

SECTION 1 GENERAL



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## SECTION 1 GENERAL

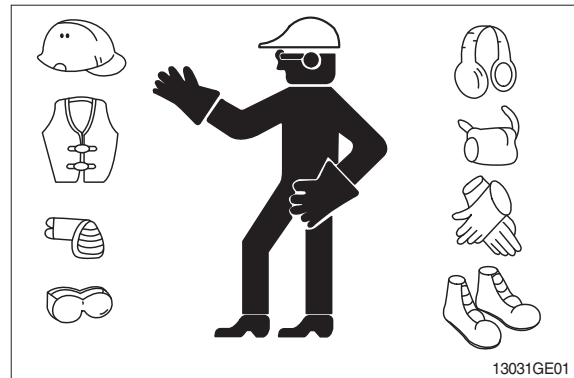
### GROUP 1 SAFETY

#### FOLLOW SAFE PROCEDURE

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

#### WEAR PROTECTIVE CLOTHING

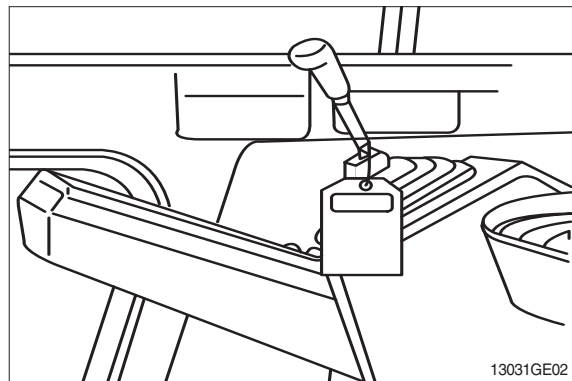
Wear close fitting clothing and safety equipment appropriate to the job.



#### 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.



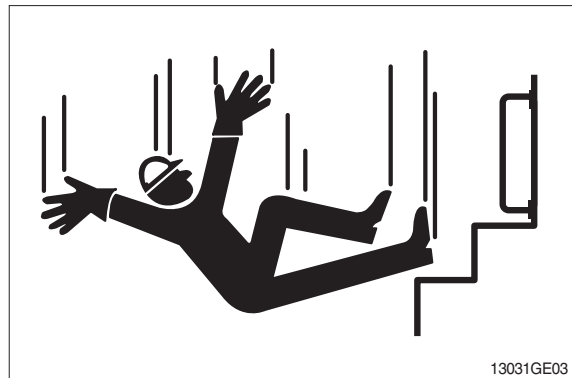
#### USE HANDHOLDS AND STEPS

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.

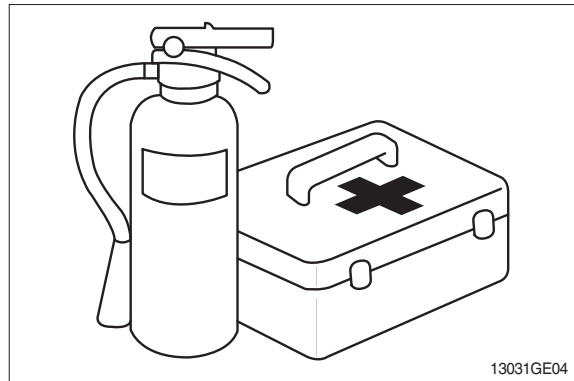


## PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

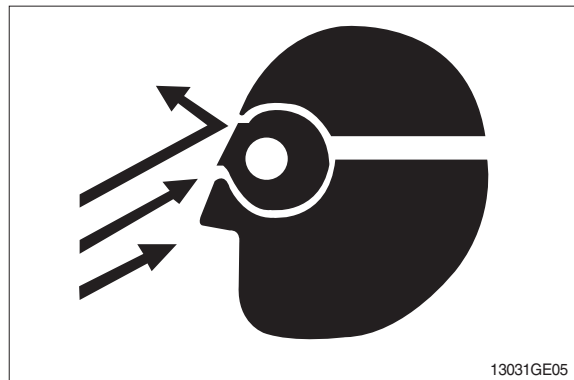
Keep a first aid kit and fire extinguisher handy.

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.

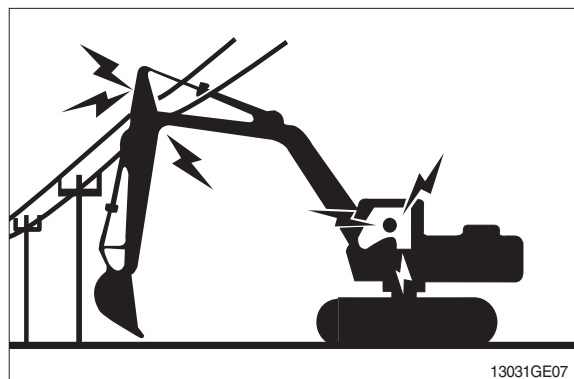
Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



## AVOID POWER LINES

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

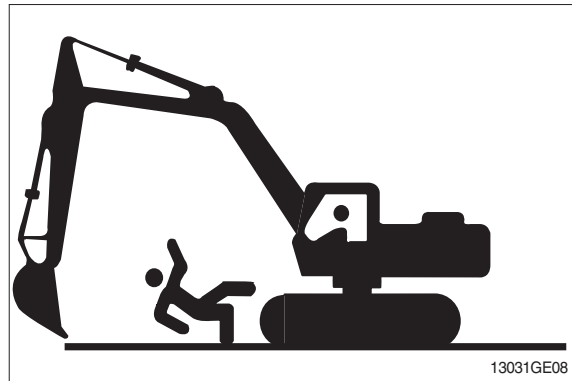
Never move any part of the machine or load closer to electric line than 3m(10ft) plus twice the line insulator length.



## 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.

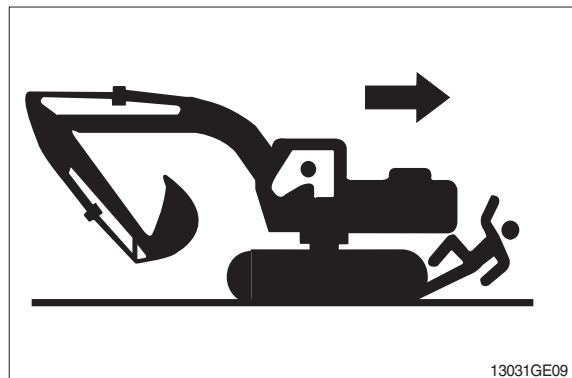


## MOVE AND OPERATE MACHINE SAFELY

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:

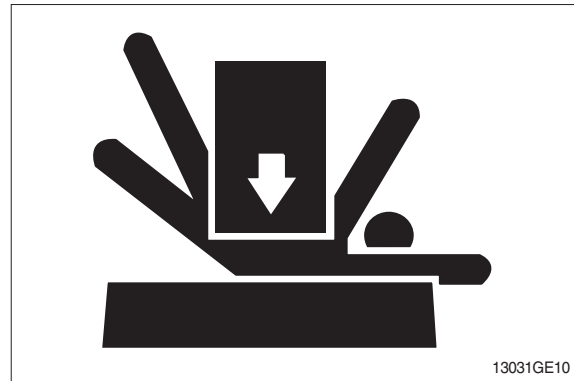
- Park machine on a level surface.
- Lower bucket to the ground.
- Turn auto idle switch off.
- Run engine at 1/2 speed without load for 2 minutes.
- Turn key switch to OFF to stop engine. Remove key from switch.
- Move pilot control shutoff lever to locked position.
- Allow engine to cool.

## 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

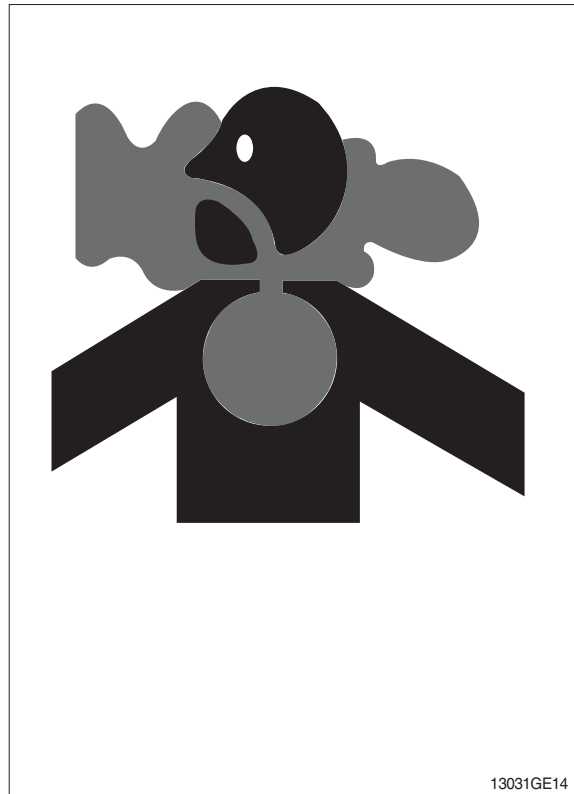
Avoid potentially toxic fumes and dust.

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

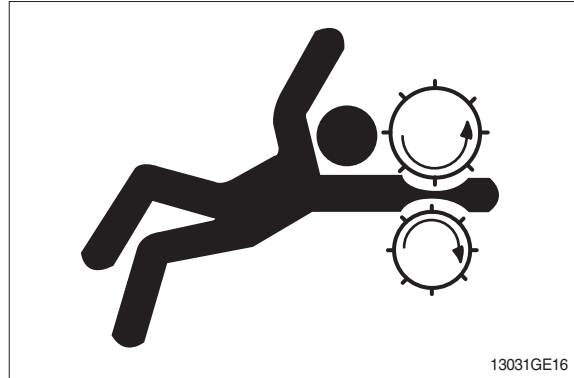
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.



## 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.

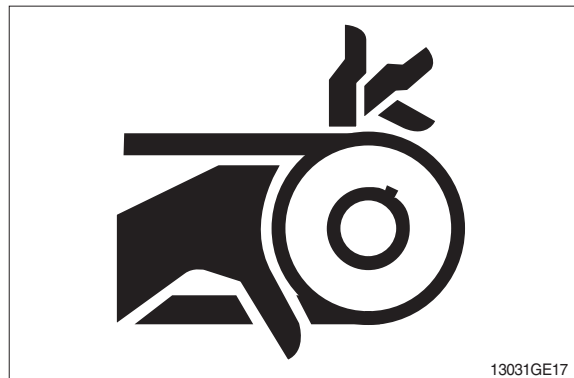
Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



## STAY CLEAR OF MOVING PARTS

Entanglements in moving parts can cause serious injury.

