

Shop Manual

PW170ES-6K

HYDRAULIC EXCAVATOR

SERIAL NUMBERS **PW170ES-6 -K30001** and up

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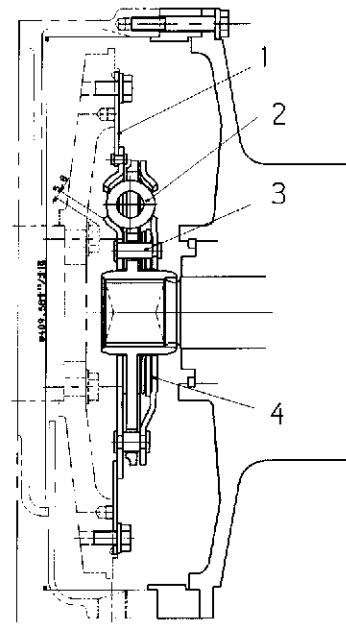
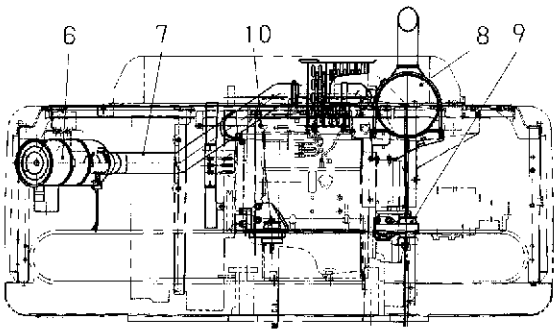
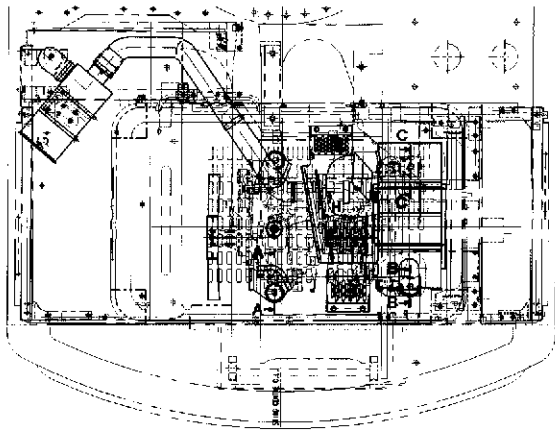
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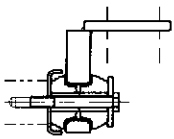
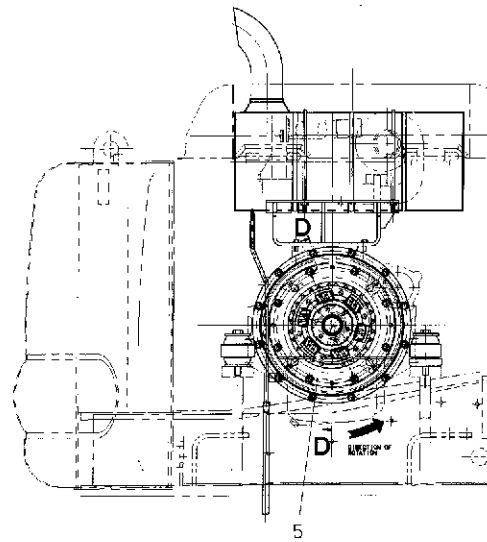
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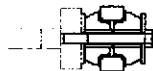
ENGINE RELATED PARTS



D-D



A-A



B-B



C-C



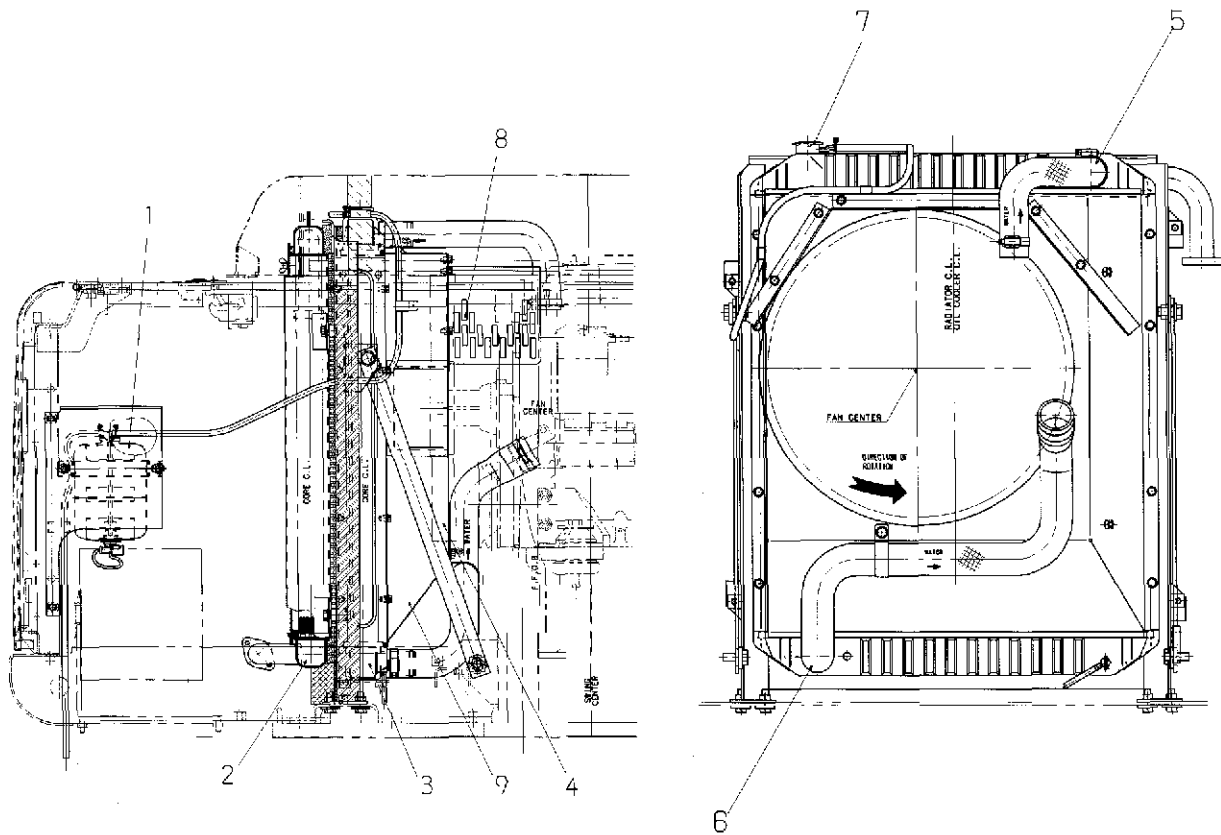
H-H

1. Drive plate
2. Torsion spring
3. Stopper pin
4. Friction plate
5. Damper assembly
6. Air cleaner
7. Intake connector
8. Muffler
9. Rear engine mount
10. Front engine mount

OUTLINE

- The damper assembly is a dry type.

