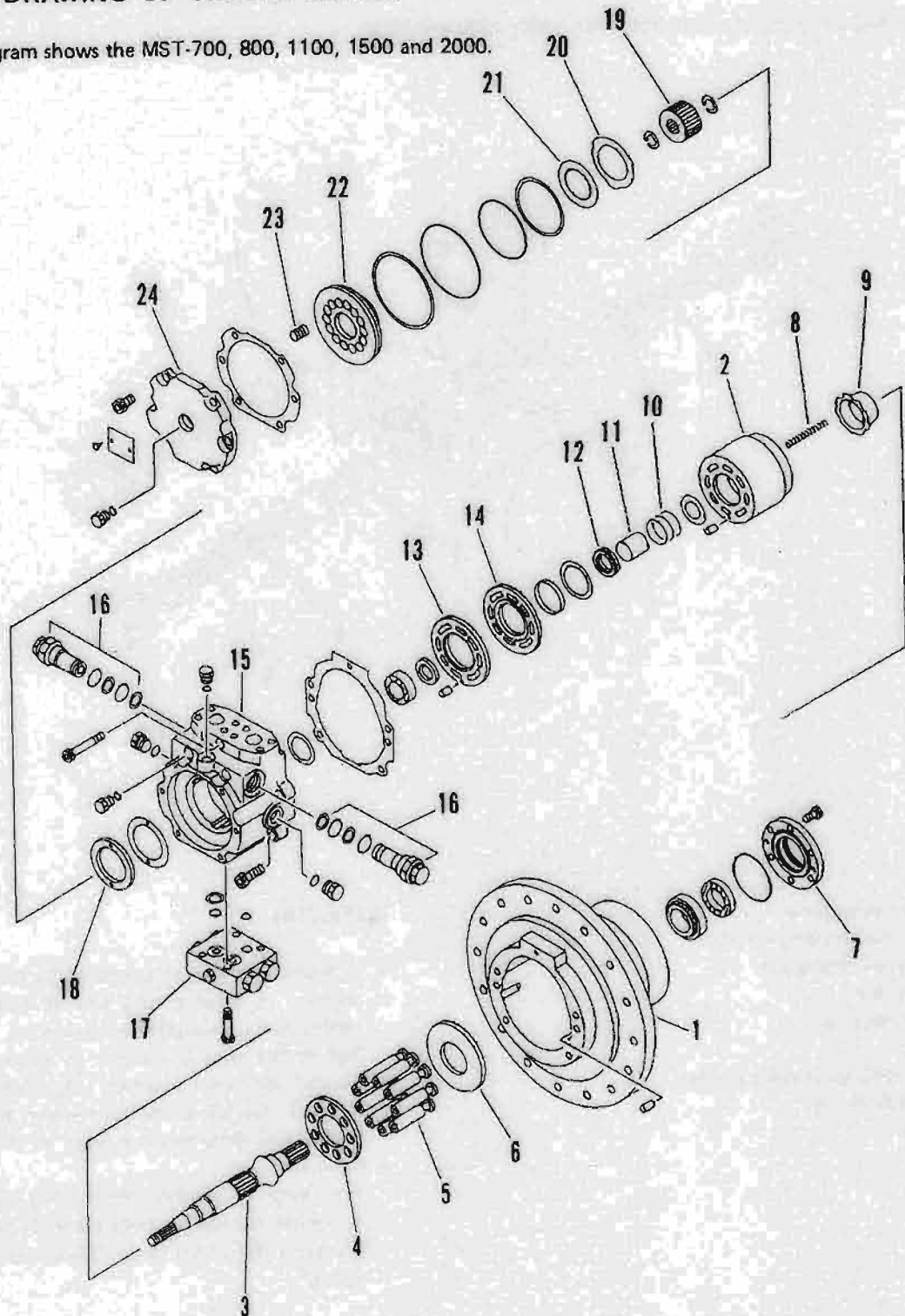


DETAIL DRAWING OF TRAVEL MOTOR

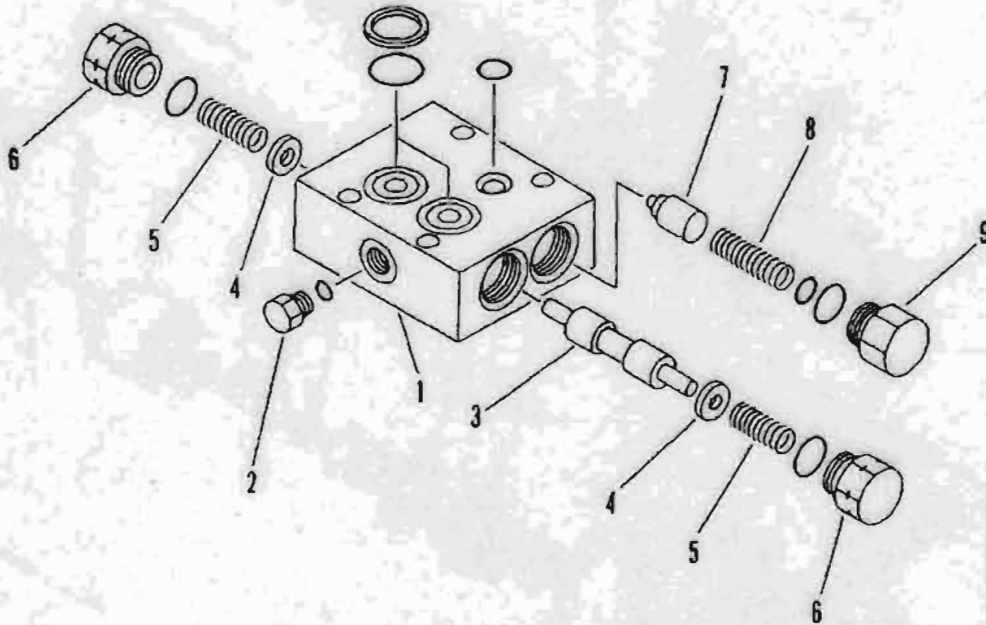
★ The diagram shows the MST-700, 800, 1100, 1500 and 2000.



- | | | | |
|-------------------|---------------|--------------------------------|-------------------|
| 1. Housing | 7. Seal cover | 13. Swash plate | 19. Brake hub |
| 2. Cylinder block | 8. Spring | 14. Bearing plate | 20. Brake plate |
| 3. Output shaft | 9. Guide | 15. End cap | 21. Brake disc |
| 4. Retainer | 10. Spring | 16. High-pressure relief valve | 22. Brake piston |
| 5. Piston | 11. Guide | 17. Flushing valve | 23. Return spring |
| 6. Thrust plate | 12. Retainer | 18. Stopper | 24. Brake cover |

DETAIL DRAWING OF FLUSHING VALVE

★ The diagram shows the MST-700, 800, 1100, 1500 and 2000.



1. Valve housing
2. Plug for charging pressure
3. Shuttle valve spool
4. Retainer
5. Valve spring
6. Plug
7. Charging relief valve poppet
8. Poppet spring
9. Plug

GENERAL

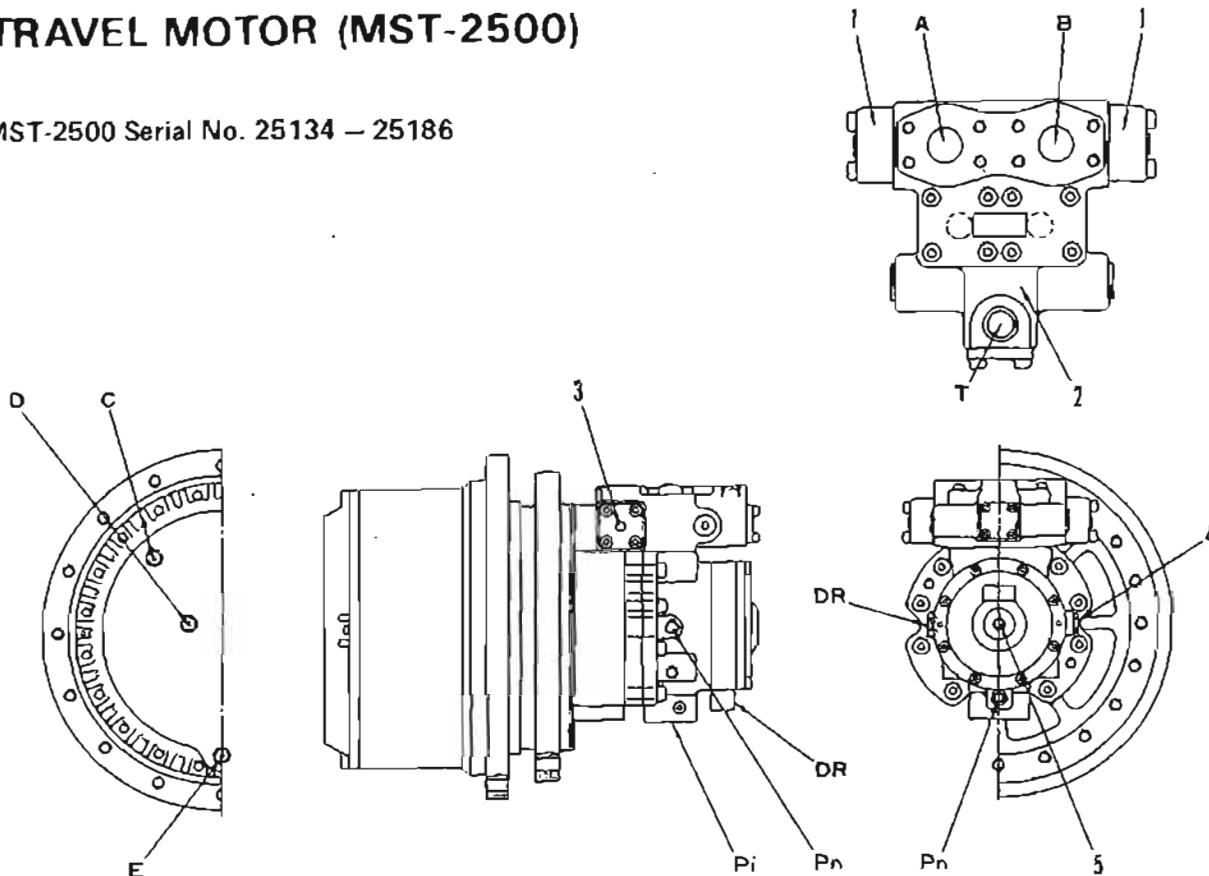
- A flushing valve is mounted in the lower part of each motor. It consists of 2 sets of shuttle and charge relief valves having different functions.

The shuttle valve is actuated by oil at the port which became the motor's suction side (high-pressure side). It sends the oil at the port which became the discharge side (low-pressure side) to the charge relief valve inlet.

The charge relief valve release oil to the oil cooler circuit when the low-pressure oil from the shuttle valve is pressurized above the specified pressure of 13 – 14 kg/cm².

