

SECTION 1 GENERAL

Group 1 Safety hints	1-1
Group 2 Specifications	1-5
Group 3 Periodic replacement	1-13

SECTION 2 REMOVAL AND INSTALLATION OF UNIT

Group 1 Structure	2-1
Group 2 Removal and installation of unit	2-2

SECTION 3 POWER TRAIN SYSTEM

Group 1 Structure and operation	3-1
Group 2 Inspection and troubleshooting	3-13
Group 3 Disassembly and assembly	3-19

SECTION 4 BRAKE SYSTEM

Group 1 Structure and function	4-1
Group 2 Operational checks and troubleshooting	4-8
Group 3 Tests and adjustments	4-10

SECTION 5 STEERING SYSTEM

Group 1 Structure and function	5-1
Group 2 Operational checks and troubleshooting	5-10
Group 3 Disassembly and assembly	5-12

SECTION 6 HYDRAULIC SYSTEM

Group 1 Structure and function	6-1
Group 2 Operational checks and troubleshooting	6-15
Group 3 Disassembly and assembly	6-20

SECTION 7 ELECTRICAL SYSTEM

Group 1 Component location	7-1
Group 2 Electrical circuit	7-2
Group 3 Component specification	7-12
Group 4 Connector destination	7-13
Group 5 Troubleshooting	7-15

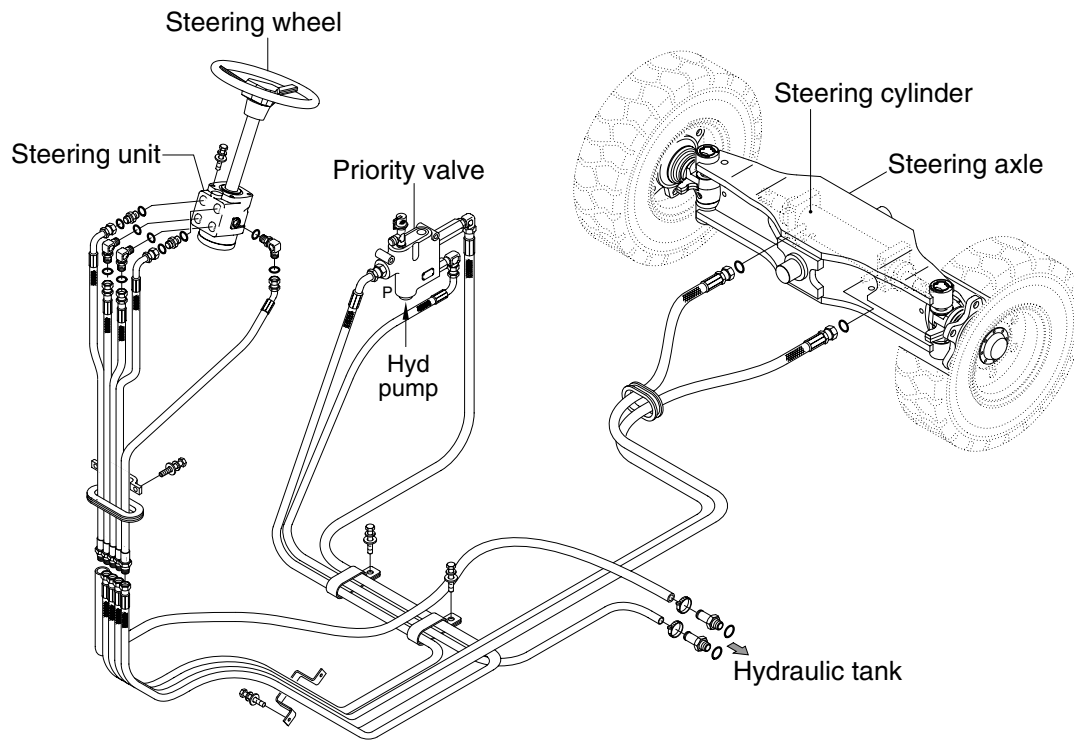
SECTION 8 MAST

Group 1 Structure	8-1
Group 2 Operational checks and troubleshooting	8-5
Group 3 Adjustment	8-8
Group 4 Removal and installation	8-11

