

Operation & Maintenance Manual

SEAMG5110104

GD511A-1
GD521A-1
GD523A-1


MOTOR GRADER

GD511A-10243
SERIAL NUMBERS GD521A-10075 and up
GD523A-30099

KOMATSU

FOREWORD

This manual describes procedures for operation, handling, lubrication, maintenance, checking, and adjustment. It will help the operator or anyone realize peak performance through effective, economical and safe machine operation and maintenance.

- Please read this manual carefully **BEFORE** operating the machine.
- Please continue studying this manual until proper operation is completely reinforced into personal habit.
- This manual describes the basic techniques. Skill is performed as the operator or anyone get the correct knowledge and performance of the machine.
- Operation, inspection, and maintenance should be carefully carried out, and the safety must be given the first priority. Safety precautions are indicated with  marks and technical precautions with ★ marks in this manual. The safety information contained in this manual is intended only to supplement safety codes, insurance requirements, local laws, rules and regulations.
- Some photographs and illustration pictures are different from your machine as technical improvement is continuously reflected on it. Revision to up-to-date manual's content is performed in later editions.
- This operation & maintenance manual may contain attachments and optional equipment that are not available in your area. Please consult your local Komatsu distributor for those items you may require. Materials and specifications are subject to change without notice.


BREAKING IN YOUR NEW MACHINE

Each machine is carefully adjusted and tested before shipment. However, a new machine requires careful operation during the first 100 hours to break in the various parts.

If a machine is subjected to unreasonably hard use at the initial operation stage, the potential of performance will prematurely deteriorate and the service life will be reduced. A new machine must be operated with care, particularly with regard to the following items.

- After starting, let the engine idle for 5 minutes to allow proper engine warm-up prior to actual operation.
- Avoid operation with heavy loads or at high speeds.
- Sudden starting or acceleration, unnecessarily abrupt braking and sharp turning should be avoided.
- If the machine is delivered without any cooling water in the radiator, flush the cooling system with ample clean water to clean the system, then fill the radiator with cooling water.
- ★ When replacing oil filter elements (cartridges), check their interiors for dirt and dust. If heavily collected, check for possible cause before starting operation.
- ★ Hours of operation are indicated by the service meter.

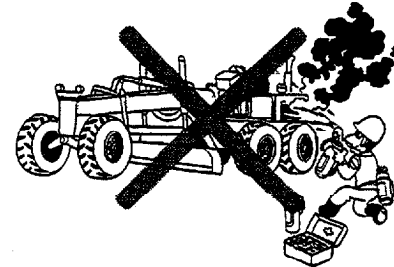
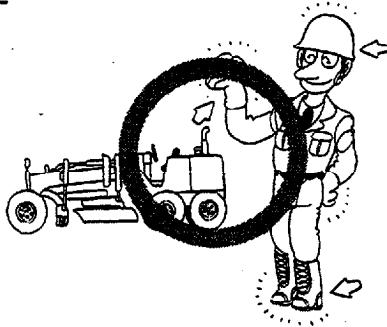
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SAFETY HINTS . . .