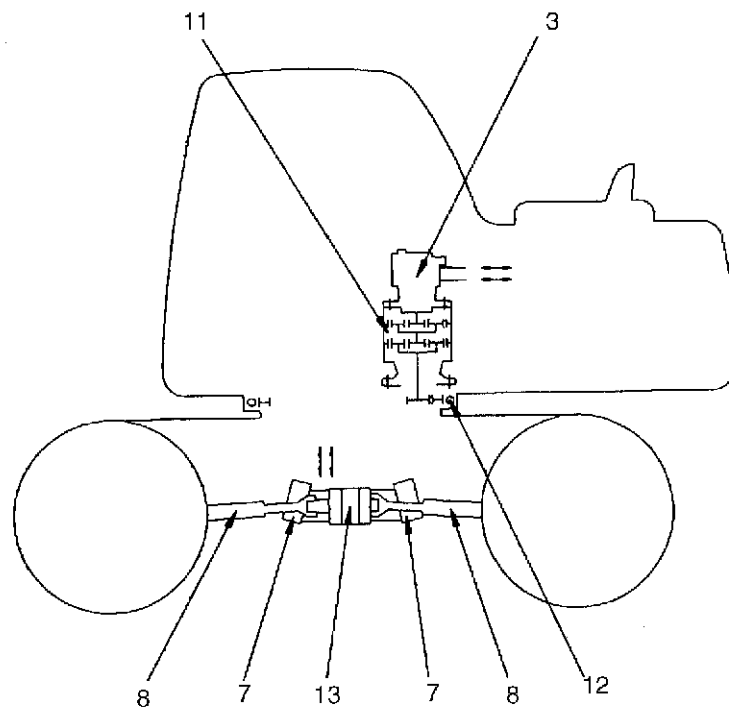
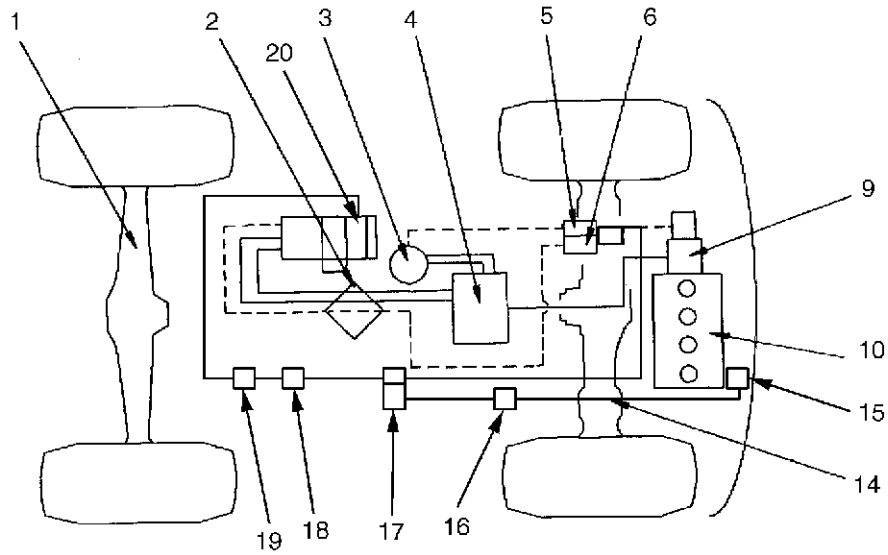
RADIATOR • OIL COOLER



1. Reservoir tank
2. Oil cooler
3. Radiator
4. Fan
5. Radiator inlet hose
6. Radiator outlet hose
7. Radiator cap
8. Net
9. Shroud

SPECIFICATIONS

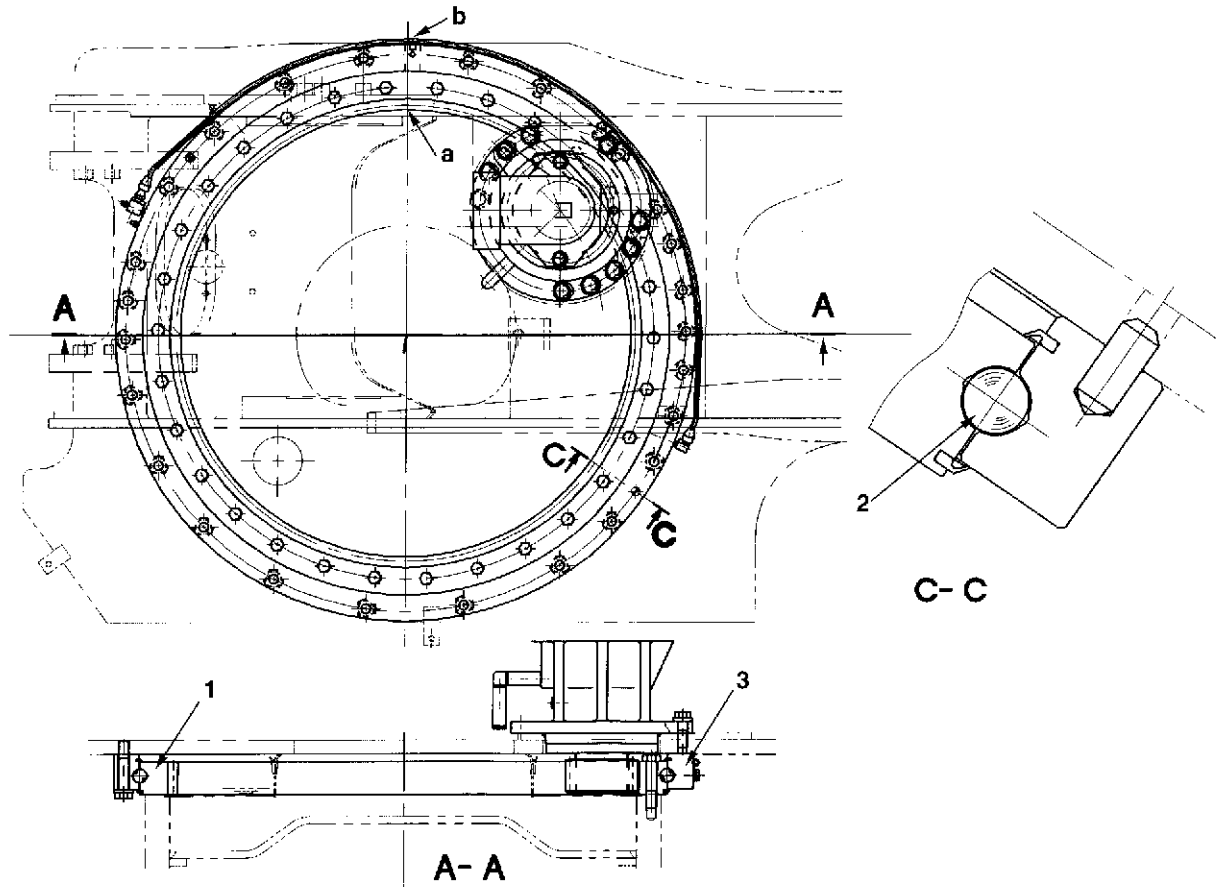
Radiator: CWX-4
 Oil cooler: SF-3



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- | | |
|--------------------------------|-----------------------------|
| 1. Front axle | 11. Swing machinery |
| 2. Center swivel joint | 12. Swing circle |
| 3. Swing motor | 13. Transmission |
| 4. Control valve | 14. Rear axle |
| 5. Swing brake solenoid valve | 15. Gear pump |
| 6. Travel speed solenoid valve | 16. Priority valve |
| 7. Travel motor | 17. Power brake valve |
| 8. Propshaft | 18. Pressure reducing valve |
| 9. Hydraulic pump | 19. Clutch control valve |
| 10. Engine | 20. Clutch |