SECTION 5 STEERING SYSTEM

GROUP 1 STRUCTURE AND FUNCTION

1. OUTLINE

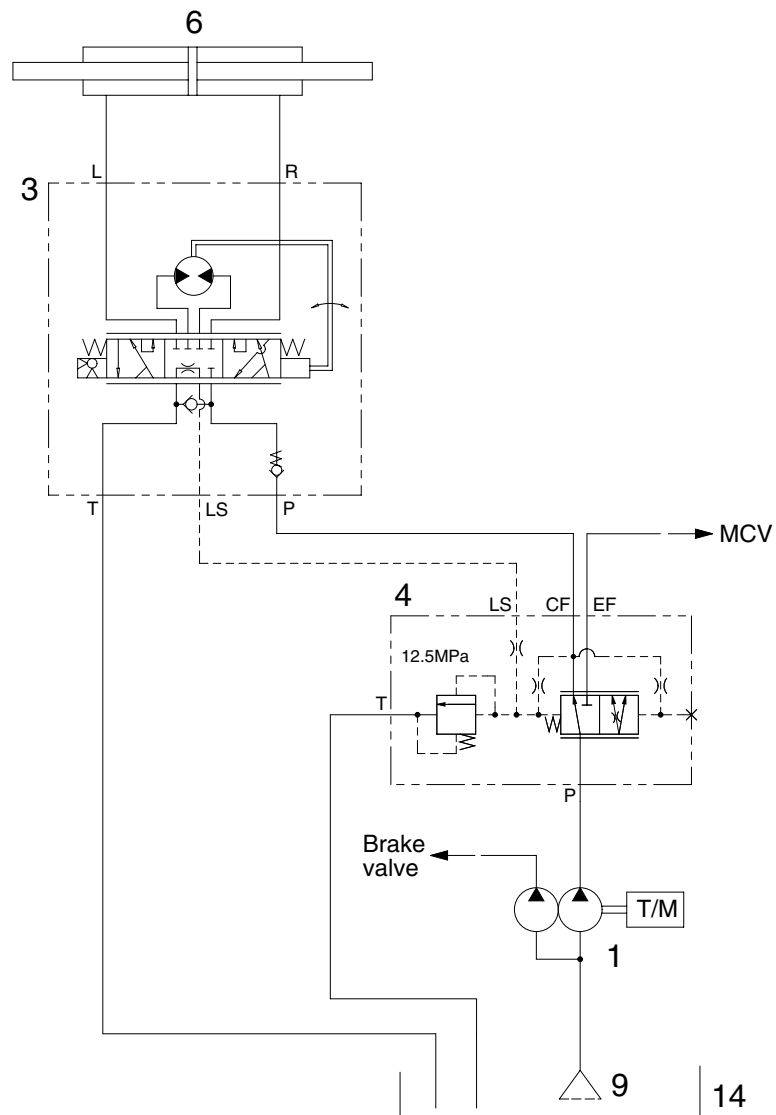


35DS7SE01

The steering system for this machine is composed of steering wheel assembly, steering unit, priority valve steering cylinder, steering axle and piping. The steering force given to the steering wheel enters the steering unit through the steering column. The required oil flow is sensed by the function of the control section of the unit, and pressurized oil delivered from the hydraulic pump is fed to the steering cylinder. The force produced by the steering cylinder moves the knuckle of steering tires through the intermediate link.

The axle body is unit structure having steering knuckles installed to its both ends by means of kingpins. Hub and wheel are mounted through bearing to spindle of knuckle.