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



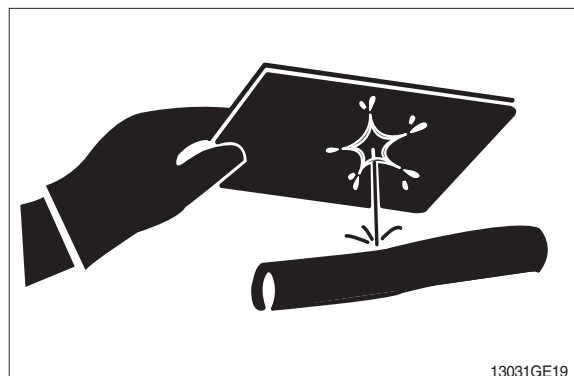
## AVOID HIGH PRESSURE FLUIDS

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:

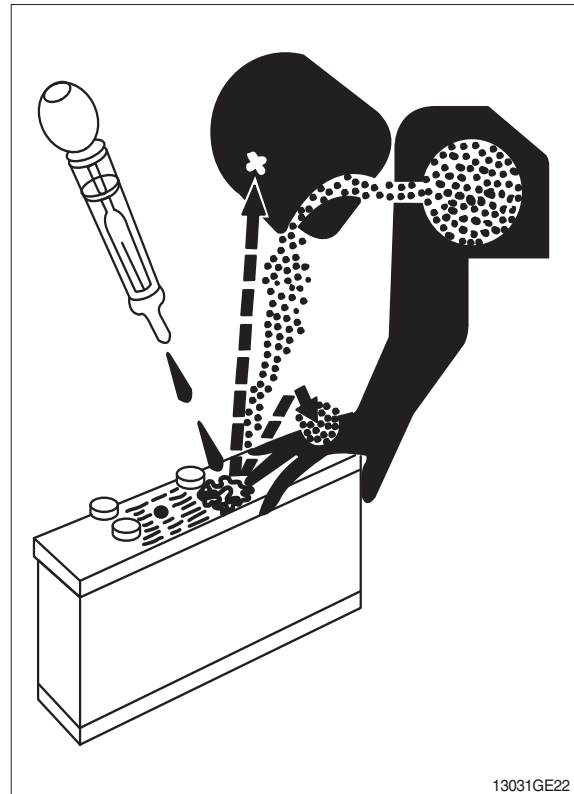
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

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.



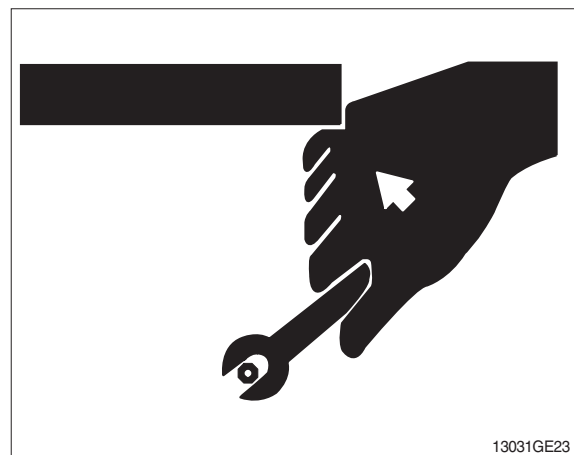
## USE TOOLS PROPERLY

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 catalogue.)

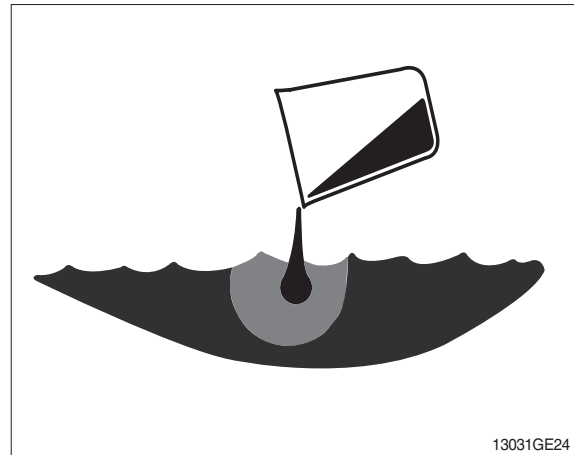


## DISPOSE OF FLUIDS PROPERLY

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.

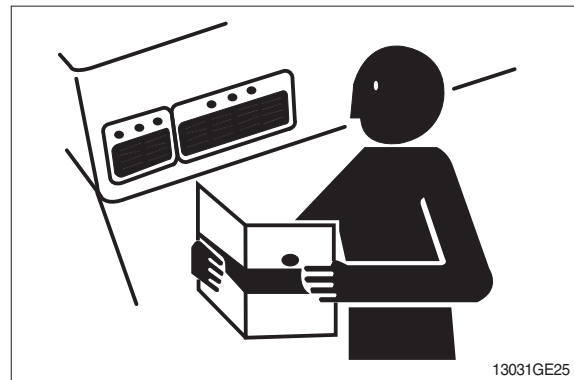
Use proper containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

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.