TRAVEL MOTOR (MST-2500)

MST-2500 Serial No. 25134 – 25186



- 1. High-pressure relief valve
- 2. Flushing valve
- 3. Plug for high-pressure
- 4. Drain plug
- 5. Plug for disengaged parking brake

- A. From port B1 or B2 of main pump
- B. From port A1 or A2 of main pump
- Pn. From parking brake valve
- Pi. From H-L speed changing solenoid valve
- DR. To hydraulic tank
- T. To oil cooler
- C. Plug for oil supply (PT 1/2)
- D. Plug for oil check (PT 1/2)
- E. Plug for oil drain (PT 1/2)

GENERAL

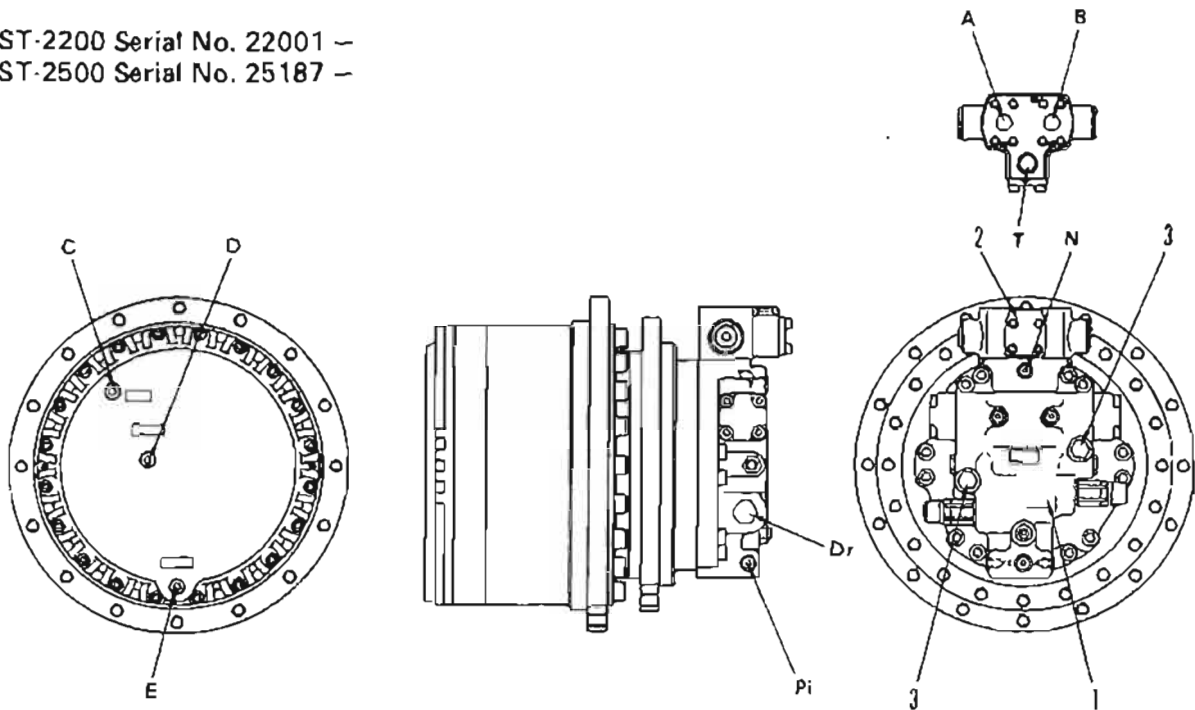
- The travel motors are mounted in the right and left front of the main frame. They drive the sprocket to run or turn the vehicle. Swash plate-type travel motors are adopted. A parking disc brake and a planetary reduction gear are mounted. There is a high/low speed selector mechanism installed to the travel motor. This is actuated by the high/low speed selector switch in the operator's compartment, and provides two-stage selection of the swash plate angle to allow selection of a travel speed to match the load of the operation. The high/low speed selector mechanism consists of the high/low speed selector valve and cylinder that switches the swash plate inside the travel motor, the high/low speed solenoid selector valve outside the travel motor that sends the pilot pressure to the high/low speed selector valve, and the switch in the operator's compartment. The pressure of the pilot circuit is set to 25 kg/cm² by the charge relief valve at the rear of the operator's compartment.
- The table below shows the travel motor's discharge and high-pressure relief pressure.

Model	Motor discharge (cc/rev)	Relief pressure (kg/cm ²)	Max. output speed (rpm)	H-L changing pressure (kg/cm ²)	Brake pressure (kg/cm ²)
MST-2500	172/123	350	54/75	15.0	13.1

TRAVEL MOTOR (MST-2200, 2500)

MST-2200 Serial No. 22001 -

MST-2500 Serial No. 25187 -



1. High-pressure relief valve
 2. Flushing valve
 3. Plug for disengaged parking brake
- A. From port B1 or B2 of main pump
 B. From port A1 or A2 of main pump
 N. From parking brake valve
 Pi. From H-L speed changing solenoid valve
 DR. To hydraulic tank
 T. To oil cooler
 C. Plug for oil supply (PT 1/2)
 D. Plug for oil check (PT 1/2)
 E. Plug for oil drain (PT 1/2)

GENERAL

- The travel motors are mounted in the right and left front of the main frame. They drive the sprocket to run or turn the vehicle.

Swash plate-type travel motors are adopted.

A parking disc brake and a planetary reduction gear are mounted.

There is a high/low speed selector mechanism installed to the travel motor. This is actuated by the high/low speed selector switch in the operator's compartment, and provides two-stage selection of the swash plate angle to allow selection of a travel speed to match the load of the operation.

The high/low speed selector mechanism consists of the high/low speed selector valve and cylinder that switches the swash plate inside the travel motor, the high/low speed solenoid selector valve outside the travel motor that sends the pilot pressure to the high/low speed selector valve, and the switch in the operator's compartment.

The pressure of the pilot circuit is set to 25 kg/cm² by the charge relief valve at the rear of the operator's compartment.

- The table below shows the travel motor's discharge and high-pressure relief pressure.

Model	Motor discharge (cc/rev)	Relief pressure (kg/cm ²)	Max output speed (rpm)	H-L changing pressure (kg/cm ²)	Brake pressure (kg/cm ²)
MST-2200	172/105	350	58/94	15.0	13.1
MST-2500	172/123	350	54/75	15.0	13.1

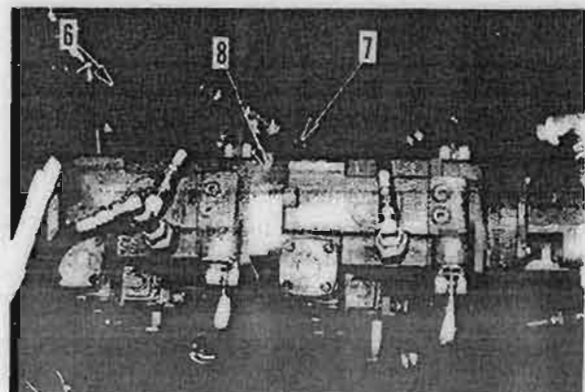
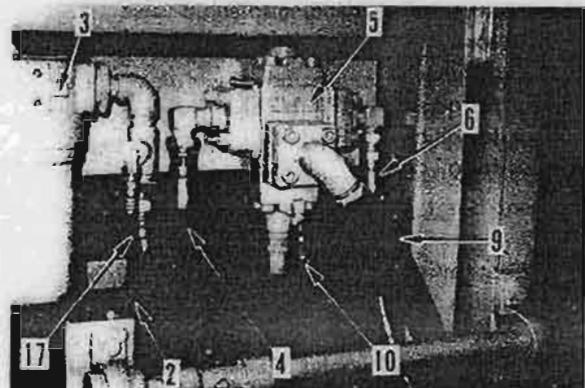
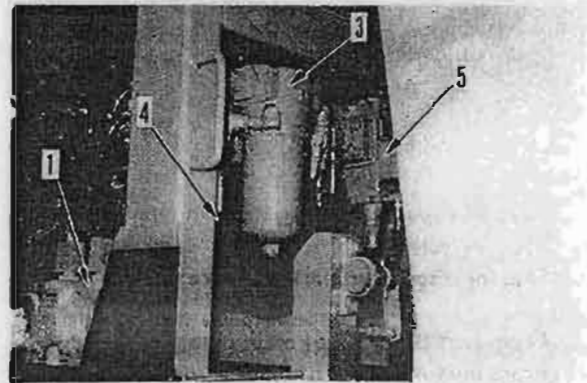
TRAVEL MOTOR SPEED CHANGING CIRCUIT (MST-2200, 2500)

OUTLINE

- The high/low speed selector circuit of the travel motor consists of the high/low speed selector valve (built into the travel motor) and piston cylinder that switches the swash plate angle of the travel motor, the high/low speed solenoid selector valve installed on top of the travel motor that sends the pilot pressure to the high/low speed selector valve, and the switch inside the operator's compartment. The pressurized oil in the circuit is supplied from the main pump charge circuit.

OIL FLOW

- The pressurized oil for the travel motor high/low speed selector circuit is supplied from the main pump charge circuit, so the explanation will start from the flow of the oil in the main pump charge circuit. The pressurized oil in the parking brake circuit is also supplied from the main pump charge circuit.
- The oil in the hydraulic tank is sucked up by the charge pump, passes through main control valve (1), and hose (2), and then enters hydraulic line filter (3) at the rear of the operator's cab. The oil is cleaned by the line filter, then passes through hose (4) and enters main pump charge relief valve (5). After being set to 20 kg/cm², it passes through hoses (6) and (7), and flows to the charge port of main pump (8). Hose (9) takes the oil relieved by the charge relief valve through the oil cooler back to the hydraulic tank. This explains the flow of the oil in the main pump charge circuit. Hose (17) connected to the inlet port of hydraulic line filter (3) takes oil to the parking brake valve installed in the operator's cab, and when the parking brake lever is set to the TRAVEL position, the oil is then sent to the brake port of the travel motor from hose (17) to release the parking brake. In other words, hose (17) sends pressurized oil to the parking brake circuit.



- The high-low speed selector circuit of the travel motor takes its hydraulic power from the oil coming from hose (10) connected to main pump charge relief valve (5).
- The oil passing through hose (10) flows to high-low speed solenoid selector valve (11) on top of the left travel motor.

