

# SECTION 1 GENERAL



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## SECTION 1 GENERAL

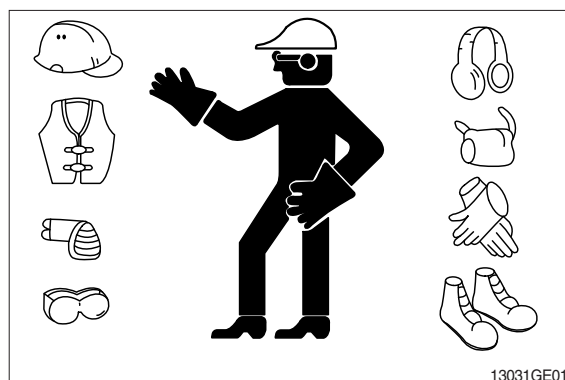
### GROUP 1 SAFETY

#### FOLLOW SAFE PROCEDURE

Unsafe work practices are dangerous. Understand service procedure before doing work; do not attempt shortcuts.

#### WEAR PROTECTIVE CLOTHING

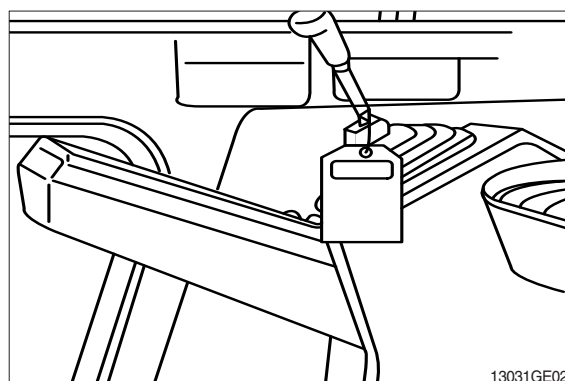
Wear close fitting clothing and safety equipment appropriate to the job.



#### WARN OTHERS OF SERVICE WORK

Unexpected machine movement can cause serious injury.

Before performing any work on the excavator, attach a 「Do Not Operate」 tag on the right side control lever.



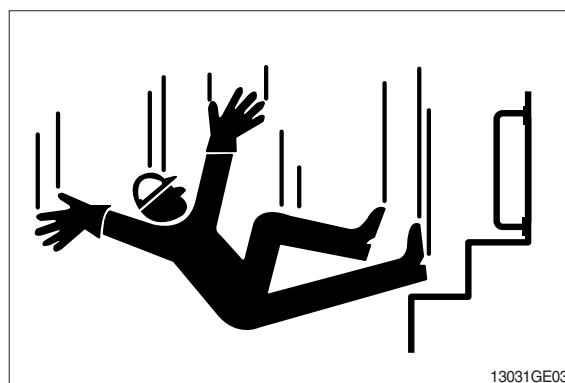
#### USE HANDHOLDS AND STEPS

Falling is one of the major causes of personal injury.

When you get on and off the machine, always maintain a three point contact with the steps and handrails and face the machine. Do not use any controls as handholds.

Never jump on or off the machine. Never mount or dismount a moving machine.

Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine.

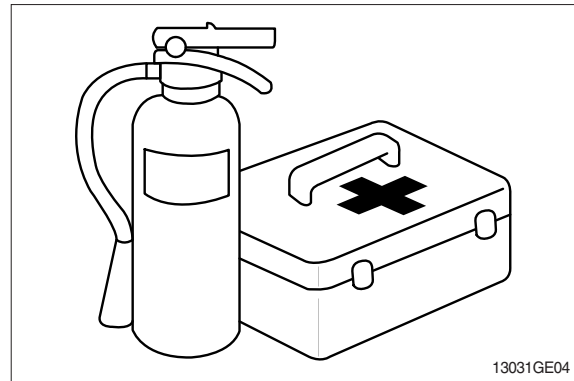


## PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

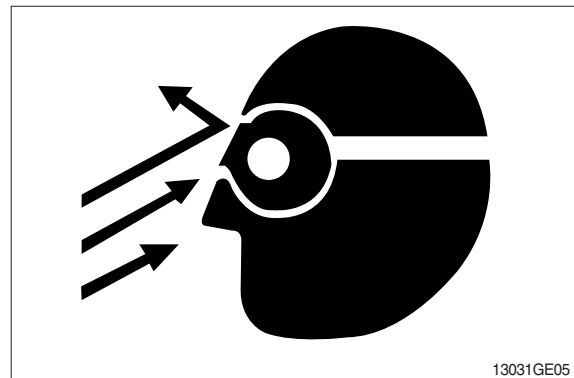
Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



## PROTECT AGAINST FLYING DEBRIS

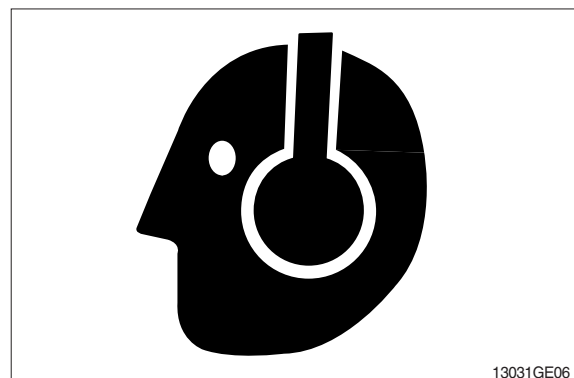
Guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.



## PROTECT AGAINST NOISE

Prolonged exposure to loud noise can cause impairment or loss of hearing.

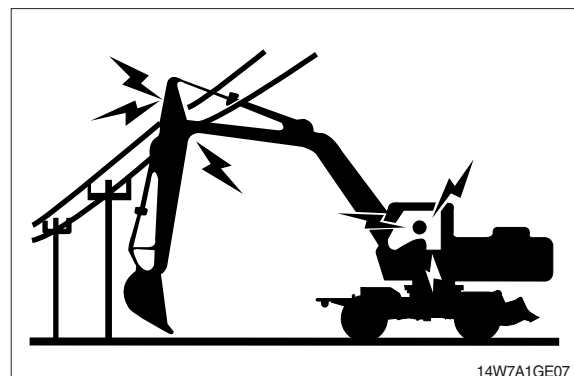
Wear a suitable hearing protective device such as ear-muffs or earplugs to protect against objectionable or uncomfortable loud noises.



## AVOID POWER LINES

Serious injury or death can result from contact with electric lines.