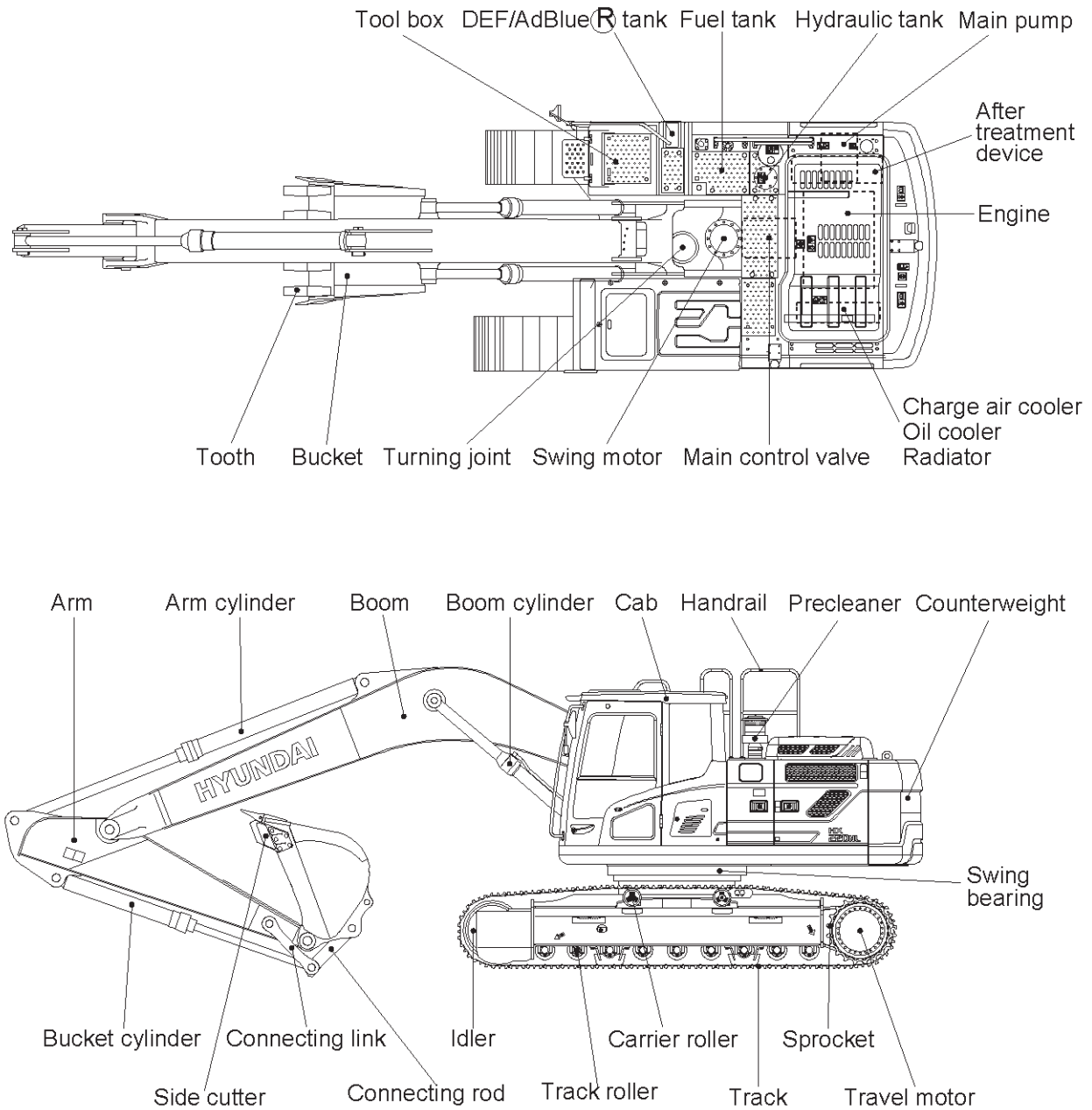


## LIVE WITH SAFETY

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

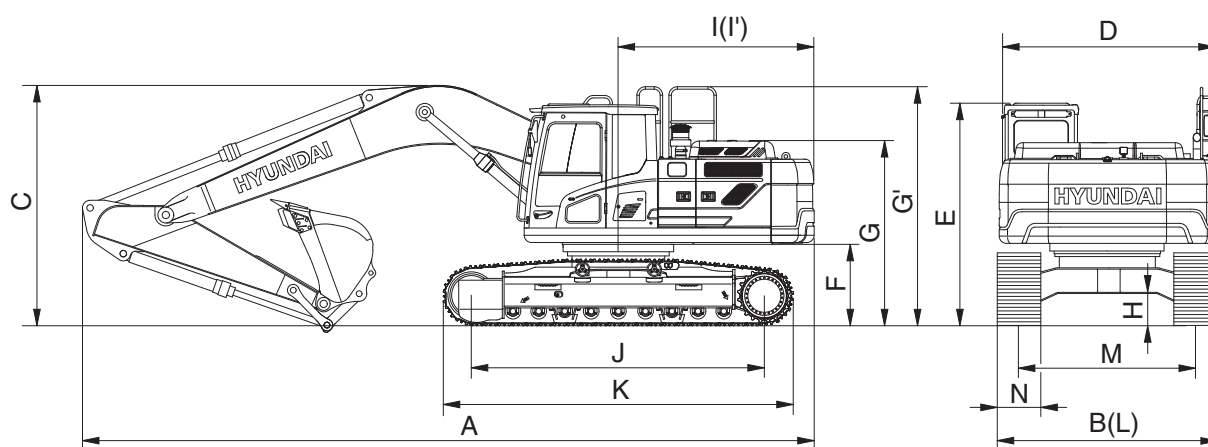


220F2SP01

## 2. SPECIFICATIONS

### 1) HX220 NL

· 5.65 m (18' 6") BOOM and 2.92 m (9' 7") ARM

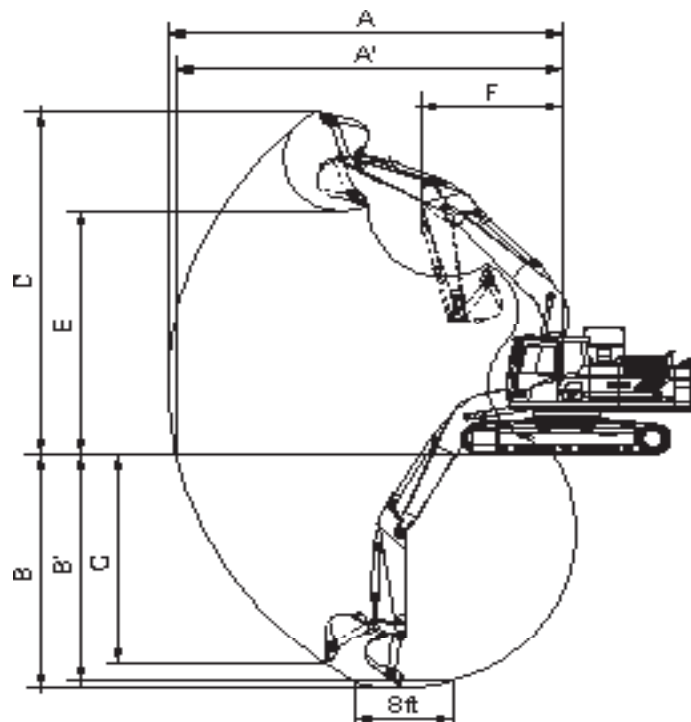


220F2SP02

| Description                            |    | Unit                              | Specification     |
|----------------------------------------|----|-----------------------------------|-------------------|
| Operating weight                       |    | kg (lb)                           | 22300 (49160)     |
| Bucket capacity (SAE heaped), standard |    | m <sup>3</sup> (yd <sup>3</sup> ) | 0.87 (1.14)       |
| Overall length                         | A  | mm (ft-in)                        | 9510 (31' 2")     |
| Overall width, with 500mm shoe         | B  |                                   | 2500 ( 8' 2")     |
| Overall height of boom                 | C  |                                   | 3100 ( 10' 2")    |
| Superstructure width                   | D  |                                   | 2530 ( 8' 4")     |
| Overall height of cab                  | E  |                                   | 3000 ( 9' 10")    |
| Ground clearance of counterweight      | F  |                                   | 1060 ( 3' 6")     |
| Overall height of engine hood          | G  |                                   | 2468 ( 8' 1")     |
| Overall height of guardrail            | G' |                                   | 3211 (10' 6")     |
| Minimum ground clearance               | H  |                                   | 480 ( 1' 7")      |
| Rear-end distance                      | I  |                                   | 2770 ( 9' 1")     |
| Rear-end swing radius                  | I' |                                   | 2850 ( 9' 4")     |
| Distance between tumblers              | J  |                                   | 3650 (12' 0")     |
| Undercarriage length                   | K  |                                   | 4440 (14' 7")     |
| Undercarriage width                    | L  |                                   | 2500 ( 8' 2")     |
| Track gauge                            | M  |                                   | 2000 ( 6' 7")     |
| Track shoe width, standard             | N  |                                   | 500 (20")         |
| Travel speed (low/high)                |    | km/hr (mph)                       | 3.4/5.3 (2.1/3.3) |
| Swing speed                            |    | rpm                               | 12.0              |
| Gradeability                           |    | Degree (%)                        | 35 (70)           |
| Ground pressure (600 mm shoe)          |    | kgf/cm <sup>2</sup> (psi)         | 0.57 (8.11)       |
| Max traction force                     |    | kg (lb)                           | 21100 (46500)     |

### 3. WORKING RANGE

- 5.65 m (18' 6") MONO BOOM

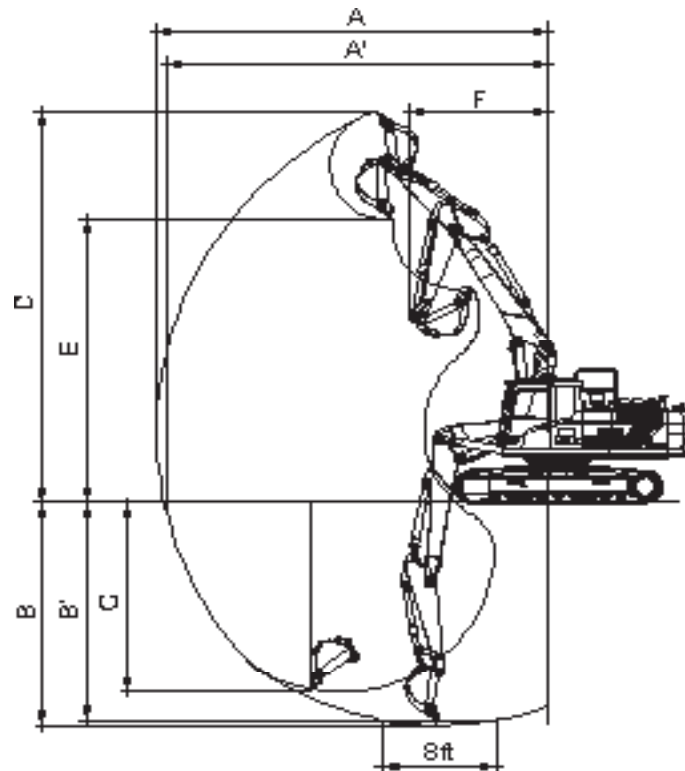


220NF2SP02

| Description                     |     | 2.0 m (6' 7") Arm | 2.4 m (7' 10") Arm | 2.92 m (9' 7") Arm |
|---------------------------------|-----|-------------------|--------------------|--------------------|
| Max digging reach               | A   | 9140 mm (30' 0")  | 9510 mm (31' 2")   | 9960 mm (32' 8")   |
| Max digging reach on ground     | A'  | 8960 mm (29' 5")  | 9340 mm (30' 8")   | 9800 mm (32' 2")   |
| Max digging depth               | B   | 5750 mm (18' 10") | 6150 mm (20' 2")   | 6640 mm (21' 9")   |
| Max digging depth (8 ft level)  | B'  | 5520 mm (18' 1")  | 5950 mm (19' 6")   | 6470 mm (21' 3")   |
| Max vertical wall digging depth | C   | 5320 mm (17' 5")  | 5780 mm (19' 0")   | 6250 mm (20' 6")   |
| Max digging height              | D   | 9270 mm (30' 5")  | 9500 mm (31' 2")   | 9740 mm (31' 11")  |
| Max dumping height              | E   | 6450 mm (21' 2")  | 6660 mm (21' 10")  | 6900 mm (22' 8")   |
| Min swing radius                | F   | 3710 mm (12' 2")  | 3630 mm (11' 11")  | 3580 mm (11' 9")   |
| Bucket digging force            | SAE | 133.4 [144.8] kN  | 133.4 [144.8] kN   | 133.4 [144.8] kN   |
|                                 |     | 13600 [14770] kgf | 13600 [14770] kgf  | 13600 [14770] kgf  |
|                                 |     | 29980 [32550] lbf | 29980 [32550] lbf  | 29980 [32550] lbf  |
|                                 | ISO | 152.0 [165.0] kN  | 152.0 [165.0] kN   | 152.0 [165.0] kN   |
|                                 |     | 15500 [16830] kgf | 15500 [16830] kgf  | 15500 [16830] kgf  |
|                                 |     | 34170 [37100] lbf | 34170 [37100] lbf  | 34170 [37100] lbf  |
| Arm digging force               | SAE | 144.2 [156.5] kN  | 102.0 [110.7] kN   | 119.6 [129.9] kN   |
|                                 |     | 14700 [15960] kgf | 10400 [11290] kgf  | 12200 [13250] kgf  |
|                                 |     | 32410 [35190] lbf | 22930 [24900] lbf  | 26900 [29210] lbf  |
|                                 | ISO | 151.0 [164.0] kN  | 106.9 [116.1] kN   | 125.5 [136.3] kN   |
|                                 |     | 15400 [16720] kgf | 10900 [11830] kgf  | 12800 [13900] kgf  |
|                                 |     | 33950 [36860] lbf | 24030 [26090] lbf  | 28220 [30640] lbf  |

[ ] : Power boost

## 2) 5.65 m (18' 6") HYDRAULIC ADJUSTABLE BOOM



220NF2SP03

| Description                     |     | 2.0 m (6' 7") Arm | 2.4 m (7' 10") Arm | 2.92 m (9' 7") Arm |
|---------------------------------|-----|-------------------|--------------------|--------------------|
| Max digging reach               | A   | 9120 mm (29' 11") | 9530 mm (31' 3")   | 10020 mm (32' 10") |
| Max digging reach on ground     | A'  | 8940 mm (29' 4")  | 9360 mm (30' 9")   | 9860 mm (32' 4")   |
| Max digging depth               | B   | 5480 mm (18' 0")  | 5890 mm (19' 4")   | 6400 mm (21' 0")   |
| Max digging depth (8 ft level)  | B'  | 5360 mm (17' 7")  | 5770 mm (18' 11")  | 6300 mm (20' 8")   |
| Max vertical wall digging depth | C   | 4560 mm (15' 0")  | 4990 mm (16' 4")   | 5530 mm (18' 2")   |
| Max digging height              | D   | 10300mm (33' 10") | 10670 mm (35' 0")  | 11080 mm (36' 4")  |
| Max dumping height              | E   | 7390 mm (24' 3")  | 7740 mm (25' 5")   | 8160 mm (26' 9")   |
| Min swing radius                | F   | 2870 mm ( 9' 5")  | 2670 mm ( 8' 9")   | 2540 mm ( 8' 4")   |
| Bucket digging force            | SAE | 133.4 [144.8] kN  | 133.4 [144.8] kN   | 133.4 [144.8] kN   |
|                                 |     | 13600 [14770] kgf | 13600 [14770] kgf  | 13600 [14770] kgf  |
|                                 |     | 29980 [32550] lbf | 29980 [32550] lbf  | 29980 [32550] lbf  |
|                                 | ISO | 152.0 [165.0] kN  | 152.0 [165.0] kN   | 152.0 [165.0] kN   |
|                                 |     | 15500 [16830] kgf | 15500 [16830] kgf  | 15500 [16830] kgf  |
|                                 |     | 34170 [37100] lbf | 34170 [37100] lbf  | 34170 [37100] lbf  |
| Arm digging force               | SAE | 144.2 [156.5] kN  | 119.6 [129.9] kN   | 102.0 [110.7] kN   |
|                                 |     | 14700 [15960] kgf | 12200 [13250] kgf  | 10400 [11290] kgf  |
|                                 |     | 32410 [35190] lbf | 26900 [29210] lbf  | 22930 [24900] lbf  |
|                                 | ISO | 151.0 [164.0] kN  | 125.5 [136.3] kN   | 106.9 [116.1] kN   |
|                                 |     | 15400 [16720] kgf | 12800 [13900] kgf  | 10900 [11830] kgf  |
|                                 |     | 33950 [36860] lbf | 28220 [30640] lbf  | 24030 [26090] lbf  |

