

Hitachi R235LCR-9 Preview

**This single sample file
contains samples for**

**Hyundai R235LCR-9 Ops & Maint [191p]
Hyundai R235LCR-9 WSM [550p]**

**Ops = operators manual
WSM = workshop manual
[***p] = *** pages**

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FOREWORD

This manual contains a number of instructions and safety recommendations regarding driving, handling, lubrication, maintenance, inspection and adjustment of the excavator.

The manual is to promote safety maintenance and enhance machine performance.

Keep this manual handy and have all personnel read it periodically.

If you sell the machine, be sure to give this manual to the new owners.

This machine complies with EC directive "2006/42/EC".

1. **Read** and **understand** this manual before operating the machine.

This operator's manual may contain attachments and optional equipment that are not available in your area. Please consult your local Hyundai distributor for those items you require.

Improper operation and maintenance of this machine can be hazardous and could result in serious injury or death.

Some actions involved in operation and maintenance of the machine can cause a serious accident, if they are not done in a manner described in this manual.

The procedures and precautions given in this manual apply only to intended uses of the machine.

If you use your machine for any unintended uses that are not specifically prohibited, you must be sure that it is safe for you and others. In no event should you or others engage in prohibited uses of actions as described in this manual.

2. **Inspect** the jobsite and **follow** the safety recommendations in the **safety hints** section before operating the machine.

3. Use **genuine Hyundai spare parts** for the replacement of parts.

We expressly point out that Hyundai will not accept any responsibility for defects resulting from non-genuine parts or non workmanlike repair.

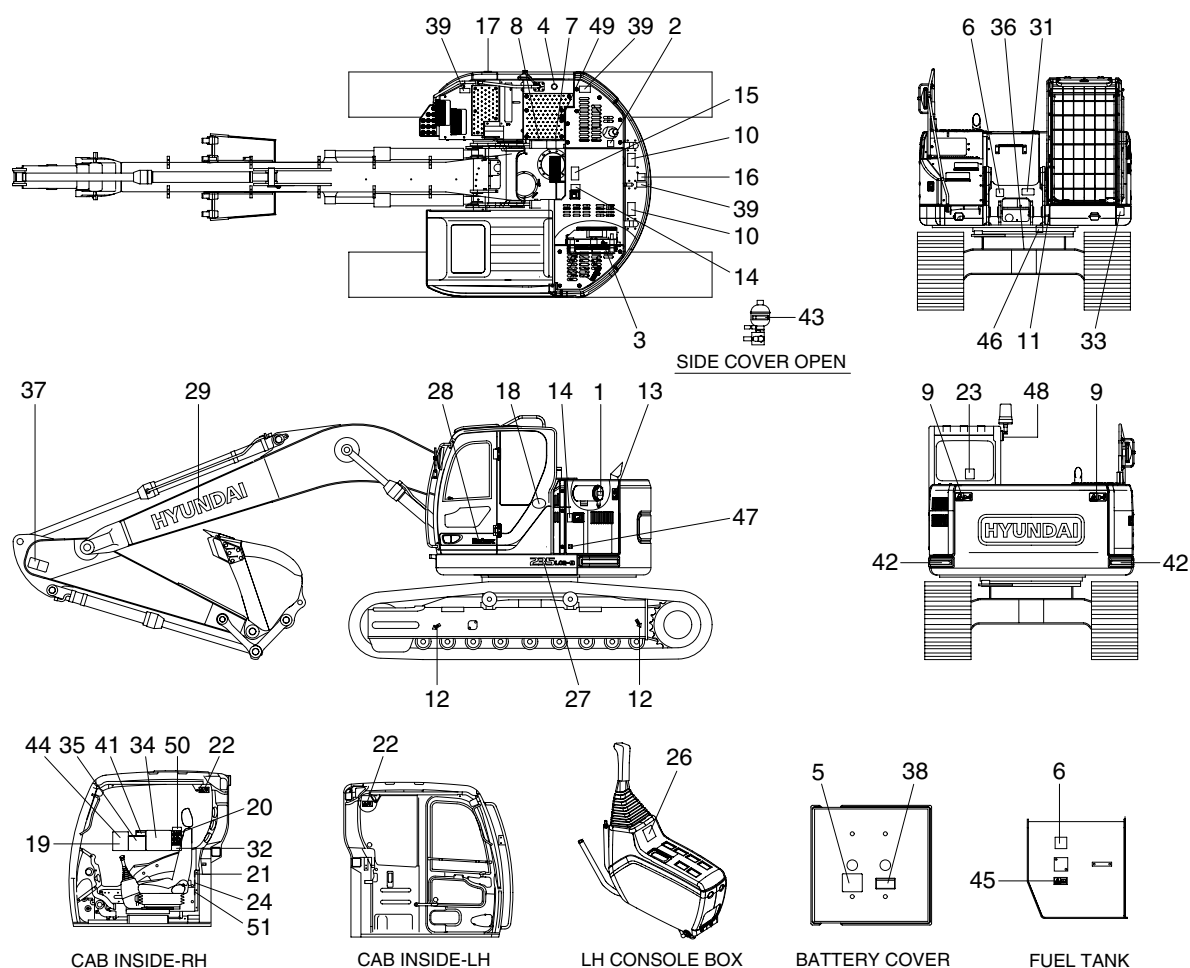
In such cases Hyundai cannot assume liability for any damage.