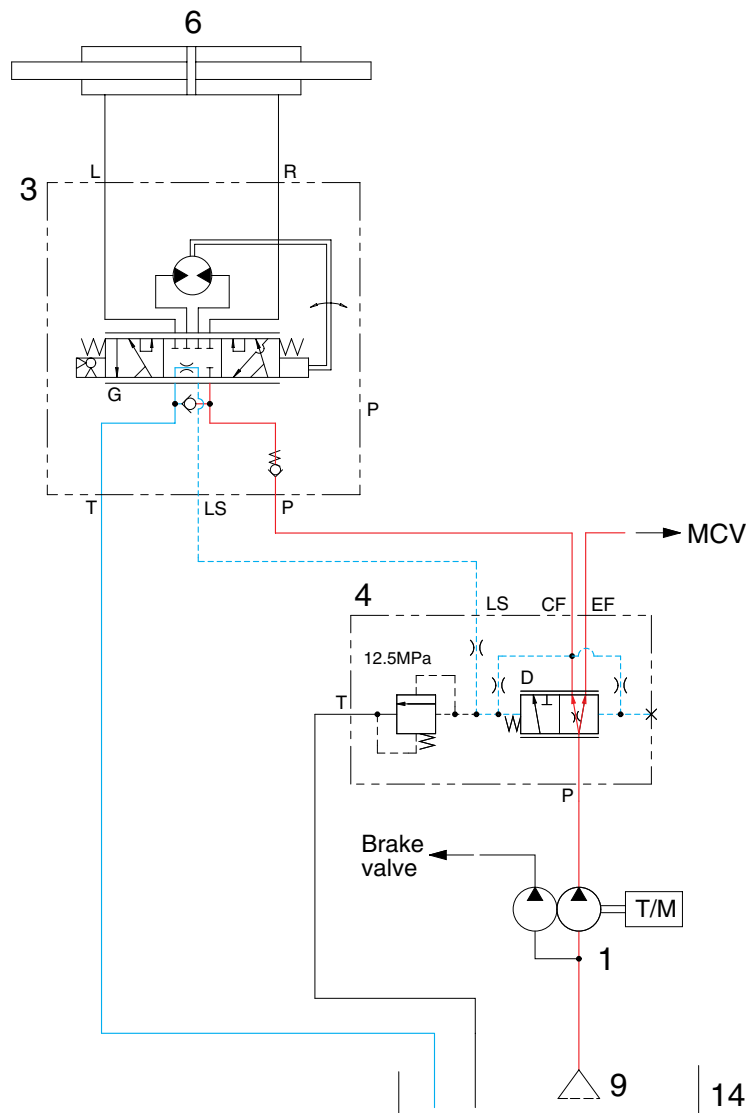
2. HYDRAULIC CIRCUIT



35DS7SE02

- | | | | |
|---|---------------------|----|-------------------|
| 1 | Hydraulic gear pump | 6 | Steering cylinder |
| 3 | Steering unit | 9 | Suction filter |
| 4 | Priority valve | 14 | Hydraulic tank |

1) NEUTRAL



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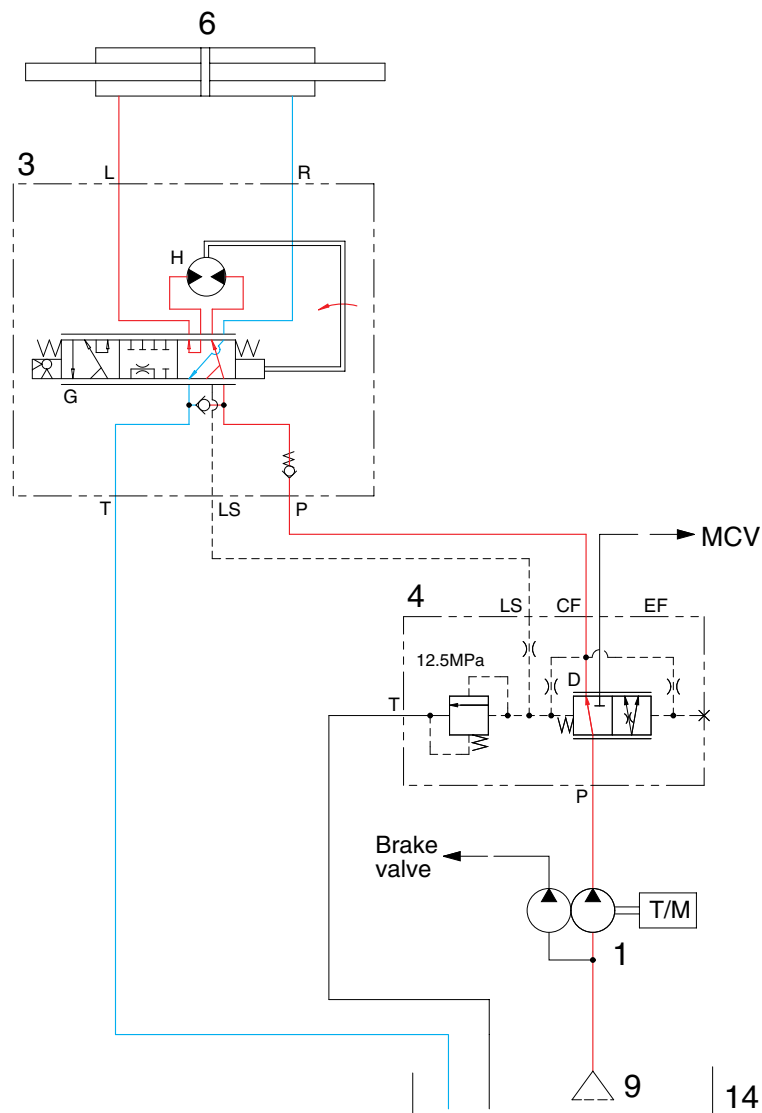
The steering wheel is not being operated, so control spool(G) does not move.