SWING CIRCLE



1. Swing circle inner race (No. of teeth: 94)
2. Ball
3. Swing circle outer race

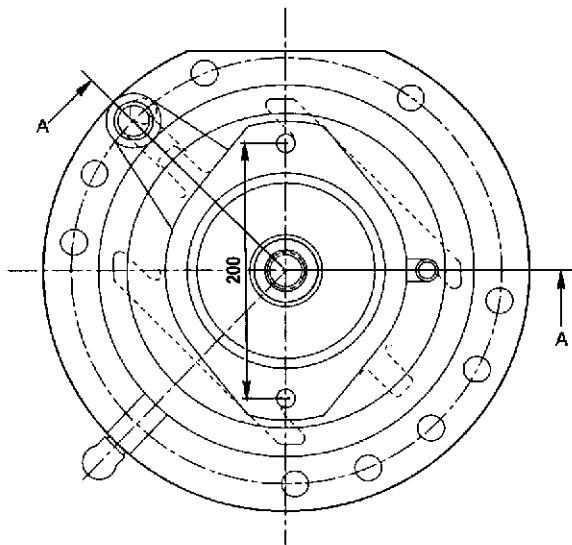
- a. Inner race soft zone **S** position
- b. Outer race soft zone **S** position

SPECIFICATIONS

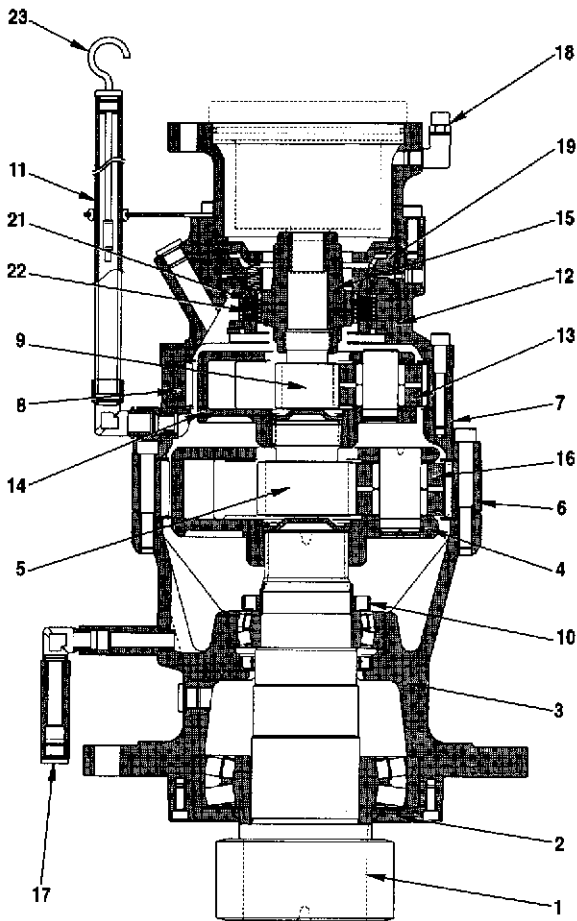
reduction ratio: $\frac{94}{12} = 7.833$

amount of grease: $8/(G2-LI)$

SWING MACHINERY



1. Swing pinion (No. of teeth: 12)
2. Cover
3. Case
4. No. 2 of planetary carrier
5. No. 2 sun gear (No. of teeth: 24)
6. No. 2 ring gear (No. of teeth: 78)
7. Case
8. No. 1 ring gear (No. of teeth: 78)
9. No. 1 sun gear (No. of teeth: 18)
10. Retainer
11. Oil level gauge
12. Cover
13. No. 1 planetary gear (No. of teeth: 29)
14. No. 1 planetary carrier
15. Coupling
16. No. 2 planetary gear (No. of teeth: 26)
17. Drain plug
18. Breather
19. Parking brake piston
20. Parking brake spring
21. Parking brake disc
22. Parking brake plate
23. Gauge rod



SPECIFICATIONS

reduction ratio: $\frac{24+78}{24} \times \frac{18+78}{18} = 22.667$

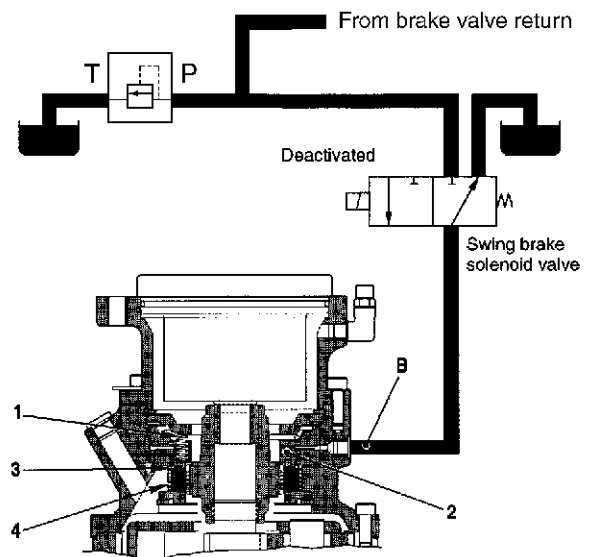
SWING HOLDING BRAKE

OPERATION

1) When swing brake solenoid valve is deactivated

When the swing brake solenoid is deactivated, the pressurized oil from the PPC pressure reducing valve is shut off and port **B** is connected to the tank circuit.

Because of this, brake piston (2) is pushed down in the direction of the arrow by brake spring (1), so disc (3) and plate (4) are pushed together and the brake is applied.

