SECTION 1 GENERAL

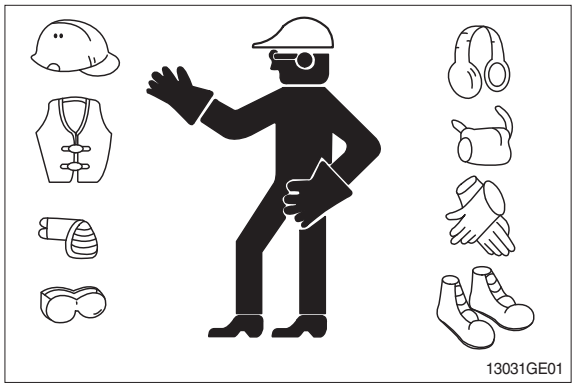
GROUP 1 SAFETY

FOLLOW SAFE PROCEDURE

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

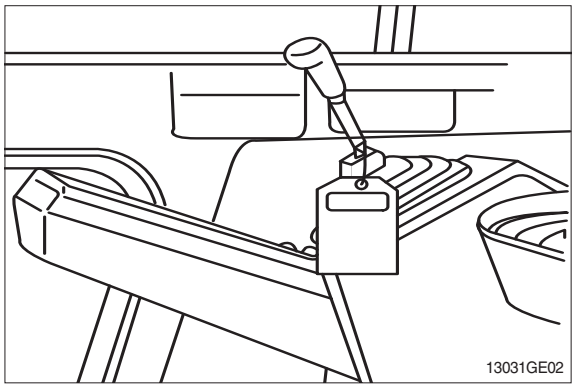
WEAR PROTECTIVE CLOTHING

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



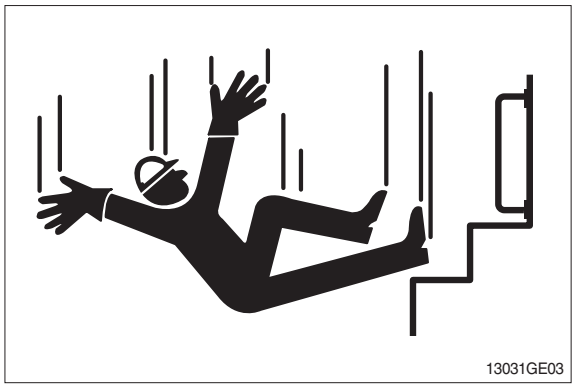
WARN OTHERS OF SERVICE WORK

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.

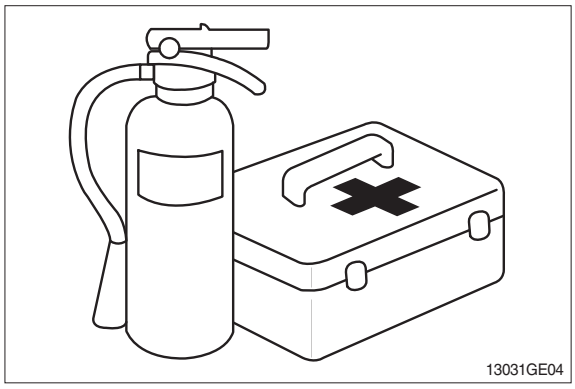


PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

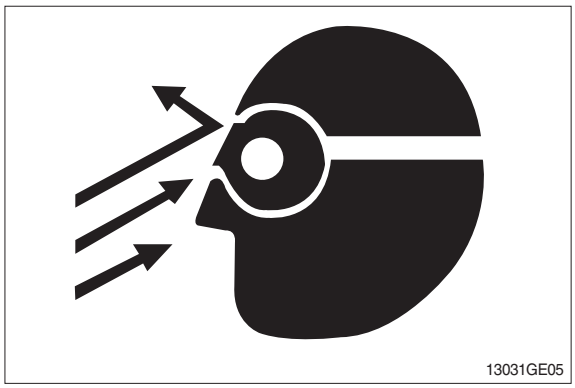
Keep a first aid kit and fire extinguisher handy.

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



PROTECT AGAINST FLYING DEBRIS

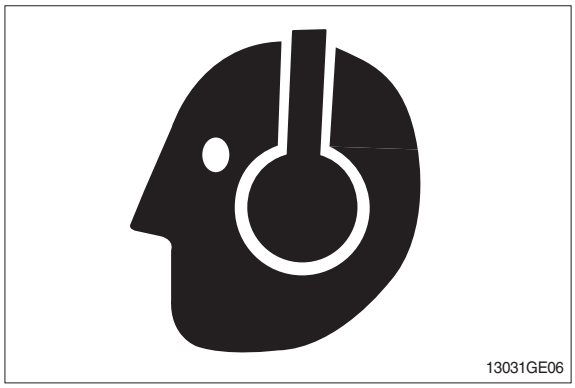
Guard against injury from flying pieces of metal or debris; Wear goggles or safety glasses.



PROTECT AGAINST NOISE

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

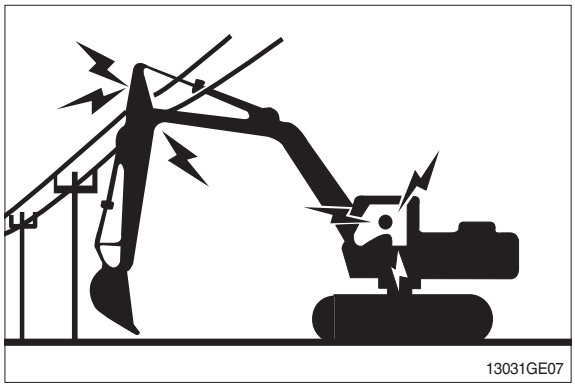
Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



AVOID POWER LINES

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

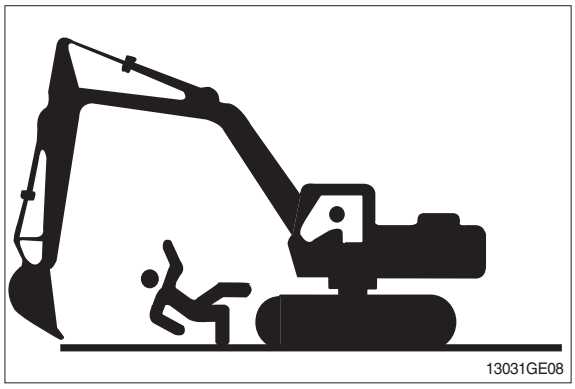
Never move any part of the machine or load closer to electric line than 3m(10ft) plus twice the line insulator length.



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.

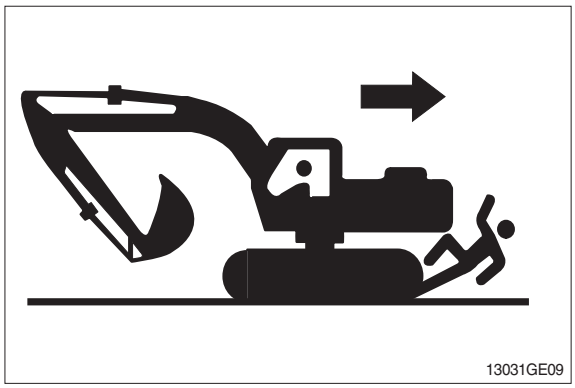


MOVE AND OPERATE MACHINE SAFELY

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 FORM 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

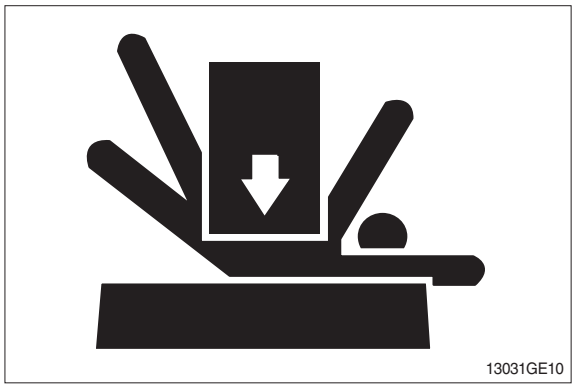
Before working on the machine:

- Park machine on a level surface.
- Lower bucket to the ground.
- Turn auto idle switch off.
- Run engine at low idle speed without load for 5 minutes.
- Turn key switch to OFF to stop engine. Remove key from switch.
- Place safety 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.