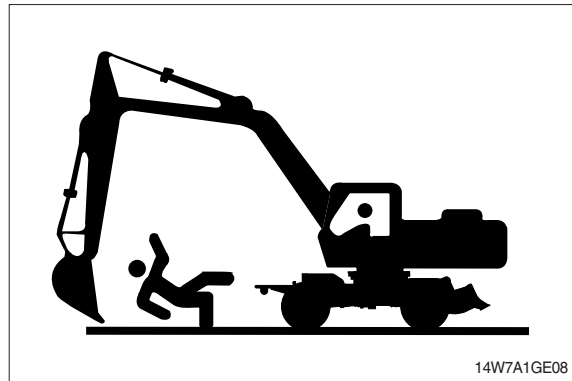
Never move any part of the machine or load closer to electric line than 3 m (10 ft) plus twice the line insulator length.



## KEEP RIDERS OFF EXCAVATOR

Only allow the operator on the excavator. Keep riders off.

Riders on excavator are subject to injury such as being struck by foreign objects and being thrown off the excavator. Riders also obstruct the operator's view resulting in the excavator being operated in an unsafe manner.

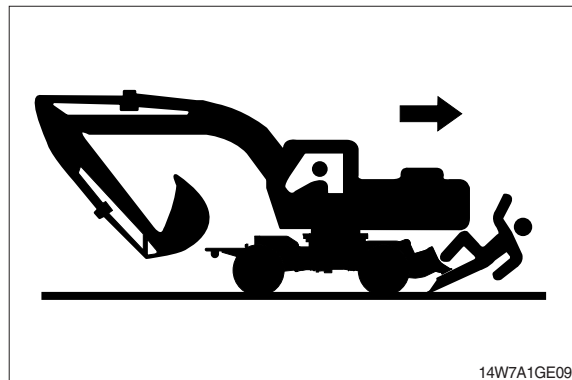


## MOVE AND OPERATE MACHINE SAFELY

Bystanders can be run over. Know the location of bystanders before moving, swinging, or operating the machine.

Always keep the travel alarm in working condition. It warns people when the excavator starts to move.

Use a signal person when moving, swinging, or operating the machine in congested areas. Coordinate hand signals before starting the excavator.



## OPERATE ONLY FROM OPERATOR'S SEAT

Avoid possible injury machine damage. Do not start engine by shorting across starter terminals.

NEVER start engine while standing on ground. Start engine only from operator's seat.



## PARK MACHINE SAFELY

Before working on the machine:

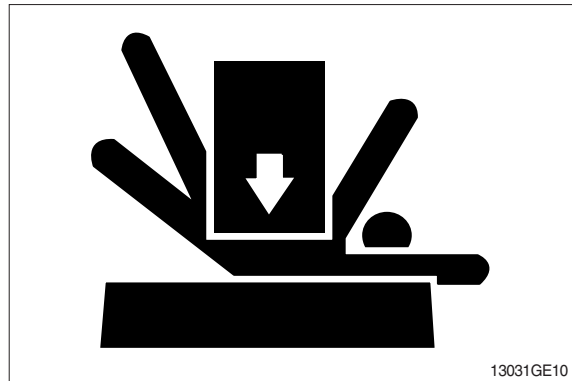
- Park machine on a level surface.
- Lower bucket to the ground.
- Turn auto idle switch off.
- Run engine at 1/2 speed without load for 2 minutes.
- Turn key switch to OFF to stop engine.
  - Remove key from switch.
- Move pilot control shutoff lever to locked position.
- Allow engine to cool.

### SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load.

Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



### SERVICE COOLING SYSTEM SAFELY

Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands.



### HANDLE FLUIDS SAFELY-AVOID FIRES

Handle fuel with care; it is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks. Always stop engine before refueling machine.

Fill fuel tank outdoors.



Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags ; they can ignite and burn spontaneously.



## BEWARE OF EXHAUST FUMES

Prevent asphyxiation. Engine exhaust fumes can cause sickness or death.

If you must operate in a building, be positive there is adequate ventilation. Either use an exhaust pipe extension to remove the exhaust fumes or open doors and windows to bring enough outside air into the area.

## REMOVE PAINT BEFORE WELDING OR HEATING

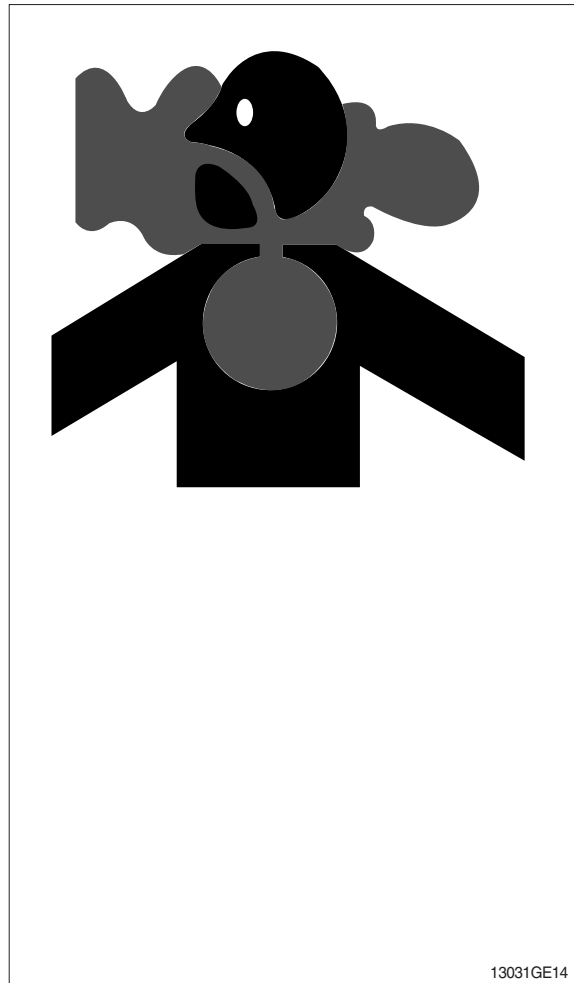
Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

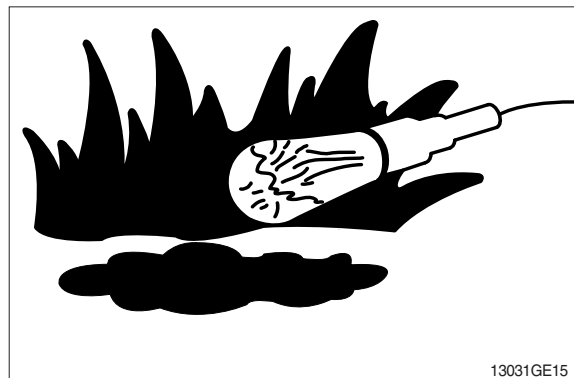
Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



## ILLUMINATE WORK AREA SAFELY

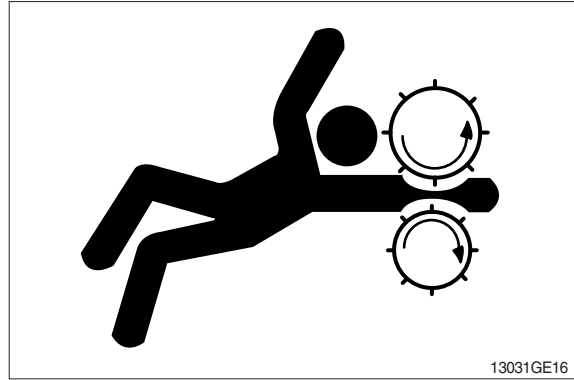
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.