[ ] : Power boost

## 4. WEIGHT

### 1) HX220 NL

| Item                                                            | HX220 NL |         |
|-----------------------------------------------------------------|----------|---------|
|                                                                 | kg       | lb      |
| Upper structure assembly                                        |          |         |
| · Main frame weld assembly                                      | 1720     | 3800    |
| · Engine assembly                                               | 1485     | 3270    |
| · Main pump assembly                                            | 136      | 300     |
| · Main control valve assembly                                   | 220      | 490     |
| · Swing motor assembly                                          | 250      | 550     |
| · Hydraulic oil tank assembly                                   | 165      | 360     |
| · Fuel tank assembly                                            | 138      | 304     |
| · Counterweight                                                 | 4700     | 10360   |
| · Cab assembly                                                  | 500      | 1100    |
| Lower chassis assembly                                          |          |         |
| · Track frame weld assembly                                     | 2525     | 5570    |
| · Swing bearing                                                 | 290      | 640     |
| · Travel motor assembly                                         | 300      | 660     |
| · Turning joint                                                 | 57       | 126     |
| · Track recoil spring                                           | 140      | 310     |
| · Idler                                                         | 151      | 333     |
| · Carrier roller                                                | 20       | 45      |
| · Track roller                                                  | 48       | 106     |
| · Sprocket                                                      | 56       | 123     |
| · Track-chain assembly<br>(500 mm standard triple grouser shoe) | 1309     | 2886    |
| Front attachment assembly                                       |          |         |
| · 5.65 m boom assembly                                          | 1370     | 3020    |
| · 2.92 m arm assembly                                           | 760      | 1680    |
| · 0.87 m³ SAE heaped bucket                                     | 800      | 1760    |
| · Boom cylinder assembly                                        | 180/1EA  | 400/1EA |
| · Arm cylinder assembly                                         | 290      | 640     |
| · Bucket cylinder assembly                                      | 175      | 390     |
| · Bucket control link assembly                                  | 170      | 370     |

※ This information is different with operating and transportation weight because it is not including harness, pipe, oil, fuel so on.

※ Refer to Transportation for actual weight information and Specifications for operating weight.











## 5. LIFTING CAPACITIES

### 1) HX220 NL

(1) 5.65 m (18' 6") boom, 2.00 m (6' 7") arm equipped with 0.87 m<sup>3</sup> (SAE heaped) bucket, 500 mm (20") triple grouser shoe.

·  : Rating over-front

·  : Rating over-side or 360 degree

| Load point height |          | Load radius                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | At max. reach                                                                       |                                                                                     |                |
|-------------------|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|
|                   |          | 3.0 m (10 ft)                                                                     |                                                                                   | 4.5 m (15 ft)                                                                     |                                                                                   | 6.0 m (20 ft)                                                                     |                                                                                   | 7.5 m (25 ft)                                                                     |                                                                                     | Capacity                                                                            |                                                                                     | Reach          |
|                   |          |  |  |  |  |  |  |  |  |  |  | m (ft)         |
| 7.5 m (25 ft)     | kg<br>lb |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | *4000<br>*8820                                                                      | 3810<br>8400                                                                        | 6.61<br>(21.7) |
| 6.0 m (20 ft)     | kg<br>lb |                                                                                   |                                                                                   |                                                                                   |                                                                                   | *4420<br>*9740                                                                    | 4380<br>9660                                                                      |                                                                                   |                                                                                     | *4060<br>*8950                                                                      | 2800<br>6170                                                                        | 7.75<br>(25.4) |
| 4.5 m (15 ft)     | kg<br>lb |                                                                                   |                                                                                   | *5670<br>*12500                                                                   | *5670<br>*12500                                                                   | *4840<br>*10670                                                                   | 4230<br>9330                                                                      |                                                                                   |                                                                                     | *4200<br>*9260                                                                      | 2340<br>5160                                                                        | 8.41<br>(27.6) |
| 3.0 m (10 ft)     | kg<br>lb |                                                                                   |                                                                                   | *7430<br>*16380                                                                   | 6170<br>13600                                                                     | *5600<br>*12350                                                                   | 3990<br>8800                                                                      | *4830<br>*10650                                                                   | 2750<br>6060                                                                        | *4360<br>*9610                                                                      | 2130<br>4700                                                                        | 8.71<br>(28.6) |
| 1.5 m (5 ft)      | kg<br>lb |                                                                                   |                                                                                   | *8990<br>*19820                                                                   | 5700<br>12570                                                                     | *6390<br>*14090                                                                   | 3760<br>8290                                                                      | *5190<br>*11440                                                                   | 2640<br>5820                                                                        | 4330<br>9550                                                                        | 2080<br>4590                                                                        | 8.71<br>(28.6) |
| Ground Line       | kg<br>lb |                                                                                   |                                                                                   | *9720<br>*21430                                                                   | 5490<br>12100                                                                     | *6930<br>*15280                                                                   | 3610<br>7960                                                                      | 5380<br>11860                                                                     | 2570<br>5670                                                                        | 4570<br>10080                                                                       | 2190<br>4830                                                                        | 8.40<br>(27.6) |
| -1.5 m (-5 ft)    | kg<br>lb | *14170<br>*31240                                                                  | 10580<br>23320                                                                    | *9690<br>*21360                                                                   | 5460<br>12040                                                                     | *7030<br>*15500                                                                   | 3560<br>7850                                                                      |                                                                                   |                                                                                     | *4930<br>*10870                                                                     | 2540<br>5600                                                                        | 7.73<br>(25.4) |
| -3.0 m (-10 ft)   | kg<br>lb | *12680<br>*27950                                                                  | 10790<br>23790                                                                    | *8900<br>*19620                                                                   | 5570<br>12280                                                                     | *6390<br>*14090                                                                   | 3650<br>8050                                                                      |                                                                                   |                                                                                     | *4910<br>*10820                                                                     | 3380<br>7450                                                                        | 6.58<br>(21.6) |

- Note
1. Lifting capacity are based on SAE J1097 and ISO 10567.
  2. Lifting capacity of the HX 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.

※ Lifting capacities are based upon a standard machine conditions.

Lifting capacities will vary with different work tools, ground conditions and attachments.

The difference between the weight of a work tool attachment must be subtracted.

Consult your HD Hyundai Construction Equipment dealer regarding the lifting capacities for specific work tools and attachments.













▲ Failure to comply to the rated load can cause possible personal injury or property damage. Make adjustments to the rated load as necessary for non-standard configurations.



(2) 5.65 m (18' 6") boom, 2.40 m (7' 10") arm equipped with 0.87 m<sup>3</sup> (SAE heaped) bucket and 500 mm (20") triple grouser shoe.

·  : Rating over-front













·  : Rating over-side or 360 degree

| Load point height |          | Load radius                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | At max. reach                                                                       |                                                                                     |                |
|-------------------|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|
|                   |          | 1.5 m (5 ft)                                                                      |                                                                                   | 3.0 m (10 ft)                                                                     |                                                                                   | 4.5 m (15 ft)                                                                     |                                                                                   | 6.0 m (20 ft)                                                                     |                                                                                   | 7.5 m (25 ft)                                                                      |                                                                                     | Capacity                                                                            |                                                                                     | Reach          |
|                   |          |  |  |  |  |  |  |  |  |  |  |  |  | m (ft)         |
| 7.5 m (25 ft)     | kg<br>lb |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | *3690<br>*8140                                                                      | 3360<br>7410                                                                        | 7.12<br>(23.4) |
| 6.0 m (20 ft)     | kg<br>lb |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | *3990<br>*8800                                                                    | *3990<br>*8800                                                                    |                                                                                    |                                                                                     | *3780<br>*8330                                                                      | 2540<br>5600                                                                        | 8.18<br>(26.8) |
| 4.5 m (15 ft)     | kg<br>lb |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | *4460<br>*9830                                                                    | 4280<br>9440                                                                      | *4050<br>*8930                                                                     | 2860<br>6310                                                                        | *3910<br>*8620                                                                      | 2140<br>4720                                                                        | 8.80<br>(28.9) |
| 3.0 m (10 ft)     | kg<br>lb |                                                                                   |                                                                                   |                                                                                   |                                                                                   | *6850<br>*15100                                                                   | 6280<br>13850                                                                     | *5260<br>*11600                                                                   | 4020<br>8860                                                                      | *4560<br>*10050                                                                    | 2760<br>6080                                                                        | *4080<br>*8990                                                                      | 1950<br>4300                                                                        | 9.09<br>(29.8) |
| 1.5 m (5 ft)      | kg<br>lb |                                                                                   |                                                                                   |                                                                                   |                                                                                   | *8540<br>*18830                                                                   | 5750<br>12680                                                                     | *6120<br>*13490                                                                   | 3760<br>8290                                                                      | *4980<br>*10980                                                                    | 2630<br>5800                                                                        | 4030<br>8880                                                                        | 1910<br>4210                                                                        | 9.08<br>(29.8) |
| Ground Line       | kg<br>lb |                                                                                   |                                                                                   | *9080<br>*20020                                                                   | *9080<br>*20020                                                                   | *9520<br>*20990                                                                   | 5470<br>12060                                                                     | *6760<br>*14900                                                                   | 3580<br>7890                                                                      | *5310<br>*11710                                                                    | 2540<br>5600                                                                        | 4220<br>9300                                                                        | 2000<br>4410                                                                        | 8.79<br>(28.8) |
| -1.5 m (-5 ft)    | kg<br>lb | *9930<br>*21890                                                                   | *9930<br>*21890                                                                   | *13780<br>*30380                                                                  | 10400<br>22930                                                                    | *9710<br>*21410                                                                   | 5400<br>11900                                                                     | *6990<br>*15410                                                                   | 3510<br>7740                                                                      |                                                                                    |                                                                                     | *4670<br>*10300                                                                     | 2280<br>5030                                                                        | 8.16<br>(26.8) |
| -3.0 m (-10 ft)   | kg<br>lb | *14320<br>*31570                                                                  | *14320<br>*31570                                                                  | *13400<br>*29540                                                                  | 10600<br>23370                                                                    | *9170<br>*20220                                                                   | 5470<br>12060                                                                     | *6630<br>*14620                                                                   | 3550<br>7830                                                                      |                                                                                    |                                                                                     | *4750<br>*10470                                                                     | 2940<br>6480                                                                        | 7.09<br>(23.3) |
| -4.5 m (-15 ft)   | kg<br>lb |                                                                                   |                                                                                   | *10790<br>*23790                                                                  | *10790<br>*23790                                                                  | *7470<br>*16470                                                                   | 5710<br>12590                                                                     |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                |

(3) 5.65 m (18' 6") boom, 2.92 m (9' 7") arm equipped with 0.87 m<sup>3</sup> (SAE heaped) bucket and 500 mm (20") triple grouser shoe.











