

## Operation Overview

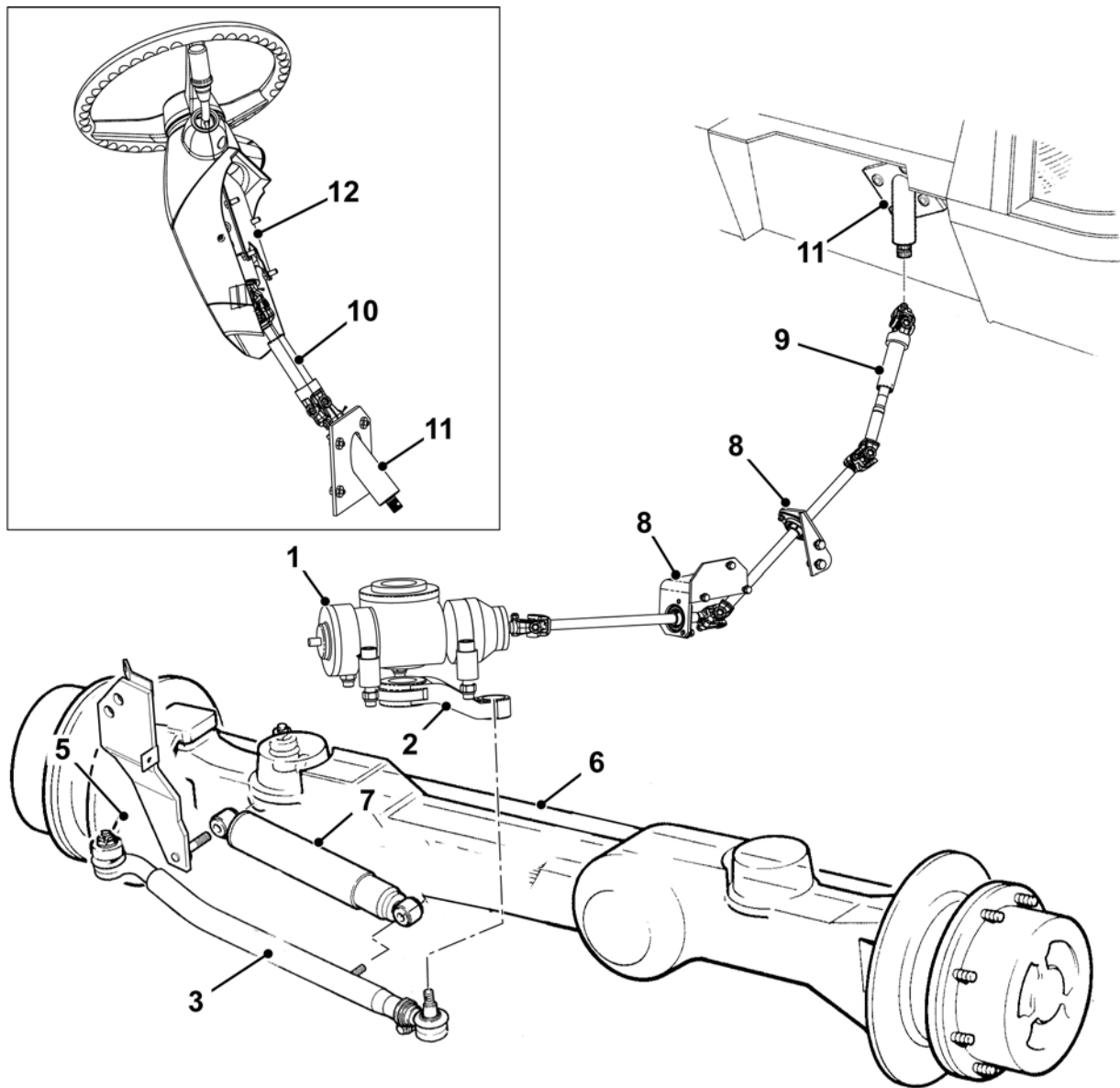


Fig 1.

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The front axle is steered by a recirculating ball hydraulically power assisted steering box 1. Drop arm 2 and drag link 3 transmit the steering effort to the right hand steering swivel 5. This is linked to the left hand steering swivel by track rod 6.

Steering damper 7 connects between drag link 3 and the chassis. The damper reduces steering kick back on uneven ground.

The steering input shafts are supported by bearings and chassis mounted brackets 8. Input shafts 9 and 10 are telescopic. Steering column assembly 12 is adjustable for angle and reach.