13031GE10

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.


13031GE11

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.


13031GE12

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

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

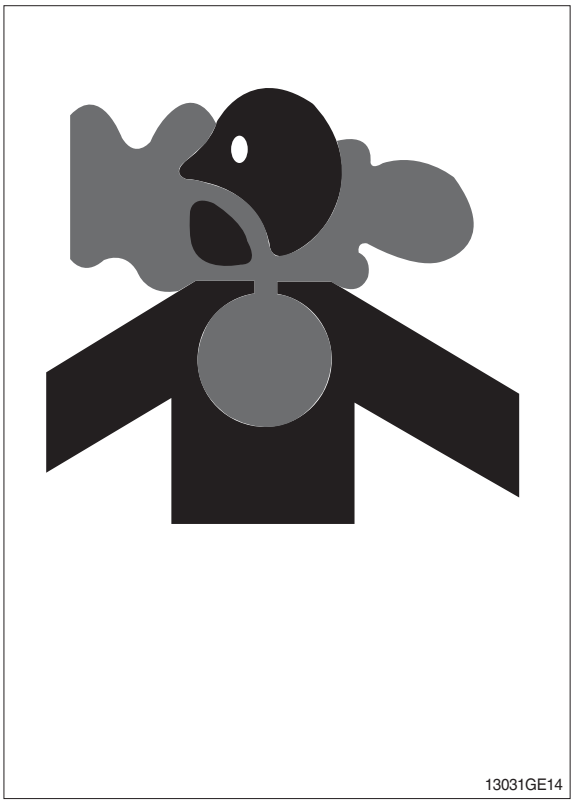
Do not store oily rags; They can ignite and burn spontaneously.


13031GE13

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.


13031GE14

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

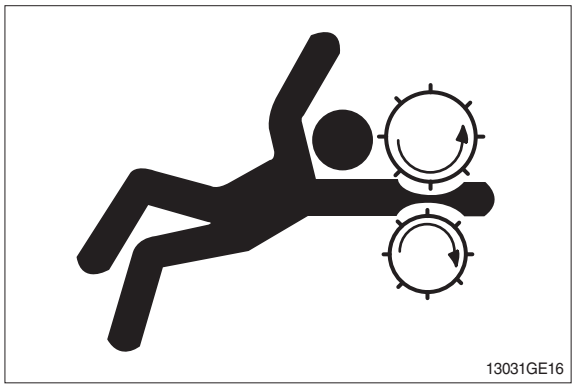
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.


13031GE15

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.

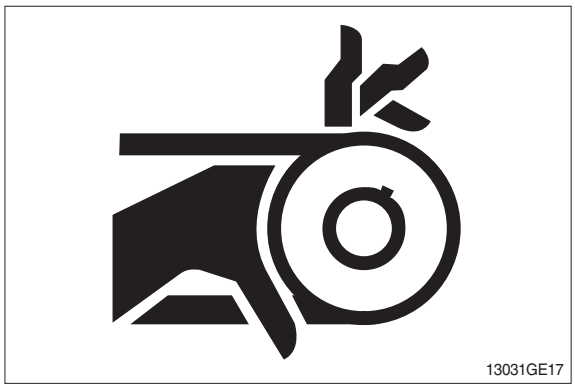
Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



STAY CLEAR OF MOVING PARTS

Entanglements in moving parts can cause serious injury.

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



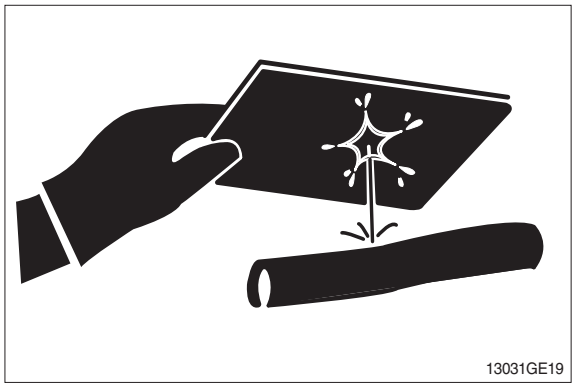
AVOID HIGH PRESSURE FLUIDS

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:

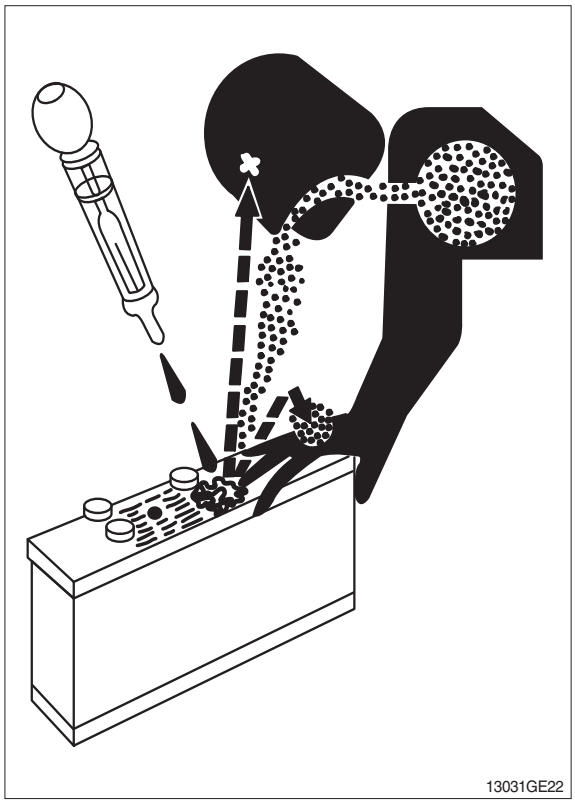
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling of dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

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

If acid is swallowed:

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



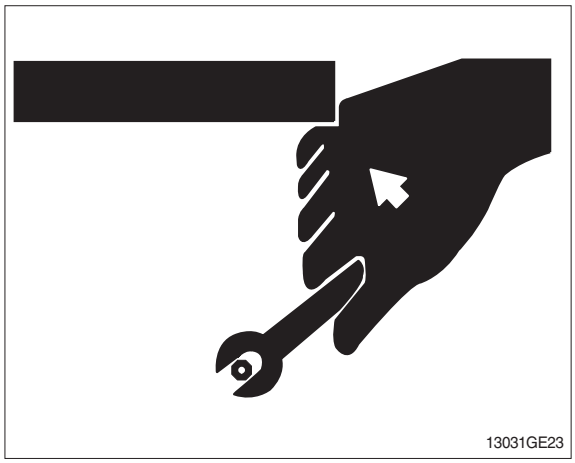
USE TOOLS PROPERLY

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

Use power tools only to loosen threaded tools and fasteners.