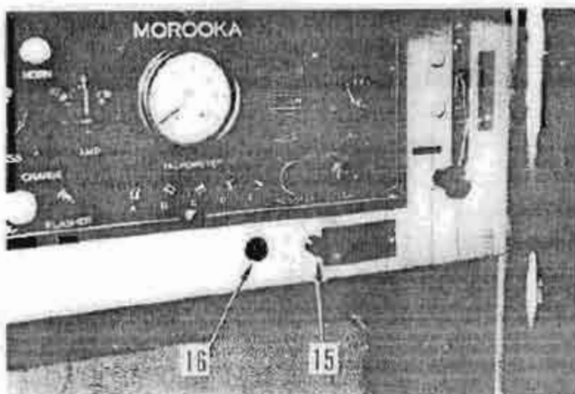
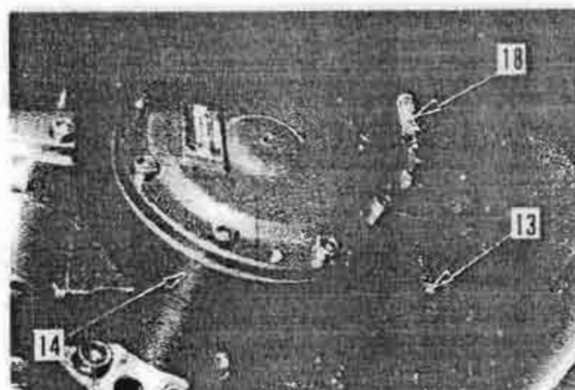
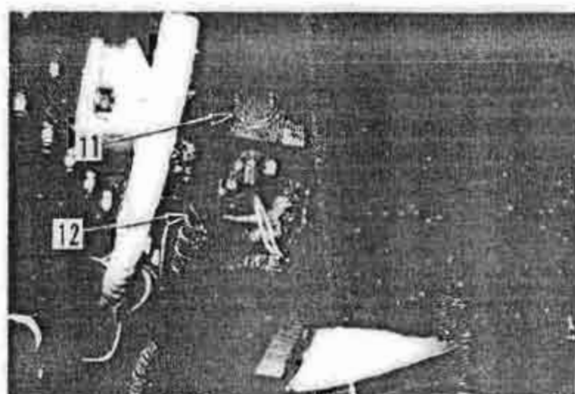
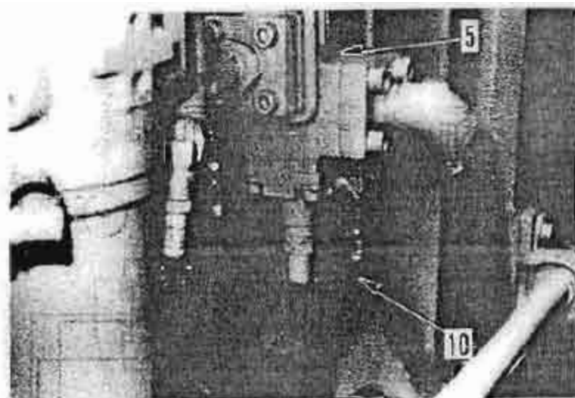
The flow of the oil is switched according to the operation of high-low speed selector switch (15) in the operator's compartment.

If the high-low speed selector switch is at the low position, the solenoid selector valve is not actuated, and the high pressure oil passing through hose (10) does not flow beyond the solenoid selector valve.

At the same time, the pilot pressure bearing on the travel motor passes through hose (12) and returns to the solenoid selector valve. It is then returned to the hydraulic tank and the travel motor is set in the low speed condition. If the high-low speed selector switch is set to the high position, the solenoid selector valve is actuated, and the high pressure oil passing through hose (10) goes out from hose (12) and is divided to the left and right. It passes through hose (13) and becomes the pilot pressure for the high-low speed selector valve inside travel motor (14), switches the valve, and sets the travel motor to the high speed condition.

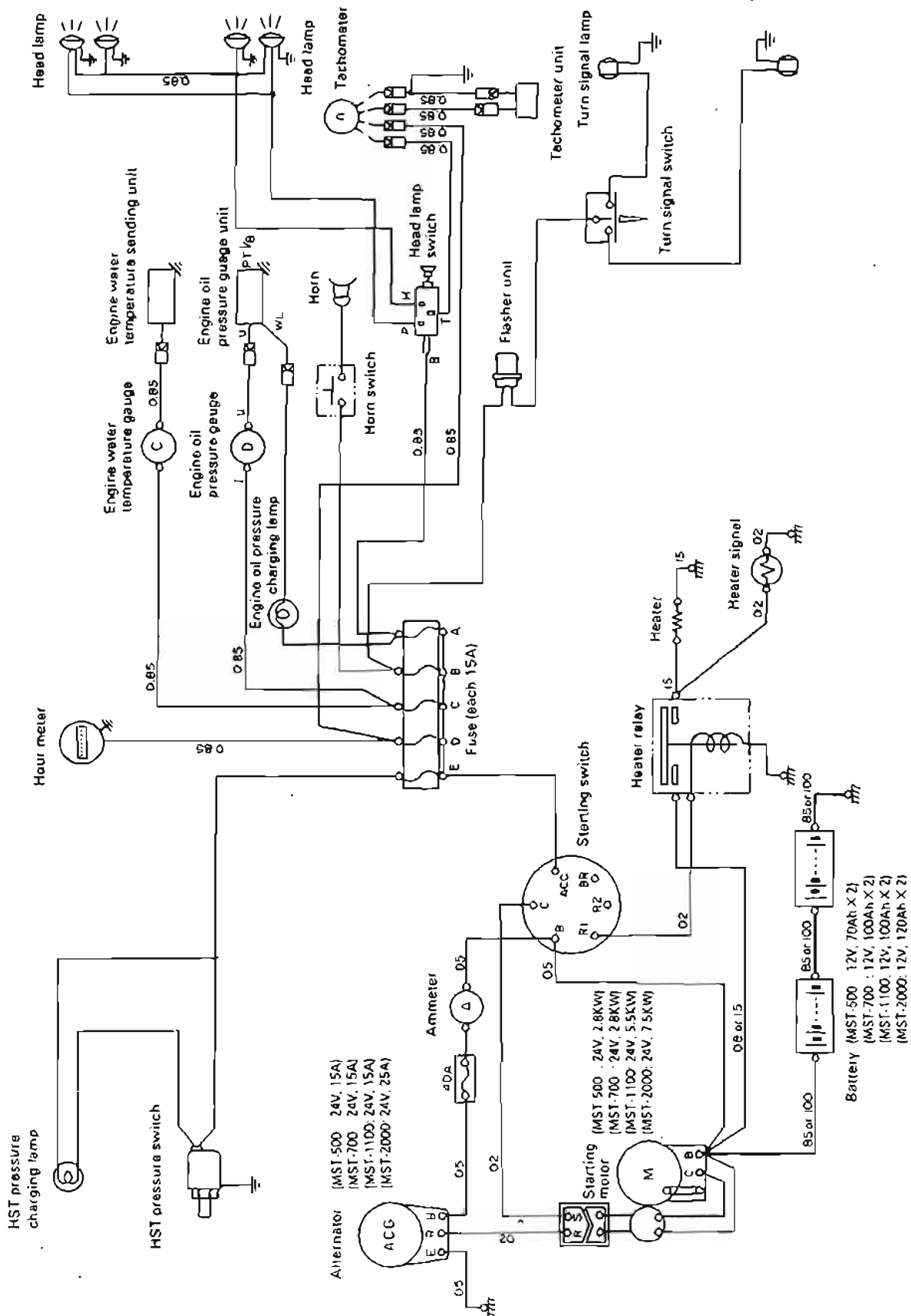
In other words, the high-low speed solenoid selector valve switches the pilot pressure operating the high-low speed selector valve built into the travel motor. The high-low speed selector valve switches the high pressure oil from the main pump and sends it to the piston cylinder that operates the swash plate angle of the travel motor.

When the high-low speed selector switch is at the high position, the above actuation is carried out. At the same time, high speed indicator lamp (16) beside the switch lights up to inform the operator that the machine is in the high speed condition.



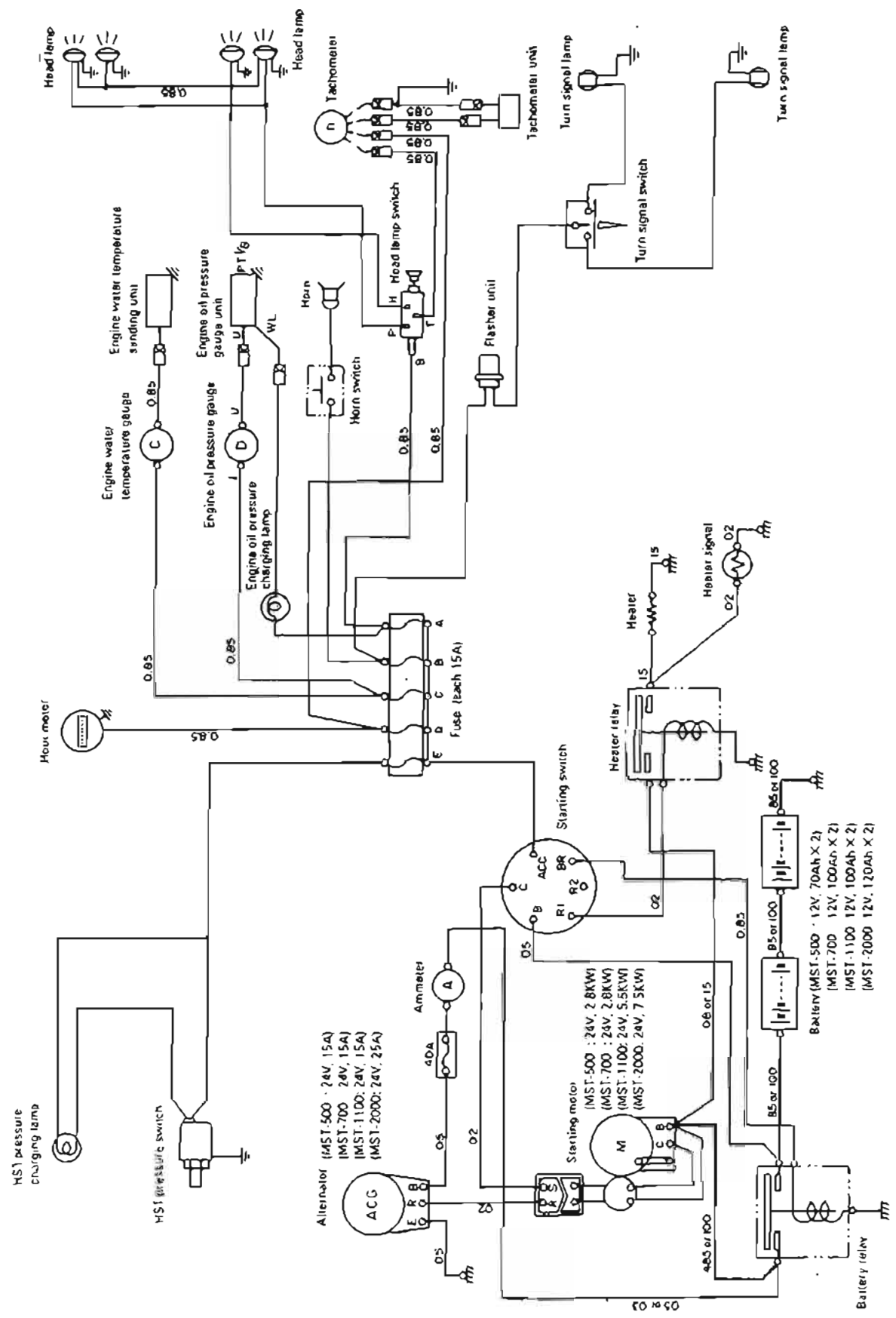
ELECTRICAL CIRCUIT DIAGRAM (MST-500, 700, 1100, 2000)

MST-500 Serial No. 50133 -
 MST-700 Serial No. 70279 - 70767
 MST-1100 Serial No. 11272 - 11789
 MST-2000 Serial No. 20160 -
 MST-2000 Serial No. 20160 - 20488



