	ON	

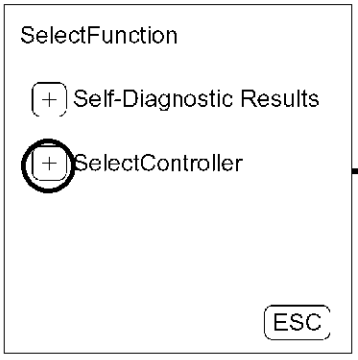
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

MAINTENANCE DISPLAY ITEM ON/OFF SELECTION

Maintenance Display Item: ON

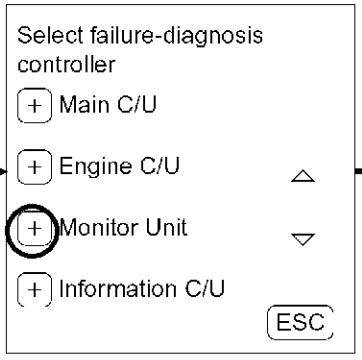
After starting Dr. ZX, push Select Controller.



T1V7-05-03-001

Function Selection Screen

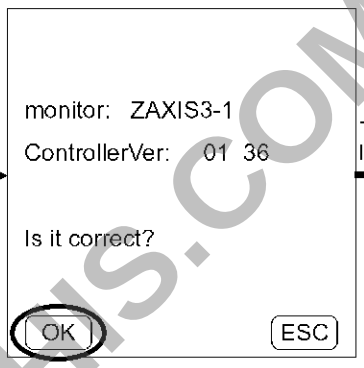
Push Monitor Unit.



T1V7-05-03-009

Controller Selection Screen

Push OK.

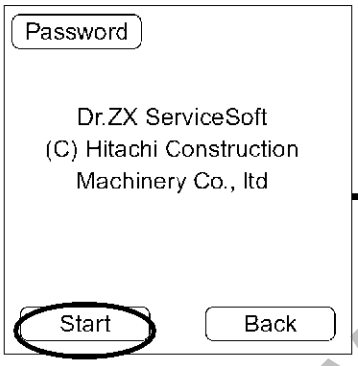


To the lower

T1V7-05-03-041

Monitor Controller Screen

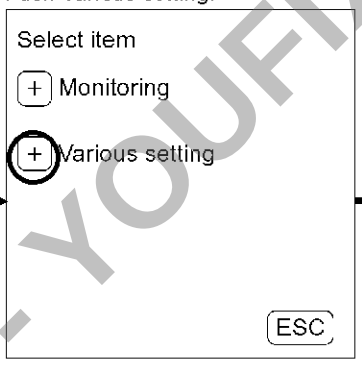
Push Start.



T1V7-05-03-025

Title Screen

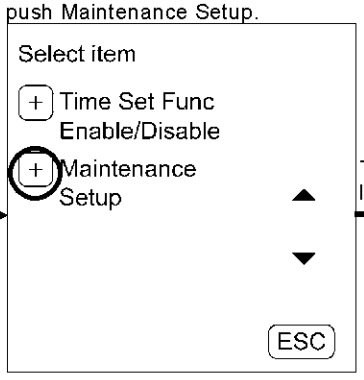
Push Various setting.



T1V7-05-03-042

Main Menu Screen

Move the item by pushing ▼ and push Maintenance Setup.

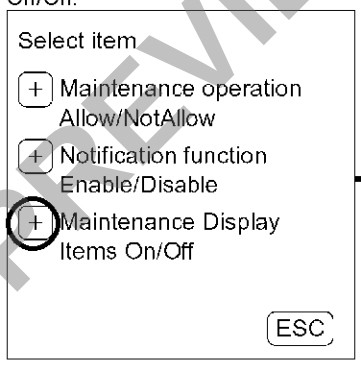


To the lower

T1V7-05-03-214

Various Setup Item Screen

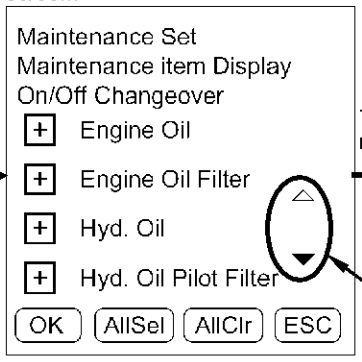
Push Maintenance Display Items On/Off.



T1V7-05-03-069

Maintenance Setup Item Screen

Push ESC and return to the former screen.



To the next page

By changing the page, the forward and backward items are displayed.