·  : Rating over-front

·  : Rating over-side or 360 degree

| Load point height |          | Load radius                                                                         |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       | At max. reach                                                                         |                                                                                       |                |
|-------------------|----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------|
|                   |          | 1.5 m (5 ft)                                                                        |                                                                                     | 3.0 m (10 ft)                                                                       |                                                                                     | 4.5 m (15 ft)                                                                       |                                                                                     | 6.0 m (20 ft)                                                                       |                                                                                     | 7.5 m (25 ft)                                                                        |                                                                                       | Capacity                                                                              |                                                                                       | Reach          |
|                   |          |  |  |  |  |  |  |  |  |  |  |  |  | m (ft)         |
| 7.5 m (25 ft)     | kg<br>lb |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       | *3350<br>*7390                                                                        | 2890<br>6370                                                                          | 7.76<br>(25.5) |
| 6.0 m (20 ft)     | kg<br>lb |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | *2140<br>*4720                                                                       | *2140<br>*4720                                                                        | *3440<br>*7580                                                                        | 2250<br>4960                                                                          | 8.73<br>(28.6) |
| 4.5 m (15 ft)     | kg<br>lb |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | *3970<br>*8750                                                                      | *3970<br>*8750                                                                      | *3810<br>*8400                                                                       | 2900<br>6390                                                                          | *3580<br>*7890                                                                        | 1920<br>4230                                                                          | 9.30<br>(30.5) |
| 3.0 m (10 ft)     | kg<br>lb |                                                                                     |                                                                                     | *9630<br>*21230                                                                     | *9630<br>*21230                                                                     | *6090<br>*13430                                                                     | *6090<br>*13430                                                                     | *4810<br>*10600                                                                     | 4060<br>8950                                                                        | *4210<br>*9280                                                                       | 2770<br>6110                                                                          | 3730<br>8220                                                                          | 1750<br>3860                                                                          | 9.58<br>(31.4) |
| 1.5 m (5 ft)      | kg<br>lb |                                                                                     |                                                                                     | *9210<br>*20300                                                                     | *9210<br>*20300                                                                     | *7920<br>*17460                                                                     | 5830<br>12850                                                                       | *5730<br>*12630                                                                     | 3780<br>8330                                                                        | *4700<br>*10360                                                                      | 2630<br>5800                                                                          | 3680<br>8110                                                                          | 1710<br>3770                                                                          | 9.57<br>(31.4) |
| Ground Line       | kg<br>lb |                                                                                     |                                                                                     | *9810<br>*21630                                                                     | *9810<br>*21630                                                                     | *9160<br>*20190                                                                     | 5460<br>12040                                                                       | *6490<br>*14310                                                                     | 3560<br>7850                                                                        | *5120<br>*11290                                                                      | 2510<br>5530                                                                          | 3830<br>8440                                                                          | 1780<br>3920                                                                          | 9.29<br>(30.5) |
| -1.5 m (-5 ft)    | kg<br>lb | *8950<br>*19730                                                                     | *8950<br>*19730                                                                     | *12850<br>*28330                                                                    | 10220<br>22530                                                                      | *9630<br>*21230                                                                     | 5320<br>11730                                                                       | *6880<br>*15170                                                                     | 3450<br>7610                                                                        | 5250<br>11570                                                                        | 2450<br>5400                                                                          | 4250<br>9370                                                                          | 2000<br>4410                                                                          | 8.71<br>(28.6) |
| -3.0 m (-10 ft)   | kg<br>lb | *12340<br>*27210                                                                    | *12340<br>*27210                                                                    | *14120<br>*31130                                                                    | 10360<br>22840                                                                      | *9380<br>*20680                                                                     | 5340<br>11770                                                                       | *6770<br>*14930                                                                     | 3450<br>7610                                                                        |                                                                                      |                                                                                       | *4490<br>*9900                                                                        | 2490<br>5490                                                                          | 7.73<br>(25.4) |
| -4.5 m (-15 ft)   | kg<br>lb |                                                                                     |                                                                                     | *12010<br>*26480                                                                    | 10690<br>23570                                                                      | *8180<br>*18030                                                                     | 5510<br>12150                                                                       |                                                                                     |                                                                                     |                                                                                      |                                                                                       | *4360<br>*9610                                                                        | 3750<br>8270                                                                          | 6.14<br>(20.1) |











(4) 5.65 m (18' 6") Adjustable boom, 2.00 m (6' 7") arm equipped with 0.87 m<sup>3</sup> (SAE heaped) bucket and 500 mm (20") triple grouser shoe.

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

| Load point height |    | Load radius                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | At max. reach                                                                       |                                                                                     |        |
|-------------------|----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|                   |    | 3.0 m (10.0 ft)                                                                   |                                                                                   | 4.5 m (15.0 ft)                                                                   |                                                                                   | 6.0 m (20.0 ft)                                                                   |                                                                                   | 7.5 m (25.0 ft)                                                                   |                                                                                     | Capacity                                                                            |                                                                                     | Reach  |
|                   |    |  |  |  |  |  |  |  |  |  |  | m (ft) |
| 10.5 m (35.0 ft)  | kg |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | *6200                                                                               | *6200                                                                               | 4.64   |
|                   | lb |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | *13670                                                                              | *13670                                                                              | (15.2) |
| 9.0 m (30.0 ft)   | kg |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | *6560                                                                               | *6560                                                                               | 4.60   |
|                   | lb |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | *14460                                                                              | *14460                                                                              | (15.1) |
| 7.5 m (25.0 ft)   | kg |                                                                                   |                                                                                   | *6750                                                                             | *6750                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                     | *5330                                                                               | 3710                                                                                | 6.66   |
|                   | lb |                                                                                   |                                                                                   | *14880                                                                            | *14880                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                     | *11750                                                                              | 8180                                                                                | (21.9) |
| 6.0 m (20.0 ft)   | kg |                                                                                   |                                                                                   | *6910                                                                             | *6910                                                                             | *5910                                                                             | 4340                                                                              |                                                                                   |                                                                                     | *4920                                                                               | 2720                                                                                | 7.79   |
|                   | lb |                                                                                   |                                                                                   | *15230                                                                            | *15230                                                                            | *13030                                                                            | 9570                                                                              |                                                                                   |                                                                                     | *10850                                                                              | 6000                                                                                | (25.6) |
| 4.5 m (15.0 ft)   | kg | *11400                                                                            | *11400                                                                            | *7810                                                                             | 6710                                                                              | *6200                                                                             | 4190                                                                              |                                                                                   |                                                                                     | 4680                                                                                | 2270                                                                                | 8.45   |
|                   | lb | *25130                                                                            | *25130                                                                            | *17220                                                                            | 14790                                                                             | *13670                                                                            | 9240                                                                              |                                                                                   |                                                                                     | 10320                                                                               | 5000                                                                                | (27.7) |
| 3.0 m (10.0 ft)   | kg |                                                                                   |                                                                                   | *9020                                                                             | 6090                                                                              | *6670                                                                             | 3930                                                                              | *5380                                                                             | 2700                                                                                | 4350                                                                                | 2060                                                                                | 8.75   |
|                   | lb |                                                                                   |                                                                                   | *19890                                                                            | 13430                                                                             | *14700                                                                            | 8660                                                                              | *11860                                                                            | 5950                                                                                | 9590                                                                                | 4540                                                                                | (28.7) |
| 1.5 m (5 ft)      | kg |                                                                                   |                                                                                   | *9720                                                                             | 5600                                                                              | *6990                                                                             | 3690                                                                              | *5410                                                                             | 2590                                                                                | 4300                                                                                | 2020                                                                                | 8.75   |
|                   | lb |                                                                                   |                                                                                   | *21430                                                                            | 12350                                                                             | *15410                                                                            | 8140                                                                              | *11930                                                                            | 5710                                                                                | 9480                                                                                | 4450                                                                                | (28.7) |
| Ground Line       | kg |                                                                                   |                                                                                   | *9430                                                                             | 5390                                                                              | *6900                                                                             | 3540                                                                              | *5130                                                                             | 2520                                                                                | *4020                                                                               | 2140                                                                                | 8.43   |
|                   | lb |                                                                                   |                                                                                   | *20790                                                                            | 11880                                                                             | *15210                                                                            | 7800                                                                              | *11310                                                                            | 5560                                                                                | *8860                                                                               | 4720                                                                                | (27.7) |
| -1.5 m (-5 ft)    | kg | *10050                                                                            | *10050                                                                            | *8270                                                                             | 5380                                                                              | *6170                                                                             | 3500                                                                              |                                                                                   |                                                                                     | *3440                                                                               | 2490                                                                                | 7.77   |
|                   | lb | *22160                                                                            | *22160                                                                            | *18230                                                                            | 11860                                                                             | *13600                                                                            | 7720                                                                              |                                                                                   |                                                                                     | *7580                                                                               | 5490                                                                                | (25.5) |
| -3.0 m (-10 ft)   | kg |                                                                                   |                                                                                   | *6160                                                                             | 5520                                                                              | *4350                                                                             | 3610                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |        |
|                   | lb |                                                                                   |                                                                                   | *13580                                                                            | 12170                                                                             | *9590                                                                             | 7960                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |        |











(5) 5.65 m (18' 6") Adjustable boom, 2.40 m (7' 10") arm equipped with 0.87 m<sup>3</sup> (SAE heaped) bucket and 500 mm (20") triple grouser shoe.