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

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

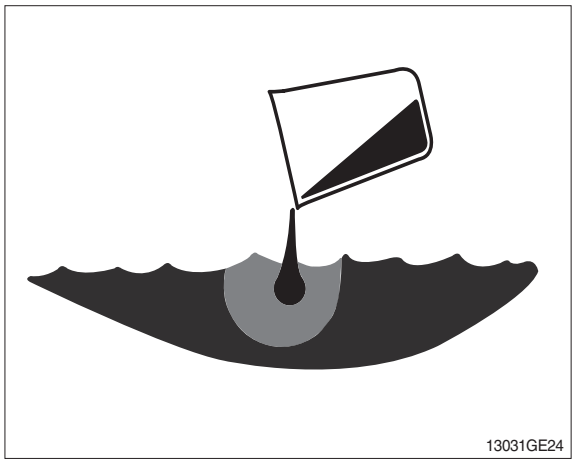


DISPOSE OF FLUIDS PROPERLY

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

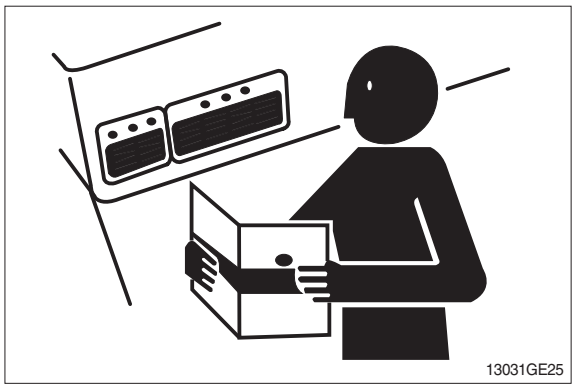
Use proper containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

