


INTRODUCTION


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 or 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 parentheses just behind SI units.

Example : 24.5 MPa (250 kgf/cm², 3560 psi)

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

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				

SAFETY

KEEP RIDERS OFF MACHINE

- Riders on machine are subject to injury such as being struck by foreign objects and being thrown off the machine.
- Only the operator should be on the machine. Keep riders off.
- Riders also obstruct the operator's view, resulting in the machine being operated in an unsafe manner.

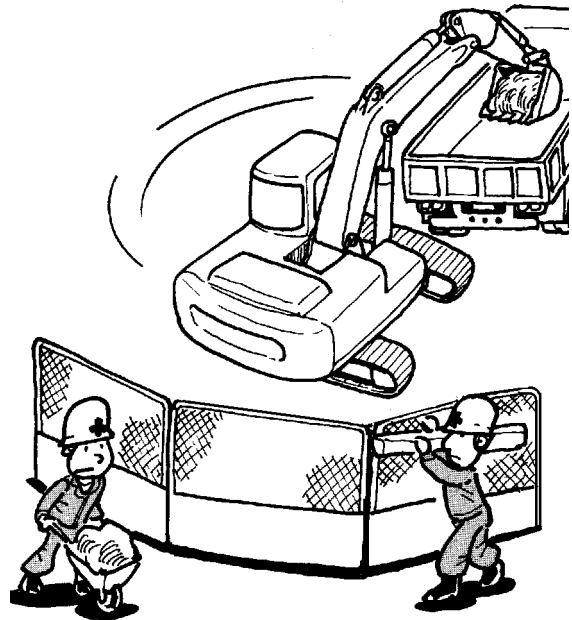
014-E01B-0427



SA-379

PRECAUTIONS FOR OPERATIONS

- Investigate the work site before starting operations.
- Be sure to wear close fitting clothing and safety equipment appropriate for the job, such as a hard hat, etc. when operating the machine.
- Clear all persons and obstacles from area of operation and machine movement.
Always beware of the surroundings while operating. When working in a small area surrounded by obstacles, take care not to hit the upperstructure against obstacles.
- When loading onto trucks, bring the bucket over the truck beds from the rear side. Take care not to swing the bucket over the cab or over any person.



M104-05-015

GENERAL / Precautions for Disassembling and Assembling

PRECAUTIONS FOR DISASSEMBLING AND ASSEMBLING

Precautions for Disassembling and Assembling

- Clean the Machine

Thoroughly wash the machine before bringing it into the shop. Bringing a dirty machine into the shop may cause machine components to be contaminated during disassembling/assembly, resulting in damage to machine components, as well as decreased efficiency in service work.

- Inspect the Machine

Be sure to thoroughly understand all disassembling / assembling procedures beforehand, to help avoid incorrect disassembling of components as well as personal injury.

Be sure to and record the items listed below to prevent problems from occurring in the future.

- The machine model, machine serial number, and hour meter reading.
- Reason for disassembly (symptoms, failed parts, and causes).
- Clogging of filters and oil, water or air leaks, if any.
- Capacities and condition of lubricants.
- Loose or damaged parts.

- Prepare and Clean Tools and Disassembly Area

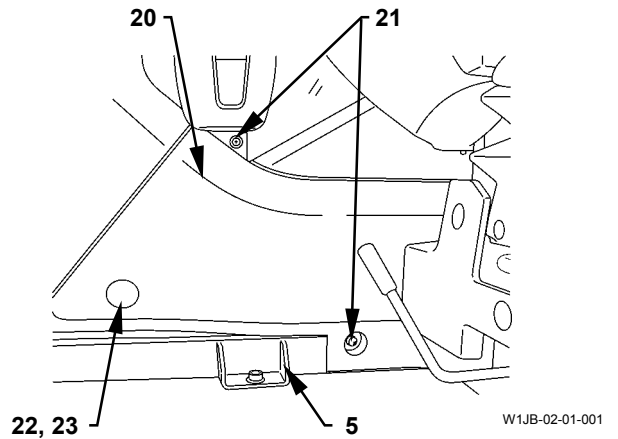
Prepare the necessary tools to be used and the area for disassembling work.

- Precautions for Disassembling

- To prevent dirt from entering, cap or plug the removed pipes.
- Before disassembling, clean the exterior of the components and place on a work bench.
- Before disassembling, drain gear oil from the reduction gear.
- Be sure to provide appropriate containers for draining fluids.
- Use matching marks for easier reassembling.
- Be sure to use the specified special tools, when instructed.
- If a part or component cannot be removed after removing its securing nuts and bolts, do not attempt to remove it forcibly. Find the cause(s), then take the appropriate measures to remove it.
- Orderly arrange disassembled parts. Mark and tag them as necessary.
- Store common parts, such as bolts and nuts with reference to where they are to be used and in a manner that will prevent loss.
- Inspect the contact or sliding surfaces of disassembled parts for abnormal wear, sticking, or other damage.
- Measure and record the degree of wear and clearances.