### SERVICE MACHINE SAFELY

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

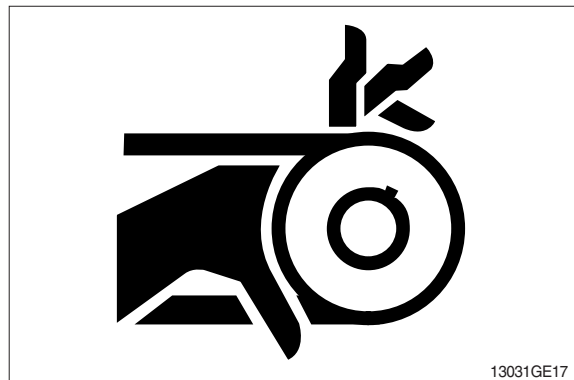
Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



### STAY CLEAR OF MOVING PARTS

Entanglements in moving parts can cause serious injury.

To prevent accidents, use care when working around rotating parts.



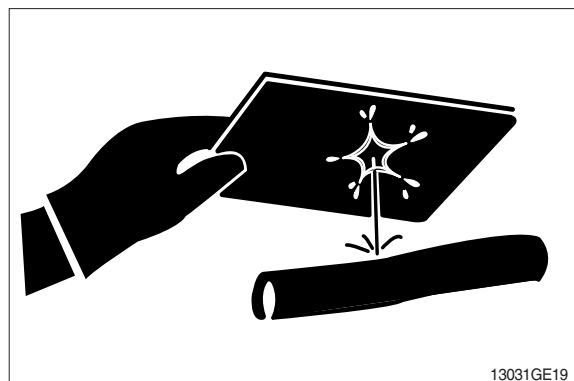
### AVOID HIGH PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.



## AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials.

Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area. Install fire resisting guards to protect hoses or other materials.



## PREVENT BATTERY EXPLOSIONS

Keep sparks, lighted matches, and flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



## PREVENT ACID BURNS

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

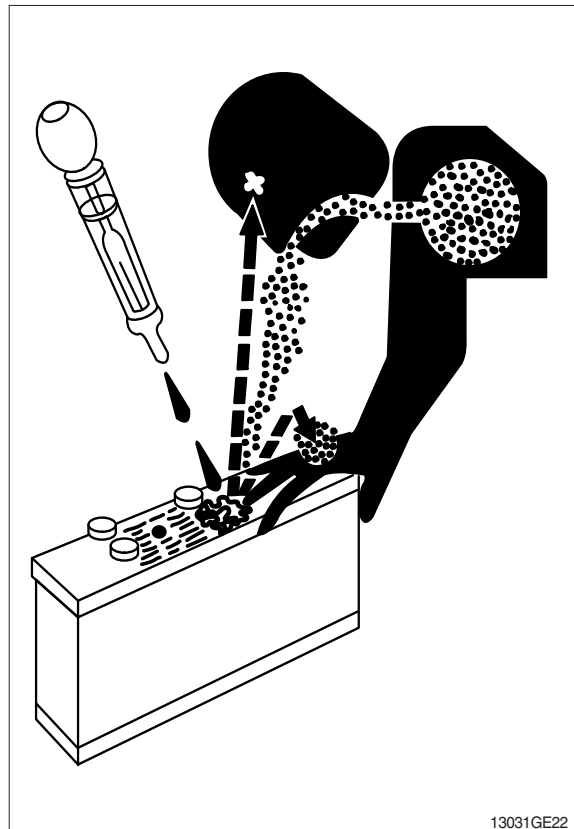
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 10-15 minutes.  
Get medical attention immediately.

If acid is swallowed:

1. Drink large amounts of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.





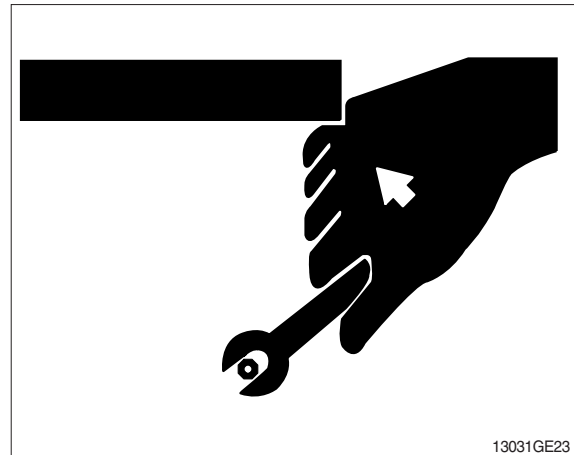
## USE TOOLS PROPERLY

Use tools appropriate to the work. Makeshift tools, parts, and procedures can create safety hazards.

Use power tools only to loosen threaded tools and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only recommended replacement parts.(See Parts manual.)

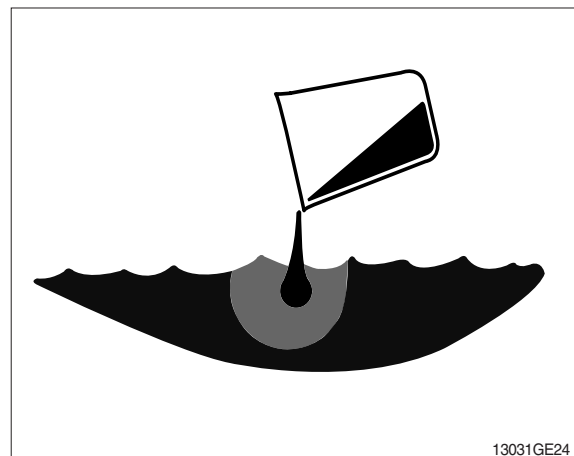


## DISPOSE OF FLUIDS PROPERLY

Improperly disposing of fluids can harm the environment and ecology. Before draining any fluids, find out the proper way to dispose of waste from your local environmental agency.