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


13031GE24

REPLACE SAFETY LABELS

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

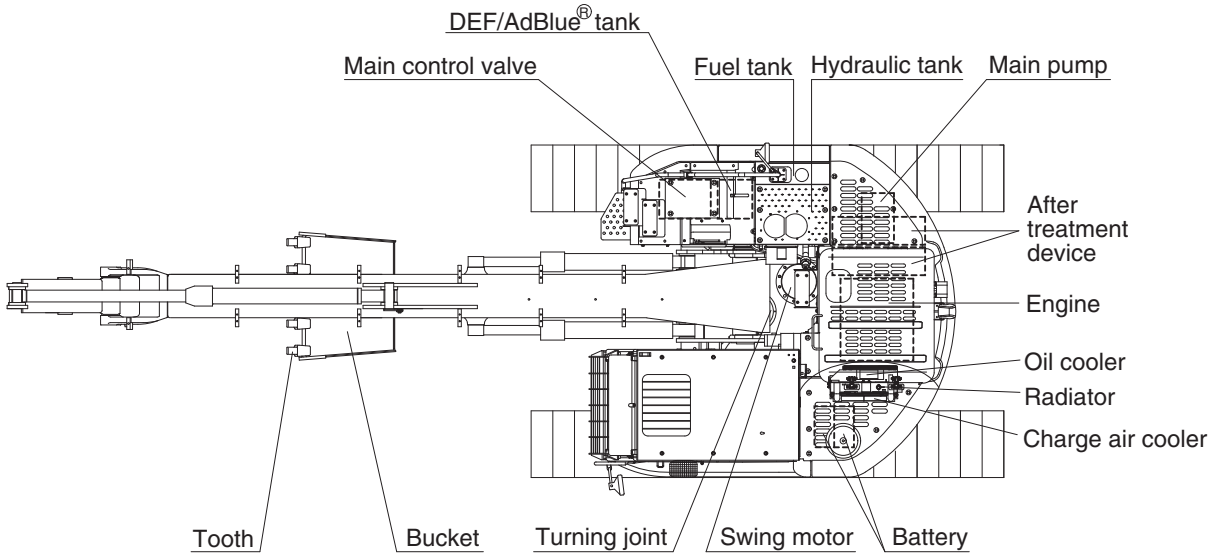

13031GE25

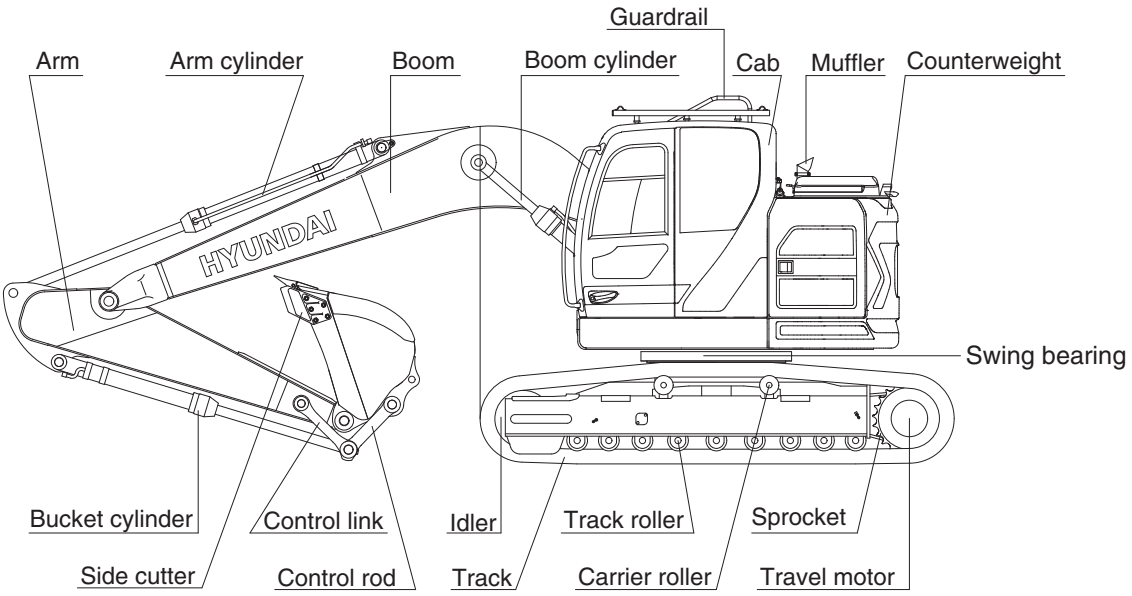
LIVE WITH SAFETY

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



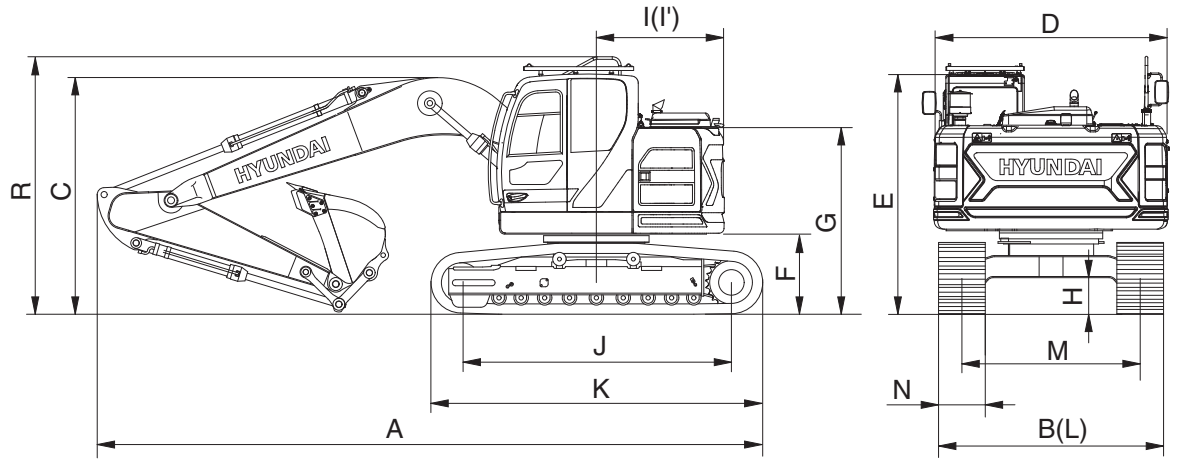


235F2SP01

2. SPECIFICATIONS

1) HX235LCR

· 5.68 m (18' 8") BOOM and 2.92 m (9' 7") ARM

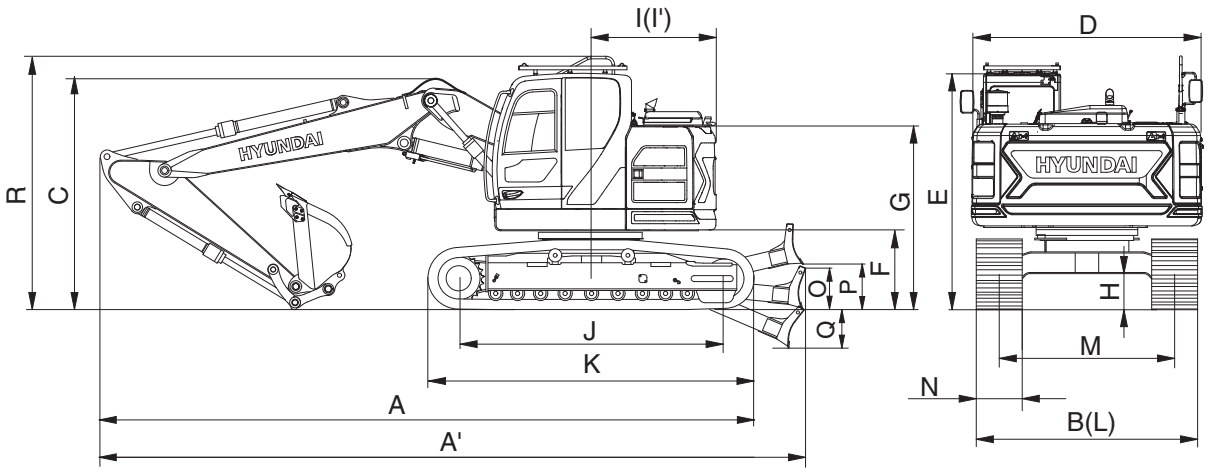


235F2SP02

Description		Unit	Specification
Operating weight		kg (lb)	24000 (52910)
Bucket capacity (SAE heaped), standard		m^3 (yd^3)	0.8 (1.05)
Overall length	A	mm (ft-in)	8910 (29' 3")
Overall width, with 600mm shoe	B		2990 (9' 10")
Overall height	C		3020 (9' 11")
Superstructure width	D		2980 (9' 9")
Overall height of cab	E		3100 (10' 2")
Ground clearance of counterweight	F		1080 (3' 7")
Engine cover height	G		2385 (7' 10")
Minimum ground clearance	H		480 (1' 7")
Rear-end distance	I		1780 (5' 10")
Rear-end swing radius	I'		1780 (5' 10")
Distance between tumblers	J		3650 (12' 0")
Undercarriage length	K		4404 (14' 5")
Undercarriage width	L		2990 (9' 10")
Track gauge	M		2390 (7' 10")
Track shoe width, standard	N		600 (24")
Overall height of guardrail	R		3290 (10' 10")
Travel speed (low/high)		km/hr (mph)	3.3/5.5 (2.1/3.4)
Swing speed		rpm	10.8
Gradeability		Degree (%)	35 (70)
Ground pressure (600 mm shoe)		kgf/cm^2 (psi)	0.57 (8.11)
Max traction force		kg (lb)	20600 (45415)

2) HX235LCR

· 5.65 m (18' 6") HYD ADJUSTABLE BOOM AND 2.4 m (7' 10") ARM WITH DOZER



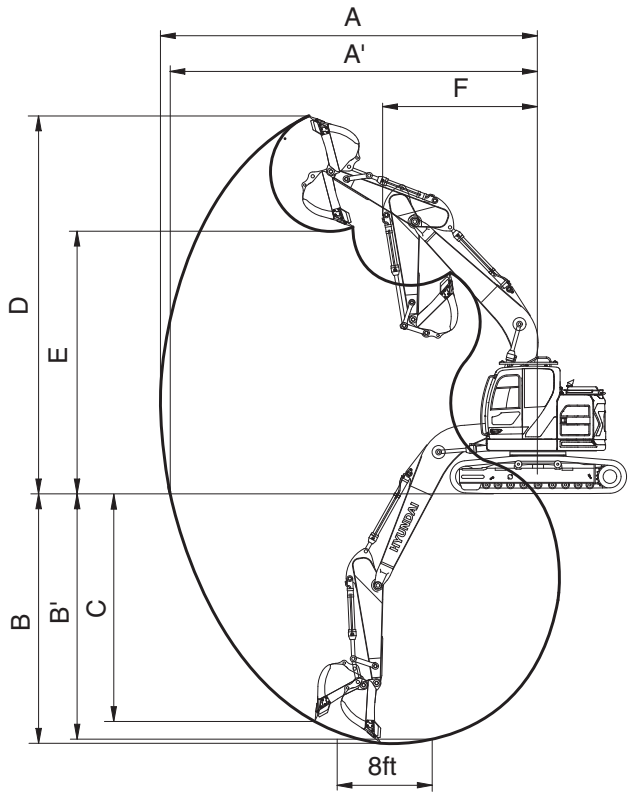
235F2SP02A

Description		Unit	Specification
Operating weight		kg (lb)	26700 (58860)
Bucket capacity (SAE heaped), standard		m^3 (yd^3)	0.8 (1.05)
Overall length	A / A'	mm (ft-in)	8910 (29' 3") / 9760 (32' 0")
Overall width, with 600mm shoe	B		2990 (9' 10")
Overall height	C		3000 (9' 10")
Superstructure width	D		2980 (9' 9")
Overall height of cab	E		3100 (10' 2")
Ground clearance of counterweight	F		1080 (3' 7")
Engine cover height	G		2385 (7' 10")
Minimum ground clearance	H		480 (1' 7")
Rear-end distance	I		1780 (5' 10")
Rear-end swing radius	I'		1780 (5' 10")
Distance between tumblers	J		3650 (12' 0")
Undercarriage length	K		4404 (14' 5")
Undercarriage width	L		2990 (9' 10")
Track gauge	M		2390 (7' 10")
Track shoe width, standard	N		600 (24")
Height of blade	O		710 (2' 4")
Ground clearance of blade up	P		575 (1' 11")
Depth of blade down	Q		390 (1' 3")
Overall height of guardrail	R		3290 (10' 10")
Travel speed (low/high)		km/hr (mph)	3.3/5.5 (2.1/3.4)
Swing speed		rpm	10.8
Gradeability		Degree (%)	35 (70)
Ground pressure (600 mm shoe)		kgf/cm^2 (psi)	0.57 (8.11)
Max traction force		kg (lb)	20600 (45415)