The oil from hydraulic gear pump(1) enters the port P of priority valve(4) and the inlet pressure oil moves the spool(D) to the left.

Oil flow into LS port to the hydraulic tank(14).

So, the pump flow is routed to the main control valve.

2) LEFT TURN



35DS7SE04

When the steering wheel is turned to the left, the spool(G) within the steering unit(3) connected with steering column turns in left hand direction.

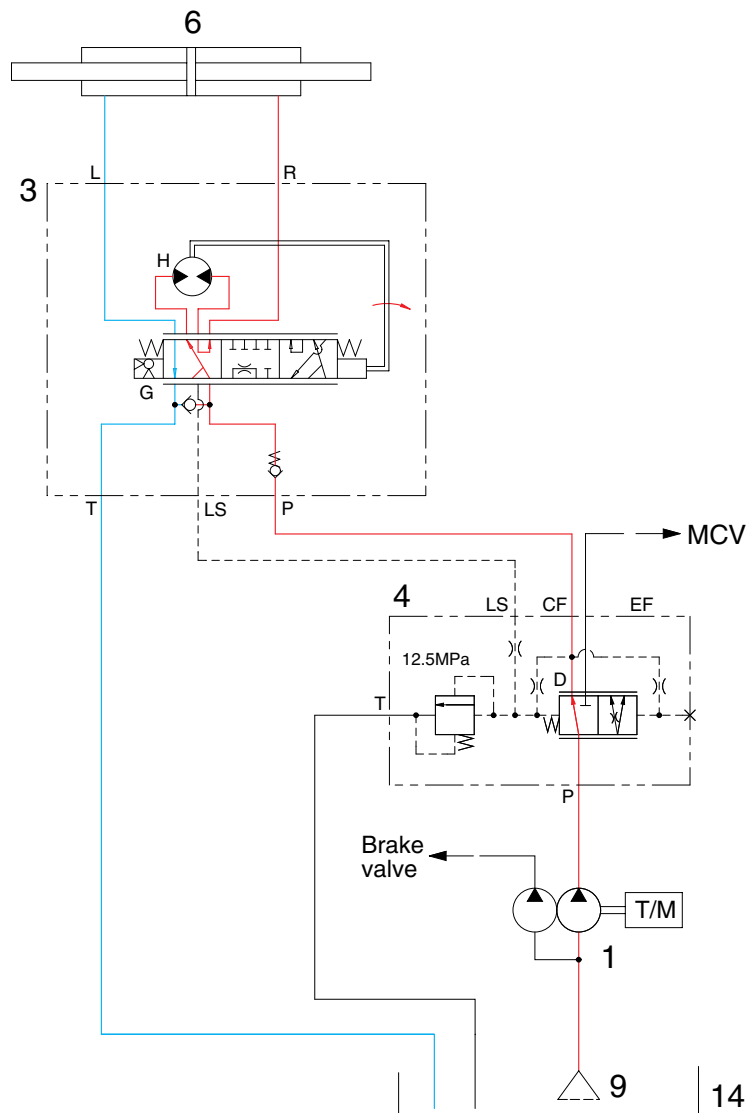
At this time, the oil discharged from the pump flows into the spool(G) within the steering unit(3) through the spool(D) of priority valve(4) and flows the gerotor(H).