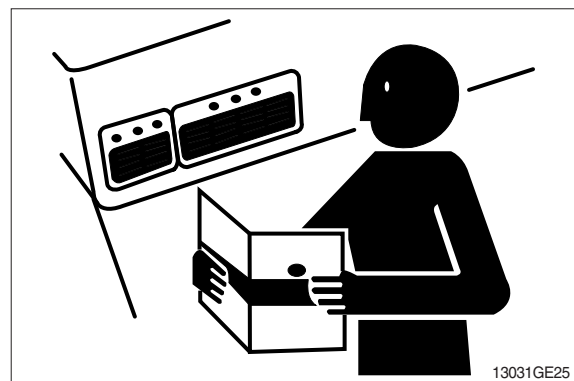
Use proper containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

DO NOT pour oil into the ground, down a drain, or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, brake fluid, filters, batteries, and other harmful waste.



## REPLACE SAFETY SIGNS

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

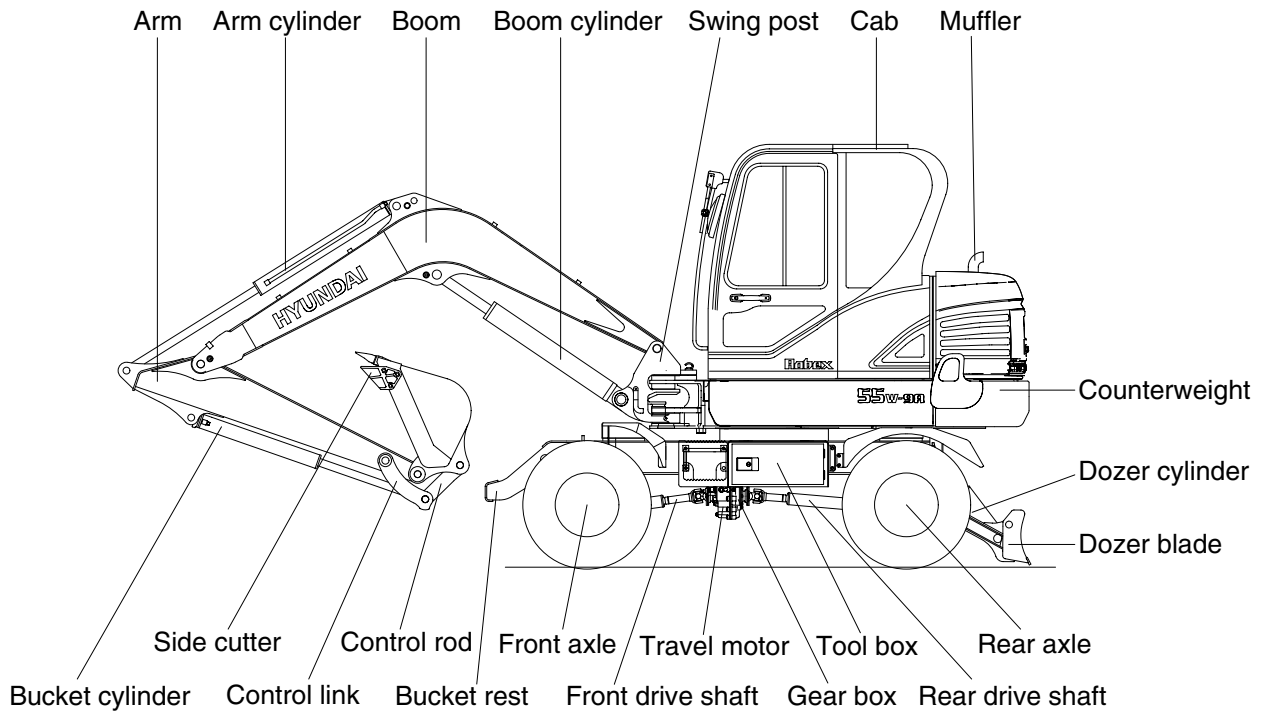
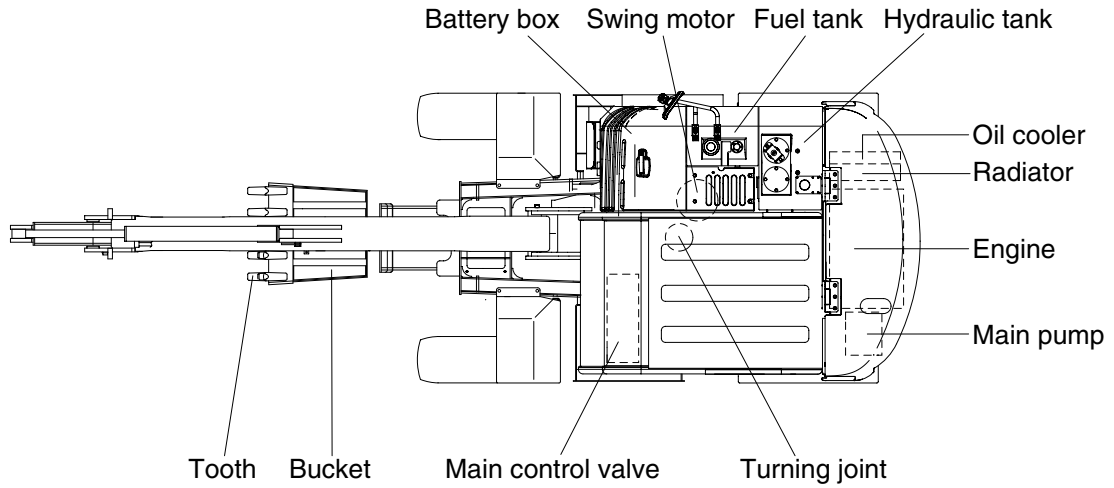


## LIVE WITH SAFETY

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.

