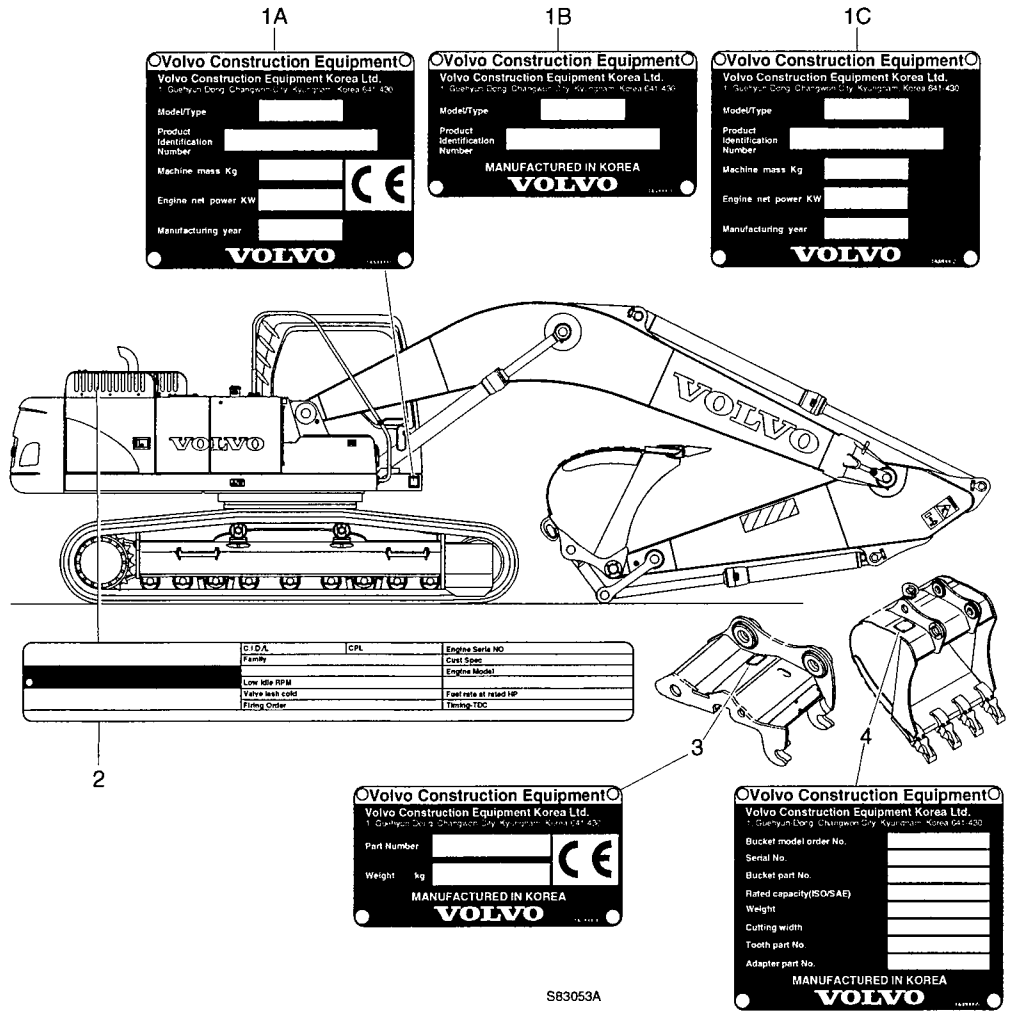
# Contents

# Plates and decals

## Product plates

This illustration and text below show which product plates are found on the machine.

When ordering spare parts and when making enquires by telephone or correspondence, the model designation and **P**roduct **I**dentification **N**umber (**PIN**) should be stated.



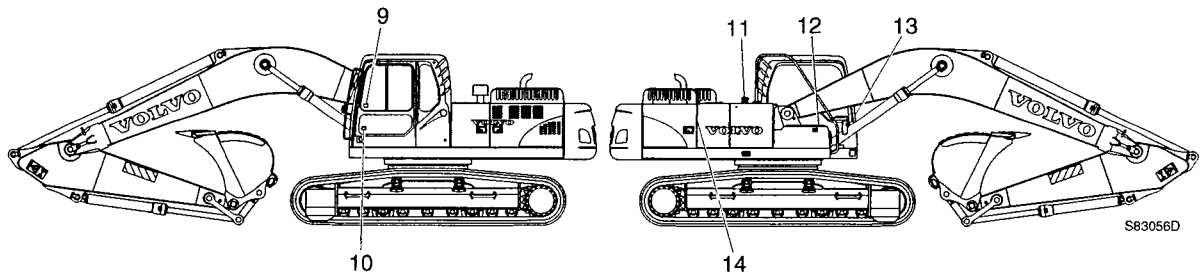
**Long Crawler (LC)**
**Counterweight = 9259 lb (4200 kg)**
**Boom = 18 ft 8 in (5.7 m)**
**Arm = 12 ft 1 in without bucket**
**Shoe = 600 mm (24 in)**