UPPERSTRUCTURE / Cab

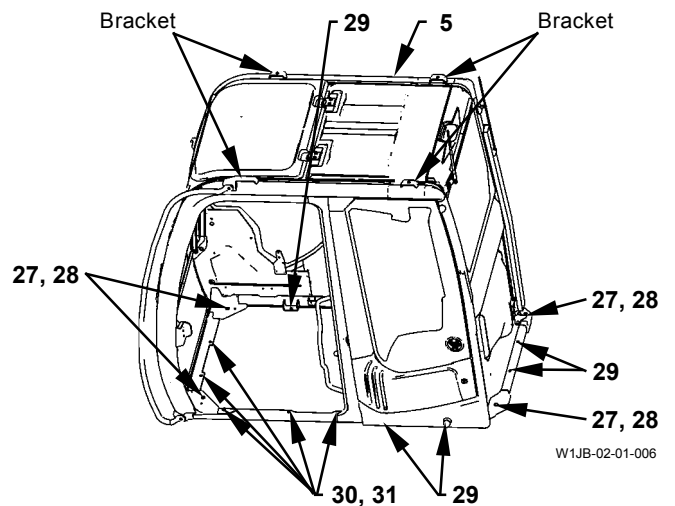
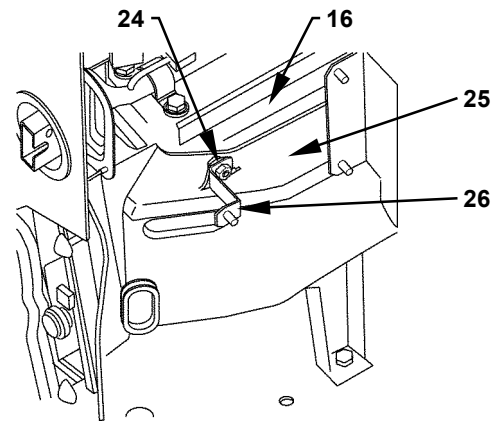
10. Remove screws (21) (2 used) from cover (20).
Remove cap (22) and screw (23) from cover (20).
Remove cover (20) from cab (5).



11. Remove bolt (24) from duct (25). Remove duct (25) from bracket (26).
🔧 : 13 mm

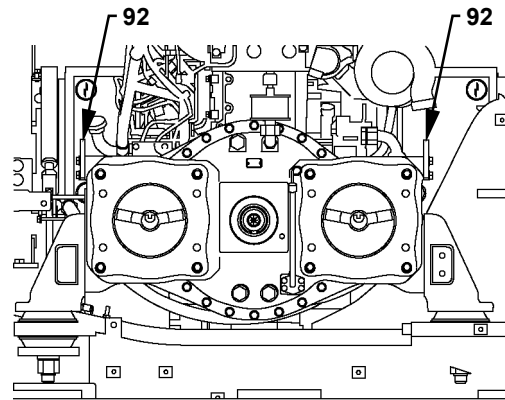
⚠ CAUTION: Cab (5) weight: 550 kg (1210 lb)

12. Attach a nylon sling onto the bracket and hold cab (5).
13. Remove nuts (27) (4 used) and washers (28) (4 used) from cab (5).
🔧 : 24 mm
14. Remove socket bolts (29) (6 used) from cab (5).
🔧 : 8 mm
15. Remove bolts (30) (5 used) and washers (31) (5 used) from cab (5).
🔧 : 17 mm



UPPERSTRUCTURE / Pump Device

34. Install the shackles (2 used) to brackets (92) (2 used). Attach a nylon sling onto the shackles (2 used). Hoist and hold the shackles (2 used).




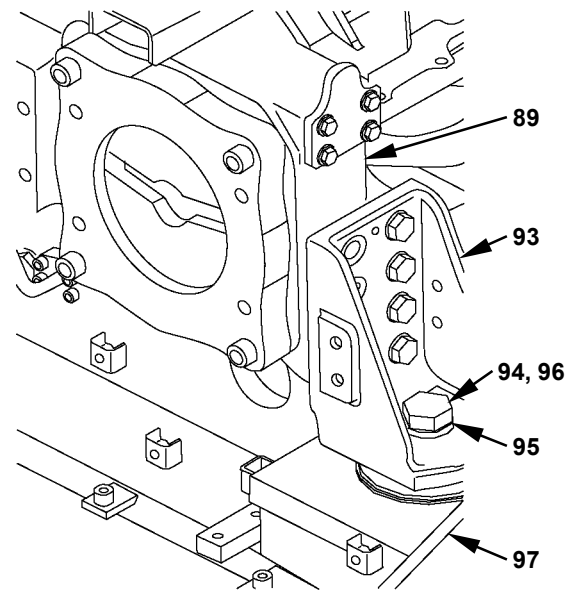
W1JB-02-04-006



CAUTION: Pump transmission (89) weight: 313 kg (690 lb)

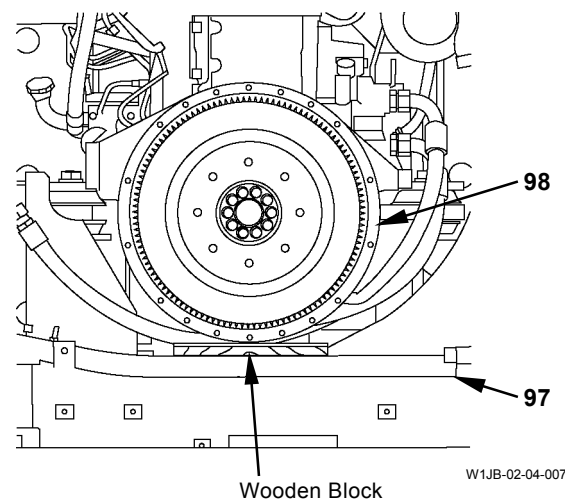
35. Remove nuts (96) (2 used), washers (95) (4 used) and bolts (94) (2 used) from brackets (93) (2 used).

 : 50 mm



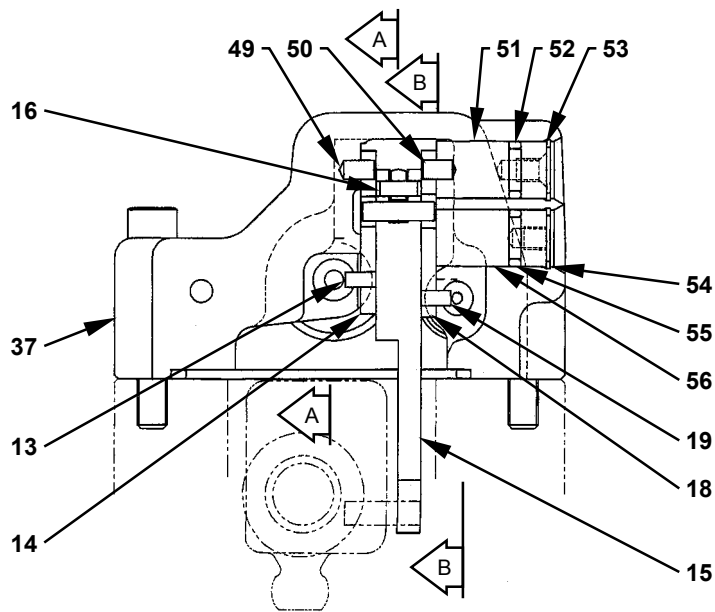
W1JB-02-04-008

36. Hoist pump transmission (89) a little. Place the wooden block between engine (98) and main frame (97). Lower engine (98).