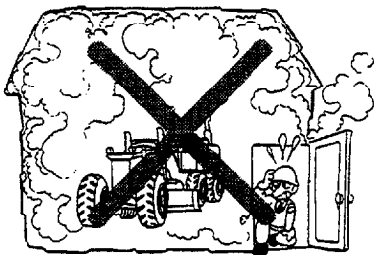


OPERATION GENERAL

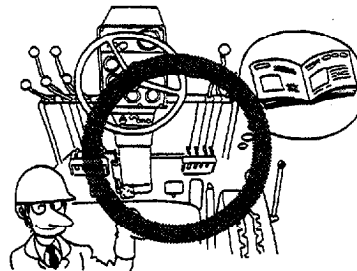


- **Wear proper clothes**
Loose clothes, ornaments or other things that may possibly contact the control lever or other machine parts must not be worn. Do not let your clothes get caught on protruding parts of the machine. Do not wear oily clothes since they may catch fire.
- **Wear well-fitting helmet, safety shoes and working clothes.** If the nature of the work requires safety, wear protective goggles or mask, thick gloves, ear plugs or other protection.
- **Accidents or injuries are liable to occur when the operator is careless or slack.** It is most important to bear safe operation in mind at all times.
- **Take care of your health.** Do not drive when tired, or after drinking.
- **Learn the prohibitions, cautions and rules about work procedures in the work site.**
When there is a leader, fix standard signals and always follow these signals when operating.
- **If there should be an accident or fire or any other such unexpected mishap, deal with it quickly, using the nearest apparatus.**
Learn beforehand the locations of the first aid boxes and fire extinguishers and how to use them. It is also important to know the emergency contact system.
- **Learn about the safety devices on your own machine and about how to use them.** Confirm that they are correctly attached in the prescribed position.
Such safety devices include:
 - ★ Guards
 - ★ Canopies
 - ★ Protective Devices
 - ★ Roll-Over Protective Structures
 - ★ Seat Belts, etc.

- Take care not to get caught by protruding parts of the machine. Do not wear oil-stained clothing because it is likely to catch fire.
- Keep fire away from stored fuel, lubricants and anti-freeze.



- Exhaust gas is dangerous. When running the engine for long periods in a poorly ventilated area, there is a danger of gas poisoning, so open the windows or doors to ensure a good supply of fresh air.



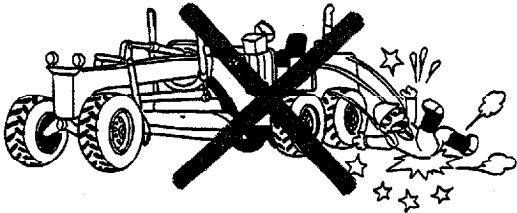
- Read the Operation and Maintenance Manual carefully. Learn how to use the control devices, gauges and warning devices. Be sure you understand the meaning of the Caution plates. Remember the check points and checking method for engine oil, fuel, cooling water and hydraulic oil levels.
- When working on a road, pay attention to the safety of passing vehicles and pedestrians. If necessary, assign a signalman or provide temporary barricades.
- Before starting the machine, perform all necessary checks as stated in the Operation and Maintenance Manual.

BEFORE STARTING OPERATION

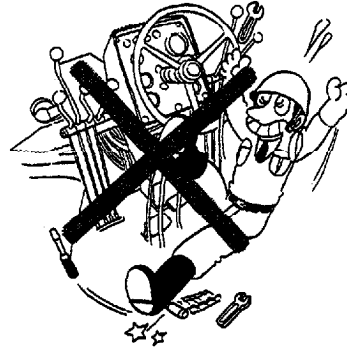
- Examine the lay of the land and the kind of soil at the work site to determine the dangerous points and the best method of operation.

Proceed with the work only after making safety arrangements about the dangerous points.

- Inspect leakages from the fuel, lubricating and hydraulic systems. Repair any fuel or oil leakage, and wipe off all dirty oil. Check that tire inflation pressure is standard, that hub nuts are not loose, and that no other parts are damaged or missing. Machines having such failures should not be operated.

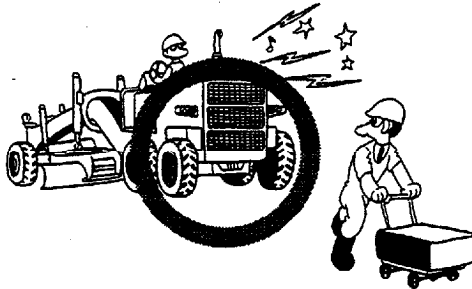


- When getting on or off the machine, use the handrail and step provided. Do not jump up or down from the machine.



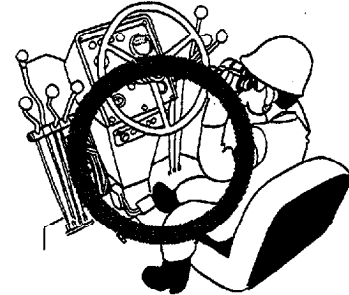
- Do not leave parts or tools lying around in the vicinity of or on the floor of the operator's compartment. Keep everything in its proper place.
- Wipe off thoroughly any grease, oil or mud on the step, handrail, floor or control levers. Failure to do this may cause you to slip.
- Check the level of the fuel, lubricants and cooling water. Extinguish cigarettes before checking or replenishing. Check that the radiator cap and each oil filler caps or plugs are firmly tightened.
- Adjust the operator's seat until it is in the most comfortable position for operating.