3. WORKING RANGE

1) HX235LCR

· 5.68 m (18' 8") MONO BOOM



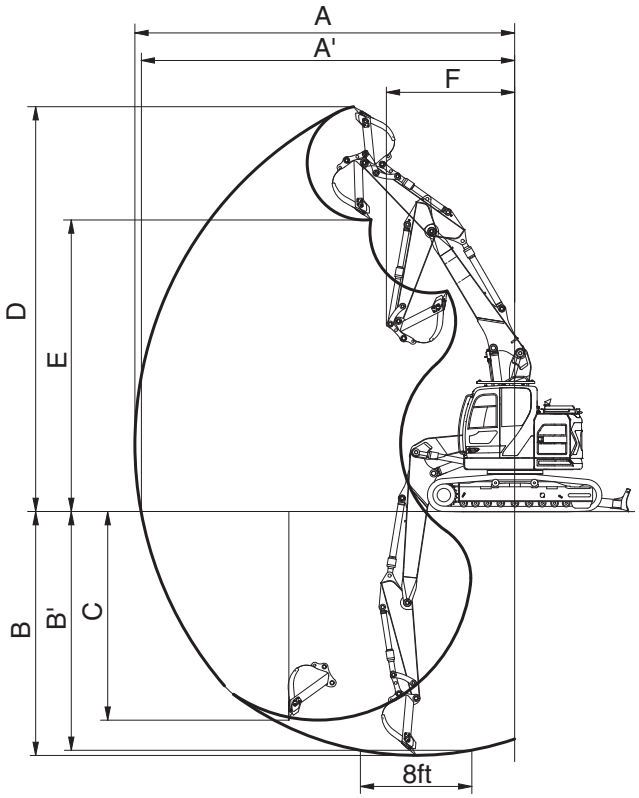
235F2SP03

Description		2.0 m (6' 7") Arm	2.40 m (7' 10") Arm	2.92 m (9' 7") Arm
Max digging reach	A	9040 mm (29' 8")	9430 mm (30' 11")	9910 mm (32' 6")
Max digging reach on ground	A'	8860 mm (29' 1")	9260 mm (30' 5")	9750 mm (32' 0")
Max digging depth	B	5780 mm (19' 0")	6180 mm (20' 3")	6700 mm (22' 0")
Max digging depth (8 ft level)	B'	5550 mm (18' 3")	5980 mm (19' 7")	6530 mm (21' 5")
Max vertical wall digging depth	C	5140 mm (16' 10")	5710 mm (18' 9")	6270 mm (20' 7")
Max digging height	D	10090 mm (33' 1")	10420 mm (34' 2")	10830 mm (35' 6")
Max dumping height	E	7190 mm (23' 7")	7510 mm (24' 8")	7890 mm (25' 11")
Min swing radius	F	2860 mm (9' 5")	2550 mm (8' 4")	2350 mm (7' 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	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

2) HX235LCR

· 5.65 m (18' 6") ADJUSTABLE BOOM



235F2SP03A

Description		2.0 m (6' 7") Arm	2.40 m (7' 10") Arm	2.92 m (9' 7") Arm
Max digging reach	A	9050 mm (29' 8")	9460 mm (31' 0")	10020 mm (32' 10")
Max digging reach on ground	A'	8880 mm (29' 2")	9290 mm (30' 6")	9860 mm (32' 4")
Max digging depth	B	5460 mm (17' 11")	5860 mm (19' 3")	6380 mm (20' 11")
Max digging depth (8 ft level)	B'	5340 mm (17' 6")	5750 mm (18' 10")	6270 mm (20' 7")
Max vertical wall digging depth	C	4530 mm (14' 10")	4970 mm (16' 4")	5520 mm (18' 1")
Max digging height	D	10600 mm (34' 9")	10990 mm (36' 1")	11470 mm (37' 8")
Max dumping height	E	7680 mm (25' 2")	8090 mm (26' 7")	8540 mm (28' 0")
Min swing radius	F	2130 mm (7' 0")	2030 mm (6' 8")	2000 mm (6' 7")
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

Item	kg	lb
Upperstructure assembly		
· Main frame weld assembly	2008	4430
· Engine assembly	520	1150
· Main pump assembly	140	310
· Main control valve assembly	220	485
· Swing motor assembly	350	770
· Hydraulic oil tank assembly	175	385
· Fuel tank assembly	150	331
· Counterweight	5300	11680
· Cab assembly	450	990
Lower chassis assembly		
· Track frame weld assembly	2720	6000
· Swing bearing	295	650
· Travel motor assembly	305	670
· Turning joint	55	120
· Track recoil spring	140	310
· Idler	151	333
· Carrier roller	21	46
· Track roller	48	106
· Sprocket	56	123
· Track-chain assembly (600 ㎜ standard triple grouser shoe)	1451	3200
Front attachment assembly		
· 5.68 m boom assembly	1510	3330
· 2.92 m arm assembly	760	1680
· 0.8 m^3 SAE heaped bucket	770	1700
· Boom cylinder assembly	190	420
· Arm cylinder assembly	290	640
· Bucket cylinder assembly	165	365
· 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) HX235LCR, MONO BOOM

(1) 5.68 m (18' 8") boom, 2.00 m (6' 7") arm equipped with 0.80 m³ (SAE heaped) bucket, 600 mm (24") triple grouser shoe.

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

Load point height		3.0 m (10 ft)		4.5 m (15 ft)		6.0 m (20 ft)		7.5 m (25 ft)		At max. reach Capacity		At max. reach Reach
												m (ft)
10.5 m (35 ft)	kg									*4160	*4160	4.63
	lb									*9170	*9170	(15.2)
9.0 m (30 ft)	kg									*4580	*4580	4.48
	lb									*10010	*10100	(14.7)
7.5 m (25 ft)	kg			*4770	*4770					*4100	*4100	6.56
	lb			*10520	*10520					*9040	*9040	(21.5)
6.0 m (20 ft)	kg			*4930	*4930	*4540	*4540			*3990	3080	7.70
	lb			*10870	*10870	*10010	*10010			*8800	6790	(25.3)
4.5 m (15 ft)	kg	*8300	*8300	*5880	*5880	*4860	4630			*3990	2580	8.36
	lb	*18300	*18300	*12960	*12960	*10710	10210			*8800	5690	(27.4)
3.0 m (10 ft)	kg			*7250	6860	*5440	4370	*4570	3000	*4030	2340	8.67
	lb			*15980	15120	*11990	9630	*10080	6610	*8880	5160	(28.4)
1.5 m (5 ft)	kg			*8350	6350	*5980	4120	*4770	2890	*4080	2290	8.66
	lb			*18410	14000	*13180	9080	*10520	6370	*8990	5050	(28.4)
Ground Line	kg			*8660	6110	*6250	3960			*4100	2410	8.36
	lb			*19090	13470	*13780	8730			*9040	5310	(27.4)
-1.5 m (-5 ft)	kg	*11410	*11410	*8260	6080	*6050	3910			*4010	2790	7.69
	lb	*25150	*25150	*18210	13400	*13340	8620			*8840	6150	(25.2)
-3.0 m (-10 ft)	kg	*9650	*9650	*7130	6190	*5090	4000			*3610	*3610	6.55
	lb	*21270	*21270	*15720	13650	*11220	8820			*7960	*7960	(21.5)

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 necessory for non-standard configurations.