T1V7-05-03-174

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Communication System

Fault Code	Trouble	Cause
639-2	Abnormal CAN bus line	The bus line off is detected.
639-3	Abnormal CAN time out	The CAN data reception is not approved in prescribedtime.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Item / Parts	Function	Symptoms in control system when trouble occurs.	Symptoms in machine operation when trouble occurs.
Pressure Sensor (Front Attachment)	• This sensor detects front attachment pilot pressure in order to control auto-idle control.	• Auto-idle control Although the front attachment is operated, auto-idle is not released. • ECO control Although the front attachment is operated, engine speed does not increase. • Operation torque decrease control Operation torque decrease control is ineffective. • Travel torque-up control Although the front attachment is operated, travel torque-up control is not released. • Travel motor displacement angle control Although the front attachment is operated, the machine travels at fast speed.	• When the front attachment is operated, engine speed is kept at auto-idle speed. • When the front attachment is operated, engine speed does not increase. • Although the front attachment is operated, the machine travels at fast speed. • All front attachment operation speeds are slow.
Pressure Sensor (Swing)	• This sensor detects swing pilot pressure in order to control arm regeneration control.	• Arm regeneration control During combined operation of arm roll-in and swing, arm regeneration is reduced. • Swing alarm (optional) control Swing alarm is kept ON.	• Arm speed is slow during combined operation of arm roll-in and swing. • The swing alarm is kept to sound when swing alarm is effective as for the machine equipped with swing alarm (optional).

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

A-7 Engine lug down is large when actuator in maximum flow rate gear pump (optional) is operated.

Related MC Fault Code: None

- Check the wiring connections first.

Switch pump 3 delivery pressure sensor with pump 1 or 2 delivery pressure sensor.
Check if fault code is displayed.
· Fault code:
11200-3, 11200-4: Pump 1 delivery pressure sensor
11202-3, 11202-4: Pump 2 delivery pressure sensor

NO → Disconnect connector in pump 3 delivery pressure sensor.
Check if voltage between terminals #1 and #3 of harness end of connector is 5±0.5 V.
· Key switch: ON

YES → Check for continuity in harness between terminal #D3 of harness end of connector MC-D in MC and terminal #2 in pump 3 delivery pressure sensor.

NO → Open circuit in harness between MC and pump 3 delivery pressure sensor.

YES → Check for continuity in harness between MC and torque control solenoid valve.
· Between terminal #A30 of connector MC-A in MC and terminal #1 of connector in torque control solenoid valve
· Between terminal #A19 of connector MC-A in MC and terminal #2 of connector in torque control solenoid valve

NO → Check if voltage between terminals #1 of harness end of connector in pump 3 delivery pressure sensor and body is between 0.25 and 4.5 V.
· Key switch: ON

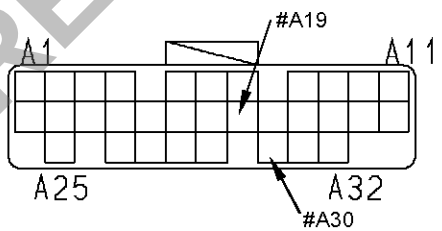
YES → Open circuit in harness between MC and pump 3 delivery pressure sensor (terminal #3).

NO → Open circuit in harness between MC and pump 3 delivery pressure sensor (terminal #1).

YES → Faulty pump 3 delivery pressure sensor.

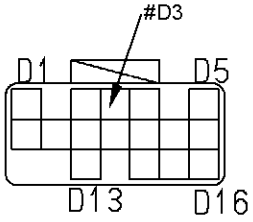
Connector (Harness end of connector viewed from the open side)

Connector MC-A



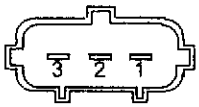
T183-05-04-008

Connector MC-D



T183-05-04-009

Pump 3 Delivery Pressure Sensor



T1V1-05-07-101

Torque Control Solenoid Valve



T1V1-05-04-003

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

SAFETY ALERT SYMBOL AND HEADLINE NOTATIONS

In this manual, the following safety alert symbol and signal words are used to alert the reader to the potential for personal injury of machine damage.

⚠ This is the safety alert symbol. When you see this symbol, be alert to the potential for personal injury.
Never fail to follow the safety instructions prescribed along with the safety alert symbol.
The safety alert symbol is also used to draw attention to component/part weights.
To avoid injury and damage, be sure to use appropriate lifting techniques and equipment when lifting heavy parts.