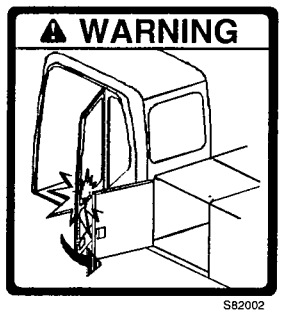
(Unit : lbs)

| H | R | 0 ft | 5 ft | 10 ft | 15 ft | 20 ft | 25 ft | 30 ft | 35 ft | MR | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 ft | F | - | - | - | - | - | - | - | - | * 7510 | (@23,54 ft) |
| | S | - | - | - | - | - | - | - | - | * 7510 | |
| 20 ft | F | - | - | - | - | - | *8890 | - | - | * 7140 | (@26,92 ft) |
| | S | - | - | - | - | - | 8210 | - | - | * 7140 | |
| 15 ft | F | - | - | - | - | - | *9360 | - | - | * 7090 | (@29,05 ft) |
| | S | - | - | - | - | - | 8040 | - | - | 6190 | |
| 10 ft | F | - | - | - | *13820 | *11520 | *10370 | *7770 | - | * 7310 | (@30,19 ft) |
| | S | - | - | - | *13820 | 10960 | 7750 | 5730 | - | 5670 | |
| 5 ft | F | - | - | *19420 | *18300 | *13780 | 11530 | 8710 | - | * 7790 | (@30,47 ft) |
| | S | - | - | *19420 | 15640 | 10300 | 7410 | 5580 | - | 5440 | |
| 0 ft | F | - | - | *15890 | *21620 | 15650 | 11200 | - | - | 8600 | (@29,91 ft) |
| | S | - | - | *15890 | 14640 | 9750 | 7110 | - | - | 5470 | |
| -5 ft | F | - | *11920 | *20680 | *23190 | 15280 | 11000 | - | - | 9170 | (@28,45 ft) |
| | S | - | *11920 | *20680 | 14160 | 9430 | 6930 | - | - | 5810 | |
| -10 ft | F | - | *18820 | *29020 | *23040 | 15190 | 11000 | - | - | 10460 | (@25,94 ft) |
| | S | - | *18820 | 27210 | 14090 | 934 | 6920 | - | - | 6600 | |
| -15 ft | F | - | *27650 | *30580 | *20950 | *15260 | - | - | - | *13320 | (@22,01 ft) |
| | S | - | *27650 | 27830 | 14350 | 9540 | - | - | - | 8420 | |
| -20 ft | F | - | - | *22260 | *15050 | - | - | - | - | *14280 | (@15,60 ft) |
| | S | - | - | *22260 | *15050 | - | - | - | - | 14270 | |

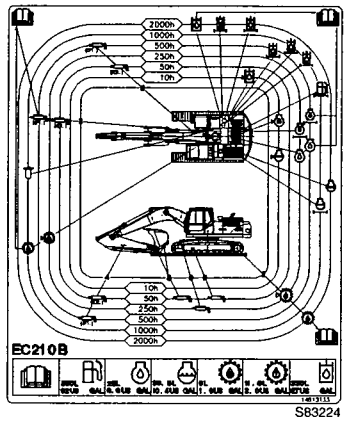
S86609

**NOTE : -**
**1. The above loads are in compliance with SAE and ISO Hydraulic Excavator Lift Capacity Standards.**
**2. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping load.**
**3. Rated loads marked with an asterisk( * ) are limited by hydraulic capacity rather than tipping load.**



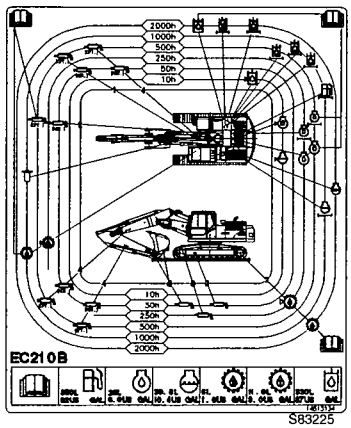

## 9 Cab door window breakage



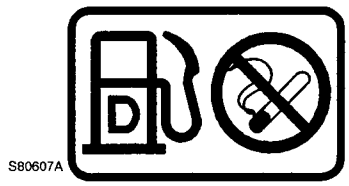

## 10 Lubrication and service chart

See ***Lubrication and service chart*** on page 204.