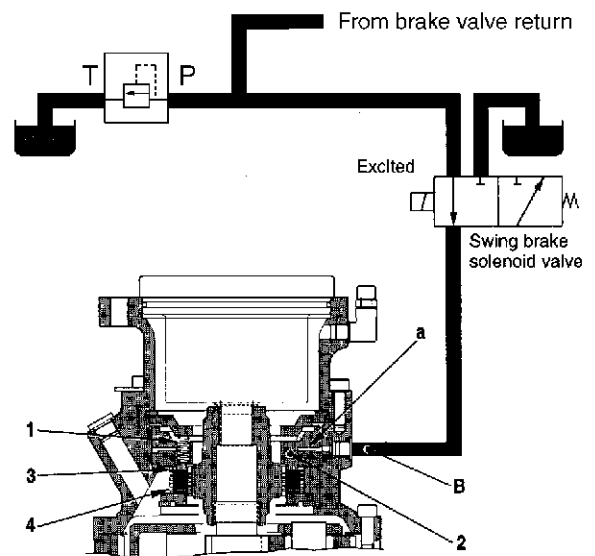


2) When swing brake solenoid valve is excited

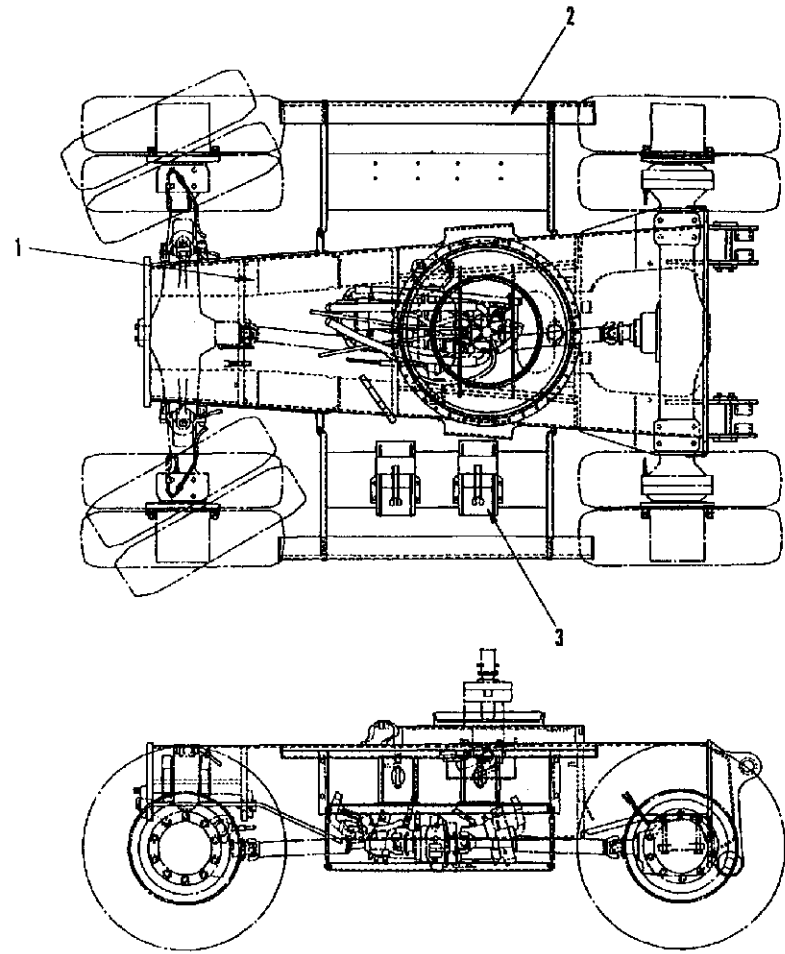
When the swing solenoid valve is excited, the valve is switched, and the pressurized oil from the PPC pressure reducing valve enters port **B** and flows to brake chamber "a".

The pressurized oil entering chamber "a" overcomes the force of brake spring (1), and brake piston (2) is pushed up in the direction of the arrow. Because of this, disc (3) and plate (4) separate, and the brake is released.

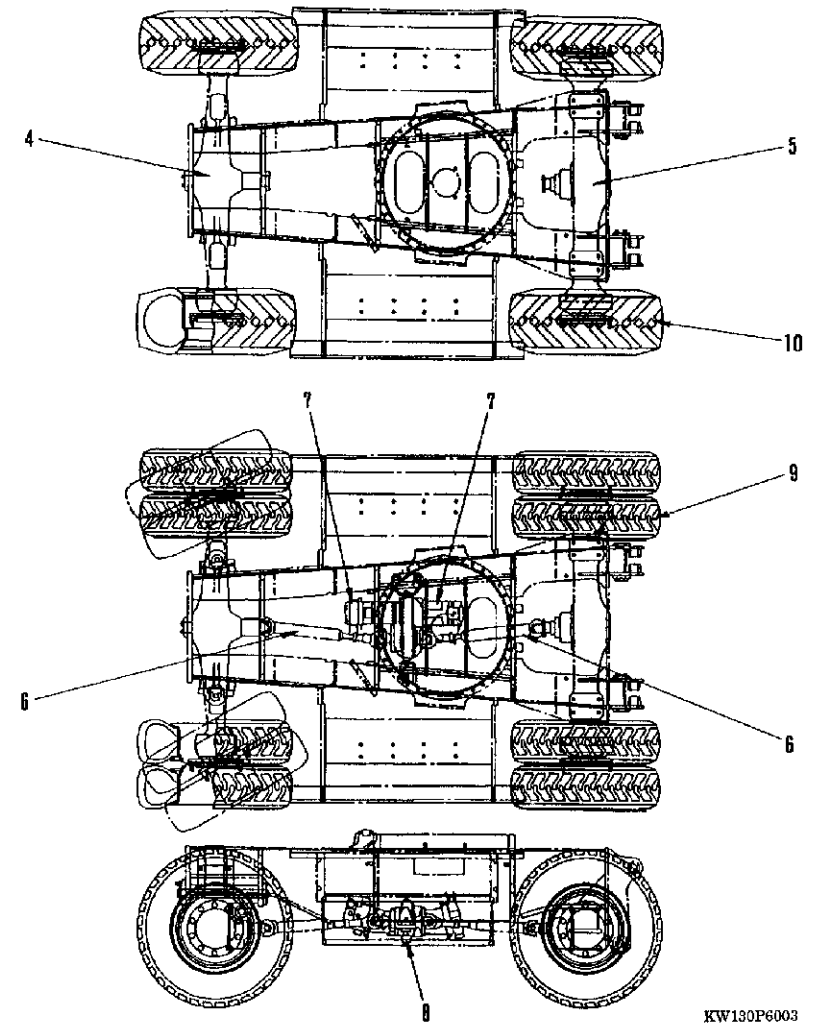
1. Brake spring
2. Brake piston
3. Disc
4. Plate



UNDERCARRIAGE



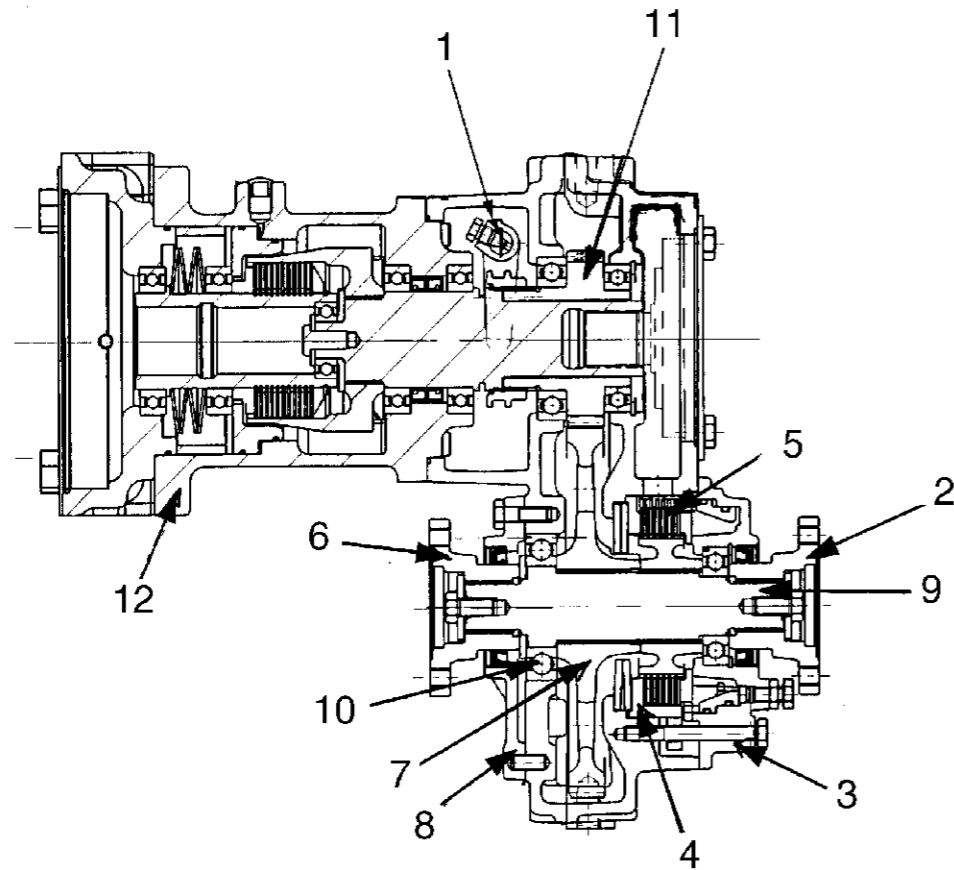
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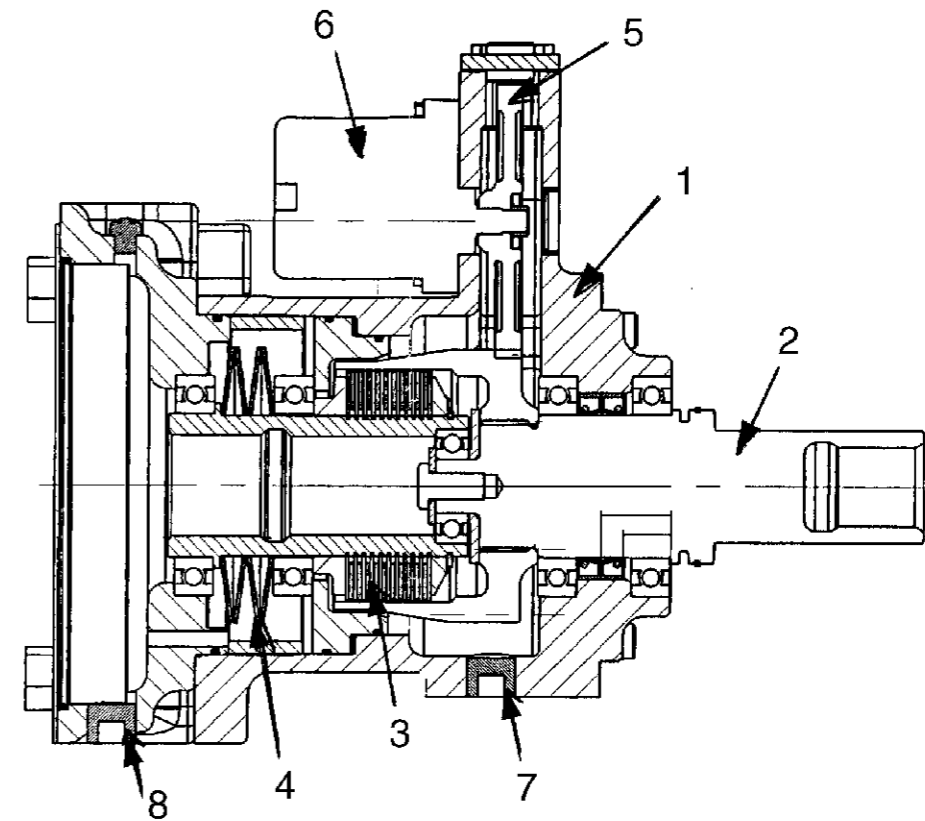
- | | |
|------------------------------------|------------------------|
| 1. Undercarriage | 6. Propshaft |
| 2. Step | 7. Travel motor |
| 3. Wheel chock | 8. Transmission |
| 4. Front oscillating steering axle | 9. Double wheel ass'y |
| 5. Rear axle | 10. Single wheel ass'y |