- If a seat belt is provided, always use it. If the belt is damaged or worn, replace it with a new one.

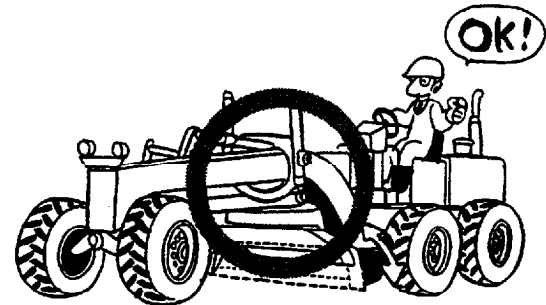


- To ensure the safety of workers near the machine, always sound the horn to warn them before starting the engine and moving the machine. Be particularly careful to check that the rear is clear before backing the machine.
- Combustible objects such as pieces of wood, dead leaves, and pieces of paper may cause fire, so inspect the inside of the engine room and remove them.
- Before starting the engine, confirm that all control levers are in “NEUTRAL” or “HOLD” position.

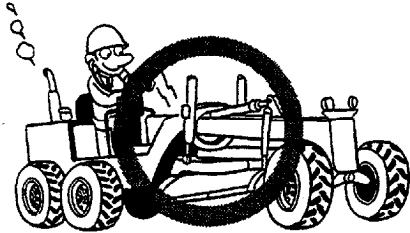
AFTER STARTING ENGINE



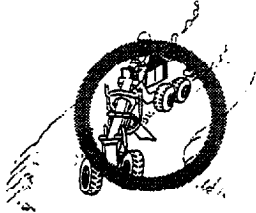
- Confirm that all gauges and warning devices are functioning correctly, and that the gauge readings are within the prescribed range.
- Check the play and travel of each lever and pedal.



- Operate the blade to confirm that they are functioning normally.

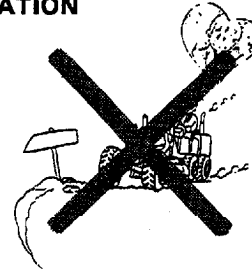


- Move the machine slowly and listen carefully to the engine or gears to confirm that they are not making any unusual noises.
- Operate the gear shift lever to confirm that the travel speeds for forward and reverse are functioning normally. Also carry out a brake test at each travel speed.



- Choosing a safe place, turn the machine to the left and right to confirm that the steering devices are functioning normally.
- If these tests reveal anything wrong, however slight it may be, contact the man in charge of the machine and operate the machine only after obtaining his permission.

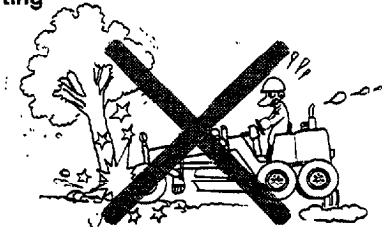
DURING OPERATION



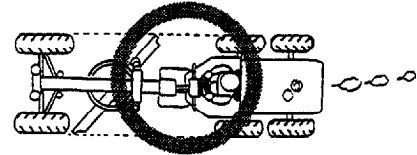
- Always concentrate. It is extremely dangerous to allow yourself to be distracted or to think of other things when operating a machine. In dangerous places, or where there is restricted visibility, it is important to get down from the machine and confirm whether it is safe before continuing work.
- The work area should be made as flat as possible. If the work area is flat, operation is made much easier and this reduces operator fatigue.