Continuing improvements in the design of this machine can lead to changes in detail which may not be reflected in this manual. Consult Hyundai or your Hyundai distributor for the latest available information for your machine or for questions regarding information in this manual.

SAFETY LABELS

1. LOCATION

Always keep these labels clean. If they are lost or damaged, attach them again or replace them with a new label.



235Z90SL01

- | | | |
|-------------------------|--------------------------------------|----------------------------|
| 1 Air cleaner filter | 17 Transporting | 35 Lifting chart |
| 2 Turbocharger cover | 18 Low emission engine | 36 Tie |
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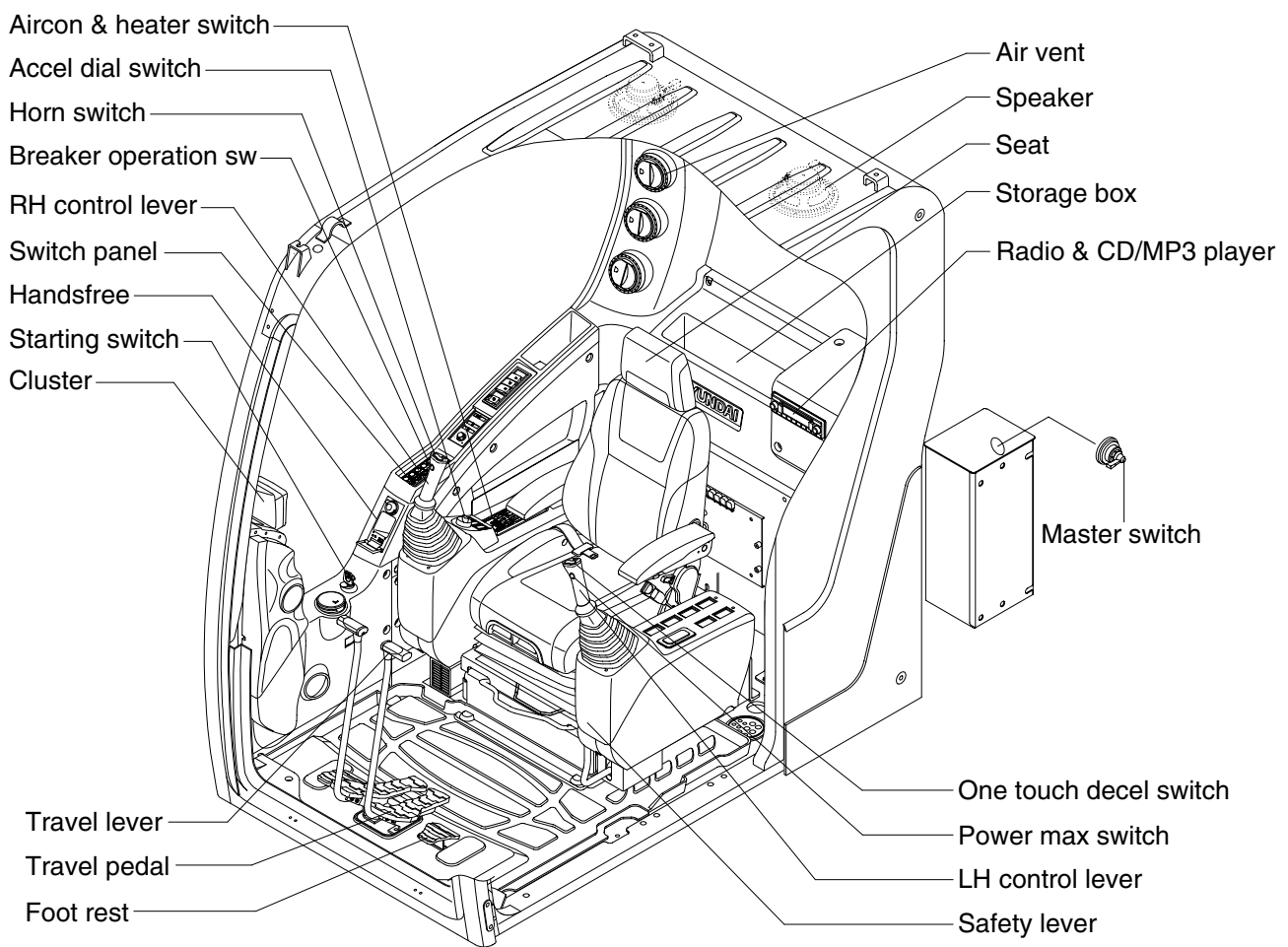
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1. CAB DEVICES

- 1) The ergonomically designed console box and suspension type seat provide the operator with comfort.

2) ELECTRONIC MONITOR SYSTEM

- (1) The centralized electronic monitor system allows the status and conditions of the machine to be monitored at a glance.
- (2) It is equipped with a safety warning system for early detection of machine malfunction.