- ⚠ **CAUTION:**
  Indicated potentially hazardous situation which could, if not avoided, result in personal injury or death.

- **IMPORTANT:**
  Indicates a situation which, if not conformed to the instructions, could result in damage to the machine.

- *NOTE:*
  Indicates supplementary technical information or know-how.

UNITS USED

- SI Units (International System of Units) are used in this manual.
  MKSA system units and English units are also indicated in parenthheses just behind SI units.
  Example : 24.5 MPa (250 kgf/cm^2, 3560 psi)

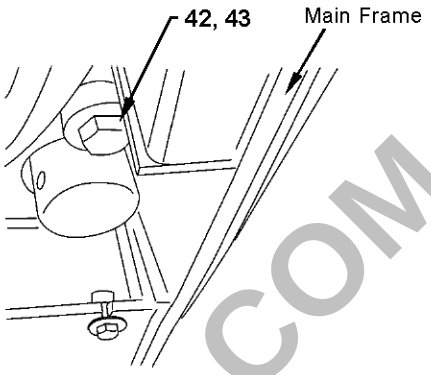
  A table for conversion from SI units to other system units is shown below for reference purposees.

Quantity	To Convert From	Into	Multiply By	Quantity	To Convert From	Into	Multiply By
Length	mm	in	0.03937	Pressure	MPa	kgf/cm^2	10.197
	mm	ft	0.003281		MPa	psi	145.0
Volume	L	US gal	0.2642	Power	kW	PS	1.360
	L	US qt	1.057		kW	HP	1.341
	m^3	yd^3	1.308	Temperature	°C	°F	°C×1.8+32
Weight	kg	lb	2.205	Velocity	km/h	mph	0.6214
Force	N	kgf	0.10197		min^{-1}	rpm	1.0
	N	lbf	0.2248	Flow rate	L/min	US gpm	0.2642
Torque	N·m	kgf·m	1.0197		mL/rev	cc/rev	1.0
	N·m	lbf·ft	0.7375				

PREVIEW - YOUFIXTHIS.COM

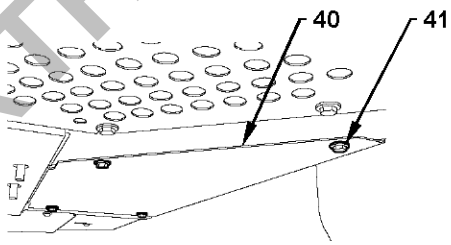
Download full manual at youfixthis.com

7. Remove anchor bolt (42) and washer (43) to the bottom of the main frame.
   : 32 mm
   : 550 N·m (56 kgf·m, 410 lbf·ft)



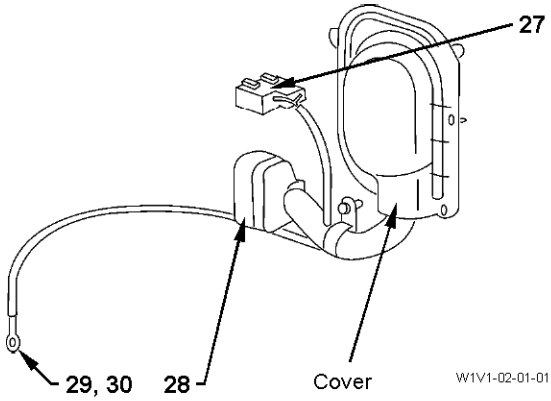
W1R7-02-01-002

8. Install under cover (40) to the bottom of the main frame with bolts (41) (6 used).
   : 17 mm
   : 50 N·m (5 kgf·m, 37 lbf·ft)