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

| Load point height |    | Load radius                                                                         |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       | At max. reach                                                                         |                                                                                       |        |
|-------------------|----|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------|
|                   |    | 3.0 m (10.0 ft)                                                                     |                                                                                     | 4.5 m (15.0 ft)                                                                     |                                                                                     | 6.0 m (20.0 ft)                                                                     |                                                                                     | 7.5 m (25.0 ft)                                                                     |                                                                                       | Capacity                                                                              |                                                                                       | Reach  |
|                   |    |  |  |  |  |  |  |  |  |  |  | m (ft) |
| 9.0 m (30.0 ft)   | kg |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       | *5730                                                                                 | 5470                                                                                  | 5.39   |
|                   | lb |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       | *12630                                                                                | 12060                                                                                 | (17.7) |
| 7.5 m (25.0 ft)   | kg |                                                                                     |                                                                                     | *5870                                                                               | *5870                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                       | *4900                                                                                 | 3260                                                                                  | 7.18   |
|                   | lb |                                                                                     |                                                                                     | *12940                                                                              | *12940                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                       | *10800                                                                                | 7190                                                                                  | (23.6) |
| 6.0 m (20.0 ft)   | kg |                                                                                     |                                                                                     | *6440                                                                               | *6440                                                                               | *5570                                                                               | 4420                                                                                |                                                                                     |                                                                                       | *4570                                                                                 | 2460                                                                                  | 8.23   |
|                   | lb |                                                                                     |                                                                                     | *14200                                                                              | *14200                                                                              | *12280                                                                              | 9740                                                                                |                                                                                     |                                                                                       | *10080                                                                                | 5420                                                                                  | (27.0) |
| 4.5 m (15.0 ft)   | kg | *10330                                                                              | *10330                                                                              | *7350                                                                               | 6840                                                                                | *5920                                                                               | 4240                                                                                | *4360                                                                               | 2820                                                                                  | 4330                                                                                  | 2070                                                                                  | 8.84   |
|                   | lb | *22770                                                                              | *22770                                                                              | *16200                                                                              | 15080                                                                               | *13050                                                                              | 9350                                                                                | *9610                                                                               | 6220                                                                                  | 9550                                                                                  | 4560                                                                                  | (29.0) |
| 3.0 m (10.0 ft)   | kg |                                                                                     |                                                                                     | *8630                                                                               | 6210                                                                                | *6450                                                                               | 3960                                                                                | *5240                                                                               | 2710                                                                                  | 4040                                                                                  | 1890                                                                                  | 9.13   |
|                   | lb |                                                                                     |                                                                                     | *19030                                                                              | 13690                                                                               | *14220                                                                              | 8730                                                                                | *11550                                                                              | 5970                                                                                  | 8910                                                                                  | 4170                                                                                  | (30.0) |
| 1.5 m (5.0 ft)    | kg |                                                                                     |                                                                                     | *9550                                                                               | 5650                                                                                | *6870                                                                               | 3700                                                                                | *5360                                                                               | 2580                                                                                  | 3990                                                                                  | 1850                                                                                  | 9.13   |
|                   | lb |                                                                                     |                                                                                     | *21050                                                                              | 12460                                                                               | *15150                                                                              | 8160                                                                                | *11820                                                                              | 5690                                                                                  | 8800                                                                                  | 4080                                                                                  | (30.0) |
| Ground Line       | kg | *8600                                                                               | *8600                                                                               | *9560                                                                               | 5370                                                                                | *6920                                                                               | 3510                                                                                | *5230                                                                               | 2490                                                                                  | *3840                                                                                 | 1950                                                                                  | 8.83   |
|                   | lb | *18960                                                                              | *18960                                                                              | *21080                                                                              | 11840                                                                               | *15260                                                                              | 7740                                                                                | *11530                                                                              | 5490                                                                                  | *8470                                                                                 | 4300                                                                                  | (29.0) |
| -1.5 m (-5.0 ft)  | kg | *11450                                                                              | 10280                                                                               | *8660                                                                               | 5310                                                                                | *6390                                                                               | 3450                                                                                | *4540                                                                               | 2470                                                                                  | *3390                                                                                 | 2230                                                                                  | 2.21   |
|                   | lb | *25240                                                                              | 22660                                                                               | *19090                                                                              | 11710                                                                               | *14090                                                                              | 7610                                                                                | *10010                                                                              | 5450                                                                                  | *7470                                                                                 | 4920                                                                                  | (26.9) |
| -3.0 m (-10.0 ft) | kg |                                                                                     |                                                                                     | *6840                                                                               | 5400                                                                                | *4980                                                                               | 3510                                                                                |                                                                                     |                                                                                       |                                                                                       |                                                                                       |        |
|                   | lb |                                                                                     |                                                                                     | *15080                                                                              | 11900                                                                               | *10980                                                                              | 7740                                                                                |                                                                                     |                                                                                       |                                                                                       |                                                                                       |        |

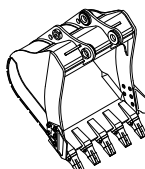
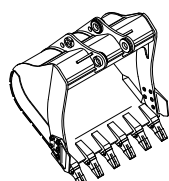
(6) 5.65 m (18' 6") Adjustable boom, 2.92 m (9' 7") arm equipped with 0.87 m³ (SAE heaped) bucket and 500 mm (20") triple grouser shoe.

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

| Load point height |          | Load radius                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | At max. reach                                                                       |                                                                                     |                |
|-------------------|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|
|                   |          | 3.0 m (10.0 ft)                                                                   |                                                                                   | 4.5 m (15.0 ft)                                                                   |                                                                                   | 6.0 m (20.0 ft)                                                                   |                                                                                   | 7.5 m (25.0 ft)                                                                   |                                                                                     | Capacity                                                                            |                                                                                     | Reach          |
|                   |          |  |  |  |  |  |  |  |  |  |  | m (ft)         |
| 9.0 m (30.0 ft)   | kg<br>lb |                                                                                   |                                                                                   | *3290<br>*7250                                                                    | *3290<br>*7250                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                     | *4600<br>*10140                                                                     | 4260<br>9390                                                                        | 6.28<br>(20.6) |
| 7.5 m (25.0 ft)   | kg<br>lb |                                                                                   |                                                                                   |                                                                                   |                                                                                   | *3530<br>*7780                                                                    | *3530<br>*7780                                                                    |                                                                                   |                                                                                     | *4030<br>*8880                                                                      | 2800<br>6170                                                                        | 7.83<br>(25.7) |
| 6.0 m (20.0 ft)   | kg<br>lb |                                                                                   |                                                                                   | *5170<br>*11400                                                                   | *5170<br>*11400                                                                   | *4870<br>*10740                                                                   | 4510<br>9940                                                                      | *2440<br>*5380                                                                    | *2440<br>*5380                                                                      | *3800<br>*8380                                                                      | 2170<br>4780                                                                        | 8.78<br>(28.8) |
| 4.5 m (15.0 ft)   | kg<br>lb |                                                                                   |                                                                                   | *6720<br>*14820                                                                   | *6720<br>*14820                                                                   | *5540<br>*12210                                                                   | 4310<br>9500                                                                      | *4390<br>*9680                                                                    | 2860<br>6310                                                                        | *3740<br>*8250                                                                      | 1850<br>4080                                                                        | 9.36<br>(30.7) |
| 3.0 m (10.0 ft)   | kg<br>lb | *12710<br>*28020                                                                  | 12080<br>26630                                                                    | *8080<br>*17810                                                                   | 6370<br>14040                                                                     | *6130<br>*13510                                                                   | 4020<br>8860                                                                      | *5040<br>*11110                                                                   | 2720<br>6000                                                                        | 3690<br>8140                                                                        | 1690<br>3730                                                                        | 9.63<br>(31.6) |
| 1.5 m (5.0 ft)    | kg<br>lb | *8700<br>*19180                                                                   | *8700<br>*19180                                                                   | *9240<br>*20370                                                                   | 5740<br>12650                                                                     | *6660<br>*14680                                                                   | 3720<br>8200                                                                      | *5240<br>*11550                                                                   | 2570<br>5670                                                                        | 3640<br>8020                                                                        | 1650<br>3640                                                                        | 9.63<br>(31.6) |
| Ground Line       | kg<br>lb | *9390<br>*20700                                                                   | *9390<br>*20700                                                                   | *9580<br>*21120                                                                   | 5360<br>11820                                                                     | *6880<br>*15170                                                                   | 3490<br>7690                                                                      | *5260<br>*11600                                                                   | 2450<br>5400                                                                        | *3610<br>*7960                                                                      | 1720<br>3790                                                                        | 9.35<br>(30.7) |
| -1.5 m (-5.0 ft)  | kg<br>lb | *12500<br>*27560                                                                  | 10070<br>22200                                                                    | *9020<br>*19890                                                                   | 5230<br>11530                                                                     | *6570<br>*14480                                                                   | 3380<br>7450                                                                      | *4860<br>*10710                                                                   | 2400<br>5290                                                                        | *3270<br>*7210                                                                      | 1950<br>4300                                                                        | 8.77<br>(28.8) |
| -3.0 m (-10.0 ft) | kg<br>lb | *10150<br>*22380                                                                  | *10150<br>*22380                                                                  | *7560<br>*16670                                                                   | 5270<br>11620                                                                     | *5530<br>*12190                                                                   | 3400<br>7500                                                                      |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                |

## 6. BUCKET SELECTION GUIDE

### 1) GENERAL BUCKET

|                                                                                   |                                                                                     |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |
| 0.80, 0.87, 0.92, 1.10, 1.20 m³<br>SAE heaped bucket                              | 1.34 m³ SAE heaped bucket                                                           |

| Capacity              |                       | Width                  |                     | Weight              | Recommendation               |                       |                       |                                    |                       |                       |
|-----------------------|-----------------------|------------------------|---------------------|---------------------|------------------------------|-----------------------|-----------------------|------------------------------------|-----------------------|-----------------------|
|                       |                       |                        |                     |                     | 5.65 m (18' 6")<br>Mono boom |                       |                       | 5.65 m (18' 6")<br>Adjustable Boom |                       |                       |
| SAE<br>heaped         | CECE<br>heaped        | Without<br>side cutter | With<br>side cutter |                     | 2.0 m arm<br>(6' 7")         | 2.4 m arm<br>(7' 10") | 2.92 m arm<br>(9' 7") | 2.0 m arm<br>(6' 7")               | 2.4 m arm<br>(7' 10") | 2.92 m arm<br>(9' 7") |
| 0.80 m³<br>(1.05 yd³) | 0.70 m³<br>(0.92 yd³) | 1070 mm<br>(42.1")     | 1160 mm<br>(45.7")  | 770 kg<br>(1700 lb) | ○                            | ○                     | ○                     | ○                                  | ○                     | ●                     |
| 0.87 m³<br>(1.14 yd³) | 0.76 m³<br>(0.99 yd³) | 1140 mm<br>(44.9")     | 1230 mm<br>(48.4")  | 800 kg<br>(1760 lb) | ○                            | ○                     | ○                     | ○                                  | ○                     | ●                     |
| 0.92 m³<br>(1.20 yd³) | 0.80 m³<br>(1.05 yd³) | 1190 mm<br>(46.9")     | 1280 mm<br>(50.4")  | 820 kg<br>(1810 lb) | ○                            | ○                     | ●                     | ○                                  | ○                     | ●                     |
| 1.10 m³<br>(1.44 yd³) | 0.96 m³<br>(1.26 yd³) | 1375 mm<br>(54.1")     | 1465 mm<br>(57.7")  | 890 kg<br>(1960 lb) | ○                            | ●                     | ●                     | ●                                  | ●                     | ●                     |
| 1.20 m³<br>(1.57 yd³) | 1.05 m³<br>(1.37 yd³) | 1390 mm<br>(54.7")     | 1480 mm<br>(58.3")  | 920 kg<br>(2030 lb) | ○                            | ●                     |                       | ●                                  | ●                     |                       |
| 1.34 m³<br>(1.75 yd³) | 1.17 m³<br>(1.53 yd³) | 1525 mm<br>(60.0")     | 1615 mm<br>(63.6")  | 990 kg<br>(2180 lb) | ●                            | ●                     |                       | ●                                  |                       |                       |

○ Applicable for materials with density of 2000 kg/m³ (3370 lb/yd³) or less

● Applicable for materials with density of 1600 kg/m³ (2700 lb/yd³) or less

● Applicable for materials with density of 1100 kg/m³ (1850 lb/yd³) or less

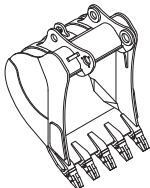
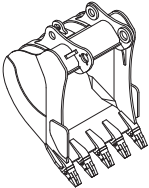
※ These recommendations are for general conditions and average use.