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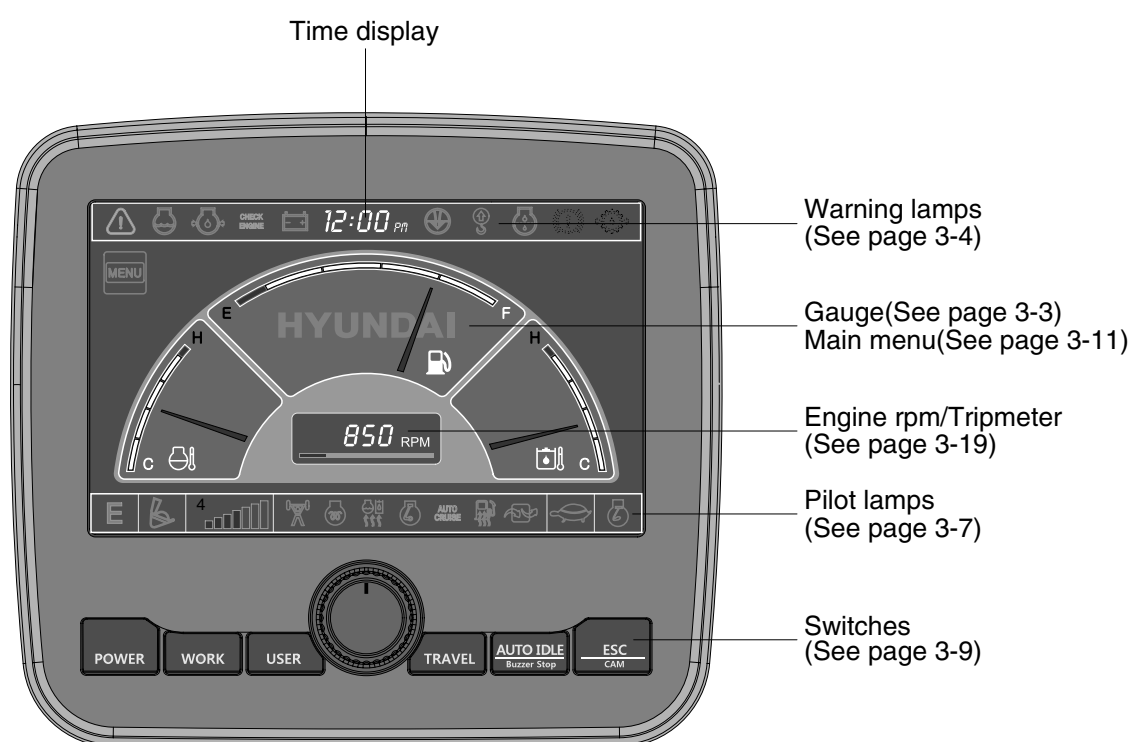
2. CLUSTER

1) STRUCTURE

The cluster consists of LCD and switches as shown below. The LCD is to warn the operator in case of abnormal machine operation or conditions for the appropriate operation and inspection. Also, The LCD is to set and display for modes, monitoring and utilities with the switches.

The switches are to set the machine operation modes.

- ※ The cluster installed on this machine does not entirely guarantee the condition of the machine. Daily inspection should be performed according to chapter 6, Maintenance.
- ※ When the cluster provides a warning immediately check the problem, and perform the required action.



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- ※ The warning lamp pops up and/or blinks and the buzzer sounds when the machine has a problem.

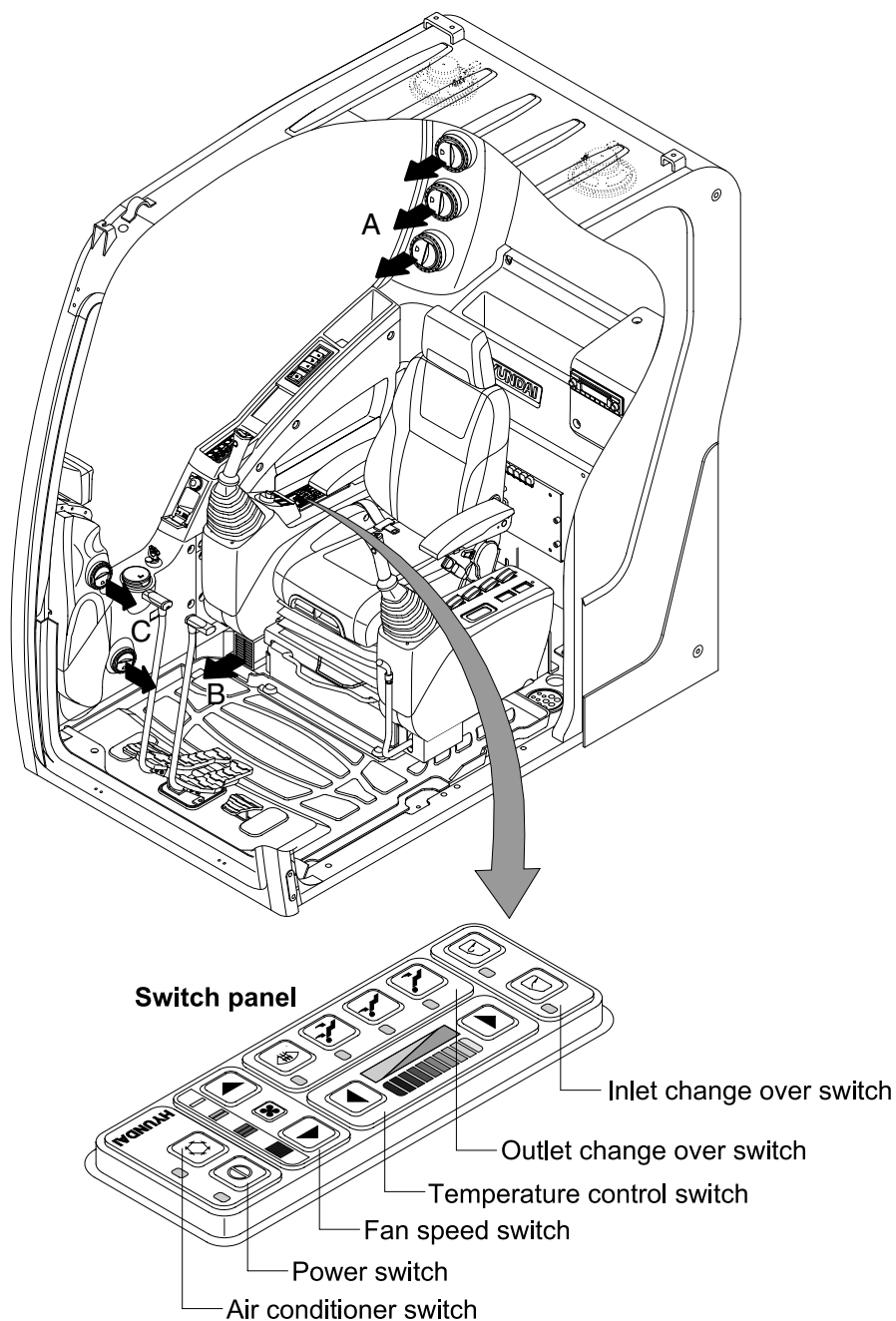
The warning lamp blinks until the problem is cleared. Refer to page 3-4 for details.

