SECTION 1 GENERAL

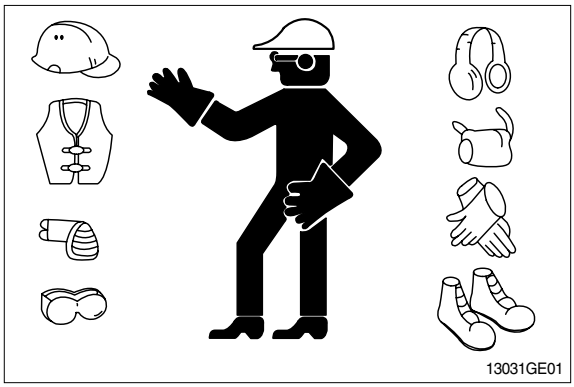
GROUP 1 SAFETY

FOLLOW SAFE PROCEDURE

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

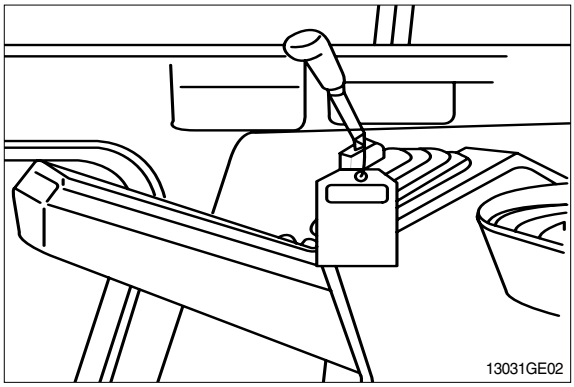
WEAR PROTECTIVE CLOTHING

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



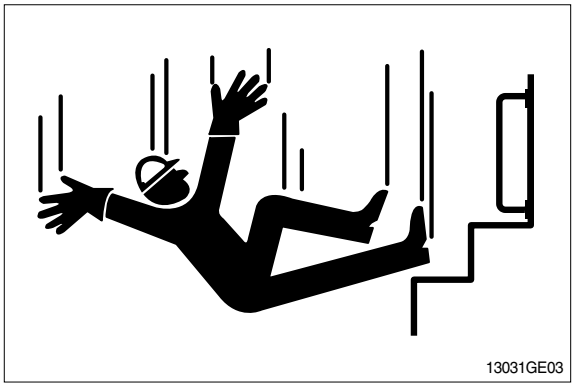
WARN OTHERS OF SERVICE WORK

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.

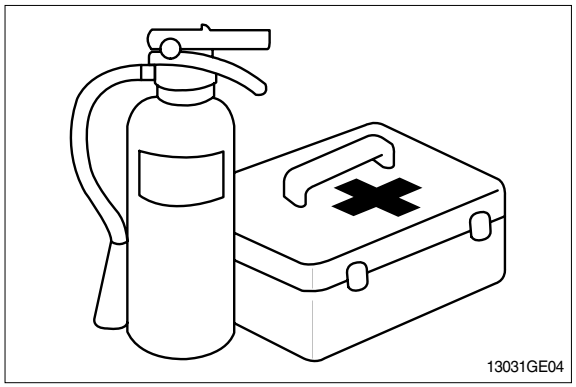


PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

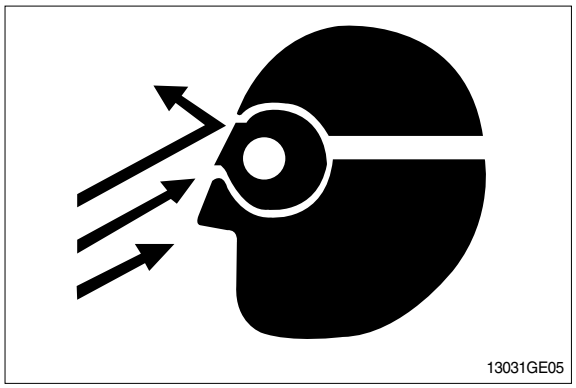
Keep a first aid kit and fire extinguisher handy.

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



PROTECT AGAINST FLYING DEBRIS

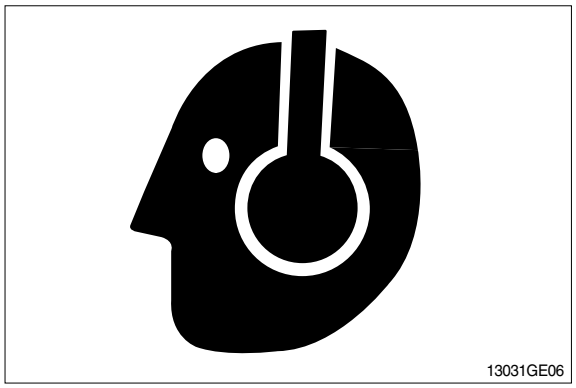
Guard against injury from flying pieces of metal or debris; Wear goggles or safety glasses.



PROTECT AGAINST NOISE

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

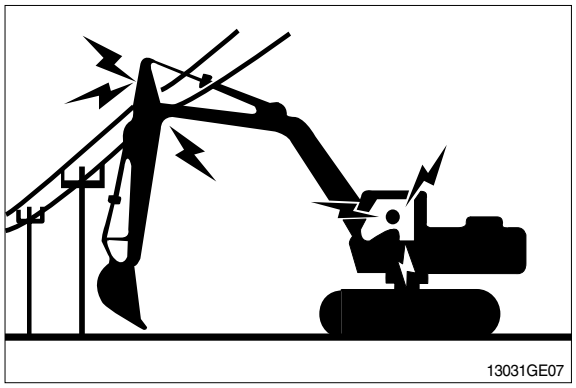
Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



AVOID POWER LINES

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

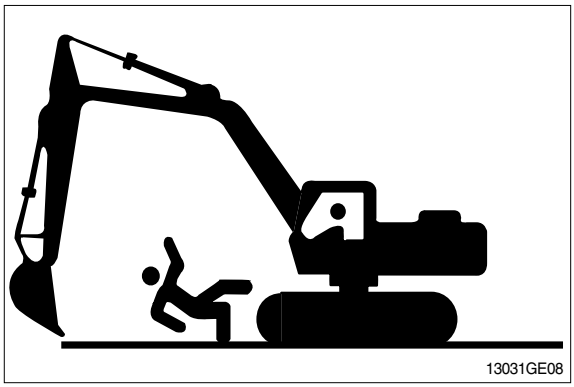
Never move any part of the machine or load closer to electric line than 3m(10ft) plus twice the line insulator length.



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.

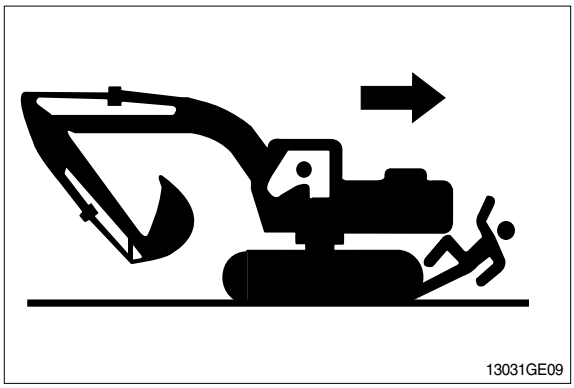

13031GE08

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.

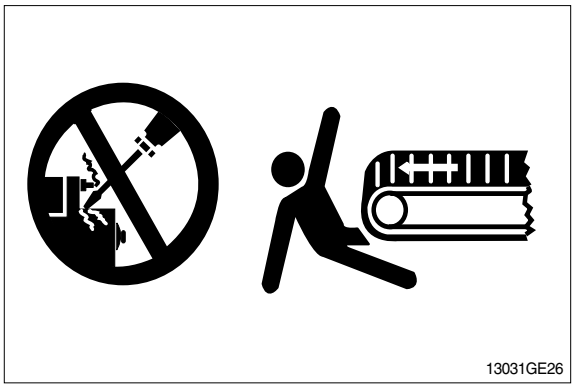
Use a signal person when moving, swinging, or operating the machine in congested areas. Coordinate hand signals before starting the excavator.


13031GE09

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.


13031GE26

PARK MACHINE SAFELY

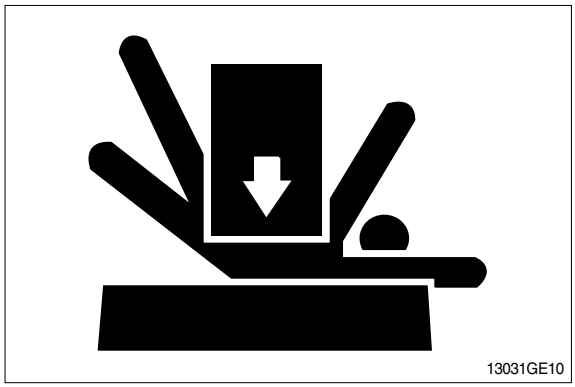
Before working on the machine:

- 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.

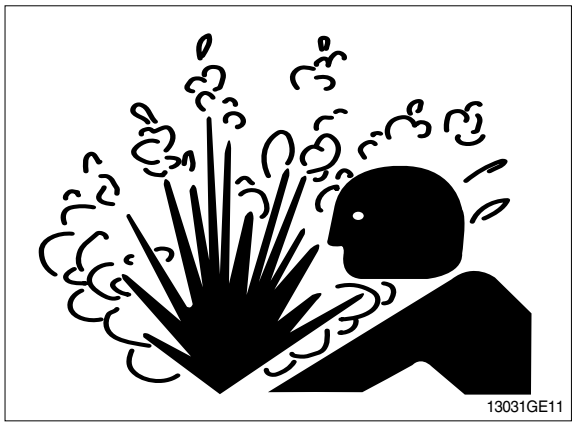
Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



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.



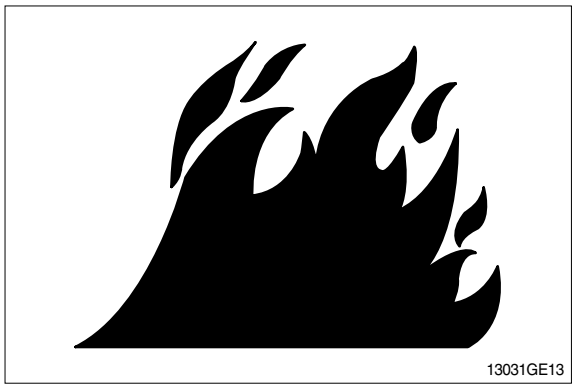
HANDLE FLUIDS SAFELY-AVOID FIRES

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.

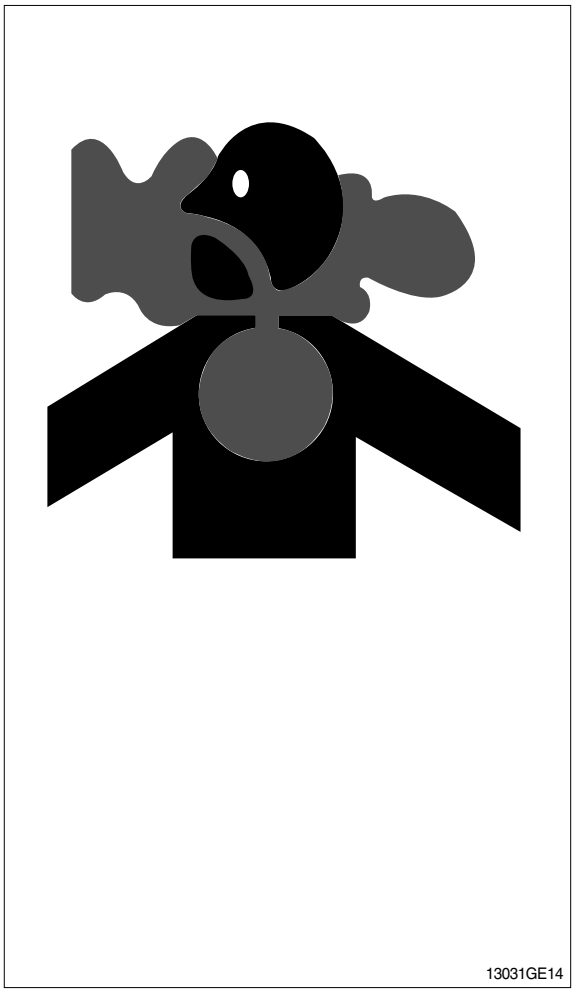
Do not store oily rags; They can ignite and burn spontaneously.



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.

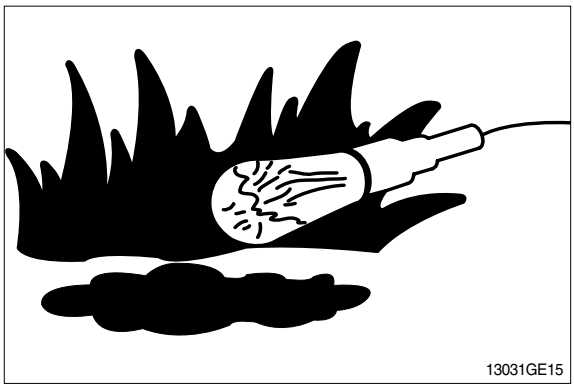
Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

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

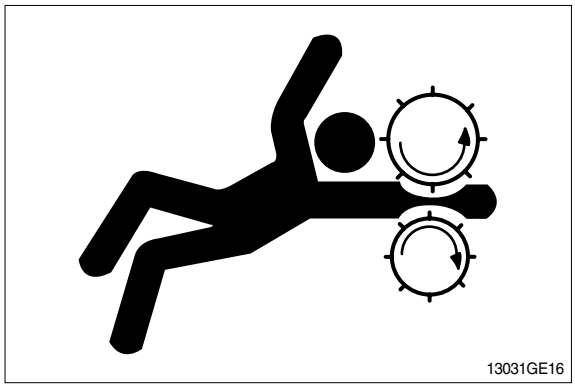
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.



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.

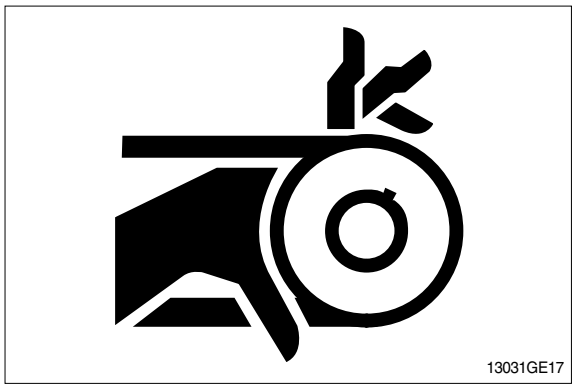
Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



STAY CLEAR OF MOVING PARTS

Entanglements in moving parts can cause serious injury.

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



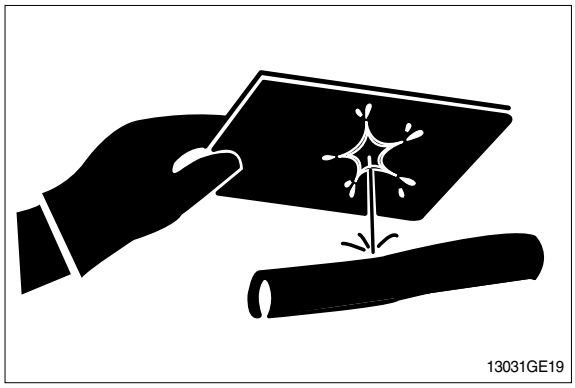
AVOID HIGH PRESSURE FLUIDS

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.

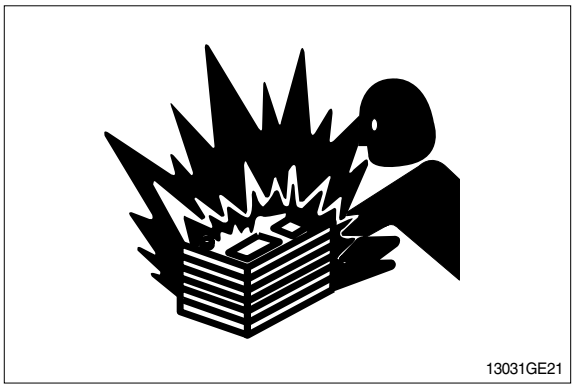

13031GE20

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 do not charge a frozen battery; It may explode. Warm battery to 16˚C(60˚F).


13031GE21

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:

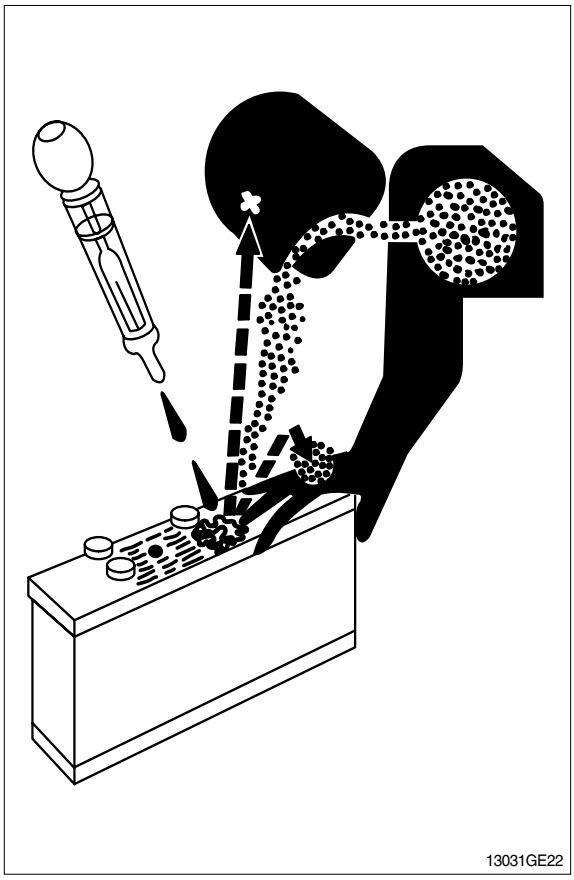
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling of dripping electrolyte.
5. Use proper jump start procedure.

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.


13031GE22

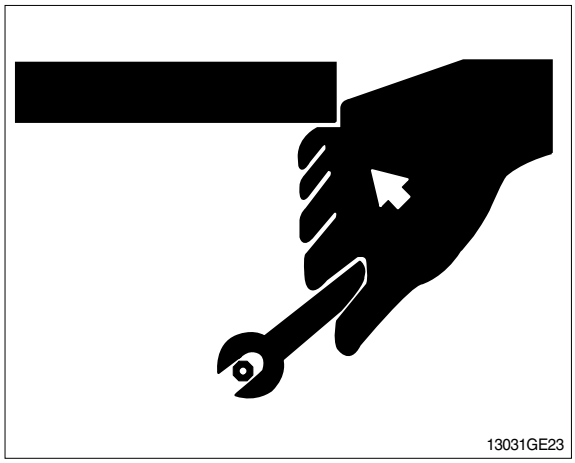
USE TOOLS PROPERLY

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.)

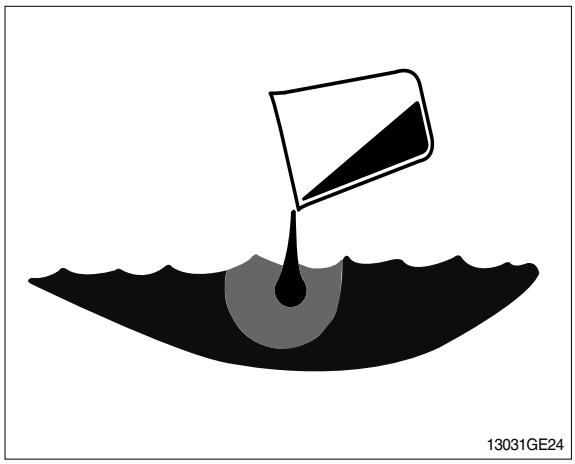


DISPOSE OF FLUIDS PROPERLY

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.

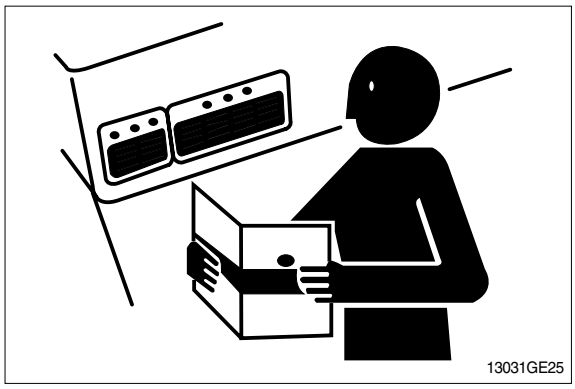
Use proper containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

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.