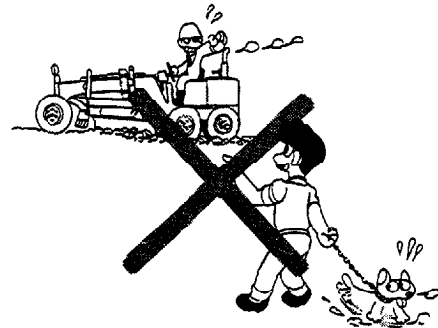
- The machine should always be operated at a speed where it can be correctly controlled. Never do the following:
 - ★ Speeding
 - ★ Sudden starting, sudden braking, sudden turning.
 - ★ Snaking
 - ★ Coasting



- Be careful of those around you, and always confirm that there is no person or obstacle in the way before driving or turning the machine.
- Always operate slowly in crowded places. On haul roads or in narrow places, give way to loaded vehicles.



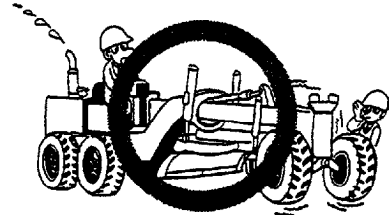
- Raise each work piece of equipment as high as possible and keep the blade within the machine width while traveling. Maintain the specified traveling posture.
- Do not control the vehicle speed by pressing the brake as it will overheat the brake disc.



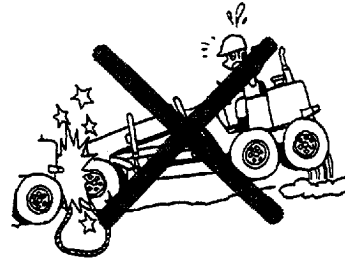
- Do not allow unauthorized persons into the work area.



- Always be aware of the operating capacity of the machine. Using the machine to do work beyond its capacity will not only damage the machine, but may even cause unexpected accidents.



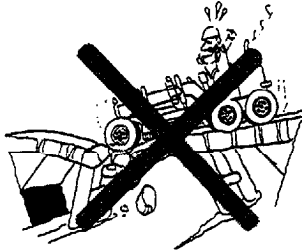
- The machine condition can be judged from many factors. Changes in the gauges, sound, vibration, exhaust gas color or response of the control levers can indicate the occurrence of some disorder. If any disorder occurs, park the machine immediately in a safe place and take appropriate action. Be especially careful in the case of a fuel leak as there is danger of fire.



- If the machine breaks down and needs to be towed, first confirm that the brakes are working properly, and then tow, using a wire rope or any other suitable towing equipment.
- When parking the machine after discontinuing work, put the gear shift lever into "NEUTRAL", apply the brake lock, lower the blade, scarifier and ripper to the ground, and put all safety levers into the "LOCK" position. Never leave the operator's seat without switching the engine off.

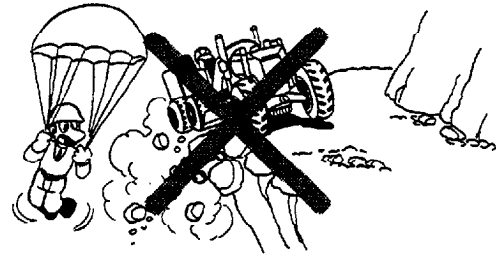


- When continuing operations after rain, remember that conditions will have changed from those before the rain started, so proceed with caution. Be particularly careful when approaching the shoulder of the road or cliffs, as they may have been loosened by the rain.

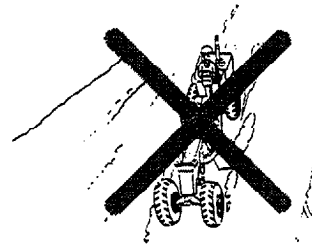
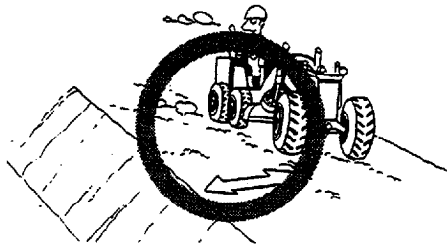


- Check the load limits of bridges before crossing.