■ SEMI AUTO AIR CONDITIONER AND HEATER (option)

Semi auto air conditioner and heater are equipped for pleasant operation against outside temperature and defrost on window glass.

※ Refer to the page 3-30 for full auto air conditioner and heater.

- Location of air flow ducts



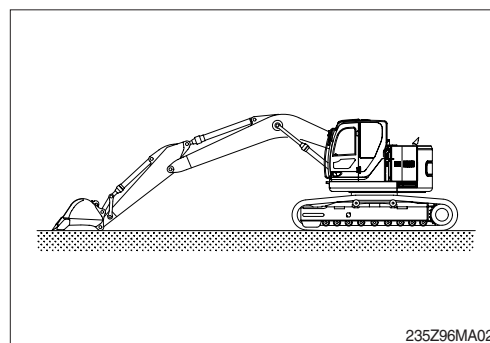
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4) RELIEVING THE PRESSURE IN THE HYDRAULIC SYSTEM

- ※ Spouting of oil can cause the accident when loosening the cap or hose right after the operating of machine as the machine or oil is on the high pressure on the condition.

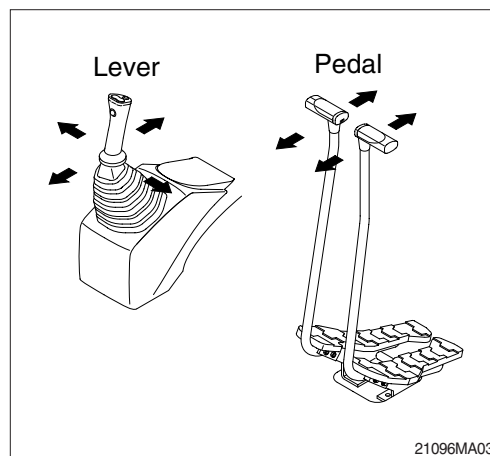
Be sure to relieve the pressure in the system before repairing hydraulic system.

- (1) Place machine in parking position, and stop the engine.

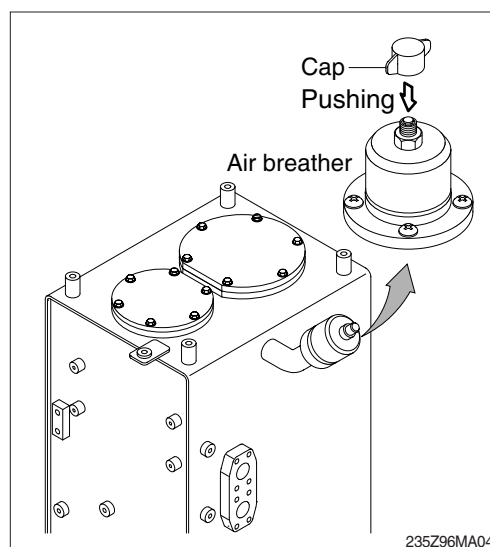


- (2) Set the safety lever completely in the release position, operate the control levers and pedals fully to the front, rear, left and right, to release the pressure in the hydraulic circuit.

- ※ This does not completely release the pressure, so when serving hydraulic component, loosen the connections slowly and do not stand in the direction where the oil spurt out.

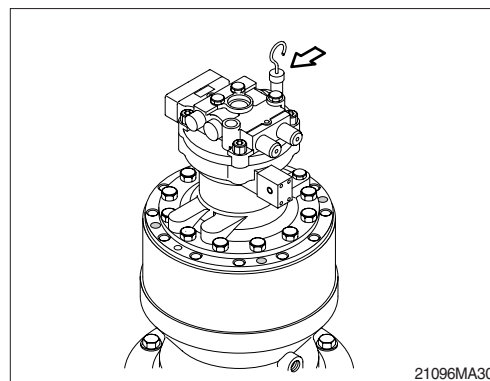


- (3) Loosen the cap and relieve the pressure in the tank by pushing the top of the air breather.