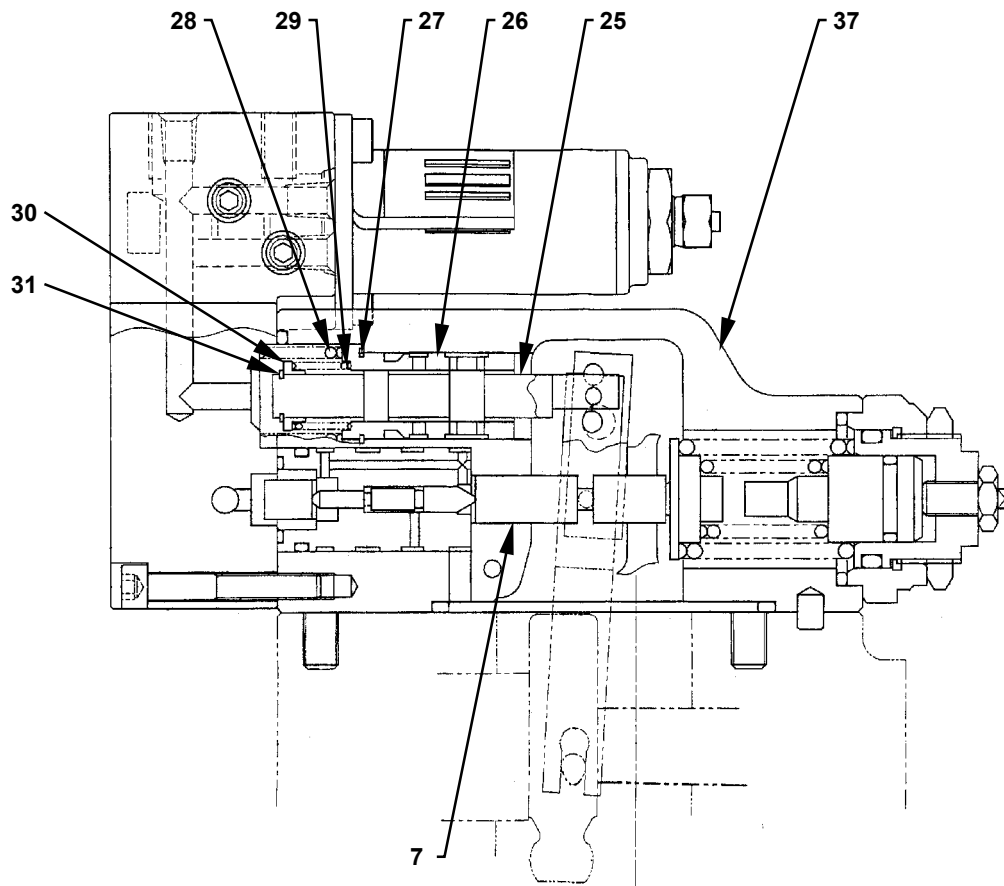


W1JB-02-04-007

UPPERSTRUCTURE / Pump Device



W1JB-02-04-003



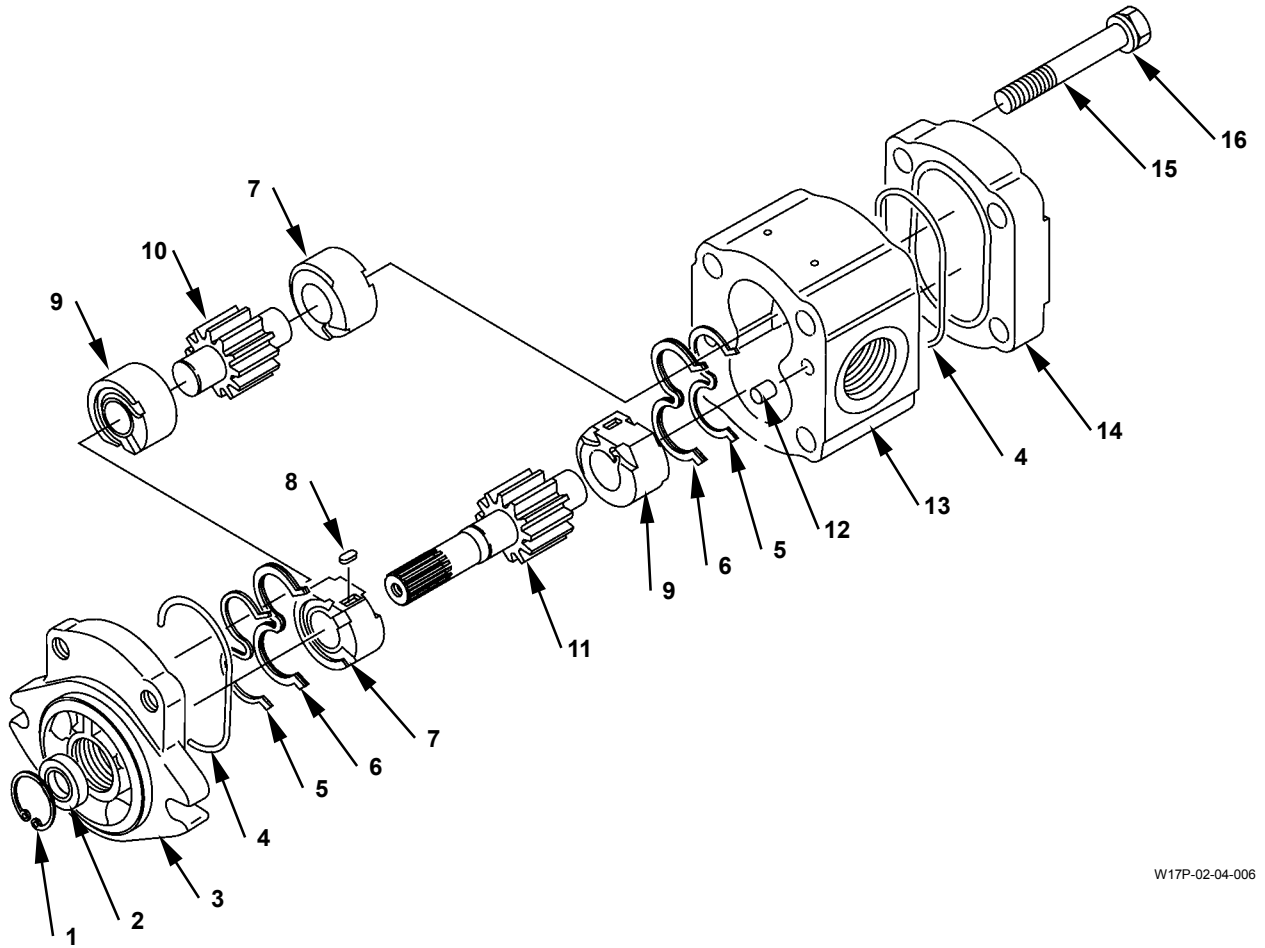
Section A-A

W1JB-02-04-002

 NOTE: As for the item 24, refer to W2-4-38.

UPPERSTRUCTURE / Pump Device

STRUCTURE OF PILOT PUMP





W17P-02-04-006

UPPERSTRUCTURE / Control Valve

Assemble Control Valve (4-Spool Housing Upper and Lower Surfaces)



- Assemble Overload Relief Valve


IMPORTANT: Align the matching marks and tighten adjusting screw (3) to the same turns when disassembling.

1. Install pilot poppet (6), spring (5), adjusting screw (3) and lock nut (2) to seat (7).
2. Install O-ring (16), backup ring (17) and O-ring (18) to sleeve (15).
3. Install piston (13) to main poppet (14). Install main poppet (14) to sleeve (15).
4. Clamp sleeve (15) into a vise. Install springs (8, 12) to the seat (7) assembly. Install the seat (7) assembly to sleeve (15).
 : 36 mm
 : 100 N·m (10 kgf·m, 74 lbf·ft)