W1R7-02-07-003

9. Connect connectors (27, 28) of the rear in the cab. Install ground harness (30) to the main frame with screw (29).



W1V1-02-01-015

PREVIEW - YOUFIXTHIS.COM

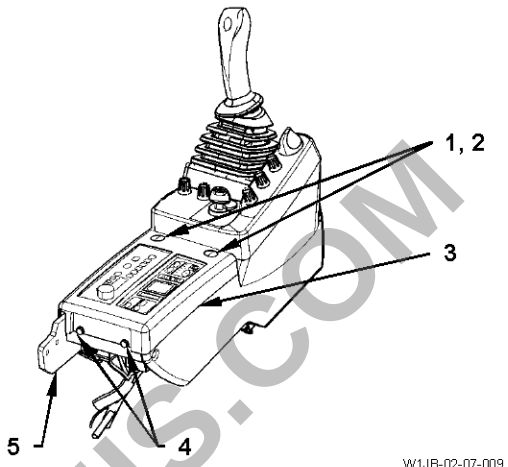
Download full manual at youfixthis.com

(Blank)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

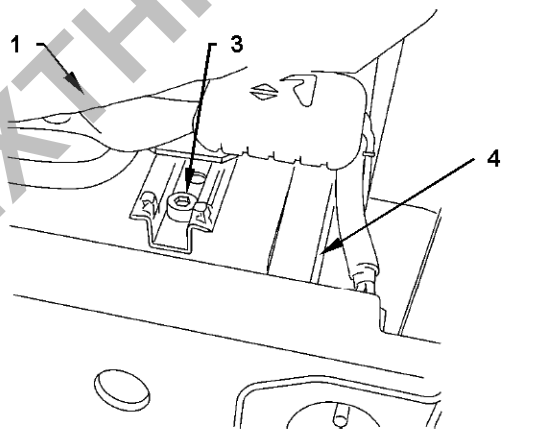
11. Install cover (3) to bracket (5) with screws (2, 4) (2 used for each). Install caps (1) (2 used) to cover (3).



W1JB-02-07-009

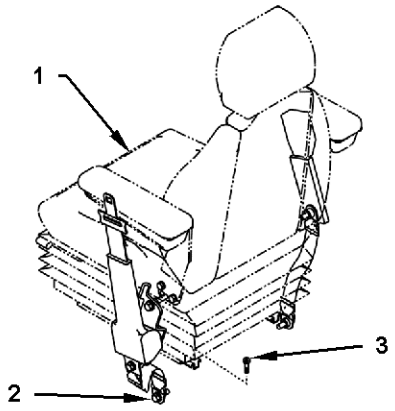
CAUTION: Seat (1) weight: 40 kg (88 lb)

12. Install seat (1) to bracket (4) with socket bolts (3) (4 used).
    : 6 mm
    : 20 N·m (2 kgf·m, 15 lbf·ft)



W1JB-02-07-007

13. Install a seat belt to bracket (4) with bolts (2) (2 used).
    : 16 mm
    : 50 N·m (5 kgf·m, 37 lbf·ft)

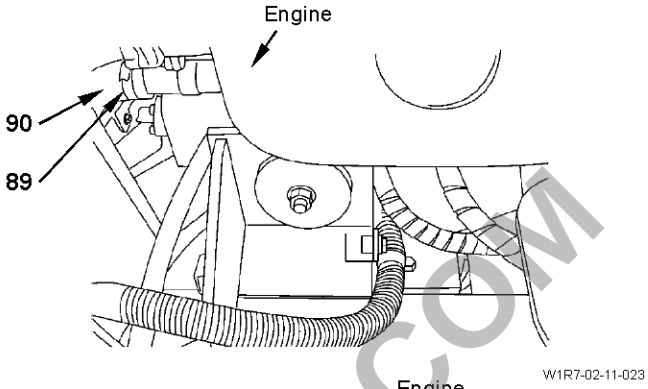


W1JB-02-01-008

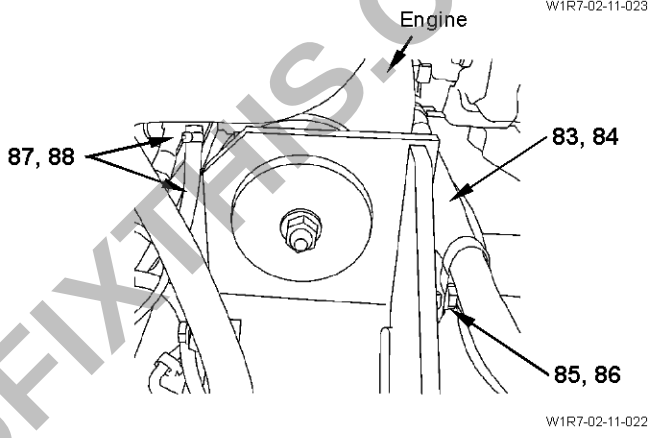
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