24) CHECK THE SWING REDUCTION GEAR OIL

- (1) Pull out the dipstick and clean it.
- (2) Insert it again.
- (3) Pull out one more time to check the oil level and fill the oil if the level is not sufficient.

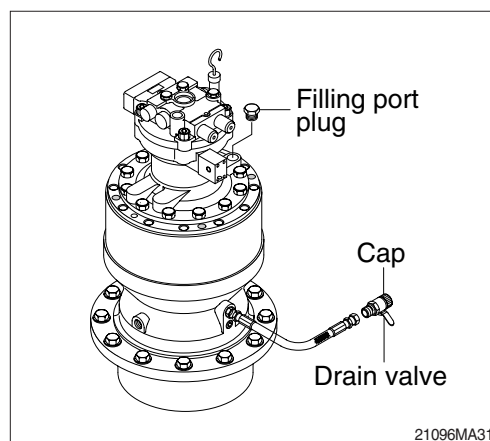


25) CHANGE SWING REDUCTION GEAR OIL

- (1) Raise the temperature of oil by swinging the machine before replace the oil and park the machine on the flat ground.
- (2) Prepare into a proper container.
- (3) Open the cap and loosen the drain valve.
- (4) Clean around the valve and close the drain valve and cap.

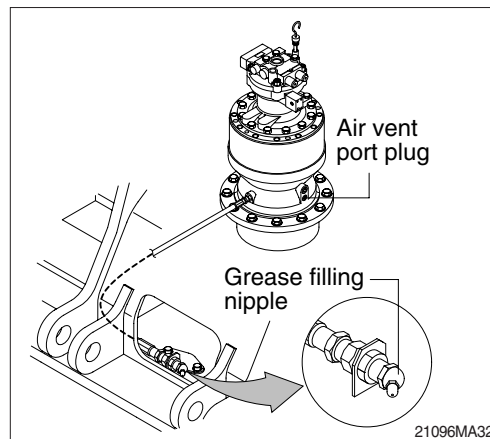
Fill proper amount of recommended oil.

- Amount of oil : 5.0 l (1.3 U.S.gal)



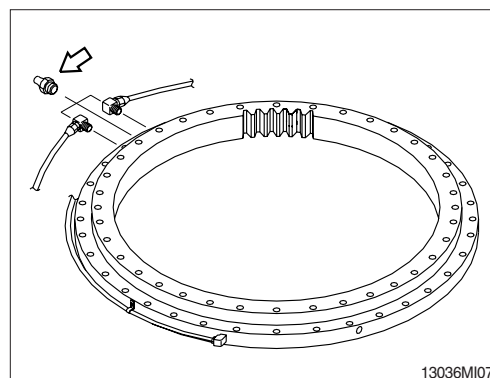
26) LUBRICATE BEARING OF OUTPUT SHAFT IN REDUCTION GEAR

- (1) Remove air vent plug.
 - (2) Lubricate NLGI No.2 with grease gun until comes out new grease from air vent port.
- Amount of oil : 1.1 kg (2.4 lb)



27) LUBRICATE SWING BEARING

- (1) Grease at 3 fitting.
- ※ Lubricate every 50 hours.



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1. STRUCTURE

This service manual has been prepared as an aid to improve the quality of repairs by giving the serviceman an accurate understanding of the product and by showing him the correct way to perform repairs and make judgements. Make sure you understand the contents of this manual and use it to full effect at every opportunity.

This service manual mainly contains the necessary technical information for operations performed in a service workshop.

For ease of understanding, the manual is divided into the following sections.

SECTION 1 GENERAL

This section explains the safety hints and gives the specification of the machine and major components.

SECTION 2 STRUCTURE AND FUNCTION

This section explains the structure and function of each component. It serves not only to give an understanding of the structure, but also serves as reference material for troubleshooting.

SECTION 3 HYDRAULIC SYSTEM

This section explains the hydraulic circuit, single and combined operation.

SECTION 4 ELECTRICAL SYSTEM

This section explains the electrical circuit, monitoring system and each component. It serves not only to give an understanding electrical system, but also serves as reference material for trouble shooting.

SECTION 5 MECHATRONICS SYSTEM

This section explains the computer aided power optimization system and each component.

SECTION 6 TROUBLESHOOTING

This section explains the troubleshooting charts correlating **problems** to **causes**.

SECTION 7 MAINTENANCE STANDARD

This section gives the judgement standards when inspecting disassembled parts.

SECTION 8 DISASSEMBLY AND ASSEMBLY

This section explains the order to be followed when removing, installing, disassembling or assembling each component, as well as precautions to be taken for these operations.

SECTION 9 COMPONENT MOUNTING TORQUE

This section shows bolt specifications and standard torque values needed when mounting components to the machine.

The specifications contained in this shop manual are subject to change at any time and without any advance notice. Contact your HYUNDAI distributor for the latest information.