Oil flow from the gerotor(H) flows back into the spool(G) where it is directed out the left work port(L).

Oil returned from cylinder returns to hydraulic tank(14).

When the above operation is completed, the machine turns to the left.

3) RIGHT TURN



35DS7SE05

When the steering wheel is turned to the right, the spool(G) within the steering unit(3) connected with steering column turns in right hand direction.

At this time, the oil discharged from the pump flows into the spool(G) within the steering unit(3) through the spool(D) of priority valve(4) and flows the gerotor(H).

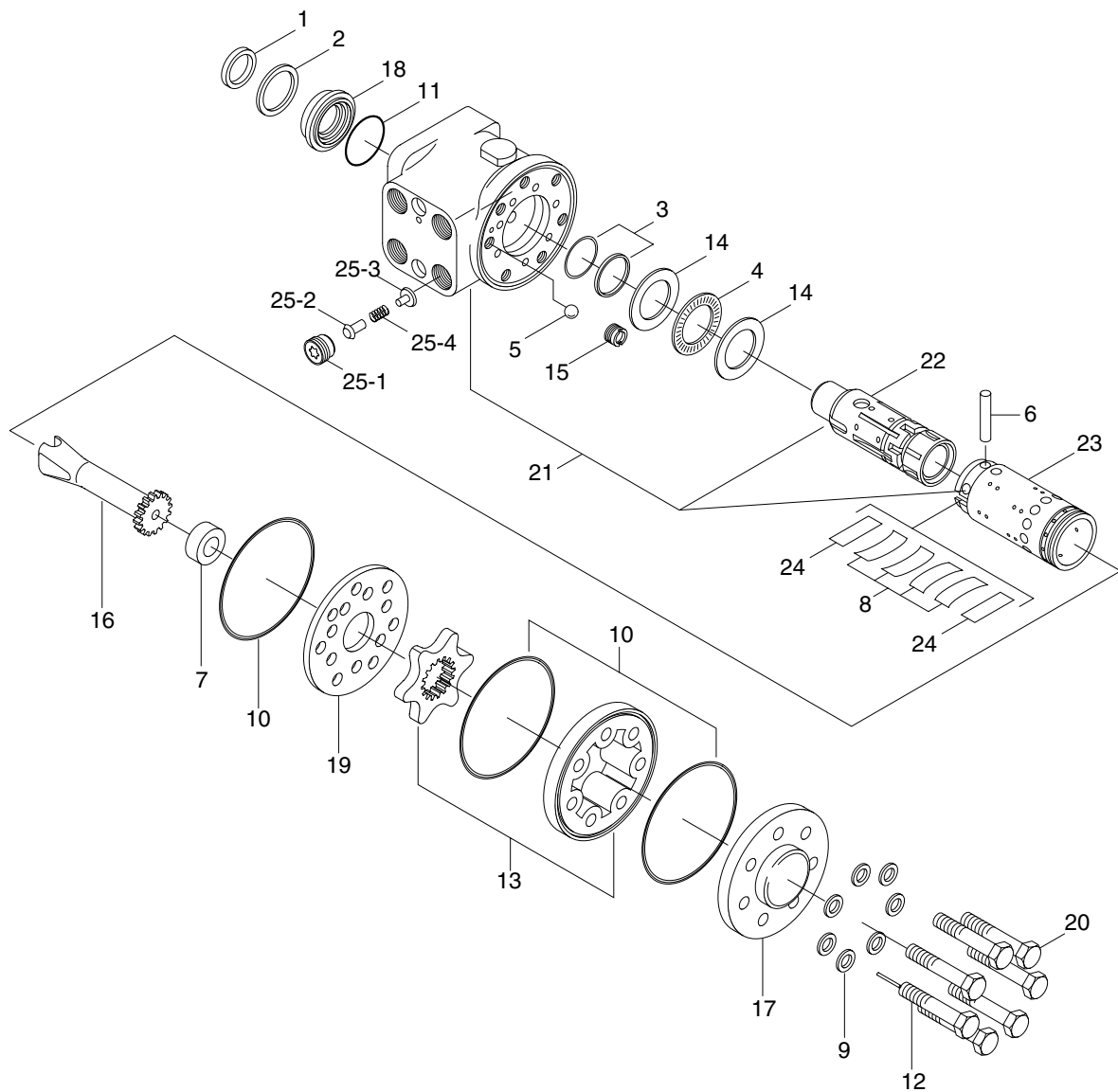
Oil flow from the gerotor(H) flows back into the spool(G) where it is directed out the right work port(R).