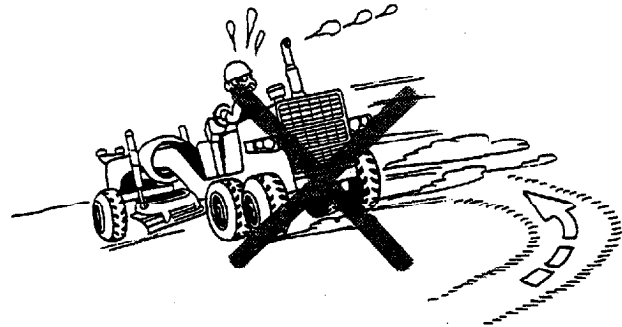
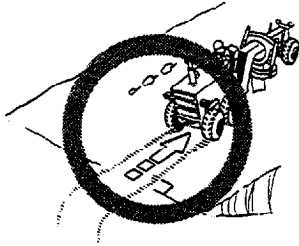
- When operating on uneven ground, drive at as low a speed as possible and avoid sudden changes in direction.
- When operating at the edge of a cliff or on the shoulder of a road, remember the following points:



- When operating in a place where there is danger of the machine falling over the side, be doubly careful. Do not approach the edge of the cliff or road shoulder by mistake.

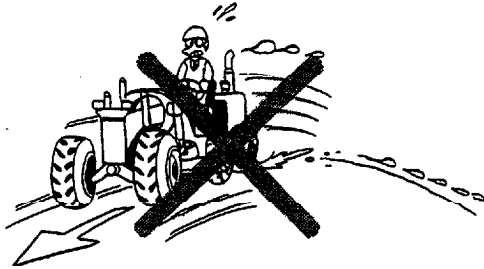


- When working on river embankments or other places made of piled soil, there is the danger that the weight or vibration of the machine may cause the machine to sink into the piled soil, so be extremely careful when operating in such places.
- When operating on slopes, remember the following points:



- When driving on a slope, always drive directly up or down it. Never drive horizontally or diagonally across the slope, as this may cause the machine to roll over or slip sideways.

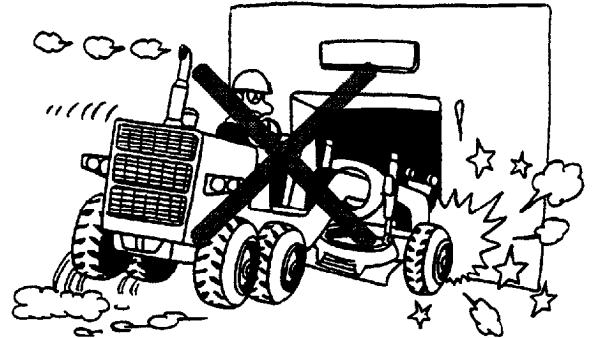
- As far as possible, avoid turning the machine on a slope. It may cause the machine to roll over or slip sideways.



- Before going up or down a slope, select a travel speed most suited to the slope. Do not change gear on the slope.
- If the engine stalls on a slope, first use the brake to stop the machine, then return the gear shift lever to "NEUTRAL" before starting the engine again.

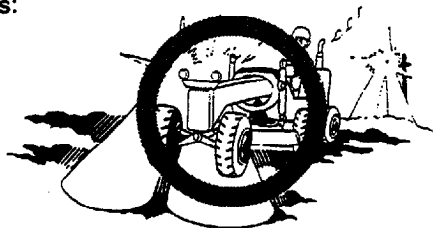
- When using the articulation system, be particularly careful not to let the blade damage the rear tires. (In articulate frame model)
- Operating the articulation system when traveling at high speed may cause the machine to overturn. Always perform this operation at a speed below 10 km/h. (In articulate frame model)

- Always observe the traffic regulations and leave margin for emergencies.
- When operating in a city area, be sure to locate underground pipes and cables before starting the machine to prevent them from being broken.

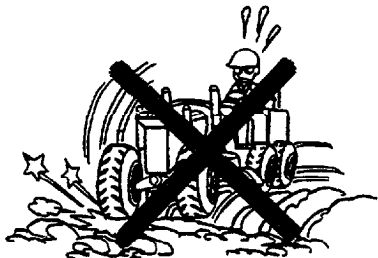


- When operating inside a building always be sure of the clearances of the ceiling, entrances, aisles, etc. and the load limit of the floor.
- Never allow other person than the operator to ride on the machine during operation.