6. Connect hose (90) to the engine. Secure hose (90) with band (89).

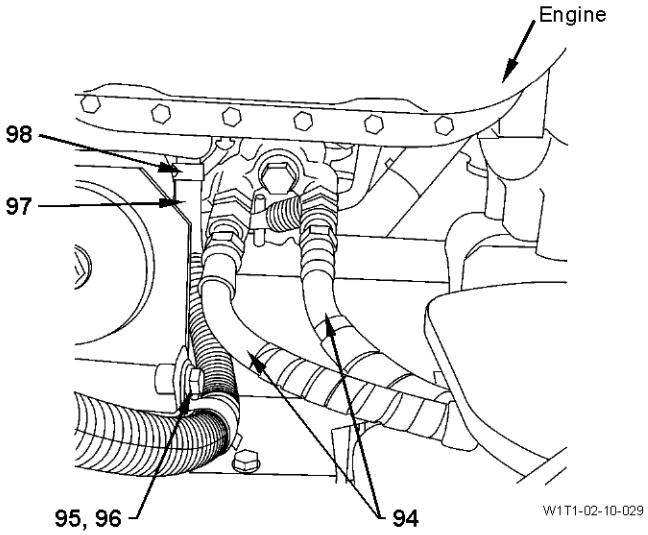


7. Connect hoses (87) (2 uses) and hose (83) to the counterweight mounting side of the engine. Secure hoses (87) (2 used) and hose (83) with bands (88) (2 used) and band (84). Install clamp (85) to the engine with bolt (86).



8. Connect hoses (94) (2 used) to the engine.
   : 19 mm
   : 29.5 N·m (3 kgf·m, 22 lbf·ft)

9. Connect hose (97) to the engine. Secure hose (97) with band (98). Install clamp (95) to the engine with bolt (96).
   : 17 mm
   : 50 N·m (5 kgf·m, 37 lbf·ft)



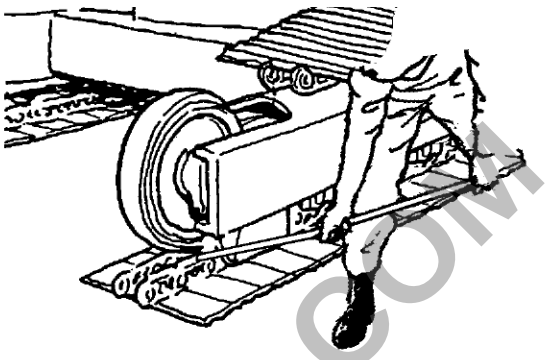
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

REMOVAL AND INSTALLATION OF FRONT IDLER

Removal

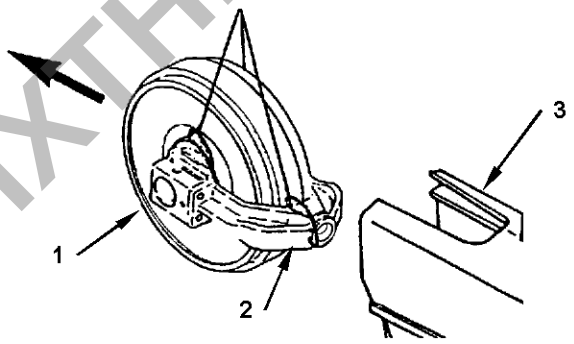
Before removing the front idler, the tracks should be removed first. (Refer to REMOVAL AND INSTALLATION OF TRACK on W3-7-1.)
Therefore, the procedure starts on the premise that the tracks have already been removed here.



W110-03-05-001

CAUTION: Front idler (1) may fly out due to the spring force when removing front idler (1). Do not stand in the same direction to remove front idler (1) or where front idler (1) may fly out.

1. Remove front idler (1) with yoke (2) together from track frame (3) by using a pry bar.

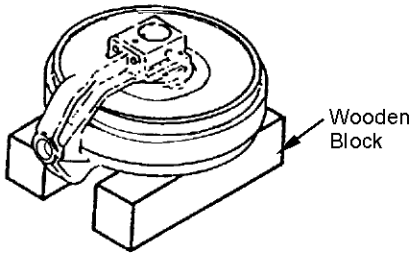


W178-03-05-001

CAUTION: Front idler (1) weight: 82 kg (181 lb)

2. Attach a sling belt onto the bearing part and the yoke (2) part of front idler (1) as illustrated. Hoist and remove front idler (1) from track frame (3).

3. When keeping front idler (1) temporarily, place front idler (1) on the wooden blocks as illustrated.



W178-03-05-002

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 25 of 1552 pages

The full manual includes:

- All 1552 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Hitachi ZX110-3, ZX110M-3, ZX120-3, ZX130K-3, ZX130L-3, ZX135US-3, ZX135USK-3, ZX135USL-3 Repair Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual