

SECTION 1 GENERAL



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## SECTION 1 GENERAL

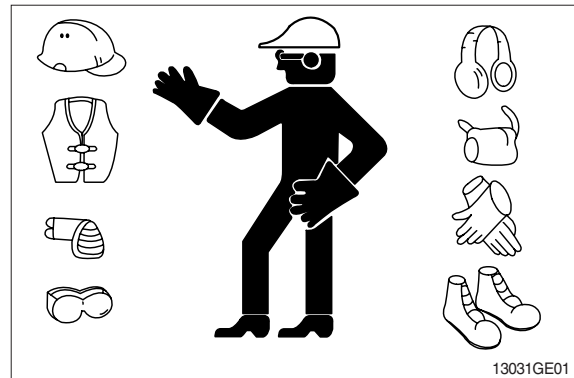
### GROUP 1 SAFETY

#### FOLLOW SAFE PROCEDURE

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

#### WEAR PROTECTIVE CLOTHING

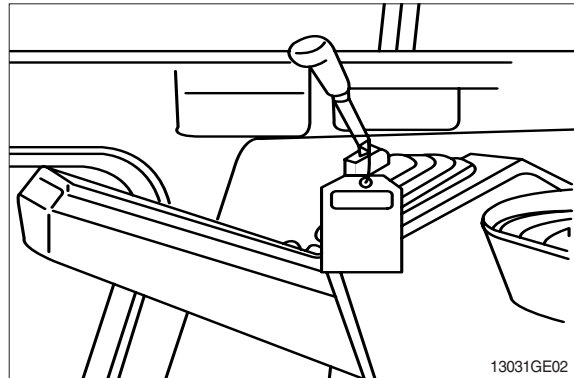
Wear close fitting clothing and safety equipment appropriate to the job.



#### 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.



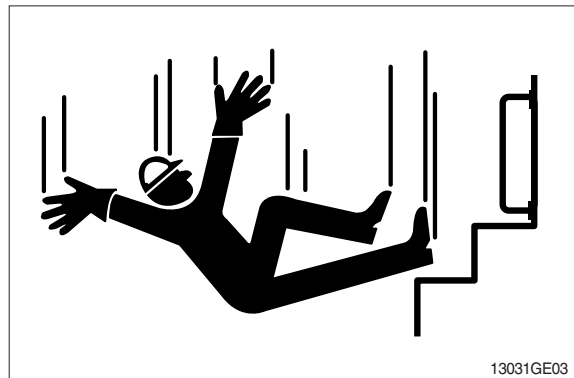
#### USE HANDHOLDS AND STEPS

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.

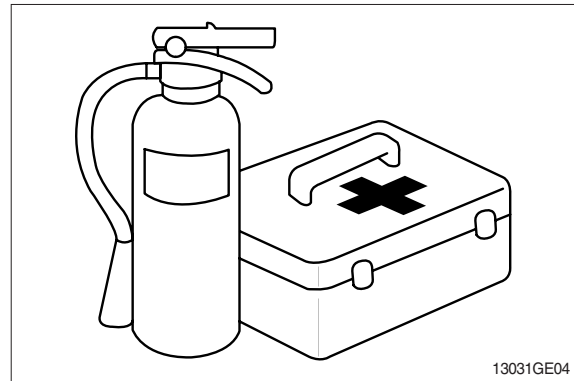


## PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

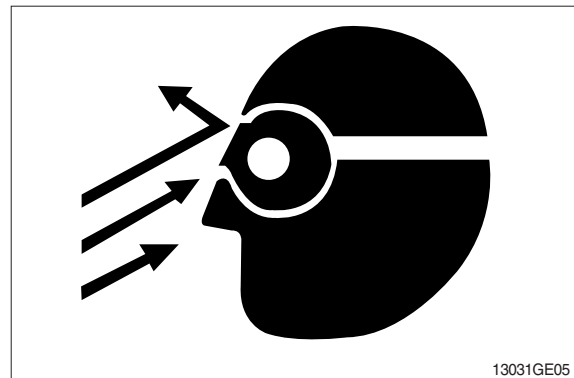
Keep a first aid kit and fire extinguisher handy.

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



## PROTECT AGAINST FLYING DEBRIS

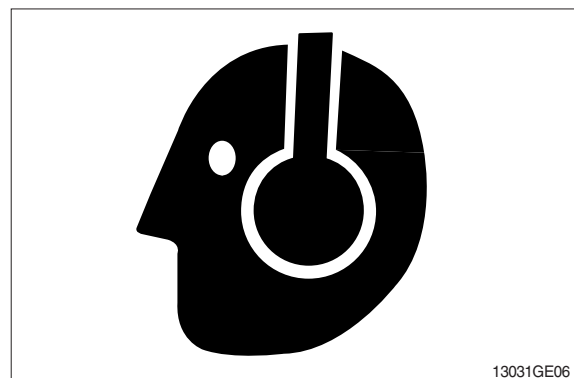
Guard against injury from flying pieces of metal or debris; Wear goggles or safety glasses.



## PROTECT AGAINST NOISE

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

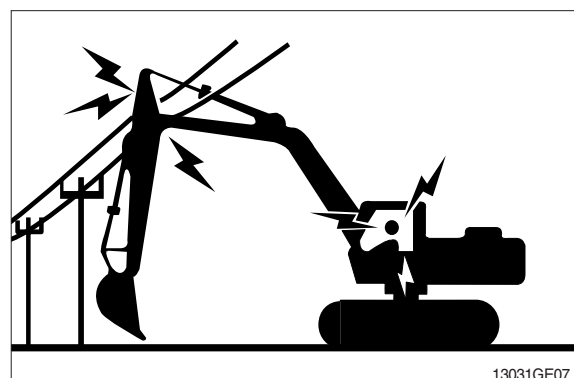
Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



## AVOID POWER LINES

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

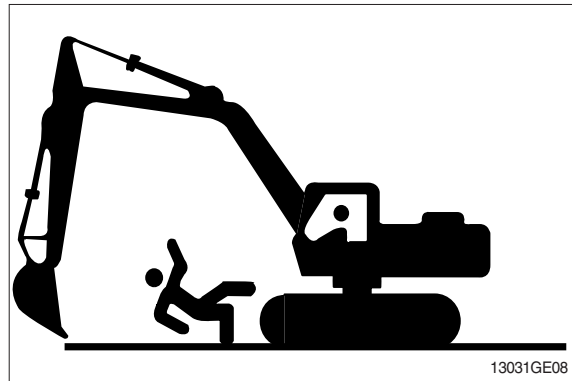
Never move any part of the machine or load closer to electric line than 3m(10ft) plus twice the line insulator length.



## 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.

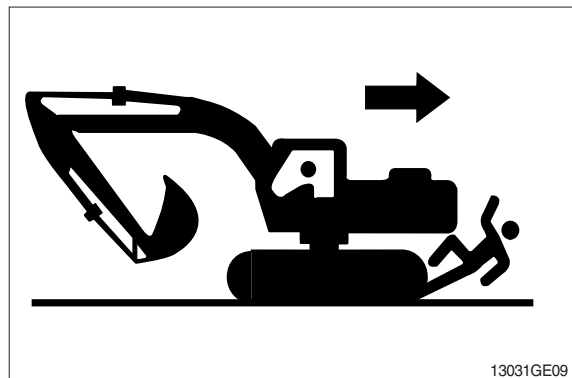


## MOVE AND OPERATE MACHINE SAFELY

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:

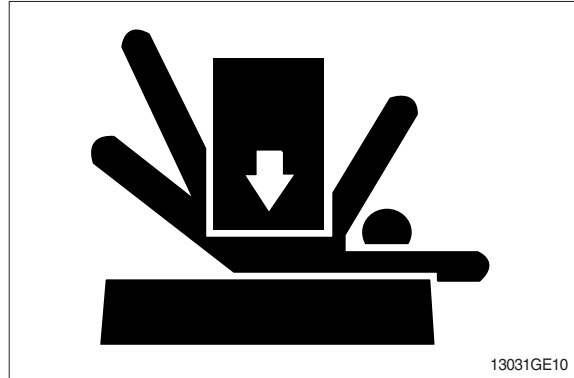
- Park machine on a level surface.
- Lower bucket to the ground.
- Turn auto idle switch off.
- Run engine at 1/2 speed without load for 2 minutes.
- Turn key switch to OFF to stop engine. Remove key from switch.
- Move pilot control shutoff lever to locked position.
- Allow engine to cool.

## 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.

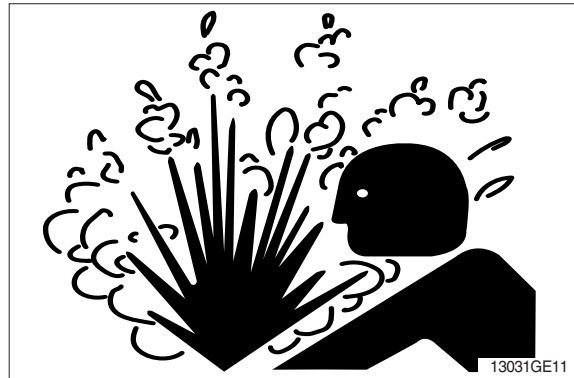
Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



## SERVICE COOLING SYSTEM SAFELY

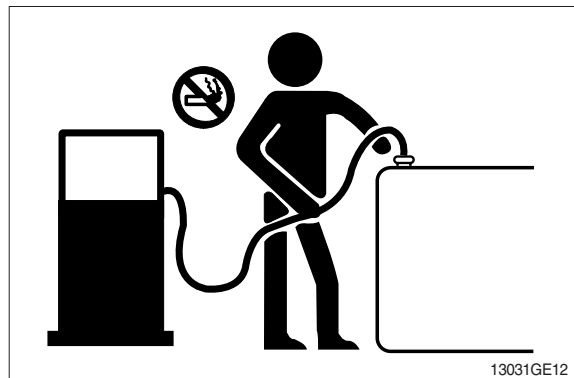
Explosive release of fluids from pressurized cooling system can cause serious burns.

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



## HANDLE FLUIDS SAFELY-AVOID FIRES

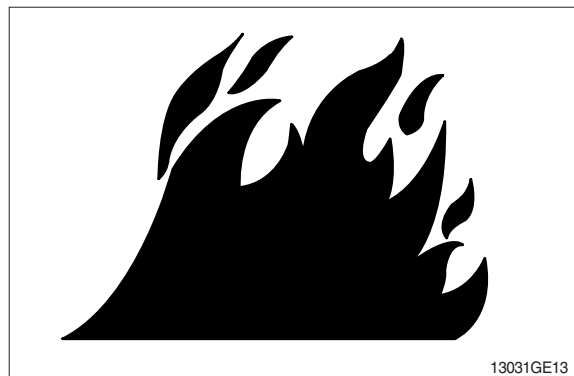
Handle fuel with care; It is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks. Always stop engine before refueling machine. Fill fuel tank outdoors.



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

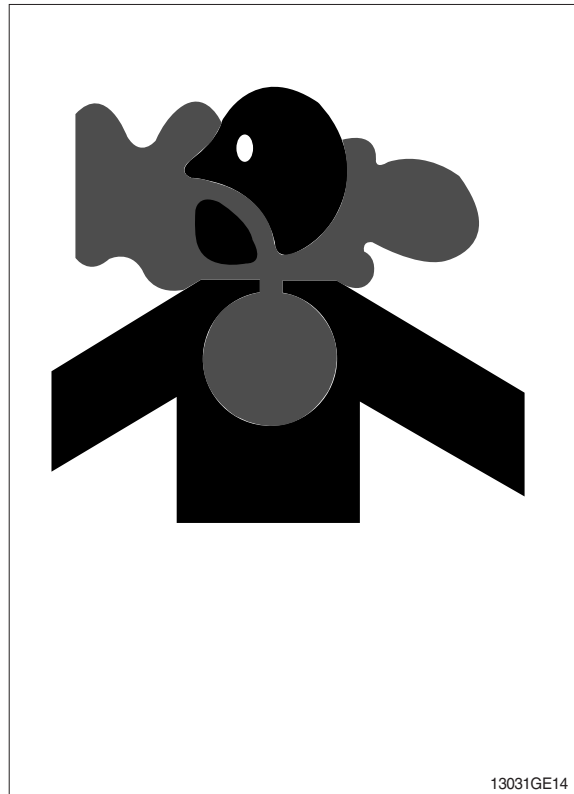
Avoid potentially toxic fumes and dust.

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

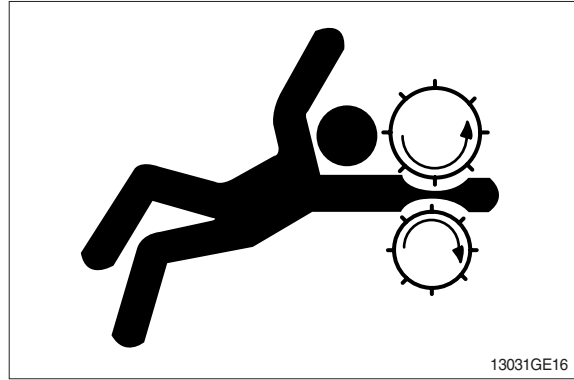
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.



## 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.

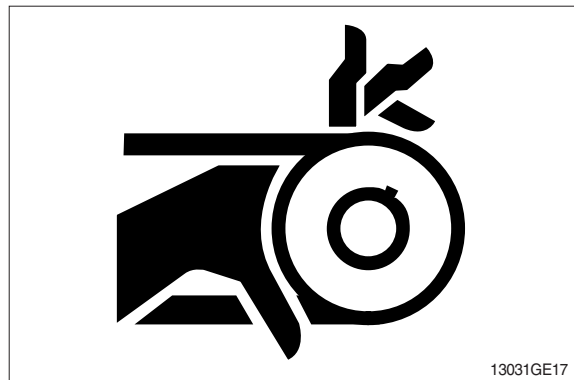
Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



## STAY CLEAR OF MOVING PARTS

Entanglements in moving parts can cause serious injury.

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



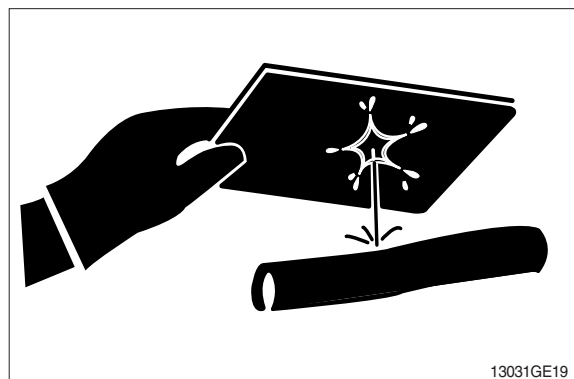
## AVOID HIGH PRESSURE FLUIDS

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:

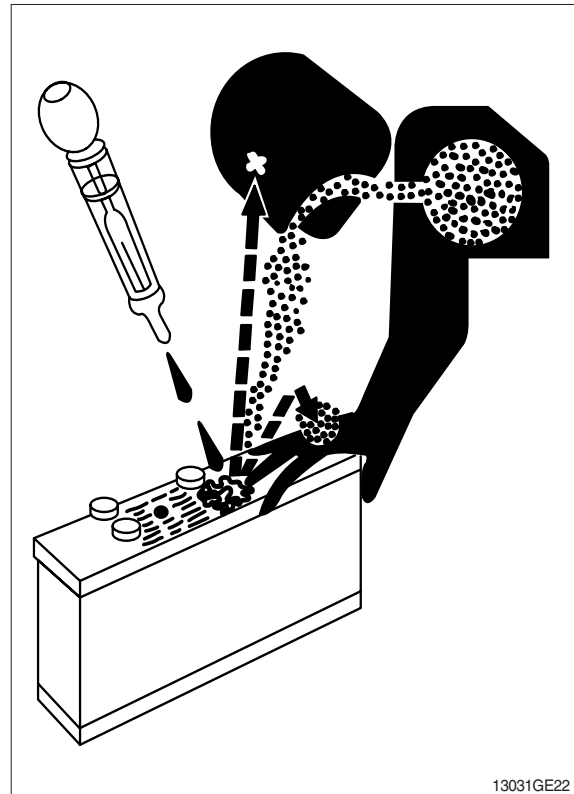
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

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.



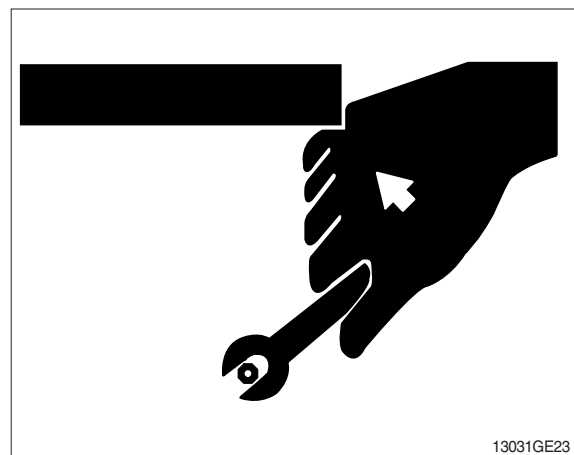
## USE TOOLS PROPERLY

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.)

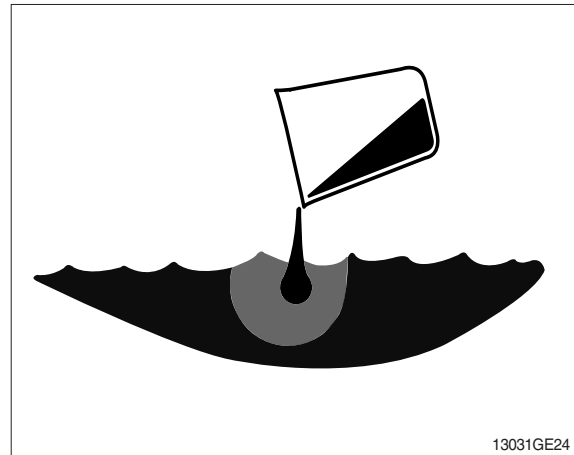


## DISPOSE OF FLUIDS PROPERLY

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.

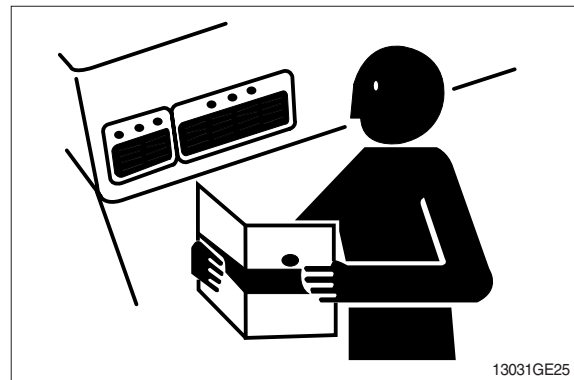
Use proper containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

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.

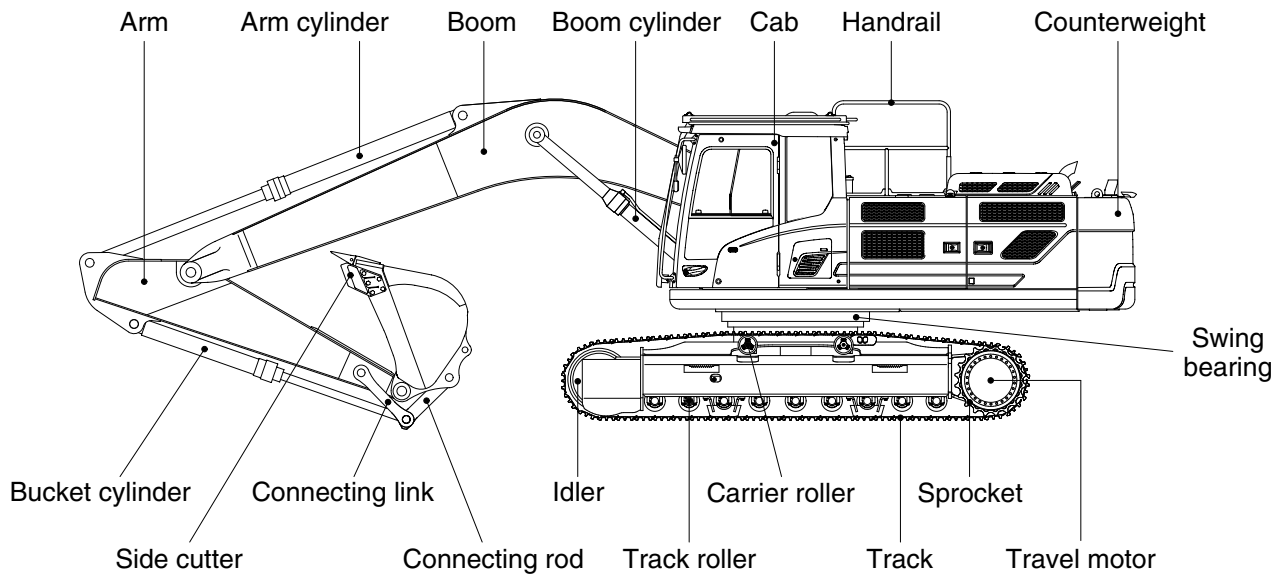
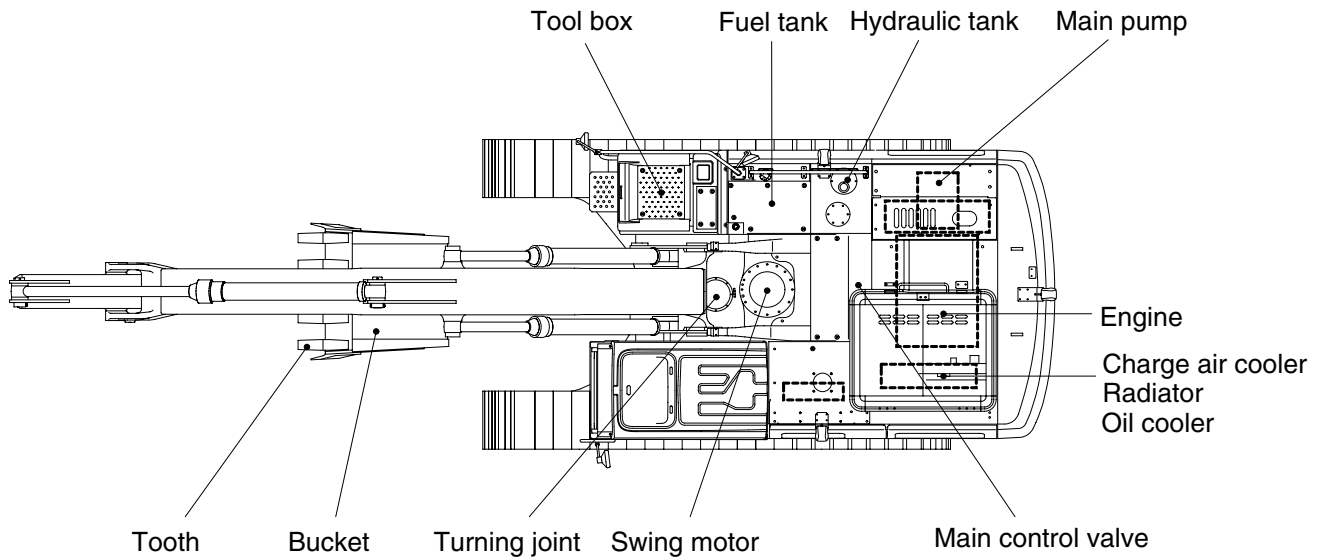


## LIVE WITH SAFETY

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

## GROUP 2 SPECIFICATIONS

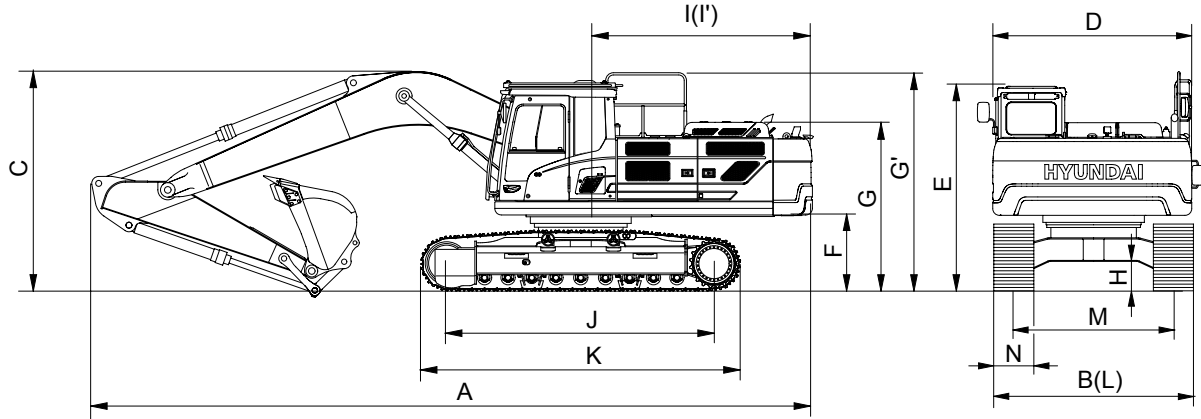
### 1. MAJOR COMPONENT



## 2. SPECIFICATIONS

### 1) HX360L

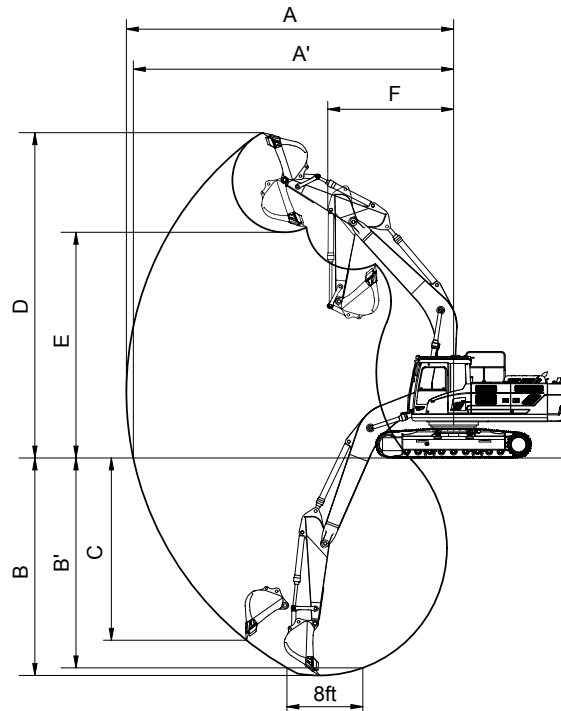
6.45 m (21' 2") boom and 2.65m (8'8") arm



Description		Unit	Specification
Operating weight		kg (lb)	36070 (79521)
Bucket capacity (SAE heaped), standard		m <sup>3</sup> (yd <sup>3</sup> )	1.44 (1.88)
Overall length	A	mm (ft-in)	11400 (37' 4")
Overall width, with 600 mm shoe	B		3230 (10' 9")
Overall height of boom	C		3360 (11' 0")
Superstructure width	D		2980 (9' 9")
Overall height of cab	E		3190 (10' 4")
Ground clearance of counterweight	F		1250 (3' 11")
Overall height of engine hood	G		2672 (8' 9")
Overall height of handrail	G'		3350 (11' 0")
Minimum ground clearance	H		530 (1' 8")
Rear-end distance	I		3510 (11' 6")
Rear-end swing radius	I'		3570 (11' 9")
Distance between tumblers	J		4030 (13' 3")
Undercarriage length	K		4940 (16' 2")
Undercarriage width	L		3280 (10' 9")
Track gauge	M		2590 (8' 5")
Track shoe width, standard	N		600 (24")
Travel speed (low/high)		km/hr (mph)	3.6/6.4 (2.11/3.98)
Swing speed		rpm	11.2
Gradeability		Degree (%)	35 (70)
Ground pressure (600 mm shoe)		kgf/cm <sup>2</sup> (psi)	0.64 (9.03)
Max traction force		kg (lb)	32500 (71650)

### 3. WORKING RANGE

#### 1) HX360L



Description		6.45 m (21' 2") Boom		
		2.2 m (7' 3") Arm	2.65 m (8' 8") Arm	3.2 m (10' 6") Arm
Max digging reach	A	10330 mm (33'11")	10730mm (35' 2")	11150 mm (36' 7")
Max digging reach on ground	A'	10120 mm (33' 2")	10520mm (34' 6")	10950 mm (35'11")
Max digging depth	B	6360 mm (20'10")	6830 mm (22' 5")	7360 mm (24' 2")
Max digging depth (8ft level)	B'	6170 mm (20' 3")	6680 mm (21' 10")	7200 mm (23' 7")
Max vertical wall digging depth	C	5970 mm (19' 7")	5050 mm (16' 7")	6330 mm (20' 9")
Max digging height	D	10260 mm (33' 8")	10120 mm (33' 2")	10360 mm (34' 0")
Max dumping height	E	7060 mm (23' 2")	7040 mm (23'1")	7260 mm (23'10")
Min swing radius	F	4630 mm (15' 2")	4740 mm (15' 7")	4360 mm (14' 4")
Bucket digging force	SAE	186.3 [203.3] kN	186.3 [203.3] kN	188.3 [205.5] kN
		19000 [20730] kgf	19000 [20730] kgf	19200 [20950] kgf
		41890 [45700] lbf	41890 [45700] lbf	42330 [46190] lbf
	ISO	214.8 [234.3] kN	214.8 [234.3] kN	216.7 [236.4] kN
		21900 [23890] kgf	21900 [23890] kgf	22100 [24110] kgf
		48280 [52670] lbf	48280 [52670] lbf	48720 [53150] lbf
Arm crowd force	SAE	195.2 [212.9] kN	156.9[171.2] kN	140.2 [153.0] kN
		19900 [21710] kgf	16000 [17480] kgf	14300 [15600] kgf
		43870 [47860] lbf	35270 [38480] lbf	31530 [34390] lbf
	ISO	205.0 [223.6] kN	162.8 [177.6] kN	145.1 [158.4] kN
		20900 [22800] kgf	16600 [18080] kgf	14800 [16150] kgf
		46080 [50270] lbf	36600[39930] lbf	32630 [35600] lbf

[ ] : Power boost

## 4. WEIGHT











### 1) HX360L

Item	HX360L	
	kg	lb
Upperstructure assembly	10714.71	23621.89
Main frame weld assembly	2919.22	6435.77
Engine assembly	730	1609.37
Main pump assembly	201	443
Main control valve assembly	220	485
Swing motor assembly	370	820
Hydraulic oil tank assembly	300	661
Fuel tank assembly	350	772
Counterweight	6000	13230
Cab assembly	515	1135.38
Radiator assy	230	510
Oil cooler assy	80	180
Lower chassis assembly	8917.23	19659.12
Track frame weld assembly	4951.13	10915.37
Swing bearing	468	1031.76
Travel motor assembly	380	837.75
Turning joint	53	116.85
Tension cylinder	225	496
Idler	261	575.4
Sprocket	83	183
Carrier roller	79.50	175.26
Track roller	40	88.18
Track-chain assembly (600 mm standard triple grouser shoe)	2196	4841.35
Front attachment assembly (6.45 m boom, 2.65 m arm)	2879.52	6348.25
6.45 m boom assembly	272.68	601.15
2.65 m arm assembly	1219.68	2688.9
1.44 m³ SAE heaped bucket	1230	2710
Boom cylinder assembly	314.10	692.47
Arm cylinder assembly	434.70	958.34
Bucket cylinder assembly	266.3	587.09
Bucket control linkage assembly	372.06	820.25

## 5. LIFTING CAPACITIES

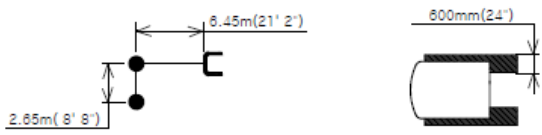












- 1) 6.45m(21' 2") boom, 2.2m(7' 3") arm equipped with 2.10m<sup>3</sup>(SAE heaped) bucket and 600mm (24") triple grouser shoe.

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

Load point height		Load radius								At max. reach		
		3.0m(10ft)		4.5m(15ft)		6.0m(20ft)		7.5m(25ft)		Capacity		Reach
												m(ft)
7.5m (25ft)	kg lb									*6140 *13540	4950 10910	7.99 (26.2)
6.0m (20ft)	kg lb					*7290 *16070	*7290 *16070	*6760 *14900	5430 11970	*6200 *13670	3890 8580	8.87 (29.1)
4.5m (15ft)	kg lb			*11110 *24490	*11110 *24490	*8480 *18700	7790 17170	*7260 *16010	5230 11530	5520 12170	3340 7360	9.39 (30.8)
3.0m (10ft)	kg lb					*9930 *21890	7200 15870	*7980 *17590	4960 10930	5180 11420	3080 6790	9.61 (31.5)
1.5m (5ft)	kg lb					*11150 *24580	6730 14840	7770 17130	4700 10360	5140 11330	3040 6700	9.56 (31.4)
Ground Line	kg lb			*16550 *36490	10200 22490	10940 24120	6460 14240	7590 16730	4530 9990	5420 11950	3210 7080	9.23 (30.3)
-1.5m (-5ft)	kg lb			*16000 *35270	10250 22600	10870 23960	6400 14110	7540 16620	4490 9900	6150 13560	3680 8110	8.59 (28.2)
-3.0m (-10ft)	kg lb	*19750 *43540	*19750 *43540	*14600 *32190	10480 23100	*10920 *24070	6510 14350			*7140 *15740	4750 10470	7.54 (24.7)
-4.5m (-15ft)	kg lb	*15770 *34770	*15770 *34770	*11820 *26060	10940 24120							

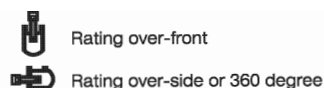
- Note
- Lifting capacity are based on SAE J1097 and ISO 10567.
  - Lifting capacity of the ROBEX series does not exceed 75% of tipping load with the machine on firm, level ground or 87% of full hydraulic capacity.
  - The load point is a hook located on the back of the bucket.
  - \*indicates load limited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

- 2) 6.45m(21' 2") boom, 2.65m(8' 8") arm equipped and 600mm(24") triple grouser shoe.

HX360 L												
		3.0m( 9.8 ft )		4.5m( 14.8 ft )		6.0m( 19.7 ft )		7.5m( 24.6 ft )				
												m(ft)
7.5m 24.6 ft	kg lb									*8500 *18740	7230 15940	7.09 (23.3)
6.0m 19.7 ft	kg lb					*9000 *19840	*9000 *19840	*8450 *18630	6530 14400	*8450 *18630	5780 12740	8.04 (26.4)
4.5m 14.8 ft	kg lb			*13280 *29280	*13280 *29280	*10340 *22800	8980 19800	*8990 *19820	6350 14000	7600 16760	5050 11130	8.62 (28.3)
3.0m 9.8 ft	kg lb					*11960 *26370	8490 18720	9300 20500	6110 13470	7090 15630	4680 10320	8.92 (29.3)
1.5m 4.9 ft	kg lb					12770 28150	8090 17840	9060 19970	5900 13010	6950 15320	4560 10050	8.95 (29.3)
0.0m 0.0 ft	kg lb			*18020 *39730	12020 26500	12520 27600	7870 17350	8910 19640	5760 12700	7160 15790	4670 10300	8.71 (28.6)
-1.5m -4.9 ft	kg lb	*12410 *27360	*12410 *27360	*18510 *40810	12060 26590	12460 27470	7820 17240	8880 19580	5730 12630	7820 17240	5090 11220	8.20 (26.9)
-3.0m -9.8 ft	kg lb	*22440 *49470	*22440 *49470	*16900 *37260	12240 26980	12570 27710	7920 17460			9290 20480	6020 13270	7.34 (24.1)
-4.5m -14.8 ft	kg lb			*13740 *30290	12630 27840					*9970 *21980	8280 18250	5.99 (19.7)

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

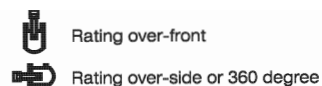
Boom : 6.45m (21' 2")  
 Arm : 3.2 m (10' 8")  
 Bucket : 2.1 m³ SAE heaped  
 Shoe 600mm Triple Grouser with 6.6 ton CWT



Load point height (m/ft)		Load radius												At max. reach		
		1.5m(5.0ft)		3.0m(15.0ft)		4.5m(15.0ft)		6.0m(20.0ft)		7.5m(25.0ft)		9.0m(30.0ft)		Capacity		Reach
																m (ft)
7.5 m	kg									*4880	*4880			*5500	1360	9.06
25.0 ft	lb									*10760	*10760			*12130	9610	(29.7)
6.0 m	kg									*6000	*6110			5730	3630	9.84
20.0 ft	lb									*13230	*13470			12630	8000	(32.3)
4.5 m	kg							*7490	*7490	*6640	5860	*5070	4150	5180	3220	10.31
15.0 ft	lb							*16510	*16510	*14640	12920	*11180	9140	11410	7100	(33.8)
3.0 m	kg					*12430	12610	*9090	7980	*7490	5540	6350	4000	4910	3010	10.52
10.0 ft	lb					*27400	27800	*20040	17600	*16510	12210	14000	8810	10820	6630	(34.5)
1.5 m	kg					*15210	11540	*10610	7440	8360	5230	6180	3840	4860	2960	10.48
5.0 ft	lb					*33530	25440	23390	16400	18440	11530	13620	8470	10710	6520	(34.4)
Ground Line	kg			*9720	*9720	*16620	11010	11630	7070	8100	5010	6050	3710	5030	3060	10.19
	lb			*21430	*21430	*36640	24270	25630	15590	17860	11040	13340	8170	11080	6740	(33.4)
-1.5 m	kg	*10800	*10800	*13710	*13710	*16830	10870	11430	6890	7970	4880			5500	3380	9.63
-5.0 ft	lb	*23810	*23810	*30230	*30230	*37100	23970	25190	15190	17570	10760			12120	7450	(31.6)
-3.0 m	kg	*14530	*14530	*18410	*18410	*16100	10940	11420	6890	7970	4890			6480	4040	8.74
-10.0 ft	lb	*32030	*32030	*40590	*40590	*35490	24120	25170	15190	17570	10780			14290	8910	(28.7)
-4.5 m	kg			*20220	*20220	*14270	11220	10560	7070					*6880	5490	7.37
-15.0 ft	lb			*44580	*44580	*31460	24730	23280	15590					*15170	12100	(24.2)
-6.0 m	kg					*10450	10450									6.58
-20.0 ft	lb					*23040	23040									(21.6)

- NOTES :
- Lifting Capacity are based on SAE J1097, ISO 10567.
  - Lifting Capacity of the Robex Series does not exceed 75% of tipping load with the machine on firm, level ground or 87% of full hydraulic capacity.
  - The load point is a hook (standard equipment) located on the back of the bucket.
  - (\*) Indicates load limited by hydraulic capacity.

Boom : 6.45m (21' 2")  
 Arm : 3.2 m (10' 8")  
 Bucket : 1.44 m³ SAE heaped  
 Shoe 600mm Triple Grouser with 6.6 ton CWT

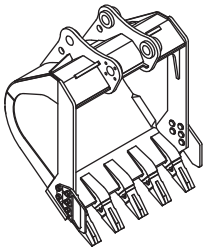
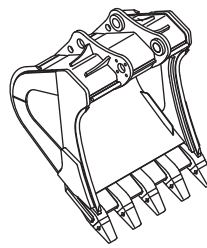


Load point height (m/ft)		Load radius												At max. reach		
		1.5m(5.0ft)		3.0m(15.0ft)		4.5m(15.0ft)		6.0m(20.0ft)		7.5m(25.0ft)		9.0m(30.0ft)		Capacity		Reach
																m (ft)
7.5 m	kg									*4880	*4880			*5500	1360	9.06
25.0 ft	lb									*10760	*10760			*12130	9610	(29.7)
6.0 m	kg									*6000	*6110			5730	3630	9.84
20.0 ft	lb									*13230	*13470			12630	8000	(32.3)
4.5 m	kg							*7490	*7490	*6640	5860	*5070	4150	5180	3220	10.31
15.0 ft	lb							*16510	*16510	*14640	12920	*11180	9140	11410	7100	(33.8)
3.0 m	kg					*12430	12610	*9090	7980	*7490	5540	6350	4000	4910	3010	10.52
10.0 ft	lb					*27400	27800	*20040	17600	*16510	12210	14000	8810	10820	6630	(34.5)
1.5 m	kg					*15210	11540	*10610	7440	8360	5230	6180	3840	4860	2960	10.48
5.0 ft	lb					*33530	25440	23390	16400	18440	11530	13620	8470	10710	6520	(34.4)
Ground Line	kg			*9720	*9720	*16620	11010	11630	7070	8100	5010	6050	3710	5030	3060	10.19
	lb			*21430	*21430	*36640	24270	25630	15590	17860	11040	13340	8170	11080	6740	(33.4)
-1.5 m	kg	*10800	*10800	*13710	*13710	*16830	10870	11430	6890	7970	4880			5500	3380	9.63
-5.0 ft	lb	*23810	*23810	*30230	*30230	*37100	23970	25190	15190	17570	10760			12120	7450	(31.6)
-3.0 m	kg	*14530	*14530	*18410	*18410	*16100	10940	11420	6890	7970	4890			6480	4040	8.74
-10.0 ft	lb	*32030	*32030	*40590	*40590	*35490	24120	25170	15190	17570	10780			14290	8910	(28.7)
-4.5 m	kg			*20220	*20220	*14270	11220	10560	7070					*6880	5490	7.37
-15.0 ft	lb			*44580	*44580	*31460	24730	23280	15590					*15170	12100	(24.2)
-6.0 m	kg					*10450	10450									6.58
-20.0 ft	lb					*23040	23040									(21.6)

- NOTES :
- Lifting Capacity are based on SAE J1097, ISO 10567.
  - Lifting Capacity of the Robex Series does not exceed 75% of tipping load with the machine on firm, level ground or 87% of full hydraulic capacity.
  - The load point is a hook (standard equipment) located on the back of the bucket.
  - (\*) Indicates load limited by hydraulic capacity.






## 6. BUCKET SELECTION GUIDE

<b>Â General bucket</b> 	<b>Â Rock-heavy duty bucket</b> 
2.10m <sup>3</sup> SAE heaped bucket	L' 1.44m <sup>3</sup> SAE L' 1.62m <sup>3</sup> SAE heaped bucket

Capacity		Width		Weight	6.45m (21' 2") boom		
SAE heaped	CECE heaped	Without side cutter	With side cutter		2.2m (7' 3") arm	2.65m (8' 8") arm	3.2m (10' 6") arm
2.10m <sup>3</sup> (2.75yd <sup>3</sup> )	1.90m <sup>3</sup> (2.49yd <sup>3</sup> )	1710mm (67.3")	1830mm (72.0")	1505kg (3320lb)			
L' 1.44m <sup>3</sup> (1.88yd <sup>3</sup> )	1.25m <sup>3</sup> (1.64yd <sup>3</sup> )	1290mm (50.8")	-	1510kg (3330lb)			
L' 1.62m <sup>3</sup> (2.12yd <sup>3</sup> )	1.43m <sup>3</sup> (1.87yd <sup>3</sup> )	1590mm (62.6")	-	1540kg (3400lb)			

L' : Rock - Heavy duty bucket

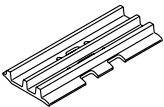
-  Applicable for materials with density of 2000kgf/m<sup>3</sup> (3370lbf/yd<sup>3</sup>) or less
-  Applicable for materials with density of 1600kgf/m<sup>3</sup> (2700lbf/yd<sup>3</sup>) or less
-  Applicable for materials with density of 1100kgf/m<sup>3</sup> (1850lbf/yd<sup>3</sup>) or less

## 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		
					
HX360L	Shoe width	mm (in)	600 (24)	700 (28)	800 (32)
	Operating weight	kg (lb)	36070 (79521)	42081 (92774)	48093 (106026)
	Ground pressure	kgf/cm <sup>2</sup> (psi)	0.64 (9.03)	0.55 (7.88)	0.49 (6.97)
	Overall width	mm (ft-in)	3280 (10' 9")	3380 (11' 1")	3480 (11' 5")

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

Item	Quantity
Carrier rollers	2EA
Track rollers	8EA
Track shoes	48EA

#### 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

※ **Table 2**

Category	Applications	Applications
A	Rocky ground, river beds, normal soil	· Travel at low speed on rough ground with large obstacles such as boulders or fallen trees or a wide range of general civil engineering work
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-1

Item	Specification
Model	HD Hyundai HM8.3
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	114 × 134.9 mm (4.49" × 5.31")
Piston displacement	8290 cc (506 cu in)
Compression ratio	18 : 1
Rated net horse power (SAE J1349)	245 Hp (183 kW) at 2200 rpm
Rated gross horse power (SAE J1995)	250 Hp (186 kW) at 2200 rpm
Maximum torque	124 kgf · m (899 lbf · ft) at 1300 rpm
Engine oil quantity	26.5 ℓ (7.0 U.S. gal)
Wet weight	617 kg (1360 lb)
High idling speed	2457 + 50 rpm
Low idling speed	850 ± 100 rpm
Rated fuel consumption	151 g/Hp · hr at 1400 rpm
Starting motor	24V-7.2 kW
Alternator	24V 90A
Battery	2 × 12V × 160Ah

## 1) ENGINE -2

Item	Specification
Model	HD Hyundai Construction Equipment / HM8.3
Type	4-cycle, turbocharged, charger air cooled, mechanical controlled diesel engine
Cooling method	Water cooled
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	114 × 135 mm (4.49" × 5.31")
Piston displacement	8.3 ℓ (506 cu in)
Compression ratio	18 : 1
Gross power	260 Hp (194 kW) at 2200 rpm
Net power	255 Hp (190 kW) at 2200 rpm
Max. power	261 Hp (195 kW) at 2200 rpm
Maximum torque	1150 N·m (848 lbf·ft) at 1300 rpm
Engine oil quantity	26.5 ℓ (7.0 U.S. gal)
Wet weight	604 kg (1332 lb)
Starting motor	24 V-7.5 kW
Alternator	24 V-90A

## 2) MAIN PUMP

Item	Specification
Type	Variable displacement tandem axis piston pumps
Capacity	2 × 175 cc/rev
Rated oil flow	2 × 306 ℓ /min (80.8 U.S. gpm / 67.3 U.K. gpm)
Rated speed	1750 rpm

### 3) GEAR PUMP

Item	Specification
Type	Fixed displacement gear pump single stage
Capacity	15cc/rev
Maximum pressure	40 kgf/cm <sup>2</sup> (570 psi)
Rated oil flow	26.3 ℓ /min (6.9 U.S. gpm/5.8 U.K. gpm)

### 4) MAIN CONTROL VALVE

Item	Specification
Type	10 spools
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	Axial piston motor
Capacity	156.9 cc/rev
Relief pressure	300 kgf/cm <sup>2</sup> (4270 psi)
Braking system	Automatic, spring applied hydraulic released
Braking torque	84.4 kgf · m (610 lbf · ft)
Brake release pressure	36.5 kgf/cm <sup>2</sup> (519 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)
Capacity (max / min)	282.6/156.9 cc/rev
Reduction gear type	2-stage planetary
Braking system	Automatic, spring applied hydraulic released
Brake release pressure	17 kgf/cm <sup>2</sup> (242 psi)
Braking torque	134 kgf · m (969 lbf · ft)

## 7) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	Ø 150 × Ø 105 × 1480 mm
	Cushion	Extend only
Arm cylinder	Bore dia × Rod dia × Stroke	Ø 160 × Ø 110 × 1685 mm
	Cushion	Extend and retract
Bucket cylinder	Bore dia × Rod dia × Stroke	Ø 140 × Ø 100 × 1285 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
HX360L	Standard	☆ 600 mm (24")	0.64 kgf/cm <sup>2</sup> (9.03 psi)	48	3280 mm (10' 9")
	Option	☆ 700 mm (28")	0.55 kgf/cm <sup>2</sup> (7.88 psi)	48	3380 mm (11' 1")
		☆ 800 mm (32")	0.49 kgf/cm <sup>2</sup> (6.97 psi)	48	3480 mm (11' 5")

☆ : Triple grouser