(2) 5.68 m (18' 8") boom, 2.40 m (7' 10") arm equipped with 0.80 m³ (SAE heaped) bucket, 600 mm (24") 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)
9.0 m (30 ft)	kg											*4060	*4060	5.25
	lb											*8950	*8950	(17.2)
7.5 m (25 ft)	kg					*4230	*4230					*3770	3710	7.07
	lb					*9330	*9330					*8310	8180	(23.2)
6.0 m (20 ft)	kg					*4450	*4450	*4170	*4170			*3700	2800	8.12
	lb					*9810	*9810	*9190	*9190			*8160	6170	(26.6)
4.5 m (15 ft)	kg			*7210	*7210	*5400	*5400	*4550	*4550	*3900	3120	*3720	2370	8.74
	lb			*15900	*15900	*11900	*11900	*10030	*10030	*8600	6880	*8200	5220	(28.7)
3.0 m (10 ft)	kg			*11320	*11320	*6790	*6790	*5170	4410	*4360	3010	*3770	2160	9.04
	lb			*24960	*24960	*14970	*14970	*11400	9720	*9610	6640	*8310	4760	(29.7)
1.5 m (5 ft)	kg					*8040	6400	*5790	4130	*4630	2880	*3830	2110	9.03
	lb					*17730	14110	*12760	9110	*10210	6350	*8440	4650	(29.6)
Ground Line	kg			*9170	*9170	*8580	6100	*6150	3940	*4760	2780	*3870	2210	8.74
	lb			*20220	*20220	*18920	13450	*13560	8690	*10490	6130	*8530	4870	(28.7)
-1.5 m (-5 ft)	kg	*9770	*9770	*12150	12070	*8390	6010	*6100	3860			*3840	2510	8.12
	lb	*21540	*21540	*26790	26610	*18500	13250	*13450	8510			*8470	5530	(26.6)
-3.0 m (-10 ft)	kg	*14230	*14230	*10480	*10480	*7490	6080	*5420	3900			*3600	3230	7.06
	lb	*31370	*31370	*23100	*23100	*16510	13400	*11950	8600			*7940	7120	(23.2)
-4.5 m (-15 ft)	kg			*7610	*7610	*5470	*5470							
	lb			*16780	*16780	*12060	*12060							

(3) 5.68 m (18' 8") boom, 2.92 m (9' 7") arm equipped with 0.80 m³ (SAE heaped) bucket, 600 mm (24") 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)
9.0 m (30 ft)	kg					*2920	*2920					*3570	*3570	6.12
	lb					*6440	*6440					*7870	*7870	(20.1)
7.5 m (25 ft)	kg							*3260	*3260			*3410	3210	7.70
	lb							*7190	*7190			*7520	7080	(25.3)
6.0 m (20 ft)	kg							*3720	*3720			*3380	2500	8.66
	lb							*8200	*8200			*7450	5510	(28.4)
4.5 m (15 ft)	kg					*4750	*4750	*4140	*4140	*3800	3170	*3410	2130	9.24
	lb					*10470	*10470	*9130	*9130	*8380	6990	*7520	4700	(30.3)
3.0 m (10 ft)	kg			*9680	*9680	*6180	*6180	*4810	4460	*4100	3030	*3460	1950	9.52
	lb			*21340	*21340	*13620	*13620	*10600	9830	*9040	6680	*7630	4300	(31.2)
1.5 m (5 ft)	kg			*9550	*9550	*7590	6510	*5500	4160	*4440	2880	*3530	1900	9.52
	lb			*21050	*21050	*16730	14350	*12130	9170	*9790	6350	*7780	4190	(31.2)
Ground Line	kg			*9930	*9930	*8400	6110	*5990	3930	*4670	2760	*3600	1970	9.24
	lb			*21890	*21890	*18520	13470	*13210	8660	*10300	6080	*7940	4340	(30.3)
-1.5 m (-5 ft)	kg	*8850	*8850	*12790	11890	*8470	5950	*6100	3810	*4630	2690	*3620	2210	8.66
	lb	*19510	*19510	*28200	26210	*18670	13120	*13450	8400	*10210	5930	*7980	4870	(28.4)
-3.0 m (-10 ft)	kg	*12280	*12280	*11380	*11380	*7840	5960	*5690	3810			*3500	2750	7.69
	lb	*27070	*27070	*25090	*25090	*17280	13140	*12540	8400			*7720	6060	(25.2)
-4.5 m (-15 ft)	kg			*8920	*8920	*6300	6140					*2930	*2930	6.11
	lb			*19670	*19670	*13890	13540					*6460	*6460	(20.0)

2) HX235LCR, ADJUSTABLE BOOM

(1) 5.65 m (18' 6") boom, 2.00 m (6' 7") arm equipped with 0.80 m³ (SAE heaped) bucket, 600 mm (24") triple grouser shoe.

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

Load point height		3.0 m (10 ft)		4.5 m (15 ft)		6.0 m (20 ft)		7.5 m (25 ft)		At max. reach Capacity		At max. reach Reach
												m (ft)
9.0 m (30 ft)	kg									*6750	*6750	4.51
	lb									*14880	*14880	(14.8)
7.5 m (25 ft)	kg	*8110	*8110	*6850	*6850					*5200	4160	6.58
	lb	*17880	*17880	*15100	*15100					*11460	9170	(21.6)
6.0 m (20 ft)	kg	*8460	*8460	*6960	*6960	*5740	4770			*4630	3040	7.72
	lb	*18650	*18650	*15340	*15340	*12650	10520			*10210	6700	(25.3)
4.5 m (15 ft)	kg	*11210	*11210	*7620	7500	*5920	4610			*4270	2530	8.37
	lb	*24710	*24710	*16800	16530	*13050	10160			*9410	5580	(27.5)
3.0 m (10 ft)	kg			*8430	6830	*6190	4340	*4850	2960	*3960	2300	8.68
	lb			*18580	15060	*13650	9570	*10690	6530	*8730	5070	(28.5)
1.5 m (5 ft)	kg			*8660	6280	*6260	4080	*4710	2850	*3610	2250	8.68
	lb			*19090	13850	*13800	8990	*10380	6280	*7960	4960	(28.5)
Ground Line	kg			*7950	6040	*5880	3910	*4200	2780	*3130	2380	8.37
	lb			*17530	13320	*12960	8620	*9260	6130	*6900	5250	(27.5)
-1.5 m (-5 ft)	kg	*7060	*7060	*6470	6020	*4870	3870			*2330	*2330	7.71
	lb	*15560	*15560	*14260	13270	*10740	8530			*5140	*5140	(25.3)
-3.0 m (-10 ft)	kg			*4140	*4140	*2800	*2800					
	lb			*9130	*9130	*6170	*6170					

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 necessory for non-standard configurations.

(2) 5.65 m (18' 6") boom, 2.40 m (7' 10") arm equipped with 0.80 m³ (SAE heaped) bucket, 600 mm (24") triple grouser shoe.

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

Load point height		3.0 m (10 ft)		4.5 m (15 ft)		6.0 m (20 ft)		7.5 m (25 ft)		At max. reach Capacity		At max. reach Reach
												m (ft)
9.0 m (30 ft)	kg	*5600	*5600							*5830	*5830	5.31
	lb	*12350	*12350							*12850	*12850	(17.4)
7.5 m (25 ft)	kg	*6240	*6240	*5830	*5830					*4760	3650	7.10
	lb	*13760	*13760	*12850	*12850					*10490	8050	(23.3)
6.0 m (20 ft)	kg	*6390	*6390	*6570	*6570	*5480	4850			*4290	2750	8.15
	lb	*14090	14090	*14480	*14480	*12080	10690			*9460	6060	(26.7)
4.5 m (15 ft)	kg	*10370	*10370	*7270	*7270	*5720	4670	*4040	3090	*3980	2320	8.77
	lb	*22860	*22860	*16030	*16030	*12610	10300	*8910	6810	*8770	5110	(28.8)
3.0 m (10 ft)	kg			*8170	6960	*6050	4380	*4790	2980	*3720	2110	9.06
	lb			*18010	15340	*13340	9660	*10560	6570	*8200	4650	(29.7)
1.5 m (5 ft)	kg			*8620	6350	*6220	4090	*4740	2840	*3420	2070	9.06
	lb			*19000	14000	*13710	9020	*10450	6260	*7540	4560	(29.7)
Ground Line	kg	*8940	*8940	*8190	6030	*5980	3890	*4400	2740	*3010	2170	8.77
	lb	*19710	*19710	*18060	13290	*13180	8580	*9700	6040	*6640	4780	(28.8)
-3.0 m (-5 ft)	kg	*8500	*8500	*6940	5950	*5160	3820			*2360	*2360	8.15
	lb	*18740	*18740	*15300	13120	*11380	8420			*5200	*5200	(26.7)
-3.0 m (-10 ft)	kg			*4860	*4860	*3490	*3490					
	lb			*10710	*10710	*7690	*7690					

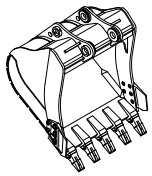
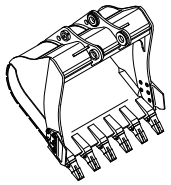
(3) 5.65 m (18' 6") boom, 2.92 m (9' 7") arm equipped with 0.80 m³ (SAE heaped) bucket, 600 mm (24") triple grouser shoe.