Oil returned from cylinder returns to hydraulic tank(14).

When the above operation is completed, the machine turns to the right.

3. STEERING UNIT

1) STRUCTURE



20D7SS06

1	Dust seal	11	O-ring	21	Housing
2	Retaining ring	12	Roll screw	22	Spool
3	Cap seal	13	Gerotor set	23	Sleeve
4	Thrust bearing	14	Bearing race	24	Plate spring
5	Ball	15	Bore screw	25	P-port check valve
6	Pin	16	Drive	25-1	Plug
7	Spacer	17	End cap	25-2	Poppet
8	Center spring	18	Gland bushing	25-3	Spring seat
9	Washer	19	Plate	25-4	Spring
10	O-ring	20	Cap screw		

2) OPERATION

The steering unit is composed of the control valve(rotary valve) and the metering device. The control valve controls the flow of oil from the pump in the interior of the unit depending on the condition of the steering wheel. The metering device is a kind of hydraulic motor composed of a stator and a rotor. It meters the required oil volume, feeds the metered oil to the power cylinder and detects cylinder's motion value, that is, cylinder's motion rate.

When the steering wheel is turned, the spool turns, the oil path is switched and the oil is fed into the metering device. As a result, the rotor is caused to run by oil pressure, and the sleeve is caused to run through the drive shaft and cross pin. Therefore, when the spool is turned, the spool turns by the same value in such a manner that it follows the motion of the spool. Steering motion can be accomplished when this operation is performed in a continuous state.