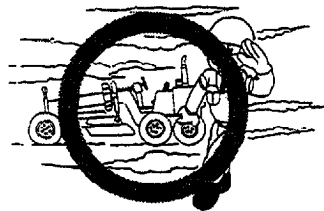
- When passing through a narrow space, be careful of the side and overhead clearances. Take special care not to touch any obstacles on either side or overhead. If necessary, have someone outside the machine call out instructions.
- When operating at night, remember the following points:



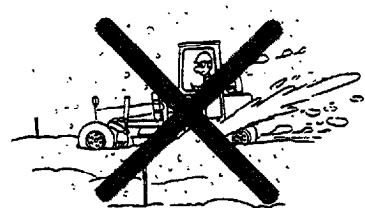
- Be sure to arrange an adequate lighting system.



- At night it is very easy to make mistakes in assuming the distance and height of objects and land.

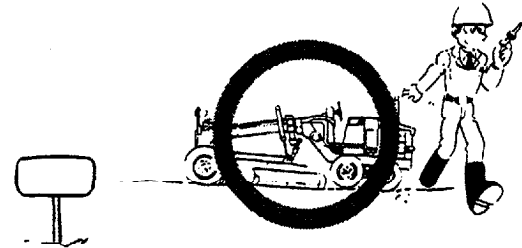


- When operating in fog, mist or smoke, where visibility is bad, be especially careful to confirm first whether operation is safe. When visibility drops below safety level, stop work and wait for the visibility to improve.
- When operating in snow, or cleaning snow, remember the following points:
 - Even slight slopes can cause unexpected side slipping, so in such places, operate with extreme caution.
 - When snow is thrown to one side of the machine, take enough caution to obstacles covered under the snow.



- Never use the wheel brake to stop suddenly on slopes. Lowering the working equipment is a far more effective way of stopping.
- During operation, use the seat belt.

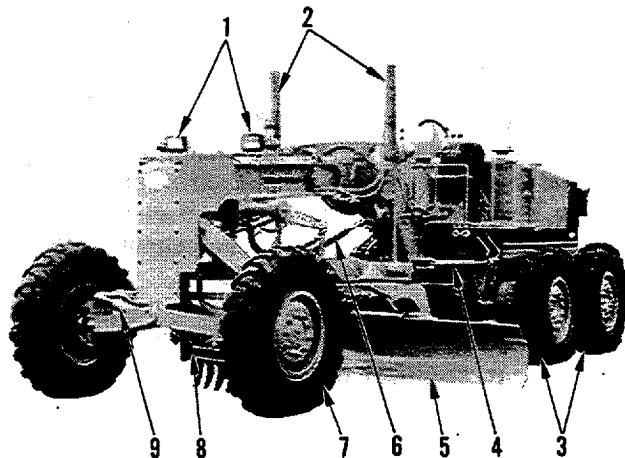
PARKING



- When parking the machine, park it in a safe place outside the working area, or in the specified place. The following factors should be considered when choosing a parking place: it should be on flat, firm ground where there is no danger of rockfalls, landslides or floods. If the machine has to be parked on a slope, it should be parked facing directly up or down the slope, and chocks should be placed under the tires. When the machine is facing downhill, lower the blade so that it cuts slightly into the ground to further increase the safety.
- When parking the machine, return the gear shift lever to "NEUTRAL", apply the brake lock, lower the blade, scarifier and ripper to the ground, and put all safety levers in the "LOCK" position. Switch off the engine and remove the key.

GENERAL LOCATIONS AND SPECIFICATIONS

- | | |
|--------------------------|--------------------------------|
| 1. Head lamp | 6. Drawbar side shift cylinder |
| 2. Blade lift cylinder | 7. Front tire |
| 3. Rear tire | 8. Scarifier |
| 4. Articulation cylinder | 9. Leaning cylinder |
| 5. Blade | |



MACHINE MODEL		
PERFORMANCE	1. Travel speeds	Forward
	(km/h)	Reverse
	2. Minimum turning radius (m)	
	3. Gradeability	
4. Stability		
OPERATING WEIGH	(kg)	
ENGINE	1. Model	
	2. Flywheel horsepower (HP)	

NOTE: Specifications are subject to change without notice.