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

Load point height		3.0 m (10 ft)		4.5 m (15 ft)		6.0 m (20 ft)		7.5 m (25 ft)		At max. reach Capacity		At max. reach Reach
												m (ft)
9.0 m (30 ft)	kg	*4950	*4950	*3120	*3120					*4630	*4630	6.19
	lb	*10910	*10910	*6880	*6880					*10210	*10210	(20.3)
7.5 m (25 ft)	kg			*4750	*4750	*3400	*3400			*4050	3130	7.75
	lb			*10470	*10470	*7500	*7500			*8930	6900	(25.4)
6.0 m (20 ft)	kg	*4760	*4760	*5190	*5190	*4840	*4840	*2180	*2180	*3820	2430	8.71
	lb	*10490	*10490	*11440	*11440	*10670	*10670	*4810	*4810	*8420	5360	(28.6)
4.5 m (15 ft)	kg	*6690	*6690	*6760	*6760	*5420	4750	*4250	3140	*3650	2070	9.29
	lb	*14750	*14750	*14900	*14900	*11950	10470	*9370	6920	*8050	4560	(30.5)
3.0 m (10 ft)	kg	*12100	*12100	*7760	7130	*5820	4440	*4670	3000	*3430	1890	9.56
	lb	*26680	*26680	*17110	15720	*12830	9790	*10300	6610	*7560	4170	(31.4)
1.5 m (5 ft)	kg	*9380	*9380	*8470	6450	*6110	4110	*4710	2840	*3180	1850	9.56
	lb	*20680	*20680	*18670	14220	*13470	9060	*10380	6260	*7010	4080	(31.4)
Ground Line	kg	*9730	*9730	*8370	6020	*6040	3870	*4520	2710	*2850	1930	9.29
	lb	*21450	*21450	*18450	13270	*13320	8530	*9960	5970	*6280	4250	(30.5)
-1.5 m (-5 ft)	kg	*9980	*9980	*7420	5870	*5440	3750	*3890	2650	*2330	2170	8.71
	lb	*22000	*22000	*16360	12940	*11990	8270	*8580	5840	*5140	4780	(28.6)
-3.0 m (-10 ft)	kg	*7060	*7060	*5650	*5650	*4130	3760					
	lb	*15560	*15560	*12460	*12460	*9110	8290					

6. BUCKET SELECTION GUIDE

1) GENERAL BUCKET

	
0.80, 0.87, 0.92, 1.10, 1.20 m^3 SAE heaped bucket	1.34 m^3 SAE heaped bucket

Capacity		Width		Weight	Recommendation		
					5.68 m (18' 8") Mono boom		
SAE heaped	CECE heaped	Without side cutter	With side cutter		2.0 m arm (6' 7")	2.4 m arm (7' 10")	2.92 m arm (9' 7")
0.80 m^3 (1.05 yd^3)	0.70 m^3 (0.92 yd^3)	1070 mm (42.1")	1160 mm (45.7")	770 kg (1700 lb)	○	○	○
0.87 m^3 (1.14 yd^3)	0.76 m^3 (0.99 yd^3)	1140 mm (44.9")	1230 mm (48.4")	800 kg (1760 lb)	○	○	⊙
0.92 m^3 (1.20 yd^3)	0.80 m^3 (1.05 yd^3)	1190 mm (46.9")	1280 mm (50.4")	820 kg (1810 lb)	○	○	⊙
1.10 m^3 (1.44 yd^3)	0.96 m^3 (1.26 yd^3)	1375 mm (54.1")	1465 mm (57.7")	890 kg (1960 lb)	○	⊙	●
1.20 m^3 (1.57 yd^3)	1.05 m^3 (1.37 yd^3)	1390 mm (54.7")	1480 mm (58.3")	920 kg (2030 lb)	⊙	●	
1.34 m^3 (1.75 yd^3)	1.17 m^3 (1.53 yd^3)	1525 mm (60.0")	1615 mm (63.6")	990 kg (2180 lb)	●	●	

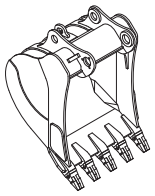
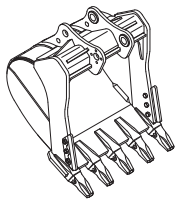
○ Applicable for materials with density of 2000 kg/m^3 (3370 lb/yd^3) or less

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

● Applicable for materials with density of 1100 kg/m^3 (1850 lb/yd^3) 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

	
◈ 0.90, 1.05 m³ SAE heaped bucket	◆ 0.87 m³ SAE heaped bucket

Capacity		Width		Weight	Recommendation		
					5.68 m (18' 8") boom		
SAE heaped	SAE heaped	Without side cutter	With side cutter		2.0 m arm (6' 7")	2.4 m arm (7' 10")	2.92 m arm (9' 7")
◈ 0.90 m³ (1.18 yd³)	0.79 m³ (1.03 yd³)	1210 mm (47.6")	-	880 kg (1940 lb)	○	○	⊙
◈ 1.05 m³ (1.37 yd³)	0.92 m³ (1.20 yd³)	1355 mm (53.3")	-	940 kg (2070 lb)	○	⊙	●
◆ 0.87 m³ (1.14 yd³)	0.77 m³ (1.01 yd³)	1195 mm (47.0")	-	940 kg (2070 lb)	○	○	⊙

◈ : Heavy duty bucket ◆ : Rock-Heavy duty bucket

○ 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

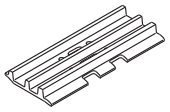
● Applicable for materials with density of 1100 kg/m³ (1850 lb/yd³) or less

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 			
HX235LCR	Shoe width	mm (in)	600 (24)	700 (28)	800 (32)	900 (36)
	Operating weight	kg (lb)	24000 (52910)	24280 (53530)	24560 (54150)	24840 (54760)
	Ground pressure	kgf/cm² (psi)	0.51 (7.25)	0.44 (6.26)	0.39 (5.55)	0.35 (4.98)
	Overall width	mm (ft-in)	2990 (9' 10")	3090 (10' 2")	3190 (10' 6")	3290 (10' 10")
HX235LCR DOZER	Shoe width	mm (in)	600 (24)	700 (28)	800 (32)	900 (36)
	Operating weight	kg (lb)	25500 (56220)	25780 (56830)	26060 (57450)	26340 (58070)
	Ground pressure	kgf/cm² (psi)	0.54 (7.68)	0.47 (6.68)	0.42 (5.97)	0.37 (5.26)
	Overall width	mm (ft-in)	2990 (9' 10")	3090 (10' 2")	3190 (10' 6")	3290 (10' 10")
HX235LCR DOZER + ADJUST BOOM	Shoe width	mm (in)	600 (24)	700 (28)	800 (32)	900 (36)
	Operating weight	kg (lb)	26700 (58860)	26980 (59480)	27260 (60100)	27540 (60710)
	Ground pressure	kgf/cm² (psi)	0.57 (8.11)	0.49 (6.97)	0.44 (6.26)	0.39 (5.55)
	Overall width	mm (ft-in)	2990 (9' 10")	3090 (10' 2")	3190 (10' 6")	3290 (10' 10")