IMPORTANT: Install the overload relief valve to the original position before disassembling. Adjust pressure of the overload relief valve by using a test bench.

(Refer to the Operational Performance Test section / TROUBLESHOOTING in the separated volume, T/M.)

5. Install the overload relief valves (4 used) to housing (1).
 : 41 mm
 : 100 N·m (10 kgf·m, 74 lbf·ft)

 **NOTE:** Tighten the hexagonal part of sleeve (15).


- Assemble Arm Regenerative Valve


6. Install O-ring (28) and backup ring (27) to sleeve (29). Install piston (26) and sleeve (29) to sleeve (23).

7. Install spool (25), spring (22) and spring seat (21) to sleeve (23).


IMPORTANT: Cap (19) is pushed outside by spring (22). While pushing cap (19) to sleeve (23), install cap (19).


8. Install O-ring (20) to cap (19). Clamp sleeve (23) into a vise. Install cap (19) to sleeve (23).

 : 14 mm

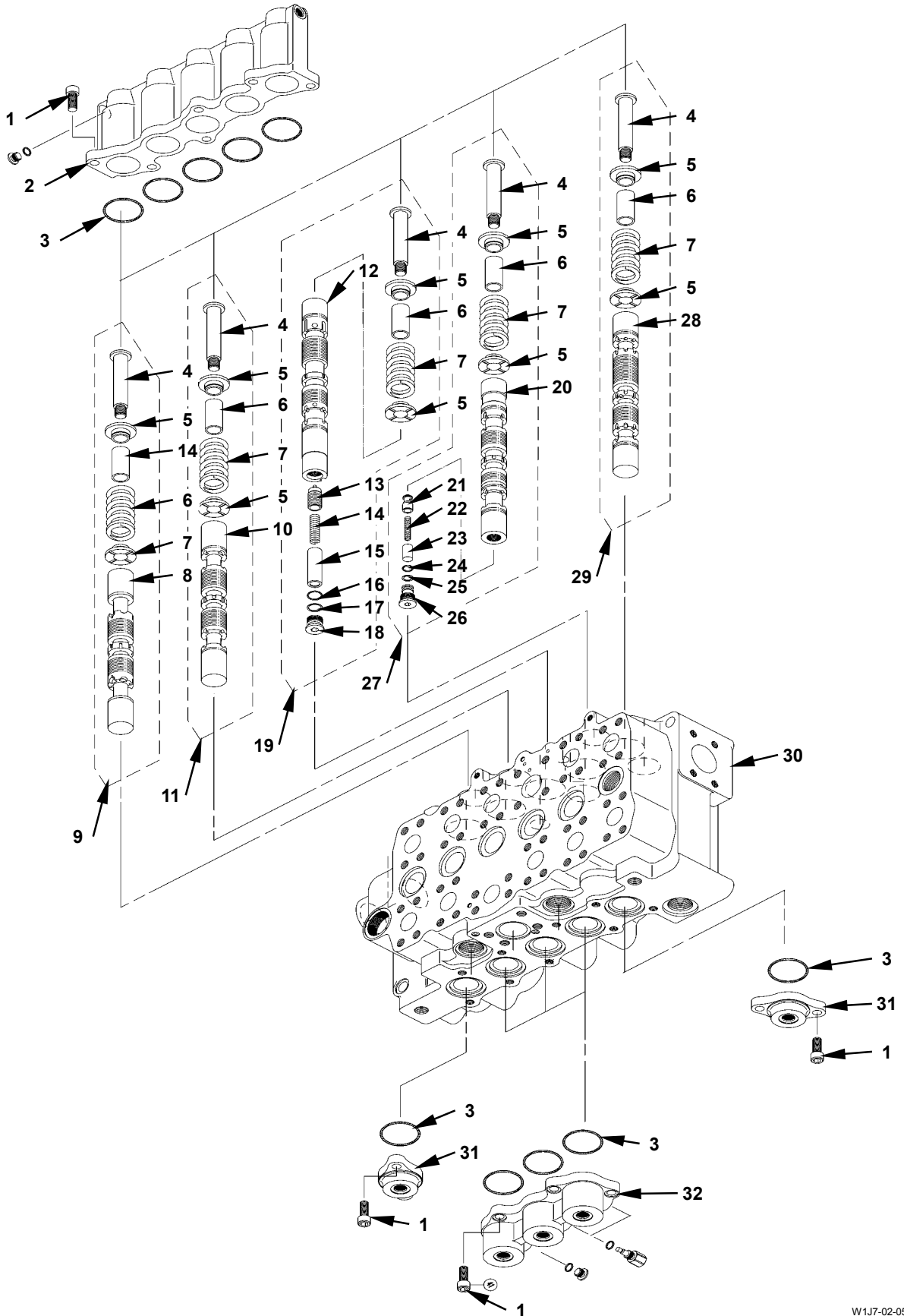
 : 180 N·m (18.3 kgf·m, 133 lbf·ft)