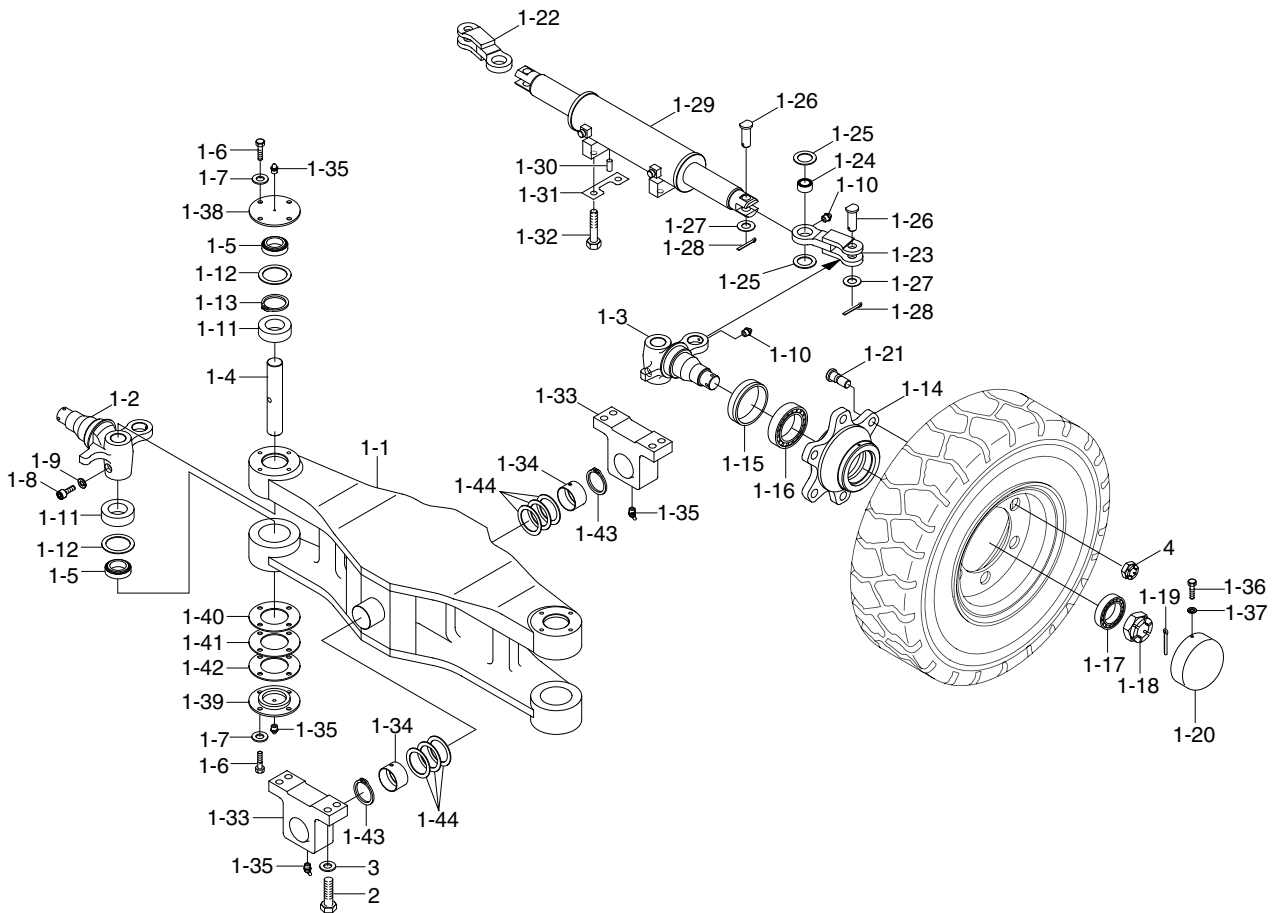
- ▲ If the hoses of the steering system are incorrectly connected, the steering wheel can turn very rapidly when the engine is started. Keep clear of the steering wheel when starting the engine.**

The centering spring for the spool and sleeve is provided to cause the valve to return to the neutral position. It is therefore possible to obtain a constant steering feeling, which is transmitted to the hands of the driver. Return to the center position occurs when the steering wheel is released.