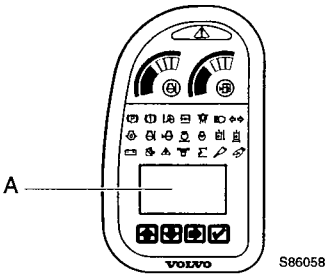
**Service decal standard long boom**




**Adjustment of boom**



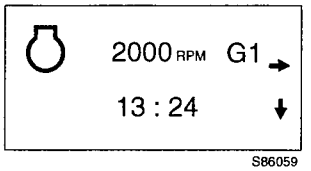

## 11 Do not smoke during fueling



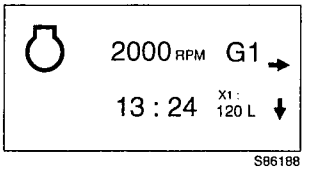

## Operator information

After the start up screen has been extinguished, this default screen showing the engine speed appears on MCD (Message Center Display) (A).

Screen 1




Screen 1-1



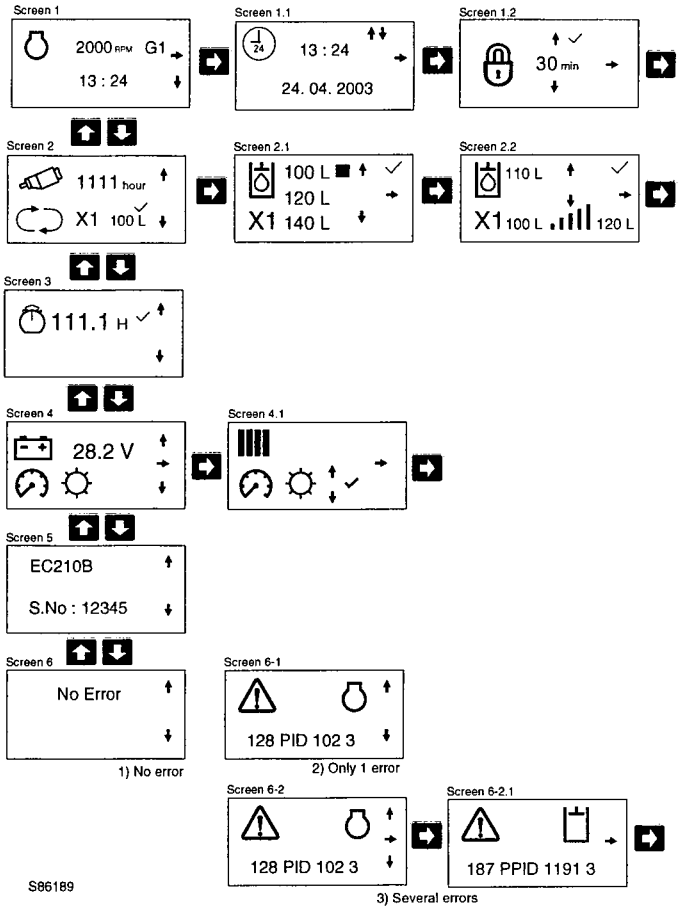

### Default screen

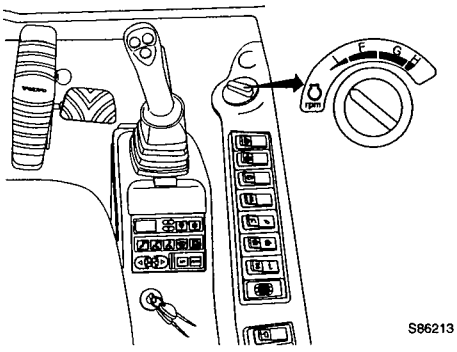
After starting, this default is shown on MCD (Message Center Display).

Engine speed and mode are displayed at first line.

Time is displayed at second line. The displayed time format is selectable on other screen. see ***Setup time and date*** on page 57.

### Normal operating screen






## 1 Engine speed control switch

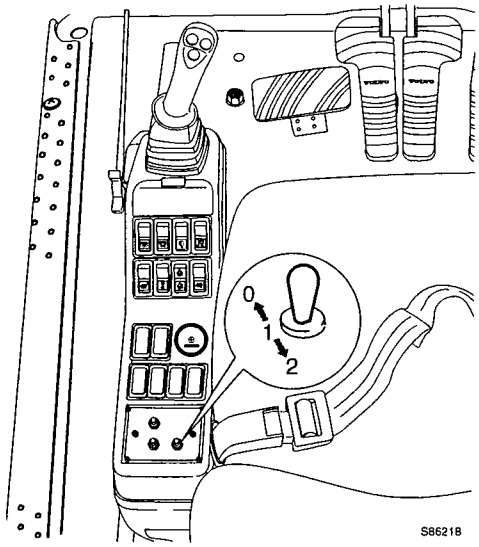
This switch is used to select the engine speed.
Turning this switch, the engine speed will change incrementally. According to the selected engine speed, working mode will be set automatically and setting mode is displayed on the message center display, See ***MCD (Message Center Display)*** on page 52.

**Except North America**

| Mode | | Switch step | Engine speed (±40 rpm) (no load/load) | Power shift current (±10 mA) | Remarks |
|---|---|---|---|---|---|
| | | | D6DEAE2 | | |
| Power max | P | 9 | 2000/ 1900 over | 215 | For maximum productivity during hard digging and trenching |
| Heavy | H | | 1900/ 1800 over | 250 | For slightly hard operations |
| General | G1 | 8 | 1800/ 1700 over | 290 | For economical operation during general applications |
| | G2 | 7 | 1700/ 1600 over | | |
| | G3 | 6 | 1600/ 1500 over | | |
| Fine | F1 | 5 | 1500/ – | 450 | For Maximum lifting power and moderate control |
| | F2 | 4 | 1400/ – | | |
| | F3 | 3 | 1300/ – | | |
| Idle | I1 | 2 | 1000/ – | 555 | For warm-up and very precise operation |
| | I2 | 1 | 800/ – | | |

**North America**

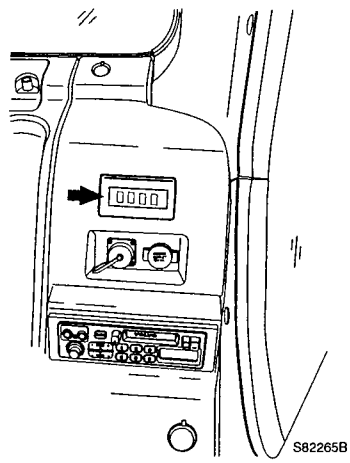
| Mode | | Switch step | Engine speed (±40 rpm) (no load/load) | Power shift current (±10 mA) | Remarks |
|---|---|---|---|---|---|
| | | | D6DEAE2 | | |
| Heavy | H | 9 | 2000/ 1900 over | 220 | For maximum productivity during hard digging and trenching |
| General | G1 | 8 | 1900/ 1800 over | 260 | For economical operation during general applications |
| | G2 | 7 | 1800/ 1700 over | 300 | |
| | G3 | 6 | 1700/ 1600 over | | |
| Fine | F1 | 5 | 1500/ – | 450 | For Maximum lifting power and moderate control |
| | F2 | 4 | 1400/ – | | |
| | F3 | 3 | 1300/ – | | |
| Idle | I1 | 2 | 1000/ – | 570 | For warm-up and very precise operation |
| | I2 | 1 | 800/ – | | |




## 26 Emergency engine speed control switch

If the engine speed control switch on **page 61** does not work, set "Auto/Manual select switch" to Manual position and use this emergency switch.

| | |
|---|---|
| Position 0 | Engine stop<br>(when the engine is not OFF, even though the start switch is turned to OFF position)<br>If the switch is at this position for more than three seconds, the engine will shut down. |
| Position 1 | Idle speed.<br>Engages idle **I2** mode (no load). |
| Position 2 | High speed.<br>Engages **H** mode (no load) of engine speed.<br>Exception: **G1** mode for North America. |




## 27 Engine diesel heater (option)

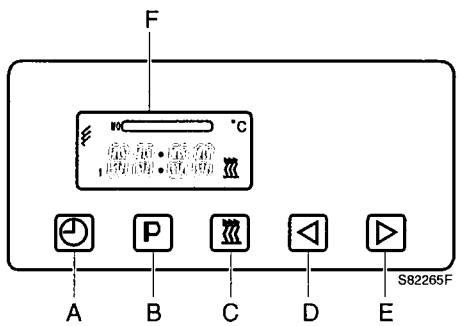
In cold weather, this auxiliary heater can be operated manually or preset to activated at various times to warm the cab, and heat the engine for easier starting.

**Setting current time and date**

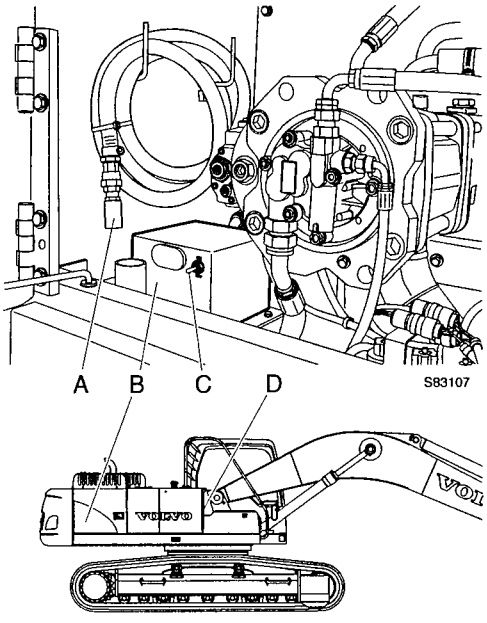
1 Press time setting switch (A) until the time in display window (F) begins to flash.

2 Adjust the current time by pressing backward switch (D) and forward switch (E).
After a few second, the current time (K) stops blinking, which means the current time is set.

3 When current time (K) has stopped flashing, the program day (J) flashes, then adjust the day by pressing backward switch (D) and forward switch (E). The current date is set when it stops flashing.




| | | | |
|---|---|---|---|
| A | Time setting switch | G | Memory indicator |
| B | Program switch | H | Symbol for remote control |
| C | Heating ON / OFF switch | J | Program day |
| D | Backward switch | K | Current time / program time |
| E | Forward switch | L | Temperature display |
| F | Display window | M | Heating indicator |




# Fuel accessory pump

**WARNING!**

**Stop the engine when fuelling.**

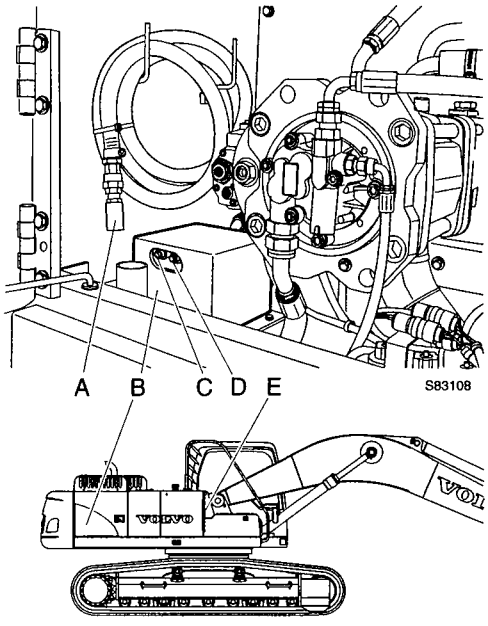
**IMPORTANT**

**Never let the fuel filler pump idle. The pump may be damaged.**

The pump is installed in the tool box. Use it when filling the fuel tank.

1 Connect the hose attached to the fuel pump to fill the fuel tank.
2 Operate the switch to start the pump.
3 Fill fuel while watching the fuel sight gauge.

A Fuel filler pump hose
B Fuel filler pump
C Operating switch (ON / OFF)
D Fuel level gauge




## Auto shut-off controller

1 Connect the hose attached to the fuel pump to fill the tank.
2 Press the green start button (C). Provided the tank is not full, pump will run (ON position).

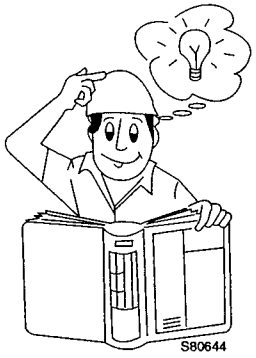
– At any time during the refuelling operation or when the drum has been emptied the pump may be stopped by pressing the red button (D).
– The pump will automatically stop when the fuel level sensor is actuated.
The pump cannot be restarted until the fuel from the tank is used.

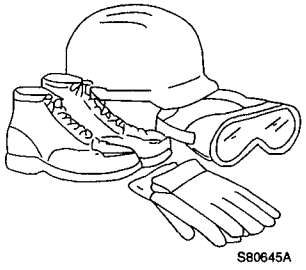
A Fuel filler pump hose
B Fuel filler pump
C Green start button
D Red (stop) button
E Fuel level gauge

# General

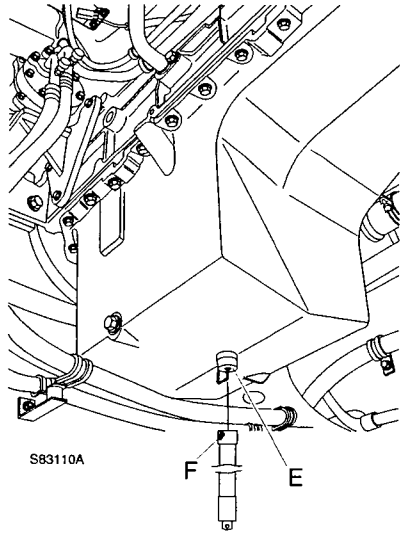
**WARNING!**

**Breaking these rules may lead to an accident, serious injuries.**


S80644


S80645A

- Read all plates and decals on the machine and in the Operator's Manual before carrying out service on the machine. Each of the instructions contain important information about the handling and service of the machine.
- No work may be carried out on the machine, unless the person doing so has acquired the right knowledge and training to do so.
- Service work, which is not carried out in the correct way, is dangerous.
  Make sure you have sufficient knowledge, correct information, correct tools and correct equipment to carry out the service in a correct way.
  Repair or change broken tools and equipment.
- Avoid spillage when emptying/draining oil or fuel. Where fluid cannot be drained directly into a vessel, use a pump or connect a hose for safe handling. Oil, which is spilled onto the ground, will harm the environment and also cause a fire.
  Used oil and other liquids should always be taken care of by a disposal firm authorized for this purpose.
- A machine which is used within a contaminated area (polluted environment and/or insanitary area) should be equipped in a special way. In addition to this, special safety regulations apply when servicing such a machine.
- Check that all slip protections are firmly fixed. If they are not, they should be fastened or replaced,
- When using high pressure for washing, the jet should not be directed at anti-slip surfaces which are glued on.
- Make sure that stepping surfaces, service areas, handholds and anti-slip surfaces are free from oil, diesel fuel, dirt or ice and that they are replaced if they are damaged or missing.
  **Never step on parts of the machine which are not prepared or intended for this.**




## Changing oil

1 Place the machine in the service position.
2 Put a container (above 26 liter, 6.9 US gal) under the protecting cap (E) at the bottom of the engine oil pan.
3 Remove protecting cap (E) and attach drain hose (F) provided as a service tool with machine.
4 Drain the oil.
5 Disconnect the hose and install the protecting cap.
6 Fill oil through oil filler port (B).

Oil capacity when changing is approx. 25 liters (6.6 US gal) including filters.

For oil grade, See ***Recommended lubricants*** on page 211.

**Take care of waste oil/fluids in an environmentally safe way!**

## Battery connection

- The battery terminals must never be confused. Each terminal is clearly marked with a (+) or a (-) sign respectively. If the cables are wrongly connected, the alternator rectifier will be ruined immediately.
- When disconnecting batteries, first break the circuit using the battery master switch. See ***Master switch*** on page 177.

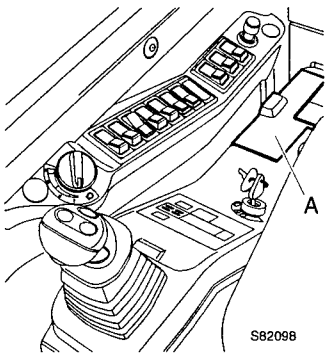
## Electric welding

- Before electric welding is carried out on the machine or any attachment installed to the machine, the current must be turned OFF at the battery master switch.
- Before carrying out any electric welding on the machine, the battery cables should be disconnected and the connectors pulled out of the electronic control units.
- When disconnecting and reconnecting, the leads should be without current (the battery master switch turned off).
- Connect the earth (ground) lead of the welding equipment as close to the welding point as possible.
- Before welding, remove all paint from an area of at least 10 cm (4 in) around the point of welding. Paint which is heated gives off unhealthy gases.
- All paint decomposes when heated and forms a great number of compounds, which may cause irritation and be dangerous to ones health after repeated or prolonged exposure.
- In addition to the health hazard, the weld will be of inferior quality and strength, which, in the future, may cause the weld to break. Therefore, never weld directly on a painted surface.

## Electrical distribution box

### General

The machine has an electrical distribution box (A) installed to the right of the operator seat. The electrical distribution box contains most of the fuses and relays of the machine.




**WARNING!**

**Never install a fuse with a higher ampere rating than that stated on the decal (risk of damage or fire on the circuit board).**
**If a fuse blows repeatedly in the same position, the cause of the fault has to be investigated.**

## Refilling grease to attachment

### Long last bushing (Option)

**Service the new machine Every 10 Service Hours or Daily only within the initial 100 service hours.**

**After the initial 100 service hours of operation, service the boom and arm linkages (point 1 ~ point 7) Every 500 Service Hours or 3 months but the bucket linkages (point 8 ~ point 12) Every 50 service hours or Weekly.**

**NOTE :**
**Under severe operating conditions where mud, water, and abrasive material may enter the bearings, or after hydraulic hammer use, the attachment linkage should also be serviced Every 10 Service Hours or Daily.**