9. Install O-ring (24) to sleeve (23). Install sleeve (23) to housing (1).

 : 46 mm

 : 180 N·m (18.3 kgf·m, 133 lbf·ft)

UPPERSTRUCTURE / Control Valve





W1J7-02-05-014

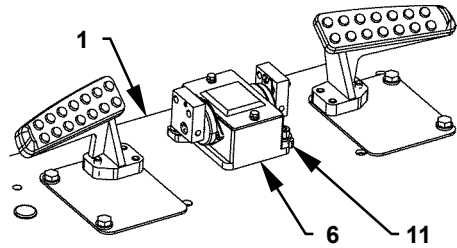
UPPERSTRUCTURE / Pilot Valve

Install Travel Pilot Valve

1. Install pilot valve (6) to main frame (1) with socket bolts (11) (2 used).


 : 8 mm


 : 50 N·m (5 kgf·m, 37 lbf·ft)

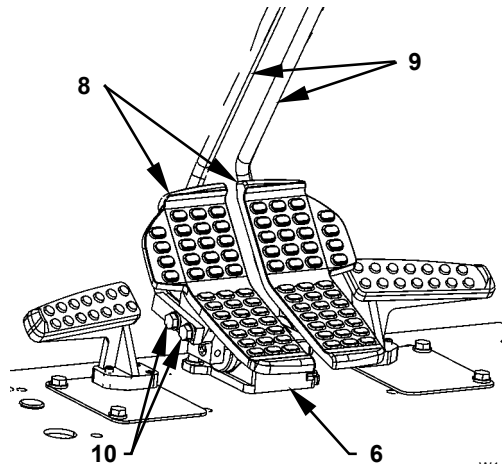


W1JB-02-07-004

2. Install levers (9) (2 used) and pedals (8) (2 used) to pilot valve (6) with bolts (10) (4 used).


 : 17 mm


 : 50 N·m (5 kgf·m, 37 lbf·ft)





W1JB-02-07-003

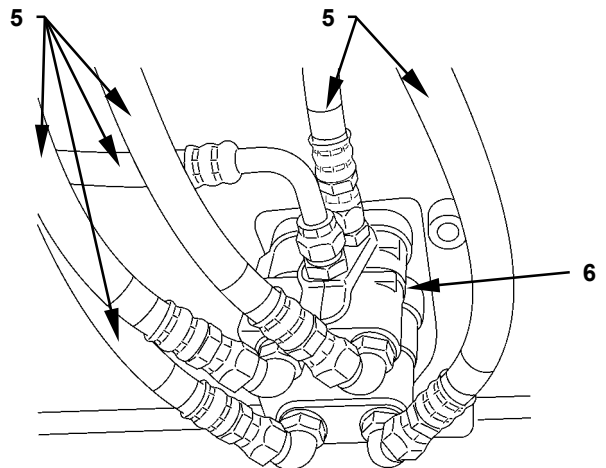
3. Install hoses (5) (6 used) to pilot valve (6).

 : 17 mm

 : 24.5 N·m (2.5 kgf·m, 18 lbf·ft)