## Hydraulic Operation and Schematics

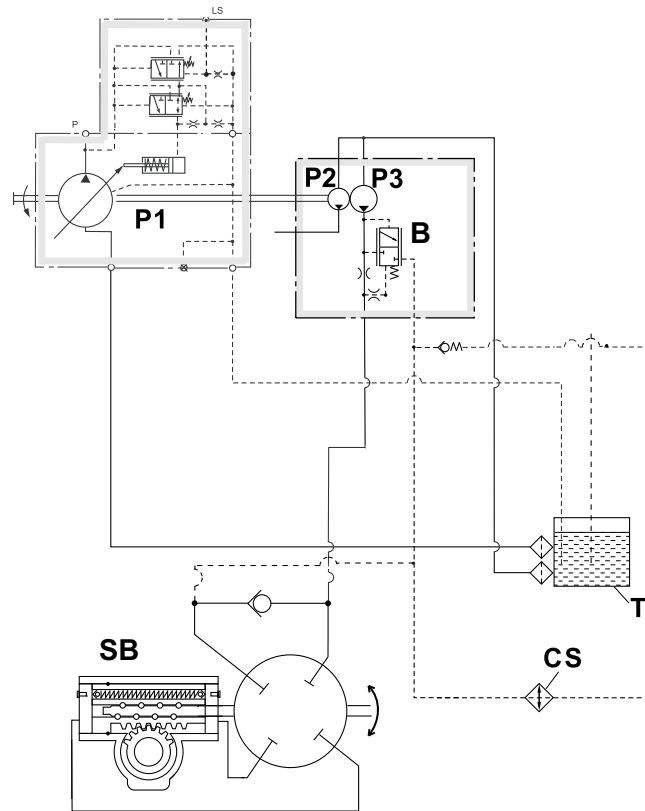


Fig 2.

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**P3** is the rear section of the gearbox-driven hydraulic pump which draws fluid from tank **T** to supply steering box **SB**. An adjustable pressure and flow control valve **B** is built into the rear cover of the pump. Fluid exhausted from the steering box joins with the pump by-pass flow and returns to tank via cooler **CS** which is part of the machine cooling pack.

## Fault Finding

### Introduction

Before assuming that the steering box or the pump is the cause of a steering problem, ensure that all other steering system faults have been rectified.

Before using the fault finding tables carry out the following checks:

- 1 Question the operator and drive the machine to establish the exact nature of the fault.
- 2 Check that the hydraulic oil is clean and to the correct level and that there are no signs of oil leakage from the circuit.
- 3 Check that the steering box mountings and all steering and suspension linkages are correctly tightened.

### Fault Finding Tables

⇒ [Fault - Heavy Steering \(□ H1-6\)](#)

**Table 1. Fault - Heavy Steering**

CHECK		ACTION	
1	Is the front axle overloaded?	YES:	Reduce load
		NO:	Check 2
2	Are the correct tyres fitted and correctly inflated?	YES:	Check 3
		NO:	Replace / inflate tyres
3	Is the 4WD clutch releasing correctly?	YES:	Check 4
		NO:	See Section F, Fault Finding
4	Is the front differential operating correctly?	YES:	Check 5
		NO:	See Section F, Fault Finding
5	Are the steering swivels and linkages free?	YES:	Check 6
		NO:	Lubricate and free off
6	Is the oil cooler free of air blockage?	YES:	Check 7
		NO:	Clean out debris
7	Is the pump relief valve pressure too low?	YES:	Check for dirt at relief valve
		NO:	Check 8
8	Is the pump flow rate too low?	YES:	Check for flow control valve sticking and check 11
		NO:	Check 9
9	Is the steering column turning freely?	YES:	Check 10
		NO:	Free off / check universal joint phasing
10	Is front wheel alignment correct?	YES:	Check 11
		NO:	Adjust
11	Are suspension and steering geometry correct?	YES:	Check 12
		NO:	Renew parts as required
12	Is steering box leaking oil?	YES:	Renew seals
		NO:	Check 13
13	Is oil temperature high?	YES:	Check cooler and pipework for free flow
		NO:	Suspect fault in steering box

**Table 2. Fault - Steering Wander or Free Play**

CHECK		ACTION	
If the fault is wander, start at check 1. If the fault is free play, start at check 4.			
1	Is the rear axle overloaded?	YES: NO:	Reduce load. Check 2.
2	Are the correct tyres fitted and correctly inflated?	YES: NO:	Check 3. Replace / inflate tyres.
3	Is the front wheel alignment correct?	YES: NO:	Check 4. Adjust.
4	Are the column or steering linkages worn or loose?	YES: NO:	Tighten or renew. Check 5.
5	Is the pump flow correct?	YES: NO:	Check 6. Check condition of flow control.
6	Is air trapped in the hydraulic oil?	YES:  NO:	Bleed out air. Turn the steering wheel from lock to lock 3 times and then back to straight ahead (with engine running at idle).  Suspect fault in steering box.