Work tools and ground conditions have effects on machine performance.

Select an optimum combination according to the working conditions and the type of work that is being done.

Consult your HD Hyundai Construction Equipment dealer for information on selecting the correct boom–arm–bucket combination.

## 2) HEAVY DUTY AND ROCK-HEAVY DUTY BUCKET

| Heavy duty bucket                                                                 | Rock-Heavy duty bucket                                                              |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |
| ◆ 0.90, 1.05 m <sup>3</sup> SAE heaped bucket                                     | ⊙ 0.87 m <sup>3</sup> SAE heaped bucket                                             |

| Capacity                                         |                                                | Width              |   | Weight              | Recommendation       |                    |                    |                                 |                    |                    |
|--------------------------------------------------|------------------------------------------------|--------------------|---|---------------------|----------------------|--------------------|--------------------|---------------------------------|--------------------|--------------------|
|                                                  |                                                |                    |   |                     | 5.65 m (18' 6") boom |                    |                    | 5.65 m (18' 6") Adjustable boom |                    |                    |
|                                                  |                                                |                    |   |                     | 2.0 m arm (6' 7")    | 2.4 m arm (7' 10") | 2.92 m arm (9' 7") | 2.0 m arm (6' 7")               | 2.4 m arm (7' 10") | 2.92 m arm (9' 7") |
| ◆ 0.90m <sup>3</sup><br>(1.18 yd <sup>3</sup> )  | 0.79 m <sup>3</sup><br>(1.03 yd <sup>3</sup> ) | 1210 mm<br>(47.6") | - | 880 kg<br>(1940 lb) | ○                    | ○                  | ⊙                  | ○                               | ○                  | ●                  |
| ◆ 1.05 m <sup>3</sup><br>(1.37 yd <sup>3</sup> ) | 0.92 m <sup>3</sup><br>(1.2 yd <sup>3</sup> )  | 1355 mm<br>(53.3") | - | 940 kg<br>(2070 lb) | ○                    | ⊙                  | ●                  | ⊙                               | ⊙                  | ●                  |
| ◆ 0.87 m <sup>3</sup><br>(1.14 yd <sup>3</sup> ) | 0.77 m <sup>3</sup><br>(1.01 yd <sup>3</sup> ) | 1195 mm<br>(47.0") | - | 940 kg<br>(2070 lb) | ○                    | ○                  | ⊙                  | ○                               | ○                  | ●                  |

◆ : Heavy duty bucket      ⊙ : Rock-Heavy duty bucket

○ Applicable for materials with density of 2000 kg/m<sup>3</sup> (3370 lb/yd<sup>3</sup>) or less

⊙ Applicable for materials with density of 1600 kg/m<sup>3</sup> (2700 lb/yd<sup>3</sup>) or less

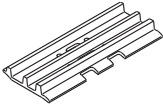
● Applicable for materials with density of 1100 kg/m<sup>3</sup> (1850 lb/yd<sup>3</sup>) or less

## 7. UNDERCARRIAGE

### 1) TRACKS

X-leg type center frame is integrally welded with reinforced box-section track frames. The design includes dry tracks, lubricated rollers, idlers, sprockets, hydraulic track adjusters with shock absorbing springs and assembled track-type tractor shoes with triple grousers.

### 2) TYPES OF SHOES

| Model                   | Shapes           |                           | Triple grouser                                                                     |               |               |
|-------------------------|------------------|---------------------------|------------------------------------------------------------------------------------|---------------|---------------|
|                         |                  |                           |  |               |               |
| HX220 NL<br>MONO BOOM   | Shoe width       | mm (in)                   | 500 (20)                                                                           | 600 (24)      | 700 (28)      |
|                         | Operating weight | kg (lb)                   | 22300 (49160)                                                                      | 22400 (49380) | 22870 (50420) |
|                         | Ground pressure  | kgf/cm <sup>2</sup> (psi) | 0.57 (8.11)                                                                        | 0.48 (6.83)   | 0.42 (5.97)   |
|                         | Overall width    | mm (ft-in)                | 2500 (8' 2")                                                                       | 2600 (8' 6")  | 2700 (8'10")  |
| HX220 NL<br>ADJUST BOOM | Shoe width       | mm (in)                   | 500 (20)                                                                           | 600 (24)      | -             |
|                         | Operating weight | kg (lb)                   | 23000 (50710)                                                                      | 23100 (50930) | -             |
|                         | Ground pressure  | kgf/cm <sup>2</sup> (psi) | 0.59 (8.39)                                                                        | 0.49 (6.97)   | -             |
|                         | Overall width    | mm (ft-in)                | 2500 (8' 2")                                                                       | 2600 (8' 6")  | -             |

### 3) NUMBER OF ROLLERS AND SHOES ON EACH SIDE

| Item            | Quantity |
|-----------------|----------|
| Carrier rollers | 2 EA     |
| Track rollers   | 9 EA     |
| Track shoes     | 49 EA    |

#### 4) SELECTION OF TRACK SHOE

Suitable track shoes should be selected according to operating conditions.

##### Method of selecting shoes

Confirm the category from the list of applications in **table 2**, then use **table 1** to select the shoe. Wide shoes (categories B and C) have limitations on applications. Before using wide shoes, check the precautions, then investigate and study the operating conditions to confirm if these shoes are suitable.

Select the narrowest shoe possible to meet the required flotation and ground pressure. Application of wider shoes than recommendations will cause unexpected problem such as bending of shoes, crack of link, breakage of pin, loosening of shoe bolts and the other various problems.

※ **Table 1**

| Track shoe            | Specification | Category |
|-----------------------|---------------|----------|
| 500 mm triple grouser | Standard      | A        |
| 600 mm triple grouser | Option        | B        |
| 700 mm triple grouser | Option        | C        |

※ **Table 2**

| Category | Applications                                | Precautions                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A        | Rocky ground,<br>river beds,<br>normal soil | <ul style="list-style-type: none"><li>Travel at low speed on rough ground with large obstacles such as boulders or fallen trees</li></ul>                                                                                                                                                                                                                                                                           |
| B        | Normal soil,<br>soft ground                 | <ul style="list-style-type: none"><li>These shoes cannot be used on rough ground with large obstacles such as boulders or fallen trees</li><li>Travel at high speed only on flat ground</li><li>Travel slowly at low speed if it is impossible to avoid going over obstacles</li></ul>                                                                                                                              |
| C        | Extremely soft ground<br>(swampy ground)    | <ul style="list-style-type: none"><li>Use the shoes only in the conditions that the machine sinks and it is impossible to use the shoes of category A or B</li><li>These shoes cannot be used on rough ground with large obstacles such as boulders or fallen trees</li><li>Travel at high speed only on flat ground</li><li>Travel slowly at low speed if it is impossible to avoid going over obstacles</li></ul> |

## 8. SPECIFICATIONS FOR MAJOR COMPONENTS

### 1) ENGINE

| Item                                | Specification                                          |
|-------------------------------------|--------------------------------------------------------|
| Model                               | Cummins QSB6.7                                         |
| Type                                | 4-cycle turbocharged, charger air cooled diesel engine |
| Cooling method                      | Water cooling                                          |
| Number of cylinders and arrangement | 6 cylinders, in-line                                   |
| Firing order                        | 1-5-3-6-2-4                                            |
| Combustion chamber type             | Direct injection type                                  |
| Cylinder bore × stroke              | 107 × 124 mm (4.2" × 4.9")                             |
| Piston displacement                 | 6700 cc (409cu in)                                     |
| Compression ratio                   | 17.3 : 1                                               |
| Rated net horse power (SAE J1349 )  | 173 Hp at 1950 rpm (129 kW at 1950 rpm)                |
| Rated gross horse power (SAE J1995) | 182.6 Hp at 1950 rpm (136 kW at 1950 rpm)              |
| Maximum torque at 1500 rpm          | 85.7 kgf · m (620 lbf · ft)                            |
| Engine oil quantity                 | 23.7 ℓ (6.26 U.S. gal)                                 |
| Wet weight                          | 520 kg (1146 lb)                                       |
| High idling speed                   | 1900 ± 50 rpm                                          |
| Low idling speed                    | 850 ± 100 rpm                                          |
| Rated fuel consumption              | 158 g/Hp · hr at 1950 rpm                              |
| Starting motor                      | Denso (24 V-4.8 kW)                                    |
| Alternator                          | Denso (24 V-95 A)                                      |
| Battery                             | 2 × 12 V × 100 Ah                                      |

### 2) MAIN PUMP

| Item             | Specification                                                         |
|------------------|-----------------------------------------------------------------------|
| Type             | Variable displacement tandem axis piston pumps                        |
| Capacity         | 2 × 117cc/rev                                                         |
| Maximum pressure | 350kgf/cm <sup>2</sup> (4980psi) [380 kgf/cm <sup>2</sup> (5400 psi)] |
| Rated oil flow   | 2 × 228.15 ℓ /min (60.3U.S. gpm/ 50.2U.K. gpm)                        |
| Rated speed      | 1950 rpm                                                              |

[ ] : Power boost



### 3) GEAR PUMP

| Item             | Specification                             |
|------------------|-------------------------------------------|
| Type             | Fixed displacement gear pump single stage |
| Capacity         | 15 cc/rev                                 |
| Maximum pressure | 40 kgf/cm <sup>2</sup> (570 psi)          |
| Rated oil flow   | 29.3 ℓ /min (7.7 U.S. gpm/6.4 U.K. gpm)   |