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
600 mm triple grouser	Standard	A
700 mm triple grouser	Option	B
800 mm triple grouser	Option	C
900 mm triple grouser	Option	C

※ Table 2

Category	Applications	Precautions
A	Rocky ground, river beds, normal soil	· Travel at low speed on rough ground with large obstacles such as boulders or fallen trees
B	Normal soil, soft ground	· These shoes cannot be used on rough ground with large obstacles such as boulders or fallen trees · Travel at high speed only on flat ground · Travel slowly at low speed if it is impossible to avoid going over obstacles
C	Extremely soft ground (swampy ground)	· Use the shoes only in the conditions that the machine sinks and it is impossible to use the shoes of category A or B · These shoes cannot be used on rough ground with large obstacles such as boulders or fallen trees · Travel at high speed only on flat ground · Travel slowly at low speed if it is impossible to avoid going over obstacles

8. SPECIFICATIONS FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification
Model	Cummins QSB6.7
Type	4-cycle turbocharged diesel engine, low emission
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)
Dry weight	520 kg (1146 lb)
High idling speed	1800 ± 50 rpm
Low idling speed	850 ± 100 rpm
Rated fuel consumption	158.5 g/Hp · hr at 1950 rpm
Starting motor	Nippon denso (24 V-4.8 kW)
Alternator	Nippon 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^2 (4980psi) [380 kgf/cm^2 (5400 psi)]
Rated oil flow	2 × 228.2 ℓ /min (60.3U.S. gpm/ 50.2U.K. gpm)
Rated speed	1900 rpm

[ ] : Power boost

3) GEAR PUMP

Item	Specification
Type	Fixed displacement gear pump single stage
Capacity	15 cc/rev
Maximum pressure	40 kgf/cm^2 (570 psi)
Rated oil flow	28.5 ℓ/min (7.5 U.S. gpm/6.3 U.K. gpm)

4) MAIN CONTROL VALVE

Item		Specification
Type		9 spools two-block
Operating method		Hydraulic pilot system
Main relief valve pressure		350 kgf/cm^2 (4980 psi) [380 kgf/cm^2 (5400 psi)]
Port relief valve pressure	Boom	400 kgf/cm^2 (5690 psi)
	Arm	400 kgf/cm^2 (5690 psi)
	Bucket	400 kgf/cm^2 (5690 psi)

[ ]: Power boost

5) SWING MOTOR

Item	Specification
Type	Two fixed displacement axial piston motor
Capacity	143 cc/rev
Relief pressure	285 kgf/cm^2 (4050 psi)
Braking system	Automatic, spring applied hydraulic released
Braking torque	63.3 kgf · m (479.5 lbf · ft)
Brake release pressure	20.9~35.5 kgf/cm^2 (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^2 (4980 psi)
Reduction gear type	2-stage planetary
Braking system	Automatic, spring applied hydraulic released
Brake release pressure	14.2~16.8 kgf/cm^2 (202~239 psi)
Braking torque	72.3 kgf · m (523 lbf · ft)

7) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	Ø120× Ø85× 1290 mm
	Cushion	Extend only
Arm cylinder	Bore dia × Rod dia × Stroke	Ø140× Ø100× 1510 mm
	Cushion	Extend and retract
Bucket cylinder	Bore dia × Rod dia × Stroke	Ø120× Ø85× 1055 mm
	Cushion	Extend only
Dozer cylinder (opt)	Bore dia × Rod dia × Stroke	Ø130× Ø80× 240 mm
	Cushion	-
Adjust cylinder (opt)	Bore dia × Rod dia × Stroke	Ø160× Ø100× 1060 mm
	Cushion	-
Adjust boom cylinder (opt)	Bore dia × Rod dia × Stroke	Ø125× Ø85× 1260 mm
	Cushion	Extend only

※ 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.

8) SHOE

Item		Width	Ground pressure	Link quantity	Overall width
HX235LCR	Standard	600 mm (24")	0.51 kgf/cm^2 (7.25 psi)	49	2990 mm (9' 10")
	Option	700 mm (28")	0.44 kgf/cm^2 (6.26 psi)	49	3090 mm (10' 2")
		800 mm (32")	0.39 kgf/cm^2 (5.55 psi)	49	3190 mm (10' 6")
		900 mm (36")	0.35 kgf/cm^2 (4.98 psi)	49	3290 mm (10' 10")

9) BUCKET

Item	Capacity		Tooth quantity	Width	
	SAE heaped	CECE heaped		Without side cutter	With side cutter
HX235LCR	0.80 m^3 (1.05 yd^3)	0.70 m^3 (0.92 yd^3)	5	1070 mm (42.1")	1160 mm (45.7")
	0.87 m^3 (1.14 yd^3)	0.76 m^3 (0.99 yd^3)	5	1140 mm (44.9")	1230 mm (48.4")
	0.92 m^3 (1.20 yd^3)	0.80 m^3 (1.05 yd^3)	5	1190 mm (46.9")	1280 mm (50.4")
	1.10 m^3 (1.44 yd^3)	0.96 m^3 (1.26 yd^3)	5	1375 mm (54.1")	1465 mm (57.7")
	1.20 m^3 (1.57 yd^3)	1.05 m^3 (1.37 yd^3)	5	1390 mm (54.7")	1480 mm (58.3")
	1.34 m^3 (1.75 yd^3)	1.17 m^3 (1.53 yd^3)	6	1525 mm (60.0")	1615 mm (63.6")
	◈0.90 m^3 (1.18 yd^3)	0.79 m^3 (1.03 yd^3)	5	1210 mm (47.6")	-
	◈1.05 m^3 (1.37 yd^3)	0.92 m^3 (1.20 yd^3)	5	1355 mm (53.3")	-
	◆0.87 m^3 (1.14 yd^3)	0.77 m^3 (1.01 yd^3)	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 ℓ (U.S. gal)	Ambient temperature ˚C(˚F) -50 (-58) -30 (-22) -20 (-4) -10 (14) 0 (32) 10 (50) 20 (68) 30 (86) 40 (104)
Engine oil pan	Engine oil	23.7 (6.3)	★SAE 5W-40 SAE 30 SAE 10W SAE 10W-30 SAE 15W-40
DEF/ AdBlue® tank	Mixture of urea and deionized water	27.0 (7.1)	ISO 22241, High-purity urea + deionized water (32.5:67.5)
Swing drive	Gear oil	7.0 (1.8)	★SAE 75W-90
Final drive		7.8×2 (2.1×2)	SAE 80W-90
Hydraulic tank	Hydraulic oil	Tank : 160 (42.3) System : 275 (72.6)	★ISO VG 15 ISO VG 32 ISO VG 46, HBHO VG 46★3 ISO VG 68
Fuel tank	Diesel fuel★1	320 (84.5)	★ASTM D975 NO.1 ASTM D975 NO.2
Fitting (grease nipple)	Grease	As required	★NLGI NO.1 NLGI NO.2
Radiator (reservoir tank)	Mixture of antifreeze and soft water★2	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

★1 : Ultra low sulfur diesel
- sulfur content ≤ 15 ppm

★2 : Soft water
City water or distilled water

★3 : 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.