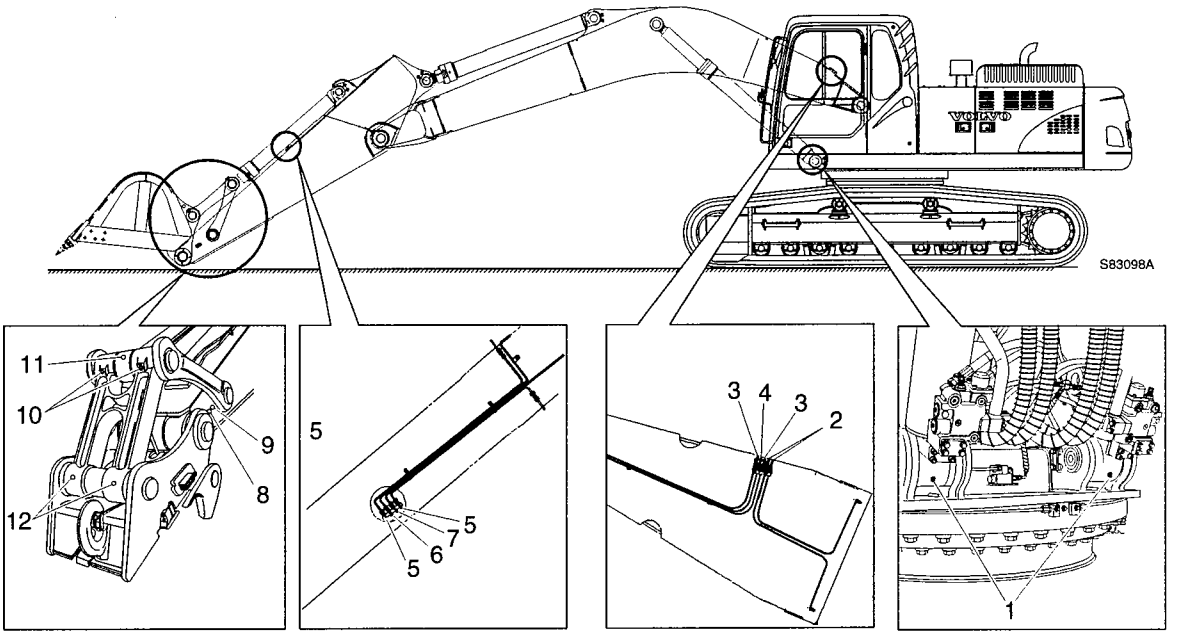
In manual refilling, lower the attachment to the ground as illustrated, and stop the engine.

Refill the grease through the grease fittings using a hand or power grease gun.

After refilling grease, clean off the overflow grease.

Immediately after working under water, refill new grease to the submerged parts like the bucket pins to remove the old grease, regardless of the grease refilling cycle time.

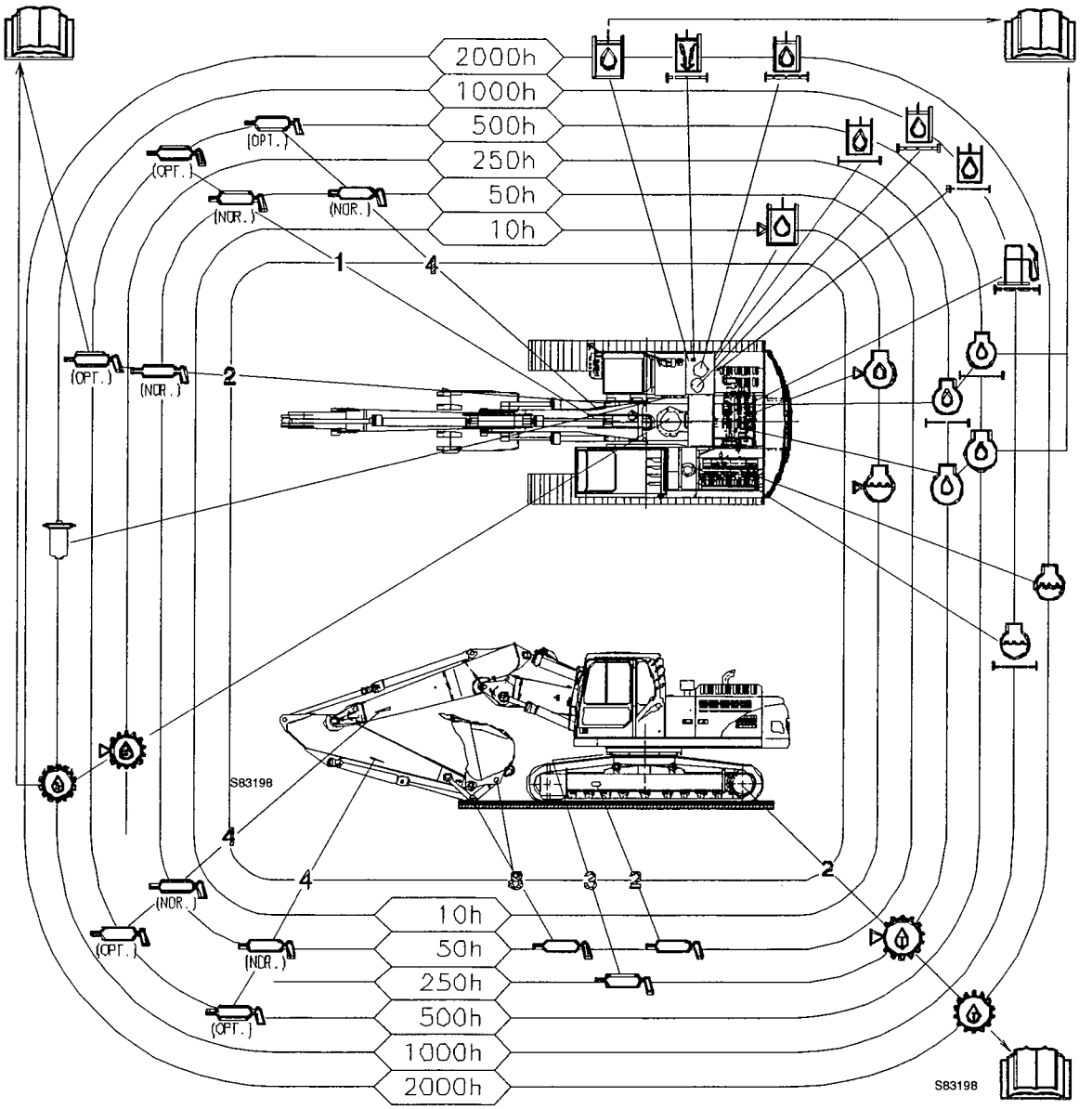
Grease specification: See ***Recommended lubricants*** on page 211.