### 4) MAIN CONTROL VALVE

| Item                           | Specification                                                           |                     |
|--------------------------------|-------------------------------------------------------------------------|---------------------|
|                                | HX220 NL                                                                | HX220 NL Long reach |
| Type                           | 9 spools two-block                                                      |                     |
| Operating method               | Hydraulic pilot system                                                  |                     |
| Main relief valve pressure     | 350 kgf/cm <sup>2</sup> (4980 psi) [380 kgf/cm <sup>2</sup> (5400 psi)] |                     |
| Overload relief valve pressure | 400 kgf/cm <sup>2</sup> (5690 psi)                                      |                     |

[ ]: Power boost

### 5) SWING MOTOR

| Item                   | Specification                                |
|------------------------|----------------------------------------------|
| Type                   | Two fixed displacement axial piston motor    |
| Capacity               | 142.8 cc/rev                                 |
| Relief pressure        | 265 kgf/cm <sup>2</sup> (3770 psi)           |
| Braking system         | Automatic, spring applied hydraulic released |
| Braking torque         | 63.3 kgf.m (458 ibf.ft)                      |
| Brake release pressure | 20.9~35.5 kgf/cm <sup>2</sup> (297~505 psi)  |
| Reduction gear type    | 2 - stage planetary                          |

### 6) TRAVEL MOTOR

| Item                   | Specification                                |
|------------------------|----------------------------------------------|
| Type                   | Variable displacement axial piston motor     |
| Relief pressure        | 350 kgf/cm <sup>2</sup> (4980 psi)           |
| Reduction gear type    | 2-stage planetary                            |
| Braking system         | Automatic, spring applied hydraulic released |
| Brake release pressure | 16.1 kgf/cm <sup>2</sup> (229 psi)           |
| Braking torque         | 68.8 kgf · m (498 lbf · ft)                  |

## 7) REMOTE CONTROL VALVE

| Item                    |                  | Specification                    |
|-------------------------|------------------|----------------------------------|
| Type                    |                  | Pressure reducing type           |
| Operating pressure      | Minimum          | 6.5 kgf/cm <sup>2</sup> (92 psi) |
|                         | Maximum          | 25 kgf/cm <sup>2</sup> (360 psi) |
| Single operation stroke | Lever(1, 3 port) | 90 mm (3.5 in)                   |
|                         | Pedal(2, 4 port) | 130 mm (4.4 in)                  |

## 8) CYLINDER

| Item                 |     |                             | Specification           |
|----------------------|-----|-----------------------------|-------------------------|
| Boom cylinder        |     | Bore dia × Rod dia × Stroke | Ø 120 × Ø 85 × 1290 mm  |
|                      |     | Cushion                     | Extend only             |
| Arm cylinder         |     | Bore dia × Rod dia × Stroke | Ø 140 × Ø 100 × 1510 mm |
|                      |     | Cushion                     | Extend and retract      |
| Bucket cylinder      |     | Bore dia × Rod dia × Stroke | Ø 120 × Ø 85 × 1055 mm  |
|                      |     | Cushion                     | Extend only             |
| Adjust boom cylinder | 1st | Bore dia × Rod dia × Stroke | Ø 120 × Ø 85 × 1290 mm  |
|                      |     | Cushion                     | Extend only             |
|                      | 2nd | Bore dia × Rod dia × Stroke | Ø 160 × Ø 100 × 1060 mm |
|                      |     | 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) SHOE

| Item                    |          | Width        | Ground pressure                     | Link quantity | Overall width    |
|-------------------------|----------|--------------|-------------------------------------|---------------|------------------|
| HX220 NL<br>MONO BOOM   | Standard | 500 mm (20") | 0.57 kgf/cm <sup>2</sup> (8.11 psi) | 49            | 2500 mm (8' 2")  |
|                         | Option   | 600 mm (24") | 0.48 kgf/cm <sup>2</sup> (6.83 psi) | 49            | 2600 mm (8' 6")  |
|                         |          | 700 mm (28") | 0.42 kgf/cm <sup>2</sup> (5.97 psi) | 49            | 2700 mm (8' 10") |
| HX220 NL<br>ADJUST BOOM | Standard | 500 mm (20") | 0.59 kgf/cm <sup>2</sup> (8.39 psi) | 49            | 2500 mm (8' 2")  |
|                         | Option   | 600 mm (24") | 0.49 kgf/cm <sup>2</sup> (6.97psi)  | 49            | 2600 mm (8' 6")  |

## 10) BUCKET

| Item     | Capacity                                     |                                             | Tooth quantity | Width               |                  |
|----------|----------------------------------------------|---------------------------------------------|----------------|---------------------|------------------|
|          | SAE heaped                                   | CECE heaped                                 |                | Without side cutter | With side cutter |
| HX220 NL | 0.80 m <sup>3</sup> (1.05 yd <sup>3</sup> )  | 0.70 m <sup>3</sup> (0.92 yd <sup>3</sup> ) | 5              | 1070 mm (42.1")     | 1160 mm (45.7")  |
|          | 0.87 m <sup>3</sup> (1.14 yd <sup>3</sup> )  | 0.76 m <sup>3</sup> (0.99 yd <sup>3</sup> ) | 5              | 1140 mm (44.9")     | 1230 mm (48.4")  |
|          | 0.92 m <sup>3</sup> (1.20 yd <sup>3</sup> )  | 0.80 m <sup>3</sup> (1.05 yd <sup>3</sup> ) | 5              | 1190 mm (46.9")     | 1280 mm (50.4")  |
|          | 1.10 m <sup>3</sup> (1.44 yd <sup>3</sup> )  | 0.96 m <sup>3</sup> (1.26 yd <sup>3</sup> ) | 5              | 1375 mm (54.1")     | 1465 mm (57.7")  |
|          | 1.20 m <sup>3</sup> (1.57 yd <sup>3</sup> )  | 1.05 m <sup>3</sup> (1.37 yd <sup>3</sup> ) | 5              | 1390 mm (54.7")     | 1480 mm (58.3")  |
|          | 1.34 m <sup>3</sup> (1.75 yd <sup>3</sup> )  | 1.17 m <sup>3</sup> (1.53 yd <sup>3</sup> ) | 6              | 1525 mm (60.0")     | 1615 mm (63.6")  |
|          | ◆0.90 m <sup>3</sup> (1.18 yd <sup>3</sup> ) | 0.79 m <sup>3</sup> (1.03 yd <sup>3</sup> ) | 5              | 1210 mm (47.6")     | —                |
|          | ◆1.05 m <sup>3</sup> (1.37 yd <sup>3</sup> ) | 0.92 m <sup>3</sup> (1.20 yd <sup>3</sup> ) | 5              | 1355 mm (53.3")     | —                |
|          | ⊙0.87 m <sup>3</sup> (1.14 yd <sup>3</sup> ) | 0.77 m <sup>3</sup> (1.01 yd <sup>3</sup> ) | 5              | 1195 mm (47.0")     | —                |

◆ : Heavy duty bucket

⊙ : Rock-heavy duty bucket

## 9. RECOMMENDED OILS

HD Hyundai Construction Equipment genuine lubricating oils have been developed to offer the best performance and service life for your equipment. These oils have been tested according to the specifications of HD Hyundai Construction Equipment and, therefore, will meet the highest safety and quality requirements.

We recommend that you use only HD Hyundai Construction Equipment genuine lubricating oils and grease officially approved by HD Hyundai Construction Equipment.

| 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                                                  | 23.7 (6.3)               | ★SAE 5W-40                                                |              |             |             |           |                                     |            |            |             |
|                                 |                                                             |                          |                                                           |              |             |             |           | SAE 30                              |            |            |             |
|                                 |                                                             |                          |                                                           |              |             |             |           | SAE 10W                             |            |            |             |
|                                 |                                                             |                          |                                                           |              |             |             |           | SAE 10W-30                          |            |            |             |
|                                 |                                                             |                          |                                                           |              |             |             |           | SAE 15W-40                          |            |            |             |
| DEF/<br>AdBlue®<br>tank         | Mixture of urea<br>and deionized<br>water                   | 27 (7.1)                 | ISO 22241, High-purity urea + deionized water (32.5:67.5) |              |             |             |           |                                     |            |            |             |
| Swing<br>drive                  | Gear oil                                                    | 6.2 (1.2)                | ★SAE 75W-90                                               |              |             |             |           |                                     |            |            |             |
| Final<br>drive                  |                                                             | 4.5 × 2<br>(1.2 × 2)     |                                                           |              |             |             |           | SAE 80W-90                          |            |            |             |
| Hydraulic<br>tank               | Hydraulic oil                                               | Tank : 165<br>(43.6)     | ★ISO VG 15                                                |              |             |             |           |                                     |            |            |             |
|                                 |                                                             |                          |                                                           |              |             |             |           | ISO VG 32                           |            |            |             |
|                                 |                                                             | System : 340<br>(89.8)   |                                                           |              |             |             |           | ISO VG 46, HBHO VG 46★ <sup>3</sup> |            |            |             |
|                                 |                                                             |                          |                                                           |              |             |             |           | ISO VG 68                           |            |            |             |
| Fuel tank                       | Diesel fuel★ <sup>1</sup>                                   | 310 (81.9)               | ★ASTM D975 NO.1                                           |              |             |             |           |                                     |            |            |             |
|                                 |                                                             |                          |                                                           |              |             |             |           | ASTM D975 NO.2                      |            |            |             |
| Fitting<br>(grease<br>nipple)   | Grease                                                      | As required              | ★NLGI NO.1                                                |              |             |             |           |                                     |            |            |             |
|                                 |                                                             |                          |                                                           |              |             |             |           | NLGI NO.2                           |            |            |             |
| Radiator<br>(reservoir<br>tank) | Mixture of<br>antifreeze<br>and soft<br>water★ <sup>2</sup> | 40 (10.6)                | Ethylene glycol base permanent type (50 : 50)             |              |             |             |           |                                     |            |            |             |
|                                 |                                                             |                          | ★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

**DEF** : Diesel Exhaust Fluid, DEF compatible with AdBlue®

★ : 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> : HD Hyundai Construction Equipment

Bio Hydraulic Oil

※ Using any lubricating oils other than HD Hyundai Construction Equipment genuine products may lead to a deterioration of performance and cause damage to major components.

※ Do not mix HD Hyundai Construction Equipment 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 HD Hyundai Construction Equipment genuine lubricating oils and grease for use in regions with extremely low temperatures, please contact HD Hyundai Construction Equipment dealers.