# GROUP 2 SPECIFICATIONS

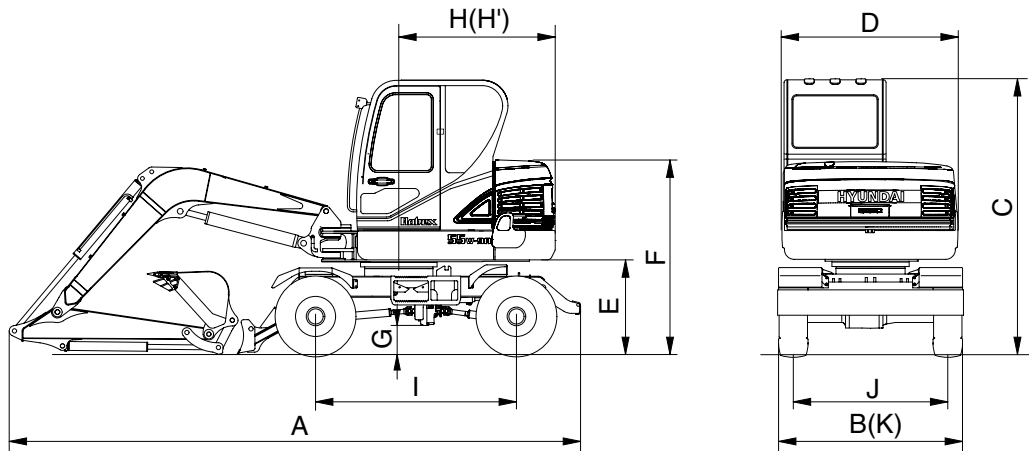
## 1. MAJOR COMPONENT



55W9A2SP01

## 2. SPECIFICATIONS

### 1) 3.0 m (9'10") MONO BOOM, 1.6 m (5' 3") ARM WITH BOOM SWING SYSTEM

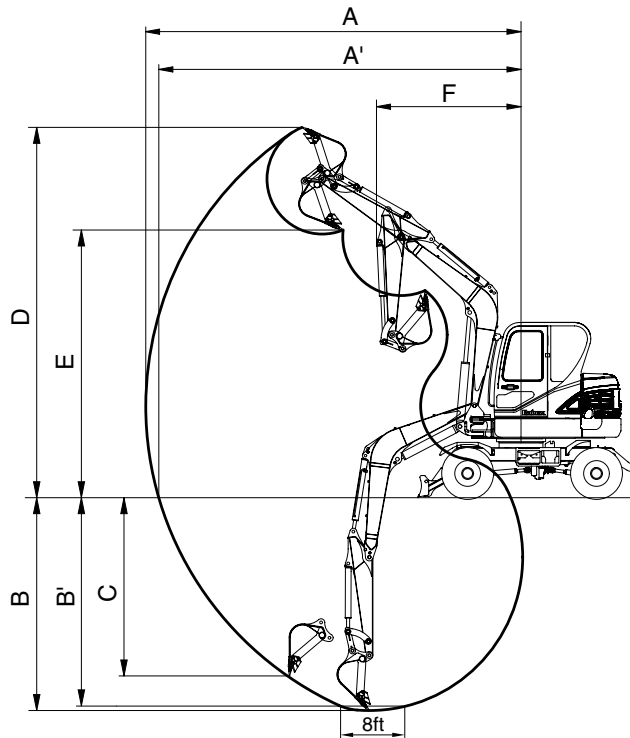


55W9A2SP02

| Description                           |      | Unit                              | Specification |
|---------------------------------------|------|-----------------------------------|---------------|
| Operating weight                      |      | kg (lb)                           | 5550 (12240)  |
| Bucket capacity(SAE heaped), standard |      | m <sup>3</sup> (yd <sup>3</sup> ) | 0.18 (0.24)   |
| Overall length                        | A    | mm (ft-in)                        | 5970 (19' 6") |
| Overall width                         | B    |                                   | 1925 ( 6' 4") |
| Overall height                        | C    |                                   | 2850 ( 9' 4") |
| Upperstructure width                  | D    |                                   | 1850 ( 6' 1") |
| Ground clearance of counterweight     | E    |                                   | 986 ( 3' 3")  |
| Engine cover height                   | F    |                                   | 1970 ( 6' 6") |
| Minimum ground clearance              | G    |                                   | 290 (11.4")   |
| Rear-end distance                     | H    |                                   | 1650 ( 5' 5") |
| Rear-end swing radius                 | H'   |                                   | 1650 ( 5' 5") |
| Wheel base                            | I    |                                   | 2100 ( 6'11") |
| Tread                                 | J    |                                   | 1600 ( 5' 3") |
| Dozer blade width                     | K    |                                   | 1925 ( 6' 4") |
| Travel speed                          | Low  |                                   | km/hr (mph)   |
|                                       | High | 30 (18.7)                         |               |
| Swing speed                           |      | rpm                               | 7.8           |
| Gradeability                          |      | Degree (%)                        | 35 (70)       |
| Max traction force                    |      | kg (lb)                           | 3400 (7500)   |

### 3. WORKING RANGE

#### 1) 3.0 m (9'10") MONO BOOM WITH BOOM SWING SYSTEM



55W9A2SP03



| Description                     |     | 1.6 m (5' 3") Arm |
|---------------------------------|-----|-------------------|
| Max digging reach               | A   | 6150 mm (20' 2")  |
| Max digging reach on ground     | A'  | 5980 mm (19' 7")  |
| Max digging depth               | B   | 3500 mm (11' 6")  |
| Max digging depth (8 ft level)  | B'  | 3100 mm (10' 2")  |
| Max vertical wall digging depth | C   | 2960 mm ( 9' 9")  |
| Max digging height              | D   | 6070 mm (19' 11") |
| Max dumping height              | E   | 4340 mm (14' 3")  |
| Min swing radius                | F   | 2350 mm ( 7' 9")  |
| Boom swing radius (left/right)  |     | 80°/50°           |
| Bucket digging force            | SAE | 37.7 kN           |
|                                 |     | 3850 kgf          |
|                                 |     | 8490 lbf          |
|                                 | ISO | 42.4 kN           |
|                                 |     | 4330 kgf          |
|                                 |     | 9550 lbf          |
| Arm crowd force                 | SAE | 28.4 kN           |
|                                 |     | 2900 kgf          |
|                                 |     | 6390 lbf          |
|                                 | ISO | 31.9 kN           |
|                                 |     | 3260 kgf          |
|                                 |     | 7190 lbf          |