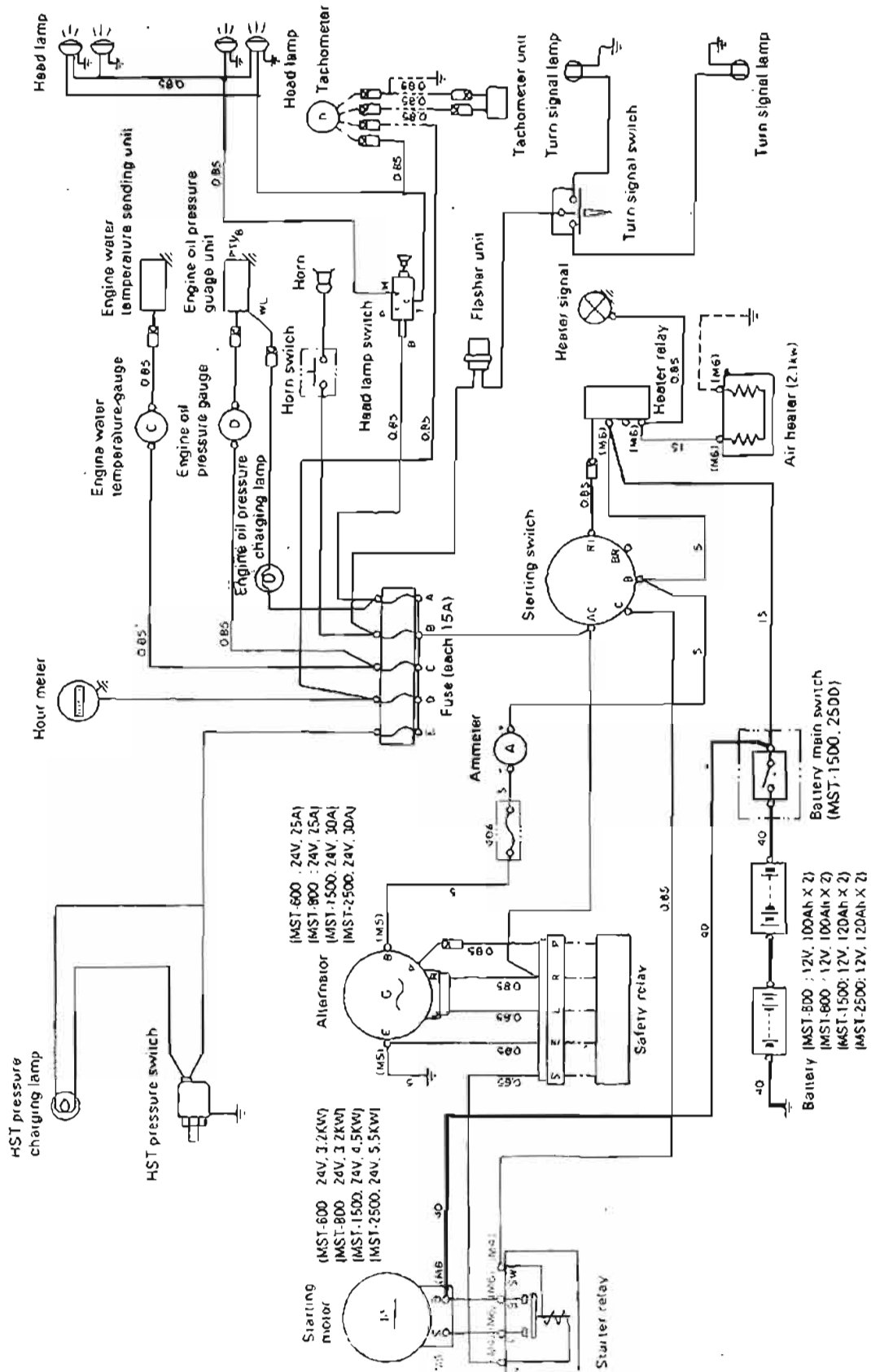
ELECTRICAL CIRCUIT DIAGRAM (MST-500, 700, 1100, 2000)

MST-700 Serial No. 70768 —
 MST-1100 Serial No. 11790 —
 MST-2000 Serial No. 20489 —



ELECTRICAL CIRCUIT DIAGRAM (MST-600, 800, 1500, 2500)

MST-600 Serial No. 1995 - 2700
 MST-800 Serial No. 1347 - 2400
 MST-1500 Serial No. 15061 -
 MST-2500 Serial No. 25134 -

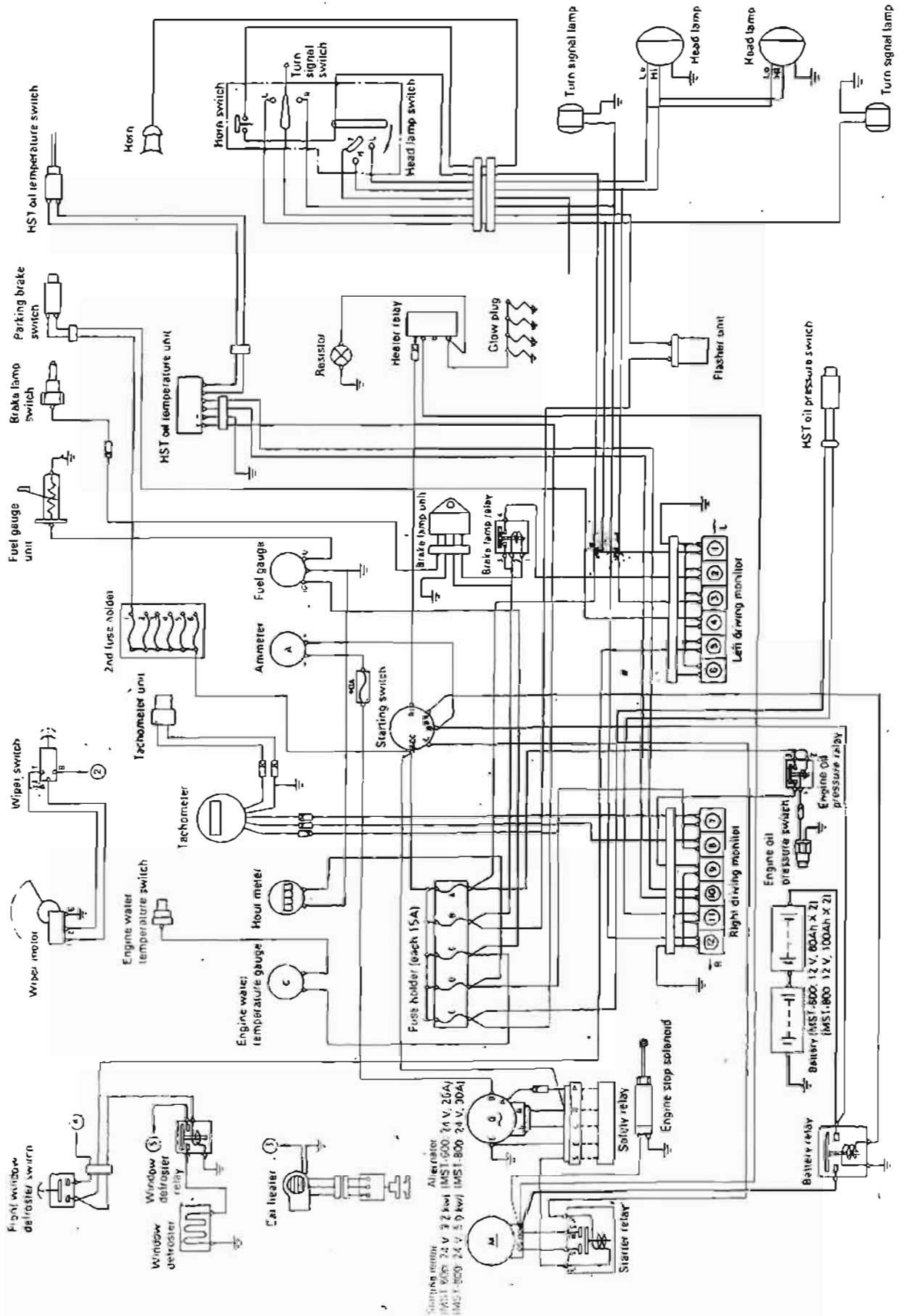


ELECTRICAL CIRCUIT DIAGRAM

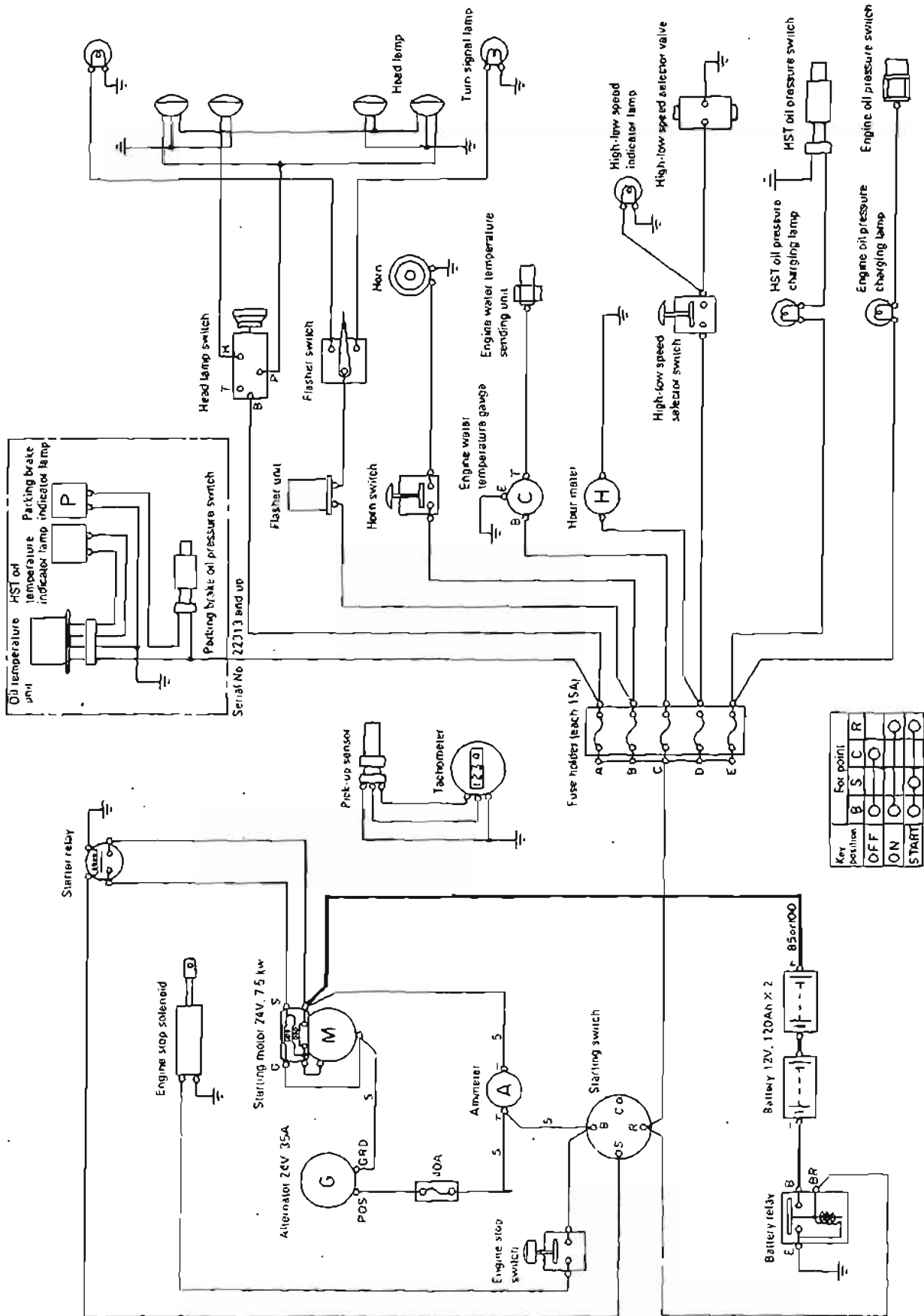
(MST-600, 800)