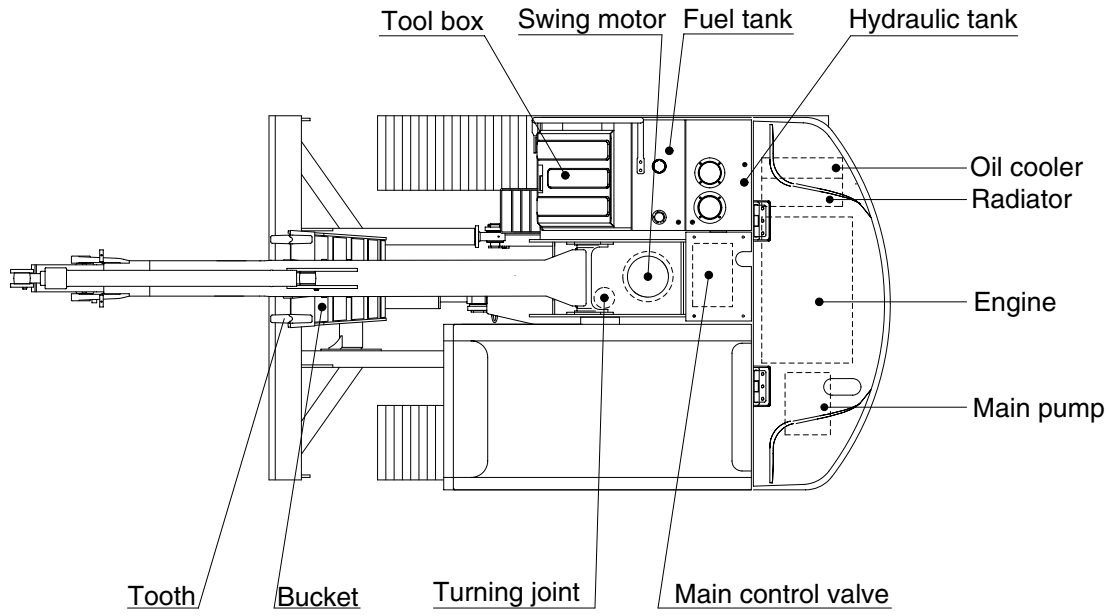


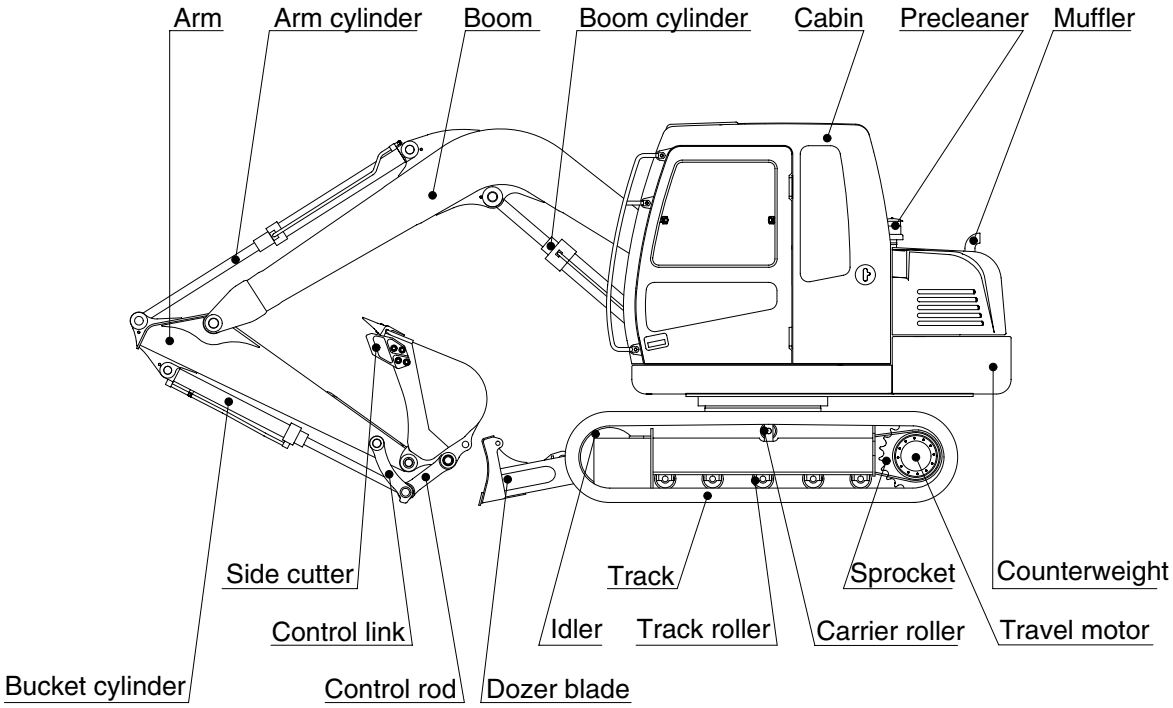
LIVE WITH SAFETY

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



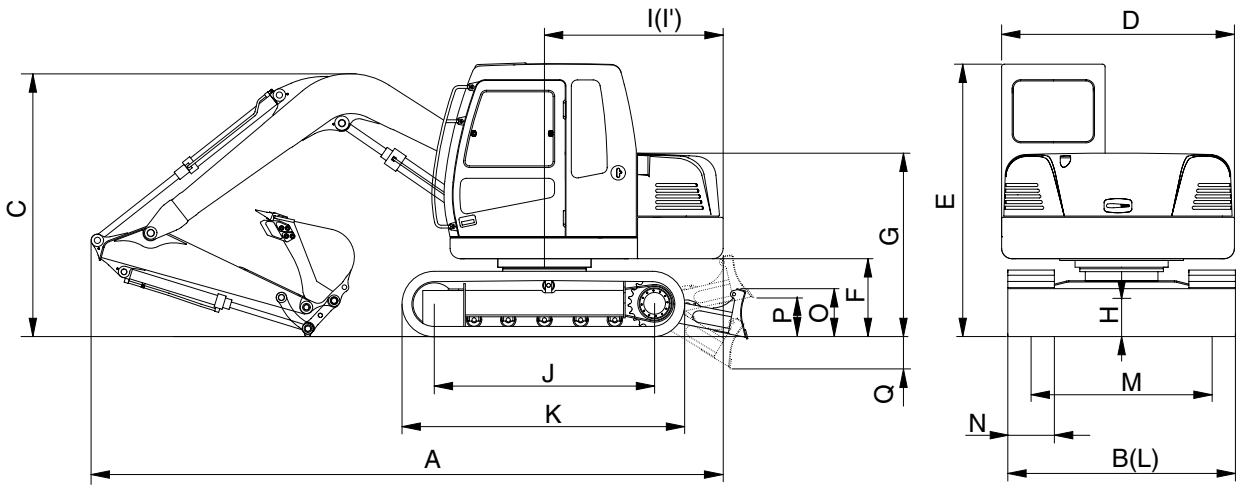


7072SP01

2. SPECIFICATIONS

1) R80-7

(1) 3.7m(12' 2") MONO BOOM, 1.67m(5' 6") ARM AND FRONT DOZER BLADE



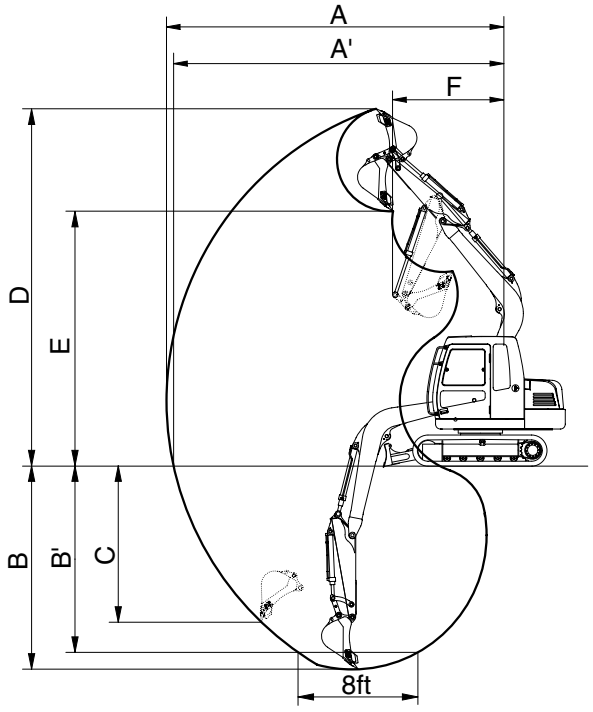
7707203A

Description		Unit	Specification
Operating weight		kg(lb)	7800(17200)
Bucket capacity(SAE heaped), standard		$m^3(yd^3)$	0.32(0.27)
Overall length	A	mm(ft-in)	6325(20' 9")
Overall width, with 450mm shoe	B		2260(7' 5")
Overall height	C		2605(8' 7")
Superstructure width	D		2250(7' 5")
Overall height of cab	E		2650(8' 8")
Ground clearance of counterweight	F		755(2' 6")
Engine cover height	G		1775(5' 10")
Minimum ground clearance	H		360(1' 2")
Rear-end distance	I		1727(5' 8")
Rear-end swing radius	I'		1750(5' 9")
Distance between tumblers	J		2130(6' 12")
Undercarriage length	K		2724(8' 11")
Undercarriage width	L		2200(7' 3")