#### 4. WEIGHT

| Item   | R55W-9A |      |
|--|---------|------|
|  | kg      | lb   |
| Upperstructure assembly  | 2680    | 5910 |
| Main frame weld assembly   | 600     | 1320 |
| Engine assembly  | 280     | 620  |
| Main pump assembly   | 30      | 70   |
| Main control valve assembly  | 40      | 90   |
| Swing motor assembly   | 75      | 165  |
| Hydraulic oil tank assembly  | 90      | 200  |
| Fuel tank assembly   | 60      | 130  |
| Boom swing post  | 110     | 240  |
| Counterweight  | 210     | 460  |
| Cab assembly   | 350     | 770  |
| Lower chassis assembly   | 2080    | 4590 |
| Lower frame weld assembly  | 550     | 1210 |
| Swing bearing  | 90      | 200  |
| Travel motor assembly  | 40      | 90   |
| Turning joint  | 30      | 70   |
| Gear box   | 94      | 207  |
| Front axle assembly  | 280     | 617  |
| Rear axle assembly   | 200     | 440  |
| Dozer blade assembly   | 200     | 440  |
| Front attachment assembly (3.0 m boom, 1.6 m arm, 0.18 m <sup>3</sup> SAE heaped bucket) | 790     | 1740 |
| 3.0 m boom assembly  | 240     | 530  |
| 1.6 m arm assembly   | 130     | 290  |
| 0.18 m <sup>3</sup> SAE heaped bucket assembly   | 170     | 370  |
| Boom cylinder assembly   | 70      | 155  |
| Arm cylinder assembly  | 60      | 130  |
| Bucket cylinder assembly   | 35      | 80   |
| Bucket control link assembly   | 40      | 90   |
| Boom swing cylinder assembly   | 40      | 90   |
| Blade cylinder assembly  | 30      | 70   |











## 5. LIFTING CAPACITIES

1) 3.0 m ( 9'10") boom, 1.6 m ( 5' 3") arm equipped with 0.18m<sup>3</sup> (SAE heaped) bucket and the dozer blade down.

-  : Rating over-front
-  : Rating over-side or 360 degree

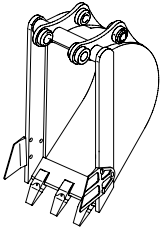
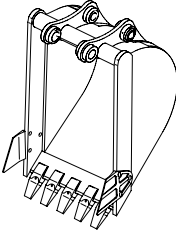
| Load point height |          | Load radius   |   |   |   |   |   |   |   | At max. reach   |   |                 |
|-------------------|----------|---|---|---|---|---|---|---|---|---|---|-----------------|
|                   |          | 2.0 m (7 ft)  |   | 3.0 m (10 ft)   |   | 4.0 m (13 ft)   |   | 5.0 m (16 ft)   |   | Capacity  |   | Reach<br>m (ft) |
|                   |          |  |  |  |  |  |  |  |  |  |  |                 |
| 5.0 m (16 ft)     | kg<br>lb |   |   |   |   |   |   |   |   | *960<br>*2120   | *960<br>*2120   | 4.47<br>(14.7)  |
| 4.0 m (13 ft)     | kg<br>lb |   |   |   |   | *1020<br>*2250  | *1020<br>*2250  |   |   | *990<br>*2180   | 720<br>1590   | 5.26<br>(17.3)  |
| 3.0 m (10 ft)     | kg<br>lb |   |   |   |   | *1150<br>*2540  | 1120<br>2470  | *990<br>*2180   | 760<br>1680   | *1020<br>*2250  | 620<br>1370   | 5.69<br>(18.7)  |
| 2.0 m (7 ft)      | kg<br>lb |   |   | *1900<br>*4190  | 1690<br>3730  | *1400<br>*3090  | 1070<br>2360  | *1200<br>*2650  | 740<br>1630   | *1070<br>*2360  | 570<br>1260   | 5.86<br>(19.2)  |
| 1.0 m (3 ft)      | kg<br>lb |   |   | *2500<br>*5510  | 1580<br>3480  | *1670<br>*3680  | 1020<br>2250  | *1310<br>*2890  | 720<br>1590   | *1110<br>*2450  | 570<br>1260   | 5.81<br>(19.1)  |
| Ground Line       | kg<br>lb | *2690<br>*5930  | *2690<br>*5930  | *2720<br>*6000  | 1530<br>3370  | *1820<br>*4010  | 990<br>2180   | *1350<br>*2980  | 700<br>1540   | *1160<br>*2560  | 620<br>1370   | 5.51<br>(18.1)  |
| -1.0 m (-3 ft)    | kg<br>lb | *4040<br>*8910  | 3040<br>6700  | *2610<br>*5750  | 1520<br>3350  | *1760<br>*3880  | 980<br>2160   |   |   | *1180<br>*2600  | 740<br>1630   | 4.92<br>(16.1)  |
| -2.0 m (-7 ft)    | kg<br>lb | *3400<br>*7500  | 3100<br>6830  | *2090<br>*4610  | 1550<br>3420  |   |   |   |   |   |   |                 |

2) 3.0 m ( 9'10") boom, 1.6 m ( 5' 3") arm equipped with 0.18m<sup>3</sup> (SAE heaped) bucket and the dozer blade up.

| Load point height |          | Load radius   |   |   |   |   |   |   |   | At max. reach   |   |                 |
|-------------------|----------|---|---|---|---|---|---|---|---|---|---|-----------------|
|                   |          | 2.0 m (7 ft)  |   | 3.0 m (10 ft)   |   | 4.0 m (13 ft)   |   | 5.0 m (16 ft)   |   | Capacity  |   | Reach<br>m (ft) |
|                   |          |  |  |  |  |  |  |  |  |  |  |                 |
| 5.0 m (16 ft)     | kg<br>lb |   |   |   |   |   |   |   |   | *960<br>*2120   | 880<br>1940   | 4.47<br>(14.7)  |
| 4.0 m (13 ft)     | kg<br>lb |   |   |   |   | *1020<br>*2250  | *1020<br>*2250  |   |   | 760<br>1680   | 650<br>1430   | 5.26<br>(17.3)  |
| 3.0 m (10 ft)     | kg<br>lb |   |   |   |   | *1150<br>*2540  | 1010<br>2230  | 810<br>1790   | 690<br>1520   | 650<br>1430   | 550<br>1210   | 5.69<br>(18.7)  |
| 2.0 m (7 ft)      | kg<br>lb |   |   | 1770<br>3900  | 1510<br>3330  | 1130<br>2490  | 960<br>2120   | 790<br>1740   | 670<br>1480   | 610<br>1340   | 510<br>1120   | 5.86<br>(19.2)  |
| 1.0 m (3 ft)      | kg<br>lb |   |   | 1660<br>3660  | 1410<br>3110  | 1080<br>2380  | 910<br>2010   | 760<br>1680   | 640<br>1410   | 610<br>1340   | 510<br>1120   | 5.81<br>(19.1)  |
| Ground Line       | kg<br>lb | *2690<br>*5930  | 2630<br>5800  | 1610<br>3550  | 1360<br>3000  | 1040<br>2290  | 880<br>1940   | 750<br>1650   | 630<br>1390   | 650<br>1430   | 550<br>1210   | 5.51<br>(18.1)  |
| -1.0 m (-3 ft)    | kg<br>lb | 3210<br>7080  | 2650<br>5840  | 1600<br>3530  | 1350<br>2980  | 1040<br>2290  | 870<br>1920   |   |   | 790<br>1740   | 660<br>1460   | 4.92<br>(16.1)  |
| -2.0 m (-7 ft)    | kg<br>lb | 3270<br>7210  | 2700<br>5950  | 1630<br>3590  | 1380<br>3040  |   |   |   |   |   |   |                 |

- Note
1. Lifting capacity are based on SAE J1097 and ISO 10567.
  2. Lifting capacity of the ROBEX series does not exceed 75% of tipping load with the machine on firm, level ground or 87% of full hydraulic capacity.
  3. The load point is a hook located on the back of the bucket.
  4. \*indicates load limited by hydraulic capacity.