MST-600 Serial No. 2701 -

MST-800 Serial No. 2401 -



ELECTRICAL CIRCUIT DIAGRAM (MST-2200)



Key position	For points		
	B	S	C
OFF	○	○	○
ON	○	○	○
START	○	○	○

20 TESTING AND ADJUSTING

Standards of testing and adjusting	20- 2
Adjusting rubber crawler	20- 7
Measuring hydraulic pressure	20- 8
Checking main pump parts	20-16
Checking travel motor parts	20-22
Test run of HST	20-23
How to release parking brake	20-24

STANDARDS OF TESTING AND ADJUSTING

MST-500

Category	Check item	Measuring conditions	Unit	Standard value for new car	Judgement criteria
HST	Main pump charging pressure	At engine high idling	kg/cm ²	20	
	Travel motor relief pressure	Vehicle fixing device used Vehicle running, turning condition		280	
	Traveling speed	Time required for traveling 20 m after approach run of at least 10 m on flat ground	seconds	6.5 ± 0.5	
Work equipment	Control valve main relief pressure	Cylinder stroke end	kg/cm ²	175	
	Dump body operating speed	Rated engine speed No load	Raise	4.5	
			Down	4.5	
Natural fall of dump body	Amount of fall from max. raise position of dump body after 5 minutes	mm	20		

MST-600

Category	Check item	Measuring conditions	Unit	Standard value for new car	Judgement criteria
HST	Main pump charging pressure	At engine low idling	kg/cm ²	13 – 14	
		At engine high idling		16 – 18	
	Travel motor relief pressure	Vehicle fixing device used Vehicle running, turning condition		315	
	Travel motor charging pressure	Vehicle running, turning condition		12 – 13	
	Traveling speed	Time required for traveling 20 m after approach run of at least 10 m on flat ground		seconds	6.0 ± 0.5
Work equipment	Control valve main relief pressure	Cylinder stroke end	kg/cm ²	175	
	Dump body operating speed	Rated engine speed No load	Raise	4.5	
			Down	4.5	
Natural fall of dump body	Amount of fall from max. raise position of dump body after 5 minutes	mm	20		

MST-700

Category	Check item	Measuring conditions	Unit	Standard value for new car	Judgement criteria
HST	Main pump charging pressure	· At engine low idling	kg/cm ²	13 – 14	
		· At engine high idling		16 – 18	
	Travel motor relief pressure	· Vehicle fixing device used · Vehicle running, turning condition		350	
	Travel motor charging pressure	· Vehicle running, turning condition		12 – 13	
	Traveling speed	· Time required for traveling 20 m after approach run of at least 10 m on flat ground		seconds	6.0 ± 0.5
Work equipment	Control valve main relief pressure	· Cylinder stroke end	kg/cm ²	175	
	Dump body operating speed	· Rated engine speed · No load	Raise	9.0	
			Down	12.0	
Natural fall of dump body	· Amount of fall from max. raise position of dump body after 5 minutes	mm	20		

MST-800

Category	Check item	Measuring conditions	Unit	Standard value for new car	Judgement criteria
HST	Main pump charging pressure	· At engine low idling	kg/cm ²	13 – 14	
		· At engine high idling		16 – 18	
	Travel motor relief pressure	· Vehicle fixing device used · Vehicle running, turning condition		350	
	Travel motor charging pressure	· Vehicle running, turning condition		12 – 13	
	Traveling speed	· Time required for traveling 20 m after approach run of at least 10 m on flat ground	seconds	6.0 ± 0.5	
Work equipment	Control valve main relief pressure	· Cylinder stroke end	kg/cm ²	165	
	Dump body operating speed	· Rated engine speed · No load	Raise	9.0	
			Down	10.0	
Natural fall of dump body	· Amount of fall from max. raise position of dump body after 5 minutes	mm	20		

$$1 \text{ kg/cm}^2 = 14.7 \text{ PSI} =$$

MST-1100

Category	Check item	Measuring conditions	Unit	Standard value for new car	Judgement criteria
HST	Main pump charging pressure	· At engine low idling	kg/cm ²	13 - 14	
		· At engine high idling		16 - 18	
	Travel motor relief pressure	· Vehicle fixing device used · Vehicle running, turning condition		385	
	Travel motor charging pressure	· Vehicle running, turning condition		12 - 13	
	Traveling speed	· Time required for traveling 20 m after approach run of at least 10 m on flat ground		seconds	7.8 ± 0.5
Work equipment	Control valve main relief pressure	· Cylinder stroke end	kg/cm ²	165	
	Dump operating speed	· Rated engine speed · No load	Raise	13.0	
			Down	14.5	
Natural fall of dump body	· Amount of fall from max. raise position of dump body after 5 minutes	mm	20		

MST-1500

Category	Check item	Measuring conditions	Unit	Standard value for new car	Judgement criteria
HST	Main pump charging pressure	· At engine low idling	kg/cm ²	13 - 14	
		· At engine high idling		16 - 18	
	Travel motor relief pressure	· Vehicle fixing device used · Vehicle running, turning condition		385 (#15001 -15164) 350 (#15165-)	
	Pressure overdrive valve switching pressure	· Vehicle fixing device used · Vehicle running condition		370 (#15094 -15164) 350 (#15165-)	
	Travel motor charging pressure	· Vehicle running, turning condition		12 - 13	
	Traveling speed	· Time required for traveling 20 m after approach run of at least 10 m on flat ground		seconds	6.0 ± 0.5
Work equipment	Control valve main relief pressure	· Cylinder stroke end	kg/cm ²	165	
	Dump operating speed	· Rated engine speed · No load	Raise	15.0	
			Down	10.5	
Natural fall of dump body	· Amount of fall from max. raise position of dump body after 5 minutes	mm	20		

MST-2000

Category	Check item	Measuring conditions	Unit	Standard value for new car	Judgement criteria
HST	Main pump charging pressure	• At engine low idling	kg/cm ²	13 - 14	
		• At engine high idling		16 - 18	
	Travel motor relief pressure	• Vehicle fixing device used • Vehicle running, turning condition		385 (#M02101-M02104) (#K20101-K20128) 350 (#M02105-) (#K20129-)	
	Pressure overdrive valve switching pressure	• Vehicle fixing device used • Vehicle running condition		370 (#M02101-M02104) (#K20101-K20128) 350 (#M02105-) (#K20129-)	
	Travel motor charging pressure	• Vehicle running, turning condition		12 - 13	
	Traveling speed	• Time required for traveling 20 m after approach run of at least 10 m on flat ground		seconds	7.2 ± 0.5
Work equipment	Control valve main relief pressure	• Cylinder stroke end	kg/cm ²	165	
	Dump operating speed	• Rated engine speed • No load	Raise	18.0	
			Down	12.0	
Natural fall of dump body	• Amount of fall from max. raise position of dump body after 5 minutes	mm	20		

MST-2200

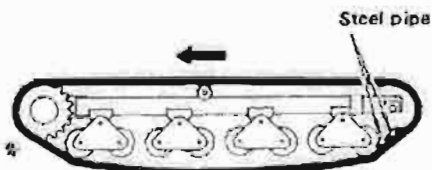
Category	Check item	Measuring conditions	Unit	Standard value for new car	Judgement criteria
HST	Main pump charging pressure	• At engine 1000 rpm	kg/cm ²	25	
	Travel motor relief pressure	• Vehicle fixing device used • Vehicle running, turning condition		325	
	Travel motor charging pressure	• Vehicle running, turning condition		16 - 18	
	Traveling speed	• Time required for traveling 20 m after approach run of at least 10 m on flat ground		seconds	6.3 ± 0.5
Work equipment	Control valve main relief pressure	• Cylinder stroke end	kg/cm ²	165	
	Dump operating speed	• Rated engine speed • No load	Raise	12.5	
			Down	13.0	
Natural fall of dump body	• Amount of fall from max. raise position of dump body after 5 minutes	mm	20		

MST-2500

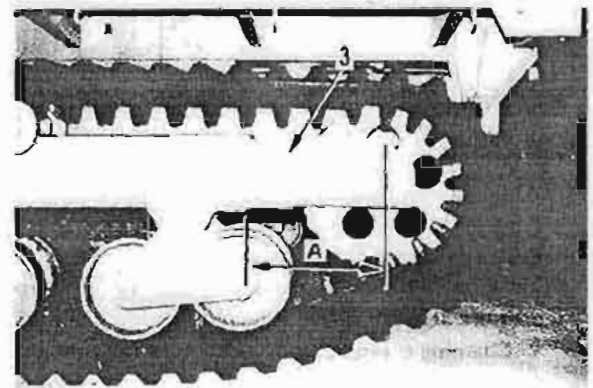
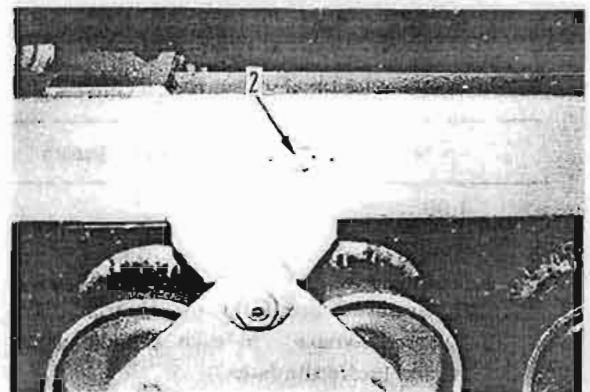
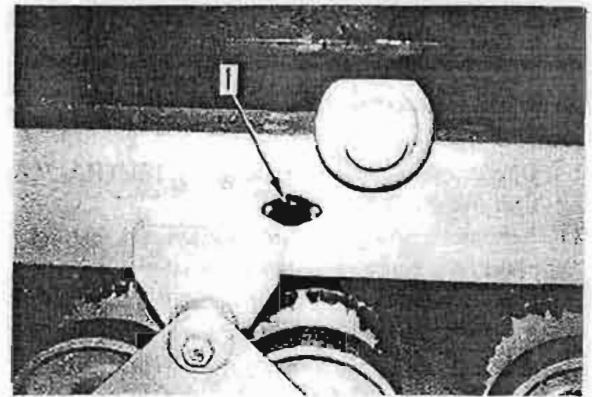
Category	Check item	Measuring conditions	Unit	Standard value for new car	Judgement criteria
HST	Main pump charging pressure	• At engine 1000 rpm	kg/cm ²	25	
	Travel motor relief pressure	• Vehicle fixing device used • Vehicle running, turning condition		350	
	Travel motor charging pressure	• Vehicle running, turning condition		16 - 18	
	Traveling speed	• Time required for traveling 20 m after approach run of at least 10 m on flat ground	seconds	6.3 ± 0.5	
Work equipment	Control valve main relief pressure	• Cylinder stroke end	kg/cm ²	165	
	Dump operating speed	• Rated engine speed • No load	Raise	15.5	
			Down	11.0	
Natural fall of dump body	• Amount of fall from max. raise position of dump body after 5 minutes	mm	20		