 : 19 mm

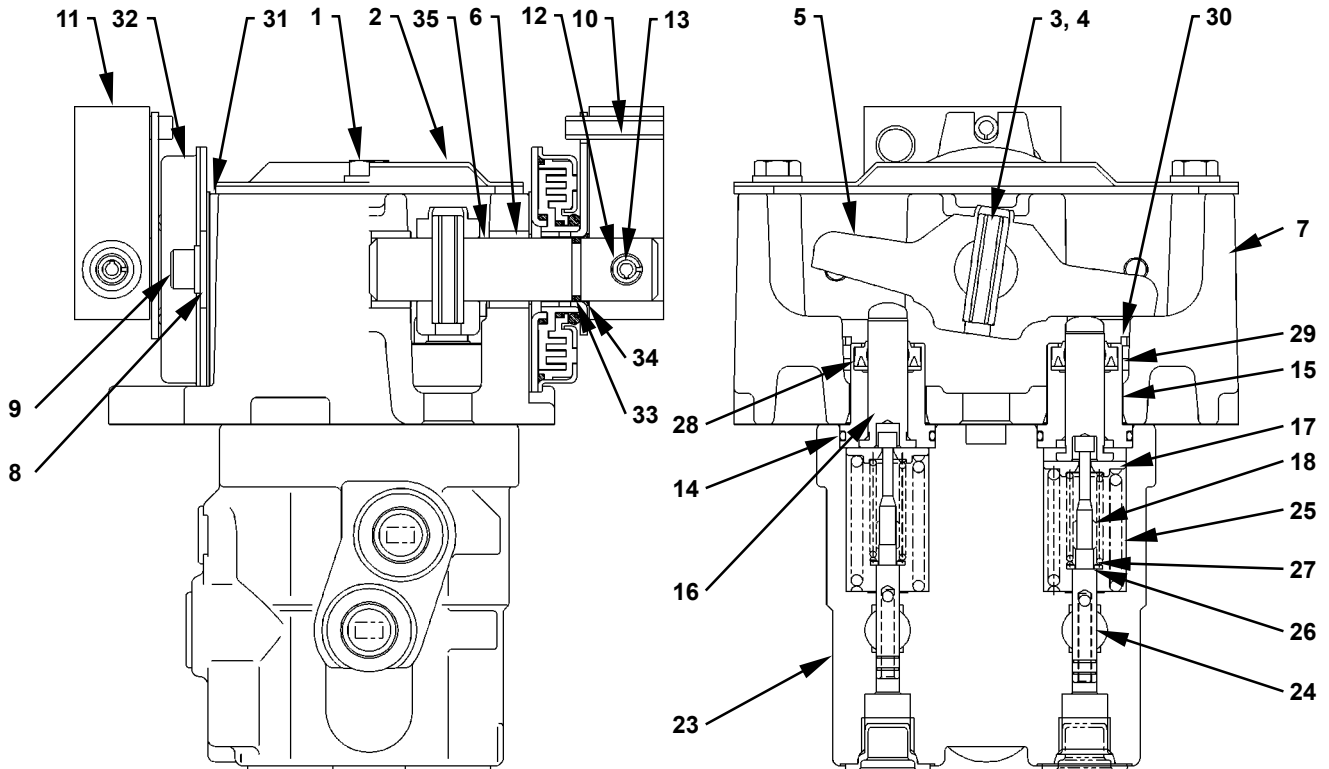
 : 29.5 N·m (3 kgf·m, 22 lbf·ft)



W1JB-02-07-001

UPPERSTRUCTURE / Pilot Valve

ASSEMBLE TRAVEL PILOT VALVE



W178-02-11-316

- | | | | |
|----------------------------|------------------------------|-----------------------------|-----------------------------|
| 1 - Bolt (2 Used) | 10 - Spring Pin | 19 - *O-Ring (2 Used) | 28 - Oil Seal (4 Used) |
| 2 - Cover | 11 - Bracket (2 Used) | 20 - *Plug (2 Used) | 29 - Spring Washer (2 Used) |
| 3 - Spring Pin (2 Used) | 12 - Spring Pin (2 Used) | 21 - *Plug (2 Used) | 30 - Socket Bolt (2 Used) |
| 4 - Spring Pin (2 Used) | 13 - Spring Pin (2 Used) | 22 - *O-Ring (2 Used) | 31 - Rubber Seat (2 Used) |
| 5 - Cam (2 Used) | 14 - O-Ring | 23 - Casing | 32 - Damper (2 Used) |
| 6 - Bushing (4 Used) | 15 - Bushing (4 Used) | 24 - Spool (4 Used) | 33 - O-Ring (2 Used) |
| 7 - Holder | 16 - Pusher (4 Used) | 25 - Return Spring (4 Used) | 34 - O-Ring (2 Used) |
| 8 - Spring Washer (4 Used) | 17 - Spring Guide (16 Used) | 26 - Spacer (4 Used) | 35 - Pin |
| 9 - Socket Bolt (4 Used) | 18 - Balance Spring (4 Used) | 27 - Shim (12 Used) | |

 **NOTE:** As for the parts with mark *, refer to W2-7-24.






UPPERSTRUCTURE / Fan Motor

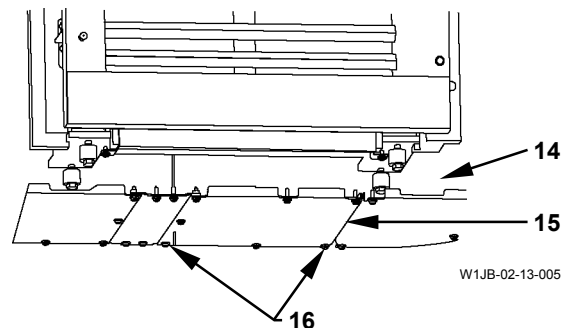
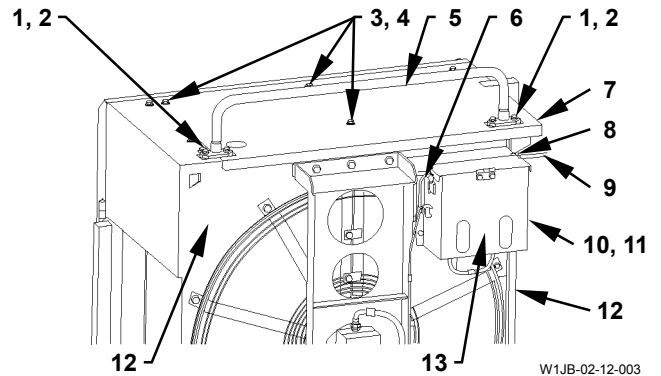
REMOVE AND INSTALL FAN MOTOR



CAUTION: Release any pressure in the hydraulic oil tank before doing any work. (Refer to BLEED AIR FROM HYDRAULIC OIL TANK on W1-4-1.)