TRANSMISSION



- 1. Screw-fork to shaft
- 2. Flange
- 3. Brake cylinder
- 4. Brake drum
- 5. Friction disk
- 6. Flange
- 7. Gear
- 8. Cover
- 9. Output shaft
- 10. Bearing
- 11. Gear
- 12. Clutch ass'y

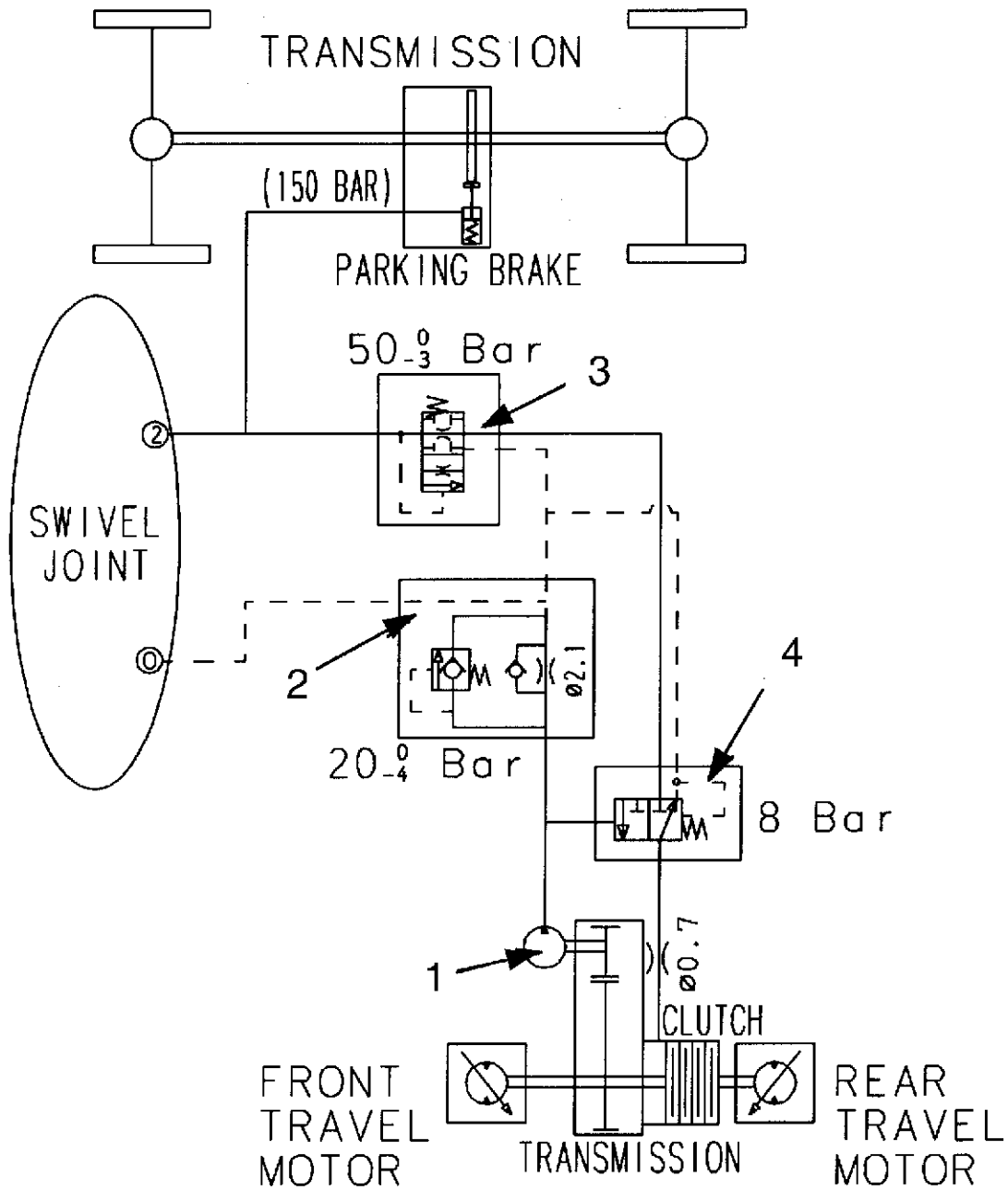
CLUTCH ASS'Y



- 1. Casing
- 2. Drive shaft
- 3. Friction plates
- 4. Spring discs
- 5. Gear
- 6. Clutch control gear pump
- 7. Plug
- 8. Plug

CLUTCH CONTROL CIRCUIT

STRUCTURE



1. Clutch control pump
2. Pressure relief valve ass'y
3. Pressure reducing valve
4. Clutch control valve

FUNCTION

The clutch is a device which automatically disengages the drive between the 200 cc (rear) travel motor and the transmission. This occurs when the machine is accelerating and the disengagement occurs at 11 Kph. The transmission system becomes more efficient (by reducing losses caused by the unnecessary rotation of the rear travel motor) providing better acceleration and enabling a maximum speed of 30 Kph.