1 Boom cylinder mounting pin (2 points)
2 Boom mounting pin (2 points)
3 Boom cylinder rod end pin (2 points)
4 Arm cylinder mounting pin (1 point)
5 Pin between of boom and arm (2 points)
6 Arm cylinder rod end pin (1 point)
7 Bucket cylinder mounting pin (1 point)
8 Pin between of arm and bucket (1 point)
9 Pin between of arm and link (1 point)
10 Pin between connecting rod and link (2 points)
11 Bucket cylinder rod end pin (1 point)
12 Pin between bucket and connecting rod (2 points)

# Lubrication and service chart

## 10 (daily), 50, 250, 500, 1000 and 2000 hour services



# Bucket & arm combination

## Volvo bucket and LC undercarriage

| Description | | | Direct fit-GP bucket | | | Quick fit-GP bucket | |
|---|---|---|---|---|---|---|---|
| Bucket capacity: SAE<br>: CECE | | | 950 *l*<br>1.24 $yd^3$<br>860 *l* | 1100 *l*<br>1.44 $yd^3$<br>990 *l* | 1250 *l*<br>1.64 $yd^3$<br>1120 *l* | 950 *l*<br>1.24 $yd^3$<br>860 *l* | 1100 *l*<br>1.44 $yd^3$<br>990 *l* |
| Cutting width | | | 1050 mm | 1180 mm | 1310 mm | 1050 mm | 1180 mm |
| Weight | | | 765 kg | 815 kg | 880 kg | 715 kg | 762 kg |
| No. of teeth | | | 4 | 4 | 5 | 4 | 4 |
| Application | | | General purpose | | | | |
| Boom 5.7 m + Arm 2.9 m | | 3700 kg Counterweight | B | C | D | C | C |
| Boom 6.0 m + Arm options | 2.5 m | | A | C | C | B | C |
| | 2.9 HD m | | B | C | D | C | C |
| | 3.9 m | | C | D | D | D | D |

A: Applicable for general purpose up to 2000 kg/$m^3$
B: Applicable for general purpose up to 1800 kg/$m^3$
C: Applicable for general purpose up to 1500 kg/$m^3$
D: Applicable for general purpose up to 1200 kg/$m^3$
E: Not available

## Volvo bucket and LC undercarriage

| Description | | | Direct fit-GP bucket | | | Quick fit-GP bucket | |
|---|---|---|---|---|---|---|---|
| Bucket capacity: SAE<br>: CECE | | | 950 *l*<br>1.24 $yd^3$<br>860 *l* | 1100 *l*<br>1.44 $yd^3$<br>990 *l* | 1250 *l*<br>1.64 $yd^3$<br>1120 *l* | 950 *l*<br>1.24 $yd^3$<br>860 *l* | 1100 *l*<br>1.44 $yd^3$<br>990 *l* |
| Cutting width | | | 1050 mm | 1180 mm | 1310 mm | 1050 mm | 1180 mm |
| Weight | | | 765 kg | 815 kg | 880 kg | 715 kg | 762 kg |
| No. of teeth | | | 4 | 5 | 5 | 4 | 5 |
| Application | | | General purpose | | | | |
| Boom 5.7 m + Arm 2.9 m | | 4200 kg Counterweight | A | C | C | B | C |
| Boom 6.0 m + Arm options | 2.5 m | | A | B | C | A | B |
| | 2.9 HD m | | B | C | C | B | C |
| | 3.9 m | | C | D | D | C | D |

A: Applicable for general purpose up to 2000 kg/$m^3$
B: Applicable for general purpose up to 1800 kg/$m^3$
C: Applicable for general purpose up to 1500 kg/$m^3$
D: Applicable for general purpose up to 1200 kg/$m^3$
E: Not available