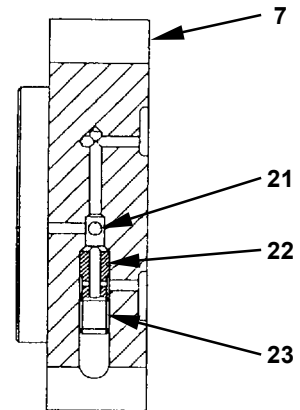
Removal of Fan Motor for Oil Cooler

1. Remove bolts (1) (4 used) and washers (2) (4 used). Remove handrail (5) from shroud (12).
 : 19 mm
2. Remove bolts (3) (6 used) and washers (4) (6 used). Remove cover (7) from shroud (12).
 : 19 mm
3. Remove bolt (8). Open the upper cover on box (10). Remove vinyl hose (9) from water tank (13).
 : 17 mm
4. Raise vinyl hose (6). Disconnect the connector from the lower of box (10).
5. Remove bolts (11) (5 used). Remove the box (10) assembly from shroud (12).
 : 17 mm
6. Remove bolts (16) (6 used). Remove cover (15) from main frame (14).
 : 19 mm

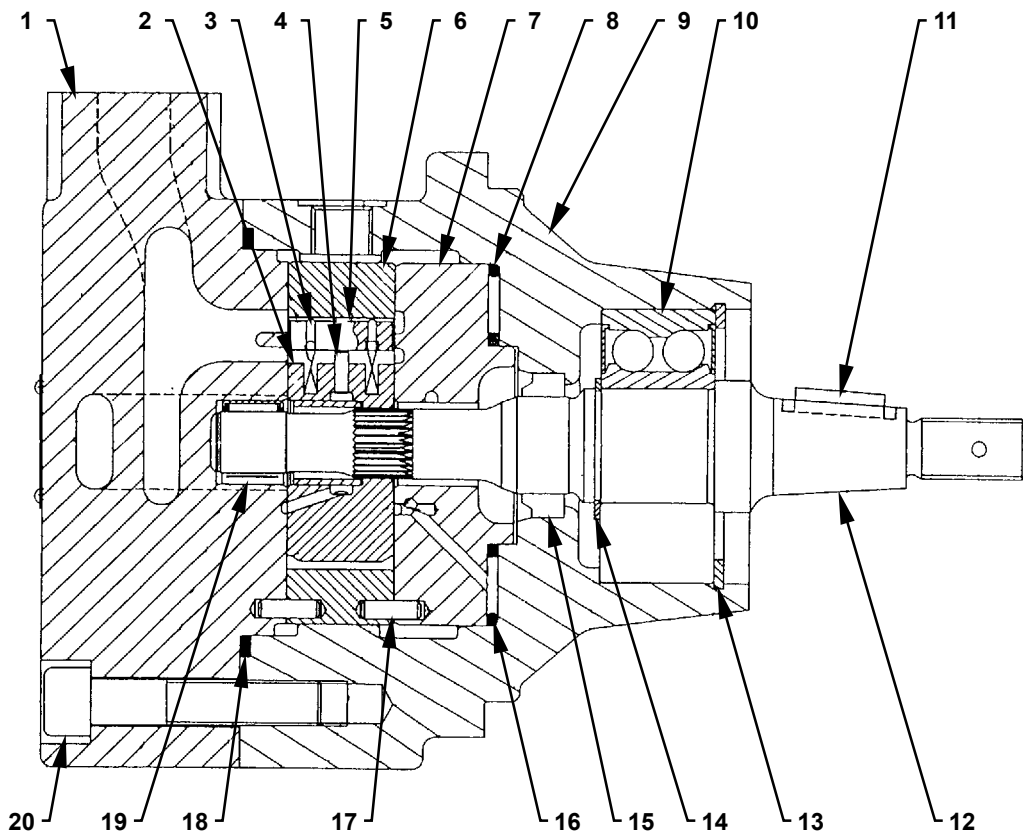


UPPERSTRUCTURE / Fan Motor

STRUCTURE OF FAN MOTOR



W1JB-02-12-002



W1JB-02-12-001

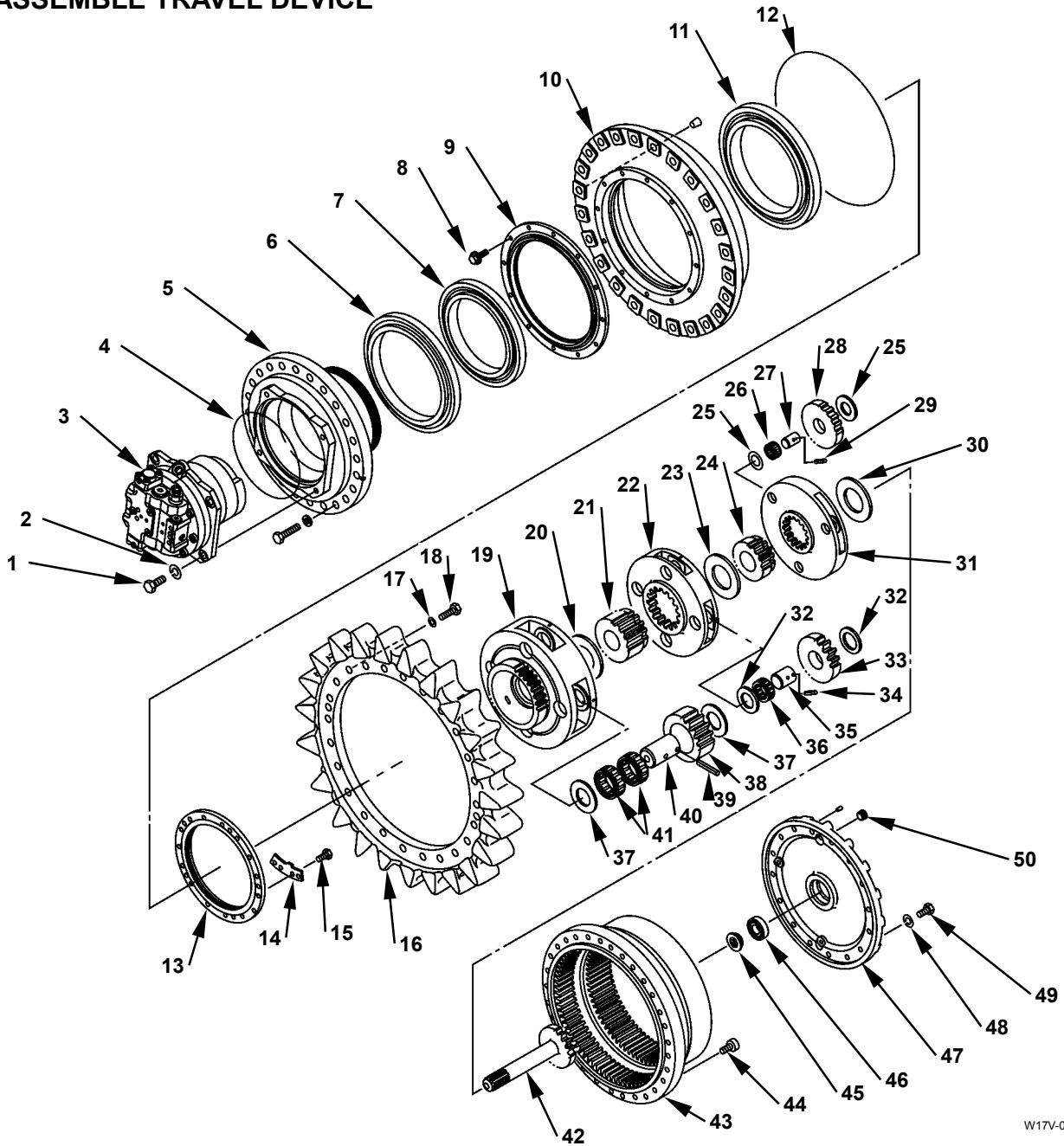
- | | | | |
|--------------------------------------|-------------------------|---------------------|---------------------------|
| 1 - End Cap | 7 - Pressure Port Plate | 13 - Retaining Ring | 19 - Needle Bearing |
| 2 - Rotor Insert Assembly | 8 - O-Ring | 14 - Retaining Ring | 20 - Socket Bolt (4 Used) |
| 3 - Vane Spring (24 Used) | 9 - Housing | 15 - Seal | 21 - Ball |
| 4 - Pin Vane Hold Mount
(12 Used) | 10 - Ball Bearing | 16 - Seal | 22 - Valve |
| 5 - Vane (12 Used) | 11 - Key | 17 - Pin (2 Used) | 23 - Screw |
| 6 - Cam Ring | 12 - Shaft | 18 - Seal | |