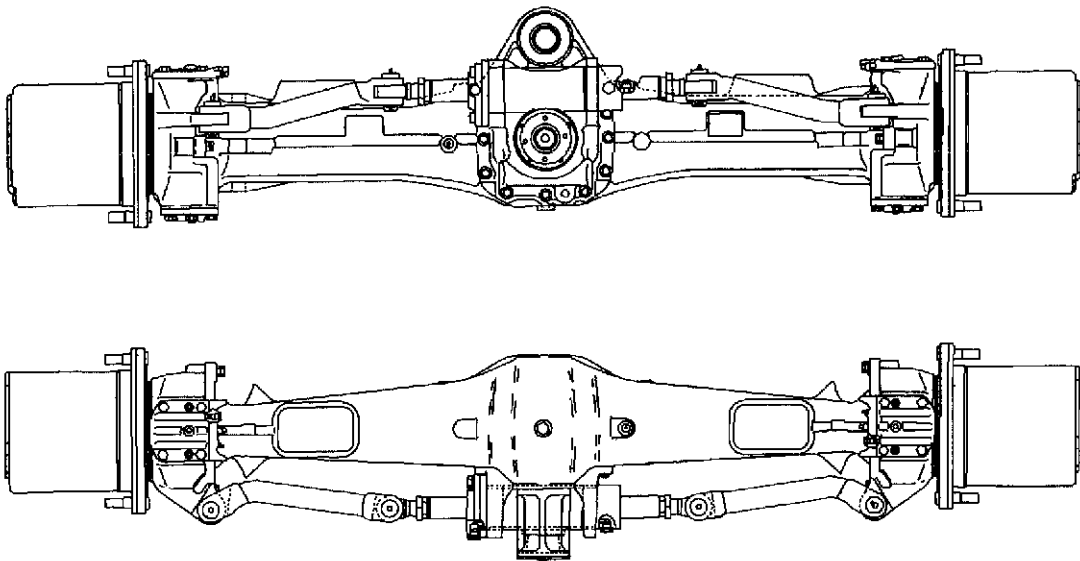
When the machine decelerates from a high speed the clutch will re-engage automatically at 9 Kph and will remain engaged until the speed is increased above 11 Kph again.

AXLE

OUTLINE

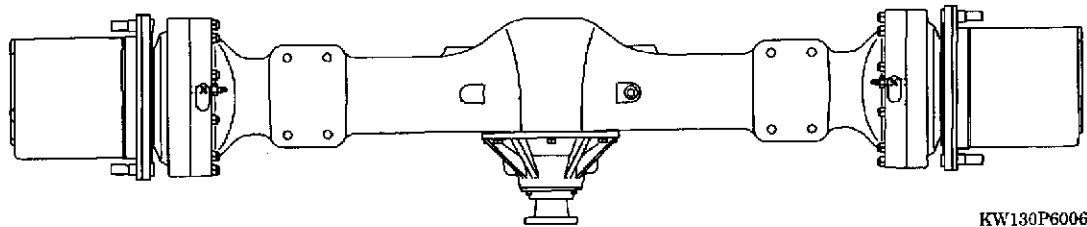
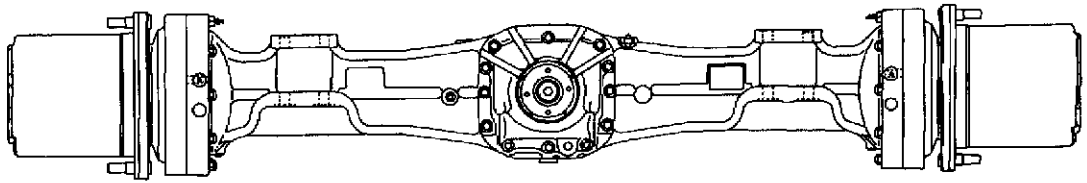
- Each axle consists of an axle housing supporting the chassis weight, a differential set in the axle housing, a final drive, and a brake provided at each end.
- A trunnion-type axle shaft with a king pin at the final drive end is used to enable the direction of travel of the machine to be changed.

FRONT AXLE



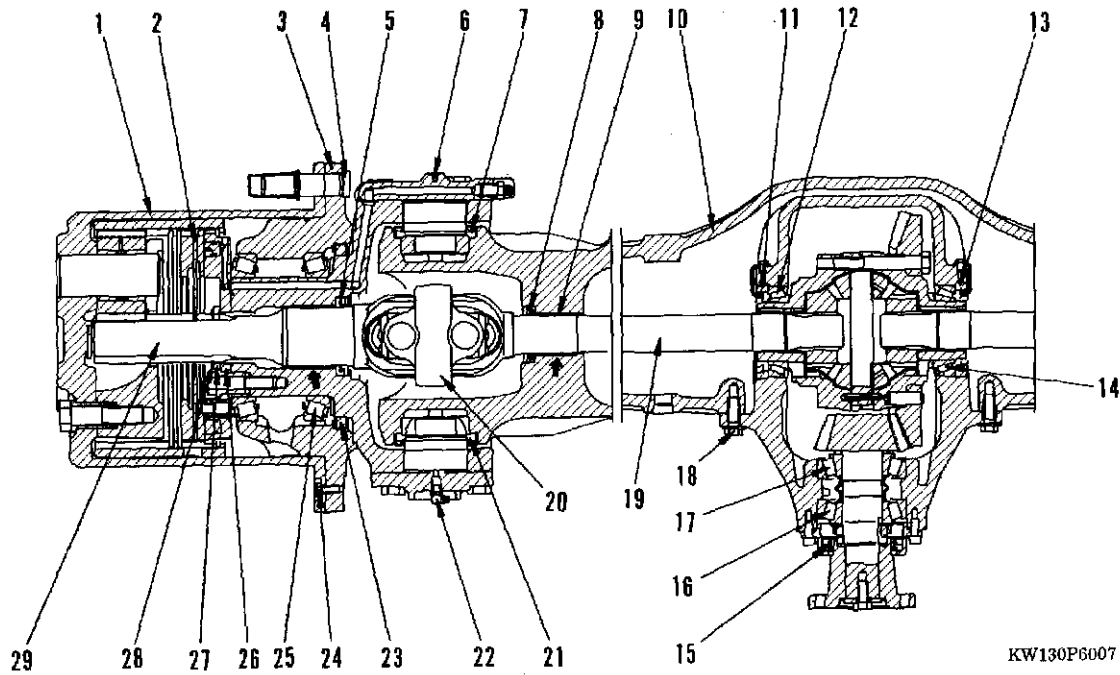
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REAR AXLE