4. STEERING AXLE

1) STRUCTURE

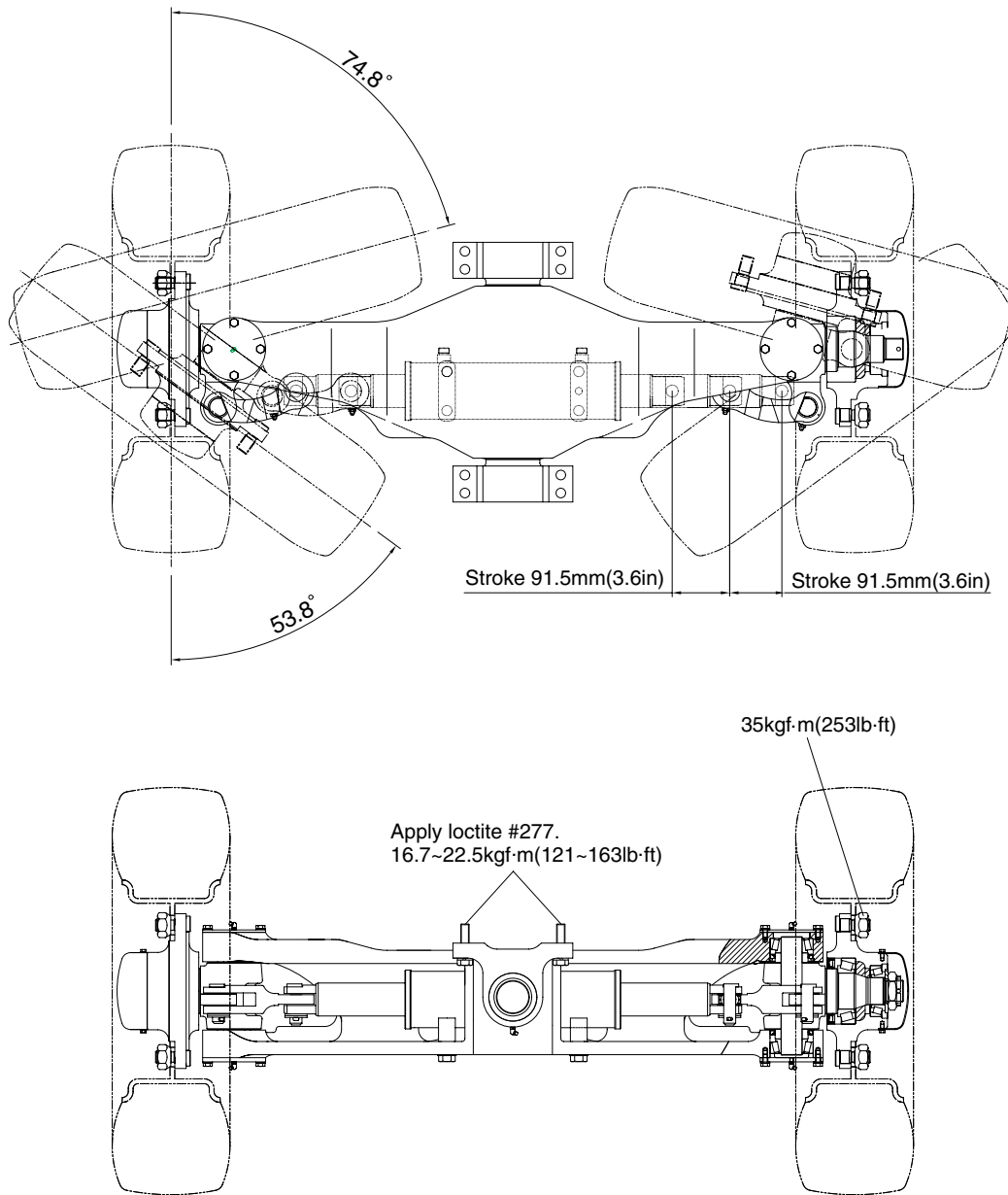
※ Do not remove the stopper bolt unless necessary.



35DS7SE06

1-1	Steering axle	1-12	Dust seal	1-23	Link-LH	1-34	Bushing
1-2	Knuckle-RH	1-13	Snap ring	1-24	SPH plain bearing	1-35	Grease nipple
1-3	Knuckle-LH	1-14	Hub	1-25	Thrust washer	1-36	Hexagon bolt
1-4	King pin	1-15	Oil seal	1-26	Clevis pin	1-37	Spring washer
1-5	Taper roller bearing	1-16	Taper roller bearing	1-27	Plain washer	1-38	Upper cover
1-6	Hexagon bolt	1-17	Taper roller bearing	1-28	Split pin	1-39	Lower cover
1-7	Spring washer	1-18	Slotted nut	1-29	Steering cylinder	1-40	Shim(0.1t)
1-8	Special bolt	1-19	Split pin	1-30	Pin	1-41	Shim(0.15t)
1-9	Spring washer	1-20	Hub cap	1-31	Lock plate	1-42	Shim(0.3t)
1-10	Grease nipple	1-21	Serration bolt	1-32	Hexagon bolt	1-43	Snap ring
1-11	Collar	1-22	Link-RH	1-33	Support	1-44	Shim

2) GREASING AND SPECIFICATION



35DS7SE07

Type	Unit	Center pin support single shaft
Structure of knuckle	-	Elliott type
Toe-in	degree	0
Camber	degree	0
Caster	degree	0
King pin angle	degree	0
Max steering angle of wheels(Inside/Outside)	degree	74.8/53.8
Tread	mm(in)	1140(45)

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