NOTE: Tightening Torque

- | | |
|-----------------|--|
| 20- Socket bolt | 100 N·m (10 kgf·m, 75 lbf·ft) |
| 23- Screw | 11.5 to 12.6 N·m (1.2 to 1.3 kgf·m, 8.5 to 9.3 lbf·ft) |

UNDERCARRIAGE / Travel Device

DISASSEMBLE TRAVEL DEVICE



W17V-03-02-001

- | | | | |
|----------------------------|------------------------------|---|------------------------------|
| 1 - Bolt (4 Used) | 14 - Lock Plate | 27 - Pin (3 Used) | 39 - Spring Pin (4 Used) |
| 2 - Spring Washer (4 Used) | 15 - Bolt (2 Used) | 28 - First Stage Planetary Gear (3 used) | 40 - Pin (4 Used) |
| 3 - Motor | 16 - Sprocket | 29 - Spring Pin (3 Used) | 41 - Needle Bearing (8 Used) |
| 4 - O-Ring | 17 - Spring Washer (24 Used) | 30 - Spacer | 42 - Shaft |
| 5 - Housing | 18 - Bolt (24 Used) | 31 - First Stage Carrier | 43 - Ring Gear |
| 6 - Floating Seal | 19 - Third Stage Carrier | 32 - Thrust Plate (8 Used) | 44 - Socket Bolt (30 Used) |
| 7 - Roller Bearing | 20 - Spacer | 33 - Second Stage Planetary Gear (4 used) | 45 - Stopper Pin |
| 8 - Bolt (12 Used) | 21 - Third Stage Sun Gear | 34 - Spring Pin (4 Used) | 46 - Bearing |
| 9 - Support | 22 - Second Stage Carrier | 35 - Pin (4 Used) | 47 - Cover |
| 10 - Drum | 23 - Spacer | 36 - Needle Bearing (4 Used) | 48 - Spring Washer (18 Used) |
| 11 - Roller Bearing | 24 - Second Stage Sun Gear | 37 - Thrust Plate (8 Used) | 49 - Bolt (18 Used) |
| 12 - O-Ring | 25 - Thrust Plate (6 Used) | 38 - Third Stage Planetary Gear (4 Used) | 50 - Plug (3 Used) |
| 13 - Bearing Nut | 26 - Needle Bearing (3 Used) | | |

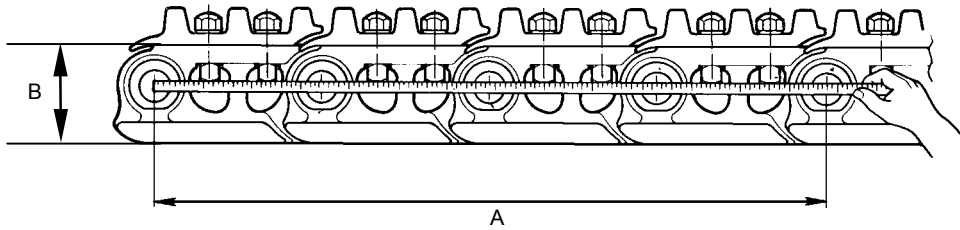
UNDERCARRIAGE / Track

MAINTENANCE STANDARD

Link

Measure the length of four links.

1. Do not measure the part included the master pin.
2. Measure the length with tension on the track.



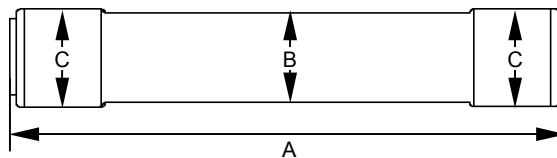
W155-03-07-001

Unit: mm (in)

	Standard	Allowable Limit	Remedy
A	1041.4 (41.0)	1062.2 (41.8)	Cladding by welding and finish or replace
B	155 (6.1)	[147.2 (5.8)]	

[] : Reference

Master Pin



W800-03-07-028

Unit: mm (in)

	Standard	Allowable Limit	Remedy
A	319.5 (12.6)	-	Replace
B	56.8 (2.2)	[53.8 (2.1)]	
C	57.0 (2.2)	-	

[] : Reference