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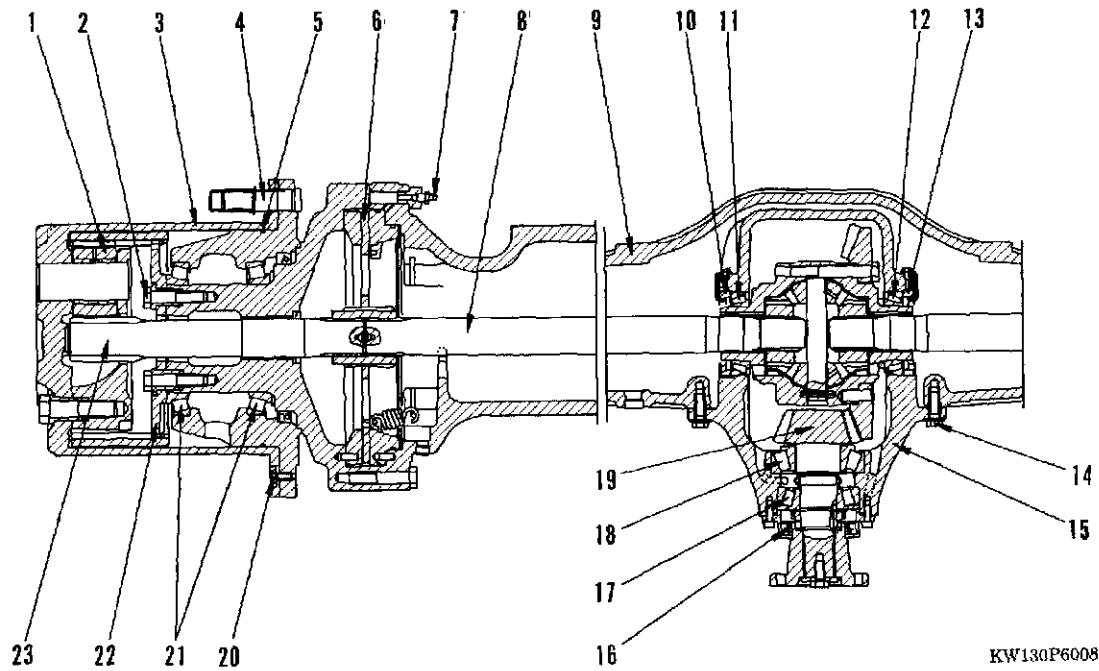
FRONT AXLE



Axle reduction ratio = 17, 73:1

- | | |
|----------------------|-------------------------|
| 1. Planetary carrier | 16. Roller bearing |
| 2. Washer | 17. Roller bearing |
| 3. Brake drum | 18. Hexagon head screw |
| 4. Pin | 19. Shaft |
| 5. Seal ring | 20. Joint |
| 6. Grease nipple | 21. Bushing |
| 7. Seal ring | 22. Grease nipple |
| 8. Seal ring | 23. Seal ring |
| 9. Bushing | 24. Cylinder head screw |
| 10. Axle tube | 25. Roller bearing |
| 11. Ring nut | 26. Washer |
| 12. Ball bearing | 27. Ring |
| 13. Ring nut | 28. Hexagon head screw |
| 14. Ball bearing | 29. Sun gear |
| 15. Seal ring | |

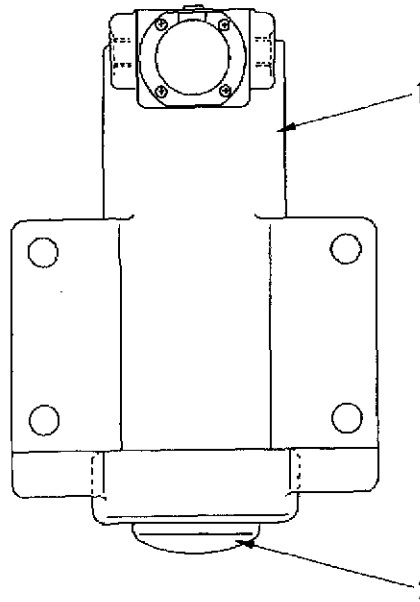
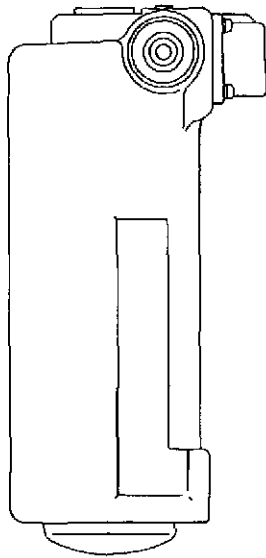
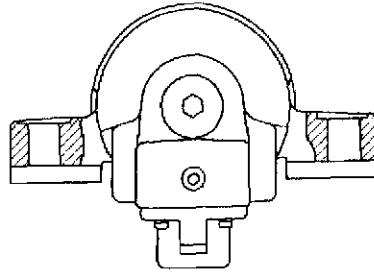
REAR AXLE



KW130P6008

- | | |
|----------------------|-------------------------|
| 1. Planetary gear | 16. Seal ring |
| 2. Bolt | 17. Roller bearing |
| 3. Planetary carrier | 18. Roller bearing |
| 4. Stud | 19. Bevel gear |
| 5. Wheel Hub | 20. Cylinder head screw |
| 6. Bushing | 21. Bearing |
| 7. Socket | 22. Ring gear plate |
| 8. Shaft | 23. Sun gear |
| 9. Axle tube | |
| 10. Ring nut | |
| 11. Roller bearing | |
| 12. Roller bearing | |
| 13. Shim | |
| 14. Bolt | |
| 15. Cover | |

SUSPENSION LOCK CYLINDER



KW130P6009

1. Barrel
2. Plunger

Specifications

Piston: $\varnothing 100\text{mm}$
Stroke: 155mm
Operating pressure: 40.0 MPa (408 Kg/cm²)
Pilot pressure: 3.0 MPa (30.6 Kg/cm²)
Max 5.0 MPa (51.0 Kg/cm²)

CIRCUIT

Purpose

The undercarriage of wheeled hydraulic excavators have one of the two driven axles oscillating mounted. This makes it possible to fully utilize the excavator's rimpull in rough terrain - all of the wheels being constantly in contact with the ground.

An oscillating blocking ram is fitted on each side of the undercarriage to block the axle during digging or lifting work.

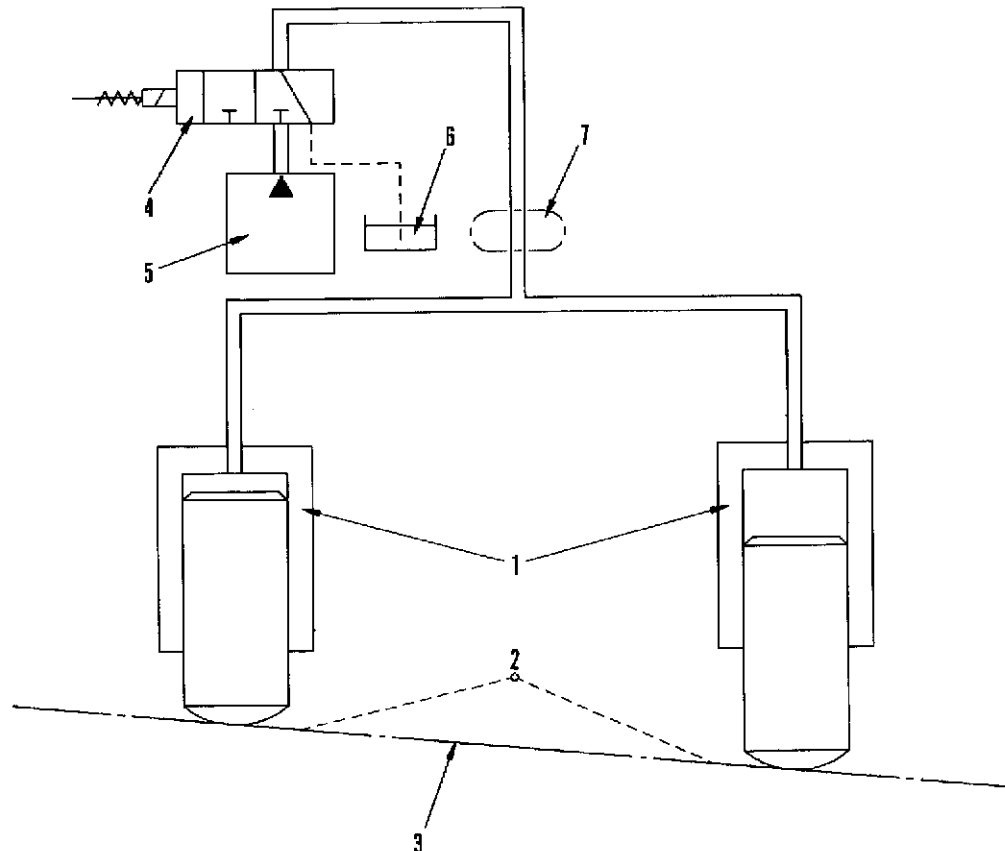
Blocking the axle increases the excavator's stability.