ADJUSTING RUBBER CRAWLER

- If the rubber crawler comes off or its tension must be adjusted, it should be remounted and adjusted as follows.
1. Apply jacks to the front and rear of the main frame and lift the relevant side. Then put a support under the frame.
 - ★ Confirm that the support is supporting the body securely.
 2. Remove the cover (1) and loosen the lubricator (2) to purge the cylinder interior of grease.
 - ★ Never remove the lubricator.
 3. Push in the idler holder (3) towards the body front.
 4. Engage the rubber crawler first with the front sprocket and then with the idler in the rear part.
 - ★ Take sufficient care because the rubber crawler is very heavy.
 5. Push in the rubber crawler while turning the sprocket.
 6. Set steel pipes, etc., in the rubber crawler, and turn the sprocket gain.
 - ★ The sprocket must be turned in the direction shown in the diagram below.



- ★ Check that the rubber crawler is securely engaged with the sprocket and the rear idler.
7. Tighten the lubricator (2), feed grease under pressure with a grease pump, and adjust dimension A from the rear end of the truck frame to the rear idler center to the standard value.
 8. Install the grease cover (1).
 9. Check that the rubber crawler is securely engaged with the sprocket and the rollers and that its tension is sufficient, and then lower the body.



★ Dimension A

Unit: mm

Model	Standard value
MST-500	290 ± 5
MST-600	215 ± 5
MST-700	335 ± 5
MST-800	315 ± 5
MST-1100	305 ± 5

Unit: mm

Model	Standard value
MST-1500	440 ± 5 (Serial No. 15001 - 15150) 370 ± 5 (Serial No. 15151 and up)
MST-2000	470 ± 5
MST-2200	435 ± 5
MST-2500	600 ± 5 (Serial No. 25101 - 25106) 550 ± 5 (Serial No. 25107 and up)

MEASURING HYDRAULIC PRESSURE

MEASURING MAIN PUMP CHARGING PRESSURE

★ Applicable to MST-500

1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
2. Remove the low-pressure switch (1) behind the operator's seat and install the oil pressure gauge (50 kg/cm²).
★ Low-pressure switch screw size: PT 1/4
3. Operate the travel lever to the "NEUTRAL" position and start the engine. Measure the charging pressure when the engine speed is 1,000 rpm and 2,000 rpm.
★ Charging pressure

Unit: kg/cm²

Engine	Charging pressure
1,000 rpm	20
2,000 rpm	21

★ If the pressure is below 10 kg/cm², there may be a fault somewhere. In such a case, stop the engine and locate the fault.

★ Applicable to MST-600, 700, 800, 1100, 1500 and 2000

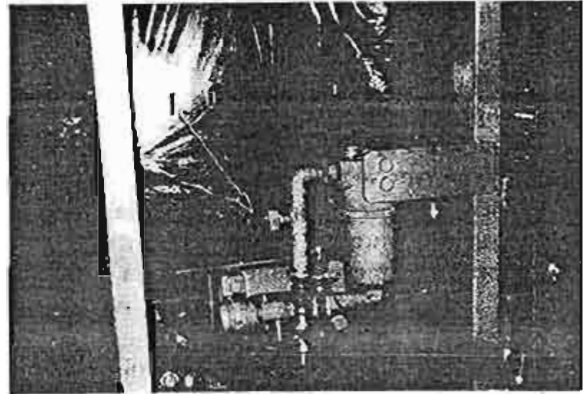
1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
2. Remove the plug (1) of the charging pressure port and install the oil pressure gauge (50 kg/cm²).
★ Plug screw size: 7/16-20 UNF
3. Operate the travel lever to the "NEUTRAL" position and start the engine. Measure the charging pressure at low idling and high idling.
★ Charging pressure

Unit: kg/cm²

	Engine speed	Charging pressure
Unload	Low idling	13 - 14
	High idling	16 - 18
On load	Low idling	11 - 13
	High idling	14 - 16

★ If the pressure is below 10 kg/cm², there may be a fault somewhere. In such a case, stop the engine and locate the fault.

★ For MST-500



★ For MST-1100



★ Applicable to MST-2200 and MST-2500

1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
2. Remove the low-pressure switch (1) behind the operator's seat and install the oil pressure gauge (50 kg/cm²)

★ Low-pressure switch part: Quick coupler

3. Operate the travel lever to the "NEUTRAL" position and start the engine. Measure the charging pressure when the engine speed is 1,000 rpm.

★ Charging pressure

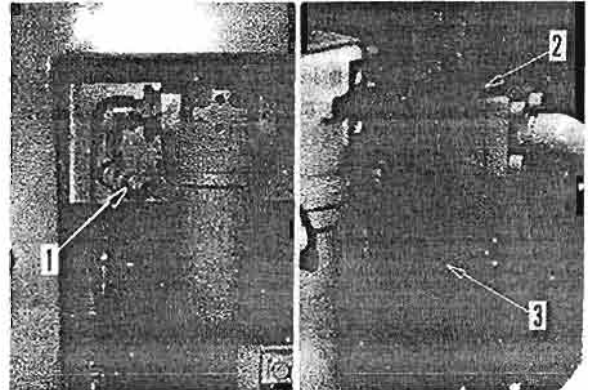
Unit: kg/cm²

Engine	Charging pressure
1,000 rpm	25

★ If the pressure is below 10 kg/cm², there may be a fault somewhere. In such a case, stop the engine and locate the fault.

★ If the pressure of pump charge relief valve (2) does not reach 25 kg/cm², remove cap (3) of the valve, loosen the locknut, and adjust the pressure with the adjustment screw.

★ For MST-2500



MEASURING PRESSURE OVERRIDE SWITCHING PRESSURE

★ Applicable to MST-1500 Serial No. 15094 and up, and MST-2000

1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
2. Remove the plug (2) of the main pump's pressure override valve (1) and install the oil pressure gauge (600 kg/cm² or 470 kg/cm²).

★ Plug screw size: 7/16-20UNF

3. To prevent the vehicle from running away during the hydraulic pressure measurement, connect it to firm fixtures such as fixed concrete blocks, etc., by wire ropes.

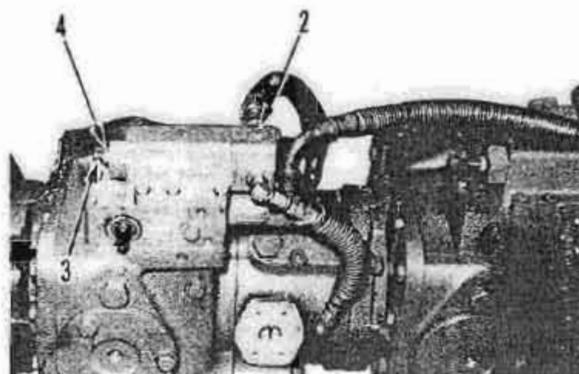
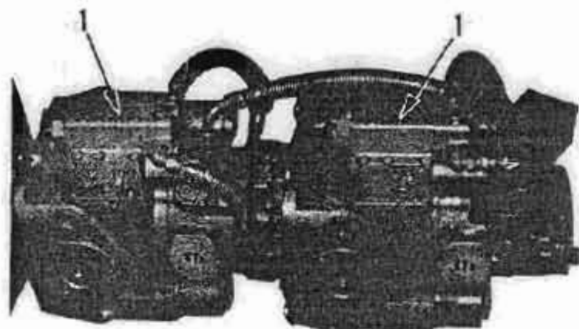
★ The fixtures must be strong enough to not break by the vehicle's tractive power. In addition, use rather big wire ropes.

4. Operate the travel lever to the "NEUTRAL" position and start the engine. Start the vehicle by operating the lever and measure the pressure when the vehicle enters the shoe slipping condition due to the fixtures.

★ Pressure override switching pressure.

Unit: kg/cm²

Model	•Switching pressure
MST-1500 (#15094 - 15164)	370
MST-1500 (#15165 and up)	350
MST-2000 (#M02101 - 02104) (#K20101 - 20128)	370
MST-2000 (#M02105 and up) (#K20129 and up)	350



- ★ If the pressure is below the standard value, there may be a fault somewhere. In such a case, stop the engine and locate the fault.
5. If there is no fault, adjust the pressure using the adjustment screw (3).
To adjust, loosen the locknut (4) and screw in the adjustment screw (3).
★ The pressure increases/decreases 70kg/cm² when the adjustment screw is turned one complete turn.

MEASURING TRAVEL MOTOR RELIEF PRESSURE

★ Applicable to MST-500, 600, 700, 800, 1100 and MST-1500 Serial No. 15001 – 15093

1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
2. Remove the plug (2) of the travel motor's high-pressure port and install the oil pressure gauge (600 kg/cm² or 470 kg/cm²).

★ Applicable to MST-600, 700, 800, 1100 and 1500.

Plug screw size: 7/16-20 UNF

- ★ The MST-500 doesn't have the pressure detection port mentioned above. Therefore, put an adaptor, etc., between the elbow (4) of the high-pressure hose connecting the main pump and the travel motor and the main pump and install the oil pressure gauge.

★ Main pump discharge port screw size: PT3/4

3. To prevent the vehicle from running away during the hydraulic pressure measurement, connect it to firm fixtures such as fixed concrete blocks, etc., by wire ropes.

★ The fixtures must be strong enough not to be broken by the vehicle's tractive power. In addition, use rather big wire ropes.

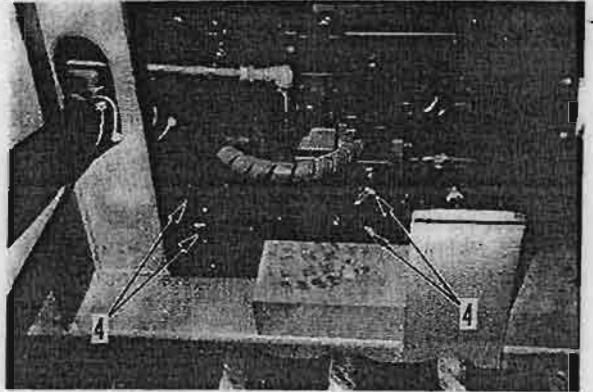
4. Operate the travel lever to the "NEUTRAL" position and start the engine. Start the vehicle by operating the lever and measure the pressure when the vehicle enters the shoe slipping condition due to the fixtures.