## 6. BUCKET SELECTION GUIDE

|   |   |
|---|---|
|  |  |
| <p>0.07m<sup>3</sup> SAE<br/>heaped bucket</p>                                    | <p>0.18 m<sup>3</sup> SAE<br/>heaped bucket</p>                                     |

| Capacity                                       |  | Width               |                   | Weight             | Recommendation   |
|--|--|---------------------|-------------------|--------------------|--|
|  |  |                     |                   |                    | 3.0 m (9' 10") boom  |
| SAE heaped                                     | CECE heaped                                    | Without side cutter | With side cutter  |                    | 1.6 m (5' 3") arm  |
| 0.07 m <sup>3</sup><br>(0.09 yd <sup>3</sup> ) | 0.06 m <sup>3</sup><br>(0.08 yd <sup>3</sup> ) | 315 mm<br>(12.4")   | 360 mm<br>(14.2") | 115 kg<br>(255 lb) | Applicable for materials with density of 1600 kgf/m <sup>3</sup><br>(2700 lb/yd <sup>3</sup> ) or less |
| 0.18 m <sup>3</sup><br>(0.24 yd <sup>3</sup> ) | 0.15 m <sup>3</sup><br>(0.20 yd <sup>3</sup> ) | 670 mm<br>(26.4")   | 740 mm<br>(29.1") | 170 kg<br>(375 lb) |  |

## 7. SPECIFICATIONS FOR MAJOR COMPONENTS

### 1) ENGINE

| Item                                | Specification                             |
|-------------------------------------|---|
| Model                               | Yanmar 4TNV98C                            |
| Type                                | 4-cycle diesel engine, low emission       |
| Cooling method                      | Water cooling                             |
| Number of cylinders and arrangement | 4 cylinders, in-line                      |
| Firing order                        | 1-3-4-2                                   |
| Combustion chamber type             | Direct injection type                     |
| Cylinder bore × stroke              | 98 × 110 mm (3.85" × 4.33")               |
| Piston displacement                 | 3319 cc (203 cu in)                       |
| Compression ratio                   | 18.5 : 1                                  |
| Rated gross horse power(SAE J1995)  | 66.9 Hp at 2400 rpm (49.9 kW at 2400 rpm) |
| Maximum torque at 1550rpm           | 24 kgf · m (173.6 lbf · ft)               |
| Engine oil quantity                 | 11.6 l (3.1 U.S. gal)                     |
| Dry weight                          | 270 kg (595 lb)                           |
| High idling speed                   | 2550+ 50 rpm                              |
| Low idling speed                    | 1000 ± 100 rpm                            |
| Rated fuel consumption              | 176 g/Hp · hr at 2400 rpm                 |
| Starting motor                      | 12V-3.0 kW                                |
| Alternator                          | 12V-80A(-#0214), 12V-100 A(#0215-)        |
| Battery                             | 1 × 12V × 100Ah                           |

### 2) MAIN PUMP

| Item             | Specification                                  |
|------------------|--|
| Type             | Variable displacement tandem axis piston pumps |
| Capacity         | 2 × 25 cc/rev                                  |
| Maximum pressure | 220 kgf/cm <sup>2</sup> (3130 psi)             |
| Rated oil flow   | 2 × 63.5 l /min (16.5 U.S. gpm/ 13.7 U.K. gpm) |
| Rated speed      | 2500 rpm                                       |



### 3) GEAR PUMP

| Item             | Specification   |
|------------------|---|
| Type             | Fixed displacement gear pump single stage             |
| Capacity         | 16.2/6.5 cc/rev                                       |
| Maximum pressure | 220/30 kgf/cm <sup>2</sup> (3130/430 psi)             |
| Rated oil flow   | 40.5/16.3 l /min (10.7/4.3 U.S. gpm/8.9/3.6 U.K. gpm) |

### 4) MAIN CONTROL VALVE

| Item                           | Specification                      |
|--------------------------------|------------------------------------|
| Type                           | 9 spools sectional block           |
| Operating method               | Hydraulic pilot system             |
| Main relief valve pressure     | 220 kgf/cm <sup>2</sup> (3130 psi) |
| Overload relief valve pressure | 240 kgf/cm <sup>2</sup> (3410 psi) |

### 5) SWING MOTOR

| Item                   | Specification                                |
|------------------------|--|
| Type                   | Two fixed displacement axial piston motor    |
| Capacity               | 32.3 cc/rev                                  |
| Relief pressure        | 220 kgf/cm <sup>2</sup> (3130 psi)           |
| Braking system         | Automatic, spring applied hydraulic released |
| Braking torque         | 14 kgf · m (101 lbf · ft)                    |
| Brake release pressure | 20~40 kgf/cm <sup>2</sup> (284~570 psi)      |
| Reduction gear type    | 2 - stage planetary                          |

### 6) TRAVEL MOTOR

| Item                 | Specification   |
|----------------------|---|
| Type                 | Bent axis design variable displacement axial piston motor |
| Relief pressure      | 220 kgf/cm <sup>2</sup> (3130 psi)                        |
| Counterbalance valve | Applied   |
| Capacity             | 80 cc   |

## 7) POWER TRAIN

| Item          | Description           |     | Specification                            |
|---------------|-----------------------|-----|--|
| Gear box      | Type                  |     | 2 speed hydrostatic                      |
|               | Gear ratio            | 1st | 6.357                                    |
|               |                       | 2nd | 1.961                                    |
| Parking brake | Type                  |     | Multi disc brake integrated in rear axle |
|               | Maximum braking power |     | 700 kgf · m (5060 lbf · ft)              |
| Axle          | Type                  |     | 4 wheel drive with differential          |
|               | Gear ratio            |     | 8.67                                     |
|               | Brake                 |     | Multi disc brake                         |