1. Ram
2. Axle oscillating point
3. Oscillating axle
4. Oscillation lock solenoid valve
5. PPC pressure reducing valve
6. Hydraulic tank
7. Swivel joint

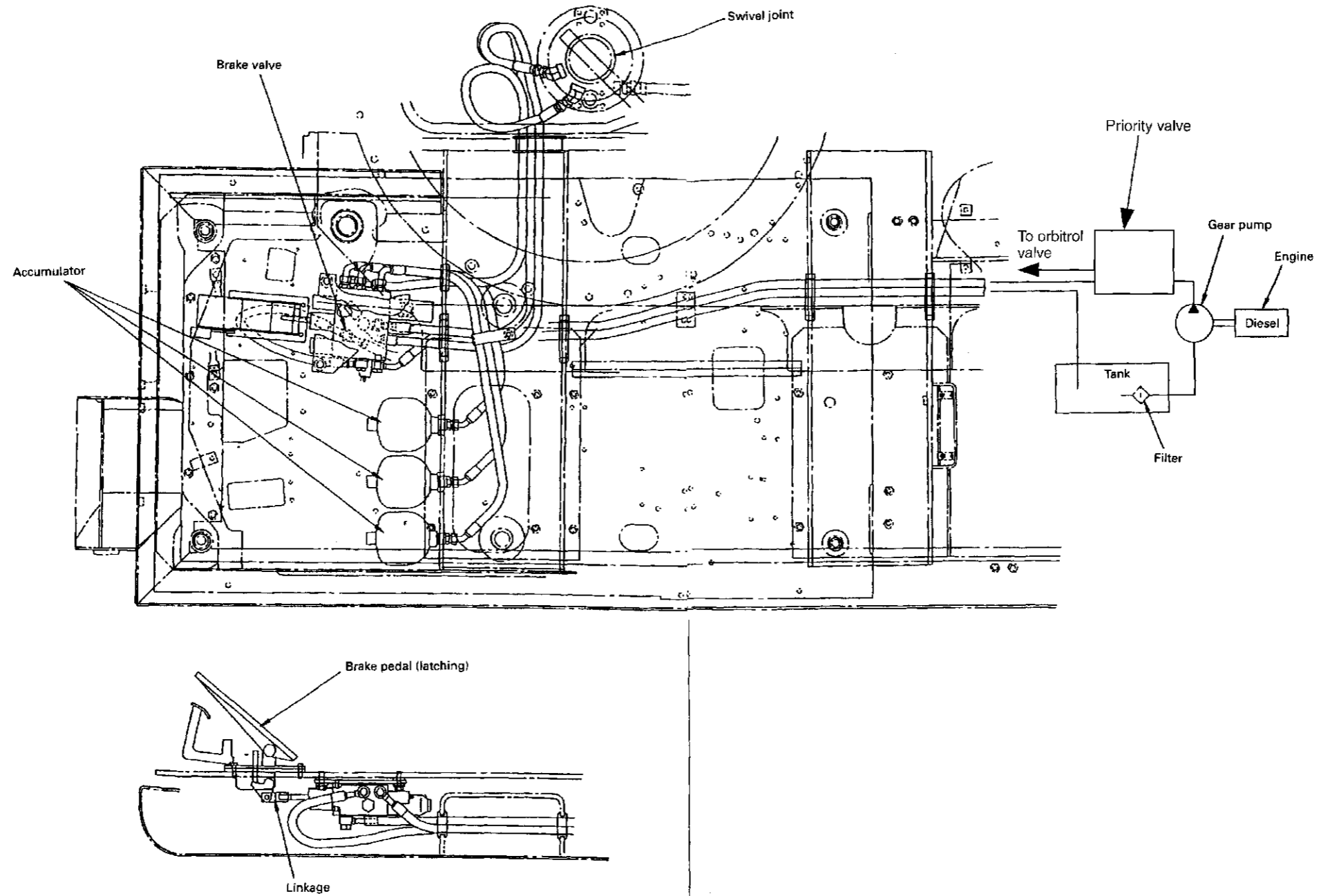
Function

The oscillating axle (3) is mounted in bearing (2) in the middle of the excavator. The two rams (1) which are full of hydraulic oil are connected through pipelines to the oscillation lock solenoid valve (4).

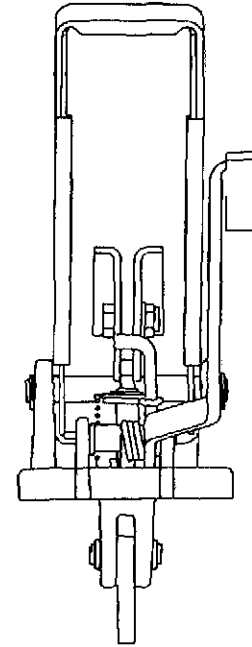
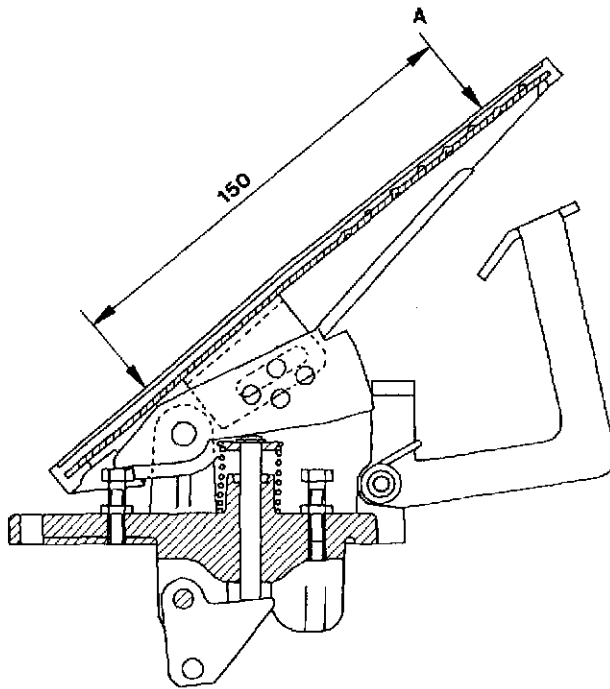
When the excavator is being moved, the oscillation lock solenoid valve should be de-energized so that the hydraulic oil in the ram can be returned to tank as the axle is oscillating up and down. Before commencing excavating operations, the oscillation lock solenoid valve should be energized to pressurize the oil in the rams. This will lock the axle in the position it is in.



BRAKING TRAIN



BRAKE PEDAL



KW130P6012

Actuation force at 'A' = 300 - 350 N
(30.6 - 35.7 kg)

When installed in machine