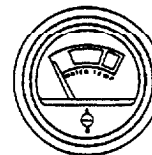
GENERAL LOCATIONS AND SPECIFICATIONS

GD511A-1	GD521A-1	GD523A-1
44.5	44.6	44.6
54.4	54.4	54.4
6.6	6.6	6.6
24°	24°	24°
30°	30°	30°
10800	10800	10800
Komatsu S6D95L diesel engine	Komatsu S6D105 diesel engine	
135 (at 2900 rpm)	135 (at 2500 rpm)	135 (at 2500 rpm)

INSTRUMENTS AND CONTROLS

METERS, GAUGE AND PILOT LAMPS

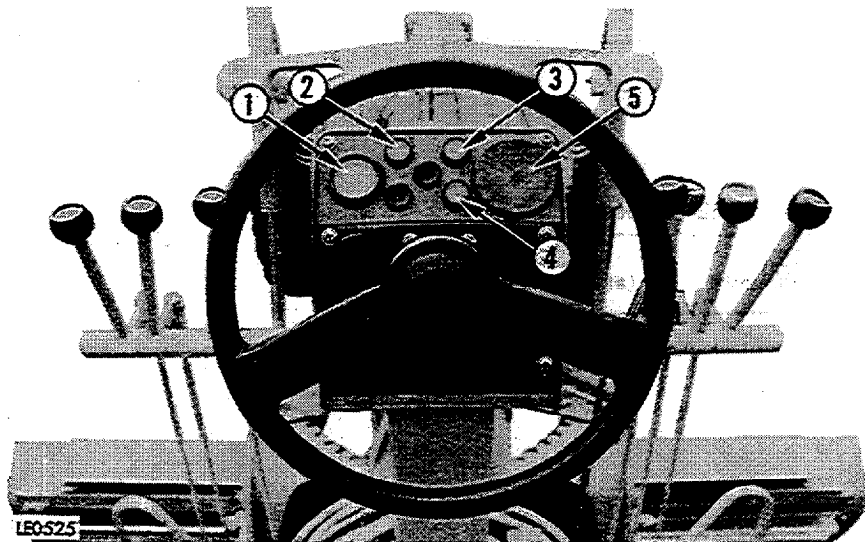
1. ENGINE COOLING WATER TEMPERATURE GAUGE



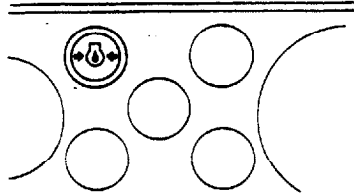
Engine is normal when indicator is on green range during operation.

After starting engine, continue to warm up engine until indicator points green range.

If indicator is over green range, keep engine in low idling and wait till temperature drops.



2. ENGINE OIL PRESSURE PILOT LAMP

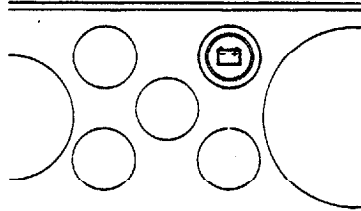


This lamp indicates a low engine oil pressure.

If the lamp goes off, the engine oil pressure is normal.

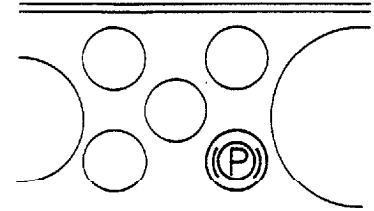
When engine is cool, this lamp lights up. In this case warm up engine until this lamp goes off.

3. BATTERY CHARGING LAMP



This lamp is used to indicate the generating condition of the alternator. Normally, when the starting switch is turned ON, the lamp will light up and then go out as the engine speed rises.

4. PARKING BRAKE PILOT LAMP



When the parking brake lever is pulled, this lamp lights up. Before starting the machine, release the parking brake lever and check that the lamp goes out.

5. SPEEDOMETER



Indicates the running speed of the machine. It also contains an odometer.

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