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2) ENGINE SPEED

- (1) Measure the engine speed at each power mode

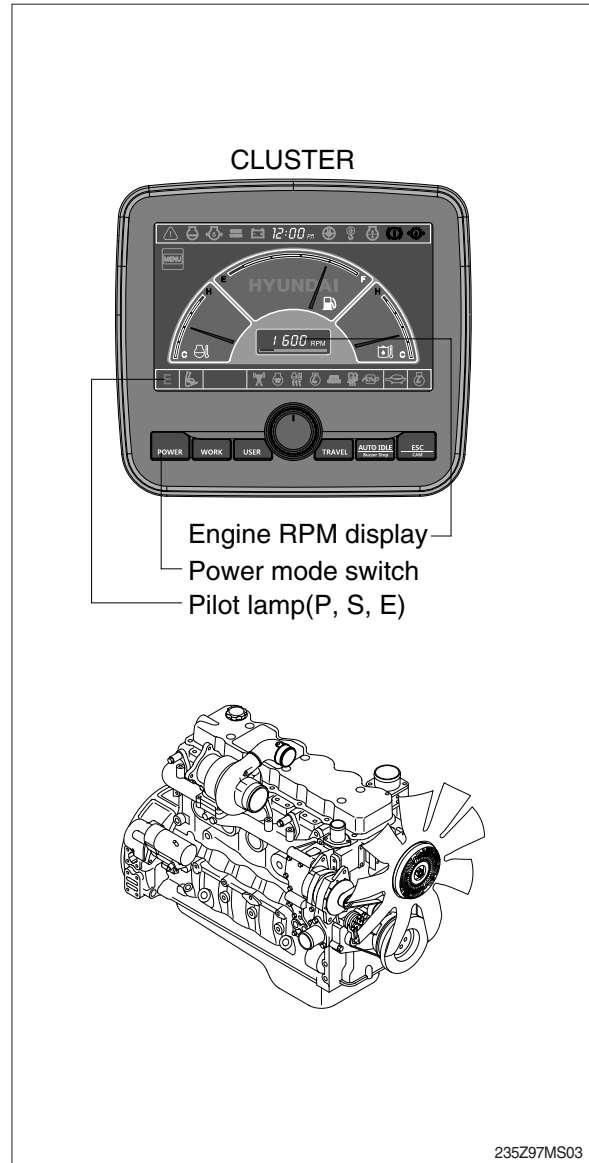
※ The engine speed at each power mode must meet standard RPM; if not, all other operational performance data will be unreliable. It is essential to perform this test first.

(2) Preparation

- ① Warm up the machine, until the engine coolant temperature reaches 50°C or more, and the hydraulic oil is $50 \pm 5^{\circ}\text{C}$.
- ② Set the accel dial at 10 (Max) position.
- ③ Measure the engine RPM.

(3) Measurement

- ① Start the engine. The engine will run at start idle speed. Measure engine speed with a engine rpm display.
- ② Measure and record the engine speed at each mode (P, S, E).
- ③ Select the P-mode.
- ④ Lightly operate the bucket control lever a few times, then return the control lever to neutral; The engine will automatically enter the auto-idle speed after 4 seconds.
- ⑤ Measure and record the auto deceleration speed.



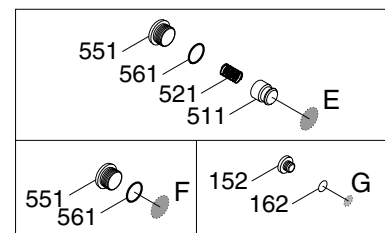
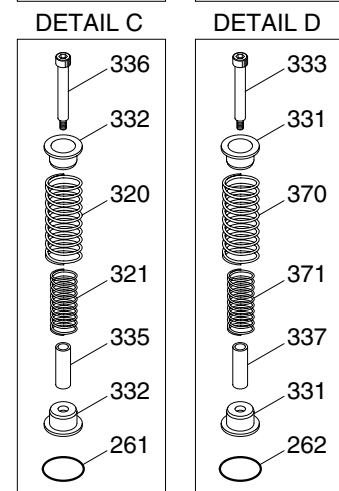
(4) Evaluation

The measured speeds should meet the following specifications.

Unit : rpm

Model	Engine speed	Standard	Remarks
R235LCR-9	Start idle	850 ± 100	
	P mode	1800 ± 50	
	S mode	1750 ± 50	
	E mode	1650 ± 50	
	Auto decel	1000 ± 100	
	One touch decel	850 ± 100	

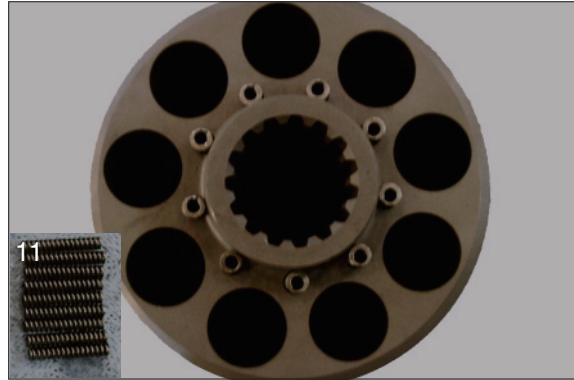
Condition : Set the accel dial at 10 (Max) position.