★ Relief pressure

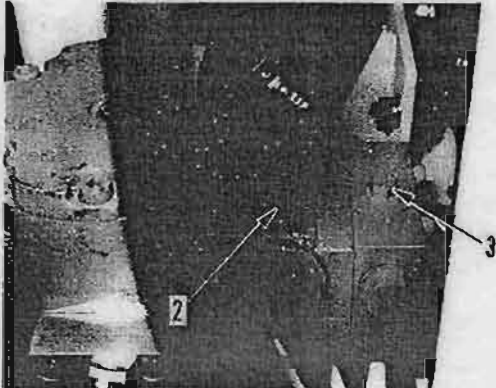
	Unit: kg/cm ²
Model	Relief pressure
MST-500	280
MST-600	315
MST-700	350
MST-800	350
MST-1100	385
MST-1500	385

- ★ If the pressure is below the standard value, there may be a fault somewhere. In such a case, stop the engine and locate the fault.

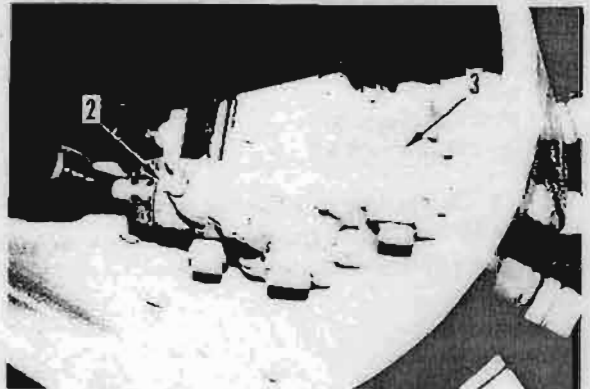
★ For MST-500



★ For MST-600



★ For MST-700, 800, 1100 and 1500



★ Applicable to MST-1500 Serial No. 15094 and up, and MST-2000

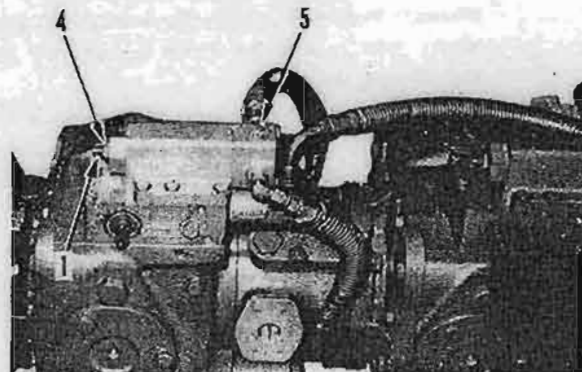
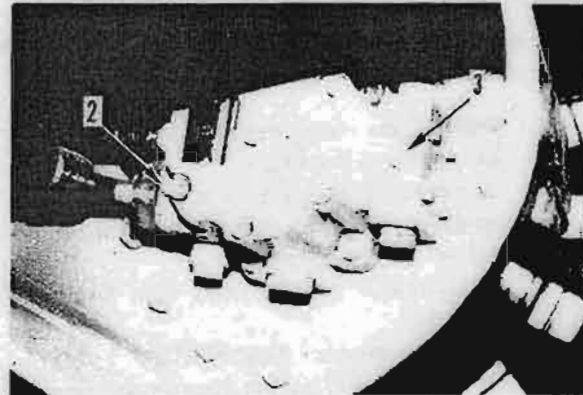
1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
2. Remove the plug (2) of the travel motor's high-pressure port and install the oil pressure gauge (600 kg/cm² or 470 kg/cm²).
 - ★ Plug screw size: 7/16-20 UNF
3. To prevent the vehicle from running away during the hydraulic pressure measurement, connect it to firm fixtures such as fixed concrete blocks, etc., by wire ropes.
 - ★ The fixtures must be strong enough not to be broken by the vehicle's tractive power. In addition, use rather big wire ropes.
4. When measuring high-pressure, screw adjustment screw (1) of the pressure override valve to one turn. After adjusting high-pressure, return adjustment screw (1) and lock with locknut (4).
5. Operate the travel lever to the "NEUTRAL" position and start the engine. Start the vehicle by operating the lever and measure the pressure when the vehicle enters the shoe slipping condition due to the fixtures.

★ Relief pressure

Unit: kg/cm²

Model	Relief pressure
MST-1500	350
MST-2000 (# M02101 - 02104) (# K20101 - 20125)	385
MST-2000 (# M02105 and up) (# K20129 and up)	350

- ★ If the pressure is below the standard value, there may be a fault somewhere. In such a case, stop the engine and locate the fault.



★ Applicable to MST-2200 and 2500

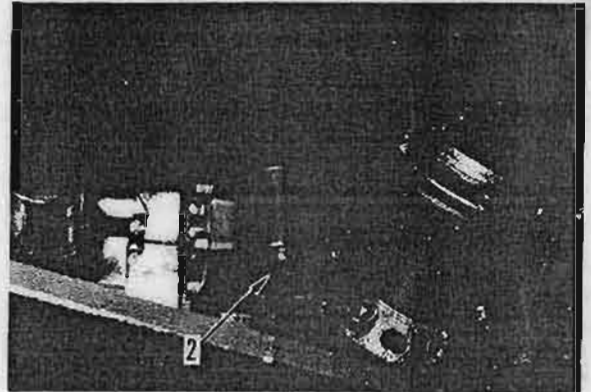
1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
2. Remove the plug (2) of the travel motor's high-pressure port and install the oil pressure gauge (600 kg/cm² or 470 kg/cm²).
 - ★ Applicable to MST-2500 Serial No. 25101 – 25186.
3. Remove the plug (2) of the main pump's high-pressure port and install the oil pressure gauge (600 kg/cm² or 470 kg/cm²).
 - ★ Plug screw size: PF 1/4
 - ★ Applicable to MST 2200 and MST-2500 Serial No. 25187 and up.
4. To prevent the vehicle from running away during the hydraulic pressure measurement, connect it to firm fixtures such as fixed concrete blocks, etc., by wire ropes.
 - ★ The fixtures must be strong enough not to be broken by the vehicle's tractive power. In addition, use rather big wire ropes.
5. Operate the travel lever to the "NEUTRAL" position and start the engine. Start the vehicle by operating the lever and measure the pressure when the vehicle enters the shoe slipping condition due to the fixtures.
 - ★ Relief pressure

Unit: kg/cm²

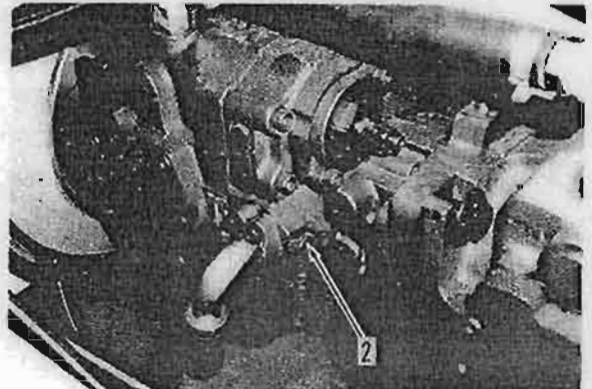
Model	Relief pressure
MST-2200	325
MST-2500	350

- ★ If the pressure is below the standard value, there may be a fault somewhere. In such a case, stop the engine and locate the fault.

★ For MST-2500 Serial No. 25101 – 25186



★ For MST-2200 and 2500 Serial No. 25187 –



MEASURING TRAVEL MOTOR CHARGING PRESSURE

★ Applicable to MST-600, 700, 800, 1100, 1500 and 2000

1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
2. Remove the plug (3) of the charging pressure port and install the oil pressure gauge (50 kg/cm²).

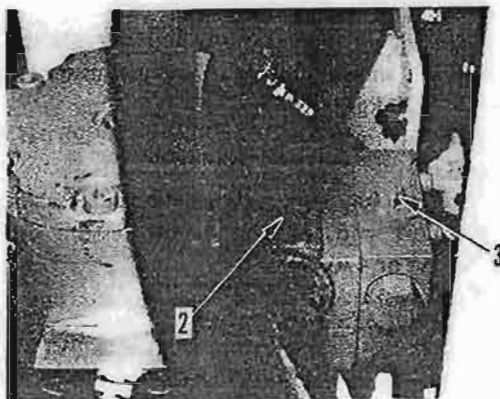
★ Plug screw size: 7/16-20UNF

3. Operate the travel lever to the "NEUTRAL" position and start the engine. Measure the charging pressure when the vehicle is started by operating the lever.

★ The charging pressure is common to the models.
12 - 13 kg/cm²

★ If the pressure is below 10 kg/cm², there may be a fault somewhere. In such a case, stop the engine and locate the fault.

★ For MST-600



★ For MST-1100



MEASURING MAIN RELIEF PRESSURE OF DUMP CYLINDER CIRCUIT

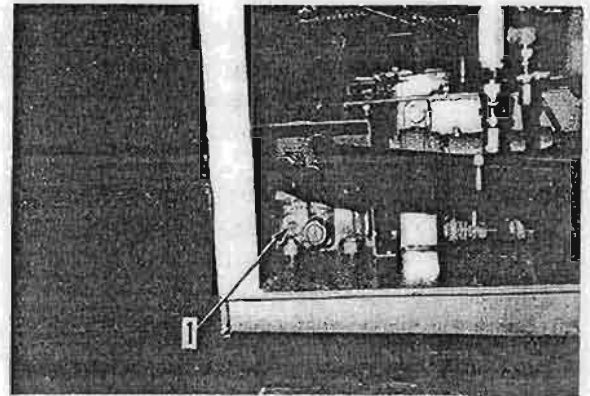
★ Applicable to MST-500, 600 and 700

1. Operate the travel lever and dump lever to the "NEUTRAL" position and stop the engine.
2. Remove plug (1) of dump control valve and install the oil pressure gauge (470 kg/cm²).
★ Plug screw size: PT 1/8
3. Operate the travel lever to the "NEUTRAL" position and start the engine. Raise the dump body by operating the dump lever and measure the pressure when the dump body (dump cylinder) is brought to the stroke end.
★ Main relief pressure

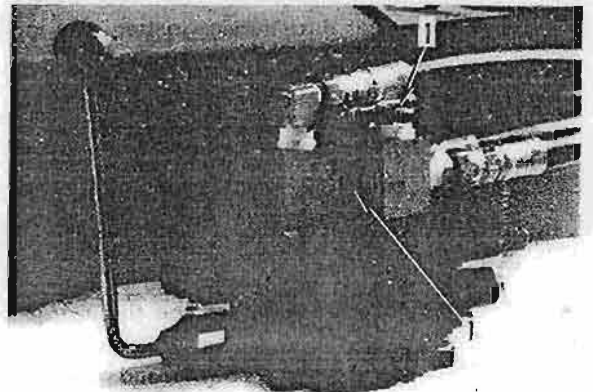
Unit: kg/cm²

Model	Main relief pressure
MST-500 - 700	175

★ For MST-500



★ For MST-1500



★ Applicable to MST-800, 1100, 1500, 2000, 2200 and 2500

1. Operate the travel lever and dump lever to the "NEUTRAL" position and stop the engine.
2. Remove plug (1) of the adapter on the dump control valve and install the oil pressure gauge (470 kg/cm²).
★ Applicable to MST-800, 1100 and 1500.
Plug screw size: PT 3/8
★ Applicable to MST-2000, 2200 and 2500.
Plug screw size: PT 1/2
3. Operate the travel lever to the "NEUTRAL" position and start the engine. Raise the dump body by operating the dump lever and measure the pressure when the dump body (dump cylinder) is brought to the stroke end.
★ Main relief pressure