## 8) CYLINDER

| Item                | Specification               |                      |
|---------------------|-----------------------------|----------------------|
| Boom cylinder       | Bore dia × Rod dia × Stroke | ø 110 × ø 65 × 715mm |
|                     | Cushion                     | Extend only          |
| Arm cylinder        | Bore dia × Rod dia × Stroke | ø 90 × ø 55 × 850mm  |
|                     | Cushion                     | Extend and retract   |
| Bucket cylinder     | Bore dia × Rod dia × Stroke | ø 80 × ø 50 × 660mm  |
|                     | Cushion                     | Extend only          |
| Dozer cylinder      | Bore dia × Rod dia × Stroke | ø 110 × ø 60 × 219mm |
|                     | Cushion                     | -                    |
| Boom swing cylinder | Bore dia × Rod dia × Stroke | ø 95 × ø 50 × 535mm  |
|                     | Cushion                     | -                    |

※ Discoloration of cylinder rod can occur when the friction reduction additive of lubrication oil spreads on the rod surface.

※ Discoloration does not cause any harmful effect on the cylinder performance.

## 9) BUCKET

| Item    |     | Capacity                                    |   | Tooth quantity | Width               |                  |
|---------|-----|---|---|----------------|---------------------|------------------|
|         |     | SAE heaped                                  | CECE heaped                                 |                | Without side cutter | With side cutter |
| R55W-9A | STD | 0.18 m <sup>3</sup> (0.24 yd <sup>3</sup> ) | 0.15 m <sup>3</sup> (0.20 yd <sup>3</sup> ) | 5              | 670 mm (26.4")      | 740 mm (29.1")   |
|         | OPT | 0.07 m <sup>3</sup> (0.09 yd <sup>3</sup> ) | 0.06 m <sup>3</sup> (0.08 yd <sup>3</sup> ) | 3              | 315 mm (12.4")      | 360 mm (14.2")   |

## 8. RECOMMENDED LUBRICANTS

Use only oils listed below or equivalent.

Do not mix different brand oil.

| Service point                | Kind of fluid  | Capacity<br>ℓ (U.S. gal)                           | Ambient temperature °C ( °F)                   |              |             |             |            |                |            |            |             |  |
|------------------------------|--|--|--|--------------|-------------|-------------|------------|----------------|------------|------------|-------------|--|
|                              |  |  | -50<br>(-58)                                   | -30<br>(-22) | -20<br>(-4) | -10<br>(14) | 0<br>(32)  | 10<br>(50)     | 20<br>(68) | 30<br>(86) | 40<br>(104) |  |
| Engine oil pan               | Engine oil   | 11.6 (3.1)   | ★SAE 5W-40                                     |              |             |             |            | SAE 30         |            |            |             |  |
|                              |  |  | SAE 10W  |              |             |             | SAE 10W-30 |                |            |            |             |  |
|                              |  |  | SAE 15W-40                                     |              |             |             |            |                |            |            |             |  |
|                              |  |  |  |              |             |             |            |                |            |            |             |  |
|                              |  |  |  |              |             |             |            |                |            |            |             |  |
| Swing drive                  | Grease   | 0.2 (0.1)  | ★NLGI NO.1                                     |              |             |             |            | NLGI NO.2      |            |            |             |  |
|                              | Gear oil   | 1.5 (0.4)  | ★SAE 75W-90                                    |              |             |             |            | SAE 85W-140    |            |            |             |  |
| Gear box case                | Gear oil   | 1.8 (0.5)  |  |              |             |             |            |                |            |            |             |  |
| Front axle                   |  | Center : 4.5 (1.19)<br>Hub : 0.4 × 2<br>(0.11 × 2) | SAE 85W-90 LSD(GL-5)                           |              |             |             |            |                |            |            |             |  |
| Rear axle                    |  | Center : 4.5 (1.19)<br>Hub : 0.4 × 2<br>(0.11 × 2) |  |              |             |             |            |                |            |            |             |  |
| Hydraulic tank               | Hydraulic oil  | Tank;<br>70 (18.5)                                 | ★ISO VG 15                                     |              |             |             |            | ISO VG 32      |            |            |             |  |
|                              |  | System;<br>120 (31.7)                              | ISO VG 46, HBHO VG 46★ <sup>3</sup>            |              |             |             |            | ISO VG 68      |            |            |             |  |
|                              |  |  |  |              |             |             |            |                |            |            |             |  |
|                              |  |  |  |              |             |             |            |                |            |            |             |  |
| Fuel tank                    | Diesel fuel★ <sup>1</sup>                                      | 120 (31.7)   | ★ASTM D975 NO.1                                |              |             |             |            | ASTM D975 NO.2 |            |            |             |  |
|                              |  |  |  |              |             |             |            |                |            |            |             |  |
| Fitting<br>(grease nipple)   | Grease   | As required  | ★NLGI NO.1                                     |              |             |             |            | NLGI NO.2      |            |            |             |  |
|                              |  |  |  |              |             |             |            |                |            |            |             |  |
| Radiator<br>(reservoir tank) | Mixture of<br>antifreeze<br>and water<br>50 : 50★ <sup>2</sup> | 9.5 (2.5)  | Ethylene glycol base permanent type            |              |             |             |            |                |            |            |             |  |
|                              |  |  | ★Ethylene glycol base permanent type (60 : 40) |              |             |             |            |                |            |            |             |  |

**SAE** : Society of Automotive Engineers  
**API** : American Petroleum Institute  
**ISO** : International Organization for Standardization  
**NLGI** : National Lubricating Grease Institute  
**ASTM** : American Society of Testing and Material  
**UTTO** : Universal Tractor Transmission Oil

★ : Cold region  
 Russia, CIS, Mongolia  
 ★<sup>1</sup> : Ultra low sulfur diesel  
 - sulfur content ≤ 15 ppm  
 ★<sup>2</sup> : Soft water  
 City water or distilled water  
 ★<sup>3</sup> : Hyundai Bio Hydraulic Oil  
 - For more information, contact HYUNDAI dealers.

- ※ Using any lubricating oils other than HYUNDAI genuine products may lead to a deterioration of performance and cause damage to major components.
- ※ Do not mix HYUNDAI genuine oil with any other lubricating oil as it may result in damage to the systems of major components.
- ※ Do not use any engine oil other than that specified above, as it may clog the diesel particulate filter(DPF).
- ※ For HYUNDAI genuine lubricating oils and grease for use in regions with extremely low temperatures, please contact HYUNDAI dealers.