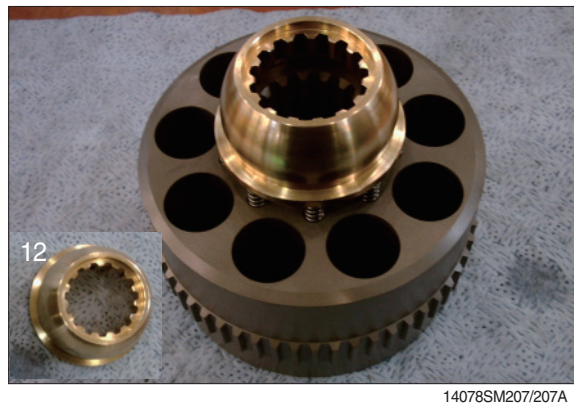
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**(2) Assemble the sub of cylinder block
assy**

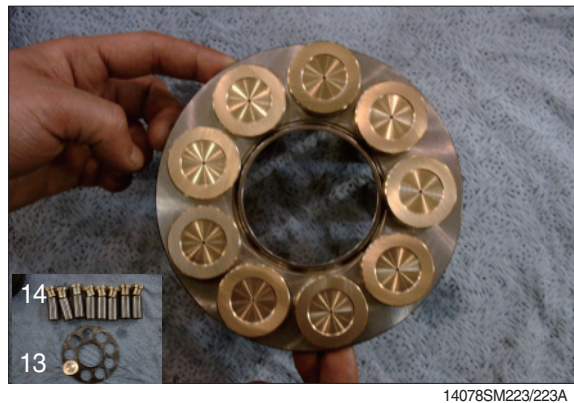
- ① Assemble spring (11) 9 set into cylinder
block (10).
· Spring × 9 EA



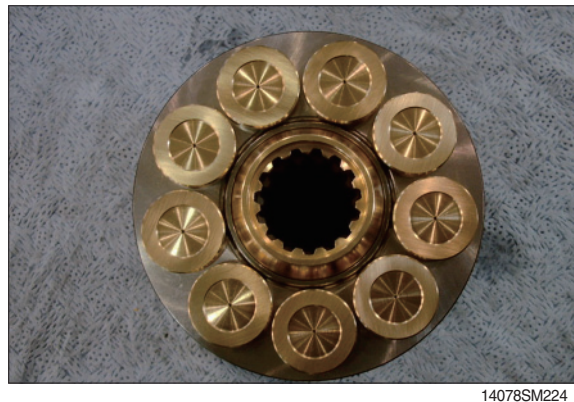
- ② Assemble ball guide (12) into cylinder.
· Ball guide × 1 EA



- ③ Assemble piston assy (14) 9 set into set
plate (13).
· Piston assy × 9 EA
· Set plate × 1 EA



- ④ Assemble above item ② and ③.



7) ASSEMBLING CARRIER SUB ASSY & SUN GEAR

- (1) Put No.2 carrier sub assy along spline of drive shaft spline.
- Screw M10 I-bolt to No.2 carrier sub assy.
 - Lifting up No.2 carrier sub assy and align planetary gear and tooth of ring gear by rotating planetary gear by hands.
 - Rotate No.2 carrier sub assy by hands to fit No.2 carrier sub assy into drive shaft spline.



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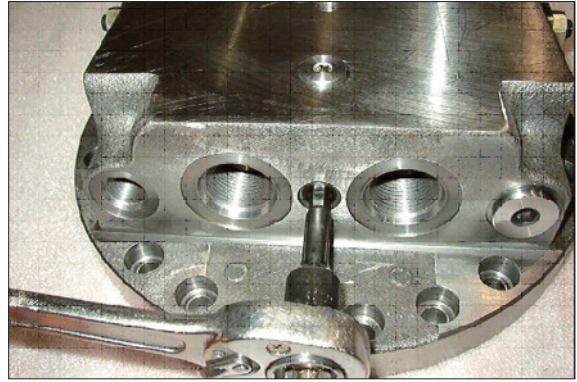
- (2) Put No.2 sun gear into No.2 carrier sub assy.



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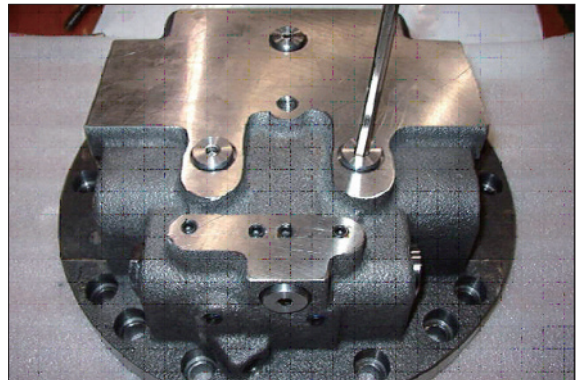
18) Assemble plug (64).

※ Plug (PT3/8) - 11EA

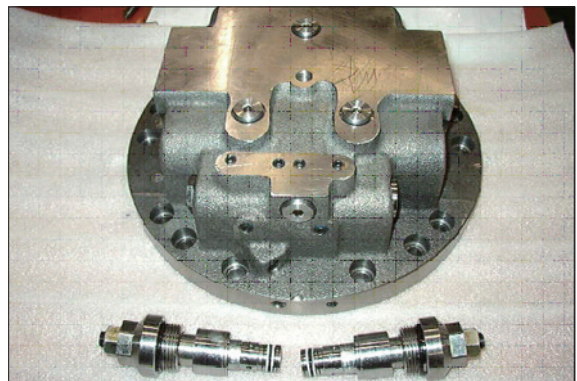


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19) Assemble plug (62, 63) into rear cover (29) and assemble relief valve assembly.