Unit: kg/cm²

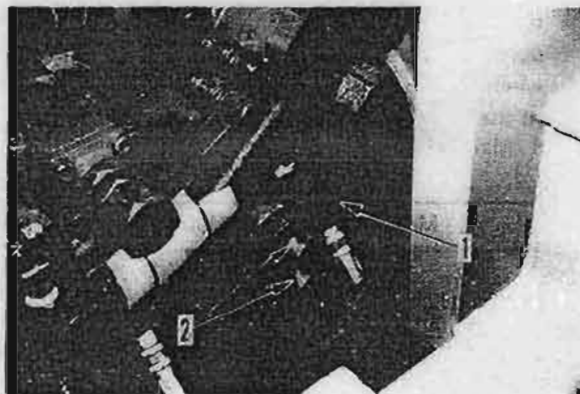
Model	Main relief pressure
MST-800 - 2500	165

CHECKING MAIN PUMP PARTS

CHECKING CHARGE RELIEF VALVE AND HIGH-PRESSURE RELIEF VALVE

★ Applicable to MST-500

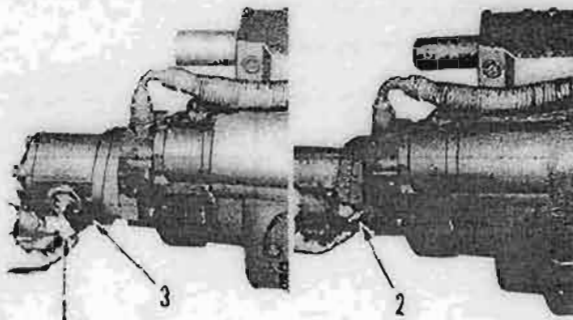
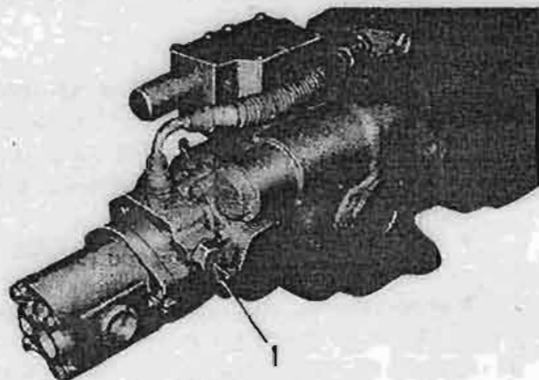
- If the oil pressure warning lamp on the instrument panel lights up or in the event of such trouble as the vehicle does not move, lacks power, and so on, check the main pump's charge relief valve and high-pressure relief valve as follows.
 - The MST-500 high-pressure relief valve is mounted on the main pump unlike in other models.
1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
 2. Check the charge relief valve
Remove the charge relief valve (1) and check it for catching dust, foreign matter, etc., spring breakdown or dilation, the seat abrasion, etc.
 3. Check the high-pressure relief valve
Remove the high-pressure relief valve (2) and check it for biting-in of dust, foreign matter, etc., spring breakdown or dilation, seat abrasion, etc.



CHECKING CHARGE RELIEF VALVE

★ Applicable to MST-600, 700, 800, 1100, 1500 and 2000.

- If the oil pressure warning lamp on the instrument panel lights up or in the event of such trouble as the vehicle does not move, lacks power, and so on, check the main pump's charge relief valve as follows.
1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
 2. Check the charge relief valve
Remove the plug (1) and draw out the poppet (2) and check the charge relief valve for biting-in of dust, foreign matter, etc., seat abrasion, spring (3) breakdown or dilation, etc.



CHECKING CHECK VALVE

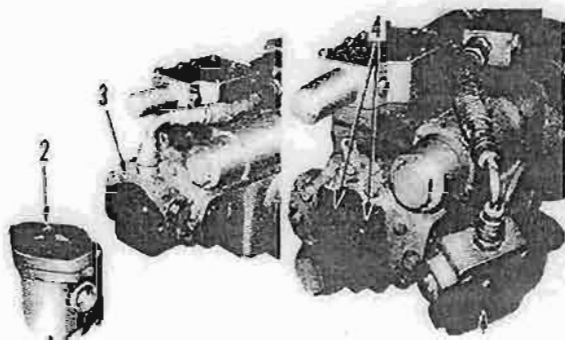
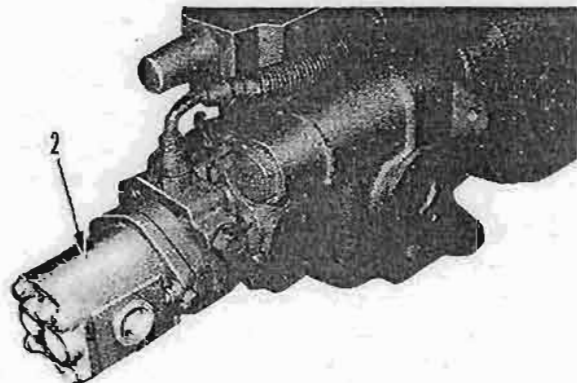
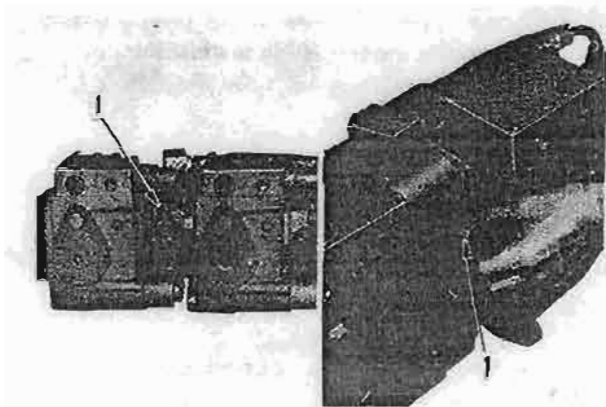
★ Applicable to MST-600, 700, 800, 1100, 1500 and 2000

● In the event of such trouble as the vehicle does not move, lacks power, and so on, check the main pump's check valve as follows.

1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
2. Check the front pump check valve
Remove the check valve (1) and check it for catching of dust, foreign matter, etc., the ball and sleeve seat abrasion, etc.
3. Check the rear pump check valve
 - 1) Disconnect the hydraulic piping and remove the charging pump (2) by removing 2 bolts.

2) Disconnect the charging port block (3).

3) Remove 2 sets of check valves (4) and check them for biting-in of dust, foreign matter, etc., spring breakdown or dilation, ball abrasion, etc.

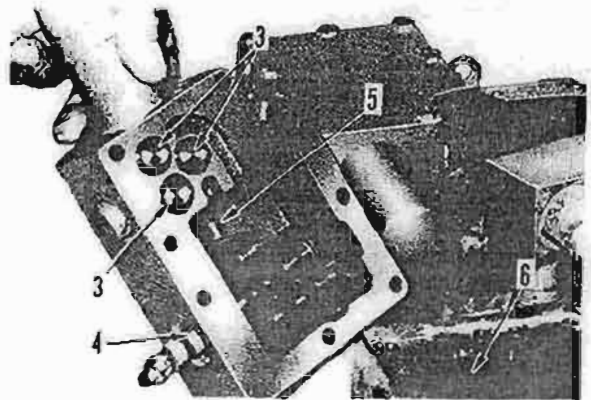
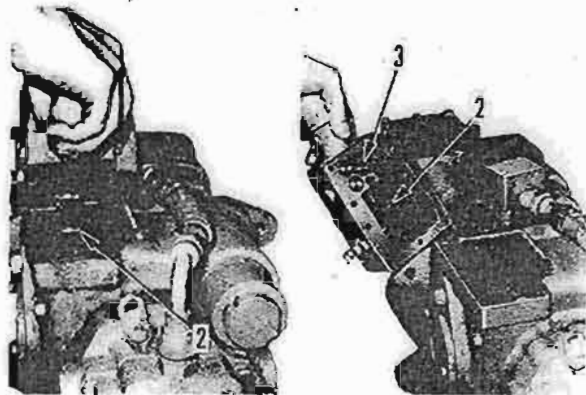
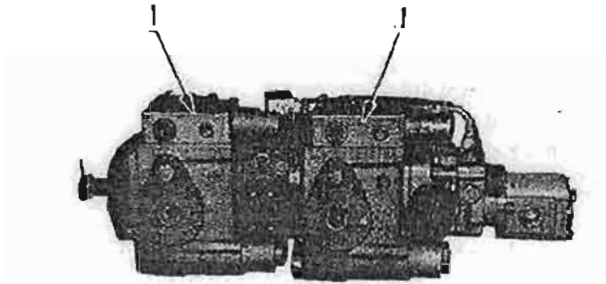


CHECKING PUMP CONTROL VALVE

★ Applicable to MST-600, 700, 800, 1100, 1500 and 2000

● In the event of such trouble as the vehicle does not move, forward/reverse shifting malfunction, etc., the main pump's pump control valve must be checked. Check it as follows.

1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
2. Disconnect the travel lever's control linkage on the pump side.
3. Remove the main pump's pump control valve (1) by removing its fixing bolts.
 - ★ The control valve is connected to the servo cylinder in the main pump. Remove it, therefore, after drawing out the pin of the lever (2) on the valve side from the hole in the link on the cylinder side while lifting the valve a little.
 - ★ The control valve is equipped with 3 sets of orifices. When removing the valve, therefore, hold down the orifice (3) and the O-ring with your finger taking care not to let them drop into the pump interior.
4. Check the control valve for the following.
 - 1) Is the orifice (3) hole clogged?
 - 2) Is the control shaft's (4) spring pin broken?
 - 3) Does the valve spool (5) move smoothly?
 - 4) Has the E-ring of the link (6) on the servo cylinder side fallen off?



RVO CYLINDER

- ★ Applicable to MST-600, 700, 800, 1100, 1500 and 2000
 - In the event of such trouble as the vehicle does not move, forward/reverse shifting malfunction, etc., check the functioning of the servo cylinder in the main pump as follows.
1. Operate the travel lever to the "NEUTRAL" position and stop the engine.
 2. Disconnect the travel lever's control linkage on the pump side.
 3. Remove the valve referring to the item on the checking pump control valve.
 4. Insert a bar ①, etc., between the servo cylinder (1) and the pump body and engage the tip of the bar with the servo cylinder.
 5. Check whether the servo cylinder (1) moves smoothly or not by trying to move it back and forth using the bar ① as a lever the fulcrum of which is the pump body.
 - ★ If the operating force is too light, the cylinder piston spring may break.
 - ★ If the operating force is too heavy, the servo cylinder may possibly seize up or make a one-sided contact.