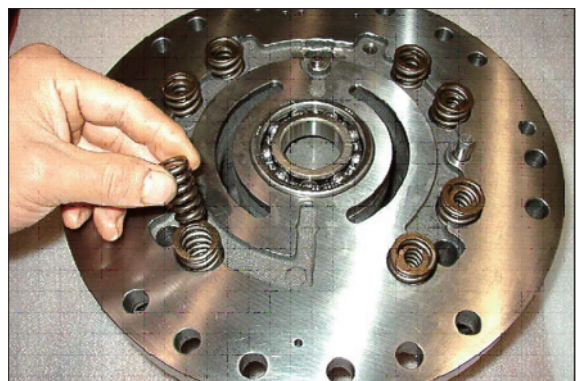


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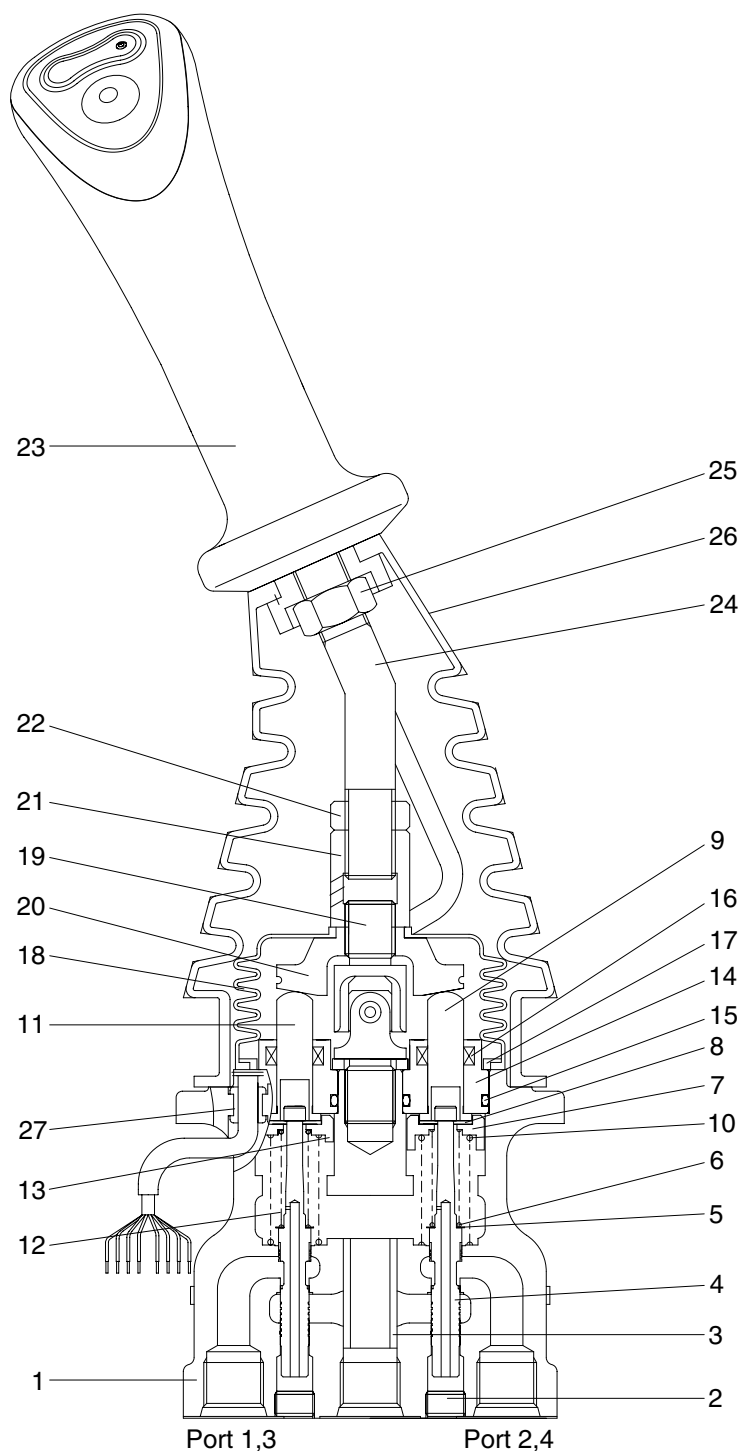
20) Put spring (67, 68) together into rear cover (29), prepare 6 set.



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2. DISASSEMBLY AND ASSEMBLY

1) STRUCTURE



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1 Case	8 Stopper	15 O-ring	22 Lock nut
2 Plug	9 Push rod	16 Rod seal	23 Handle assembly
3 Bushing	10 Spring	17 Plate	24 Handle bar
4 Spool	11 Push rod	18 Boot	25 Nut
5 Shim	12 Spring	19 Joint assembly	26 Boot
6 Spring	13 Spring seat	20 Swash plate	27 Bushing
7 Spring seat	14 Plug	21 Adjusting nut	