Track gauge	M		1750(5' 9")
Track shoe width, standard	N		450(1' 6")
Height of blade	O		460(1' 6")
Ground clearance of blade up	P		400(1' 4")
Depth of blade down	Q		280(0' 11")
Travel speed(Low/high)		km/hr(mph)	2.8/4.6(1.7/2.9)
Swing speed		rpm	11.4
Gradeability		Degree(%)	30(58)
Ground pressure(450mm shoe)		$kgf/cm^2(psi)$	0.37(5.26)

3. WORKING RANGE

1) R80-7

(1) 3.7m(12' 2") MONO BOOM



7072SP03

Description		1.67m(5' 6") Arm
Max digging reach	A	6330mm (20' 9")
Max digging reach on ground	A'	6190mm (20' 4")
Max digging depth	B	4150mm (13' 7")
Max digging depth (8ft level)	B'	3810mm (12' 6")
Max vertical wall digging depth	C	3200mm (10' 6")
Max digging height	D	7260mm (23'10")
Max dumping height	E	5170mm (17' 0")
Min swing radius	F	1750mm (5' 9")
Bucket digging force	SAE	44.1 kN
		4500 kgf
		9920 lbf
	ISO	51.0 kN
		5200 kgf
		11460 lbf
Arm digging force	SAE	38.2 kN
		3900 kgf
		8600 lbf
	ISO	39.2 kN
		4000 kgf
		8820 lbf

4. WEIGHT

1) R80-7

Item	kg	lb
Upperstructure assembly	3750	8270
Main frame weld assembly	820	1810
Engine assembly	550	1120
Main pump assembly	50	110
Main control valve assembly	60	130
Swing motor assembly	80	170
Hydraulic oil tank assembly	120	260
Fuel tank assembly	80	170
Counterweight	540	1190
Cab assembly	310	680
Lower chassis assembly	2820	6220
Track frame weld assembly	980	2160
Swing bearing	140	310
Travel motor assembly	90	200
Turning joint	30	60
Track recoil spring(2EA)	120	260
Idler(2EA)	130	290
Sprocket(2EA)	50	110
Carrier roller(2EA)	20	40
Track roller(10EA)	160	360
Track-chain assembly(450㎜ standard triple grouser shoe, 2EA)	810	1790
Dozer blade assembly	330	730
Front attachment assembly(3.7m boom, 1.67m arm, 0.28m^3 SAE heaped bucket)	1230	2710
3.7m boom assembly	490	1080
1.67m arm assembly	200	440
0.32m^3 SAE heaped bucket	245	540
Boom cylinder assembly	120	260
Arm cylinder assembly	80	180
Bucket cylinder assembly	50	110
Dozer blade cylinder	50	110
Bucket control link assembly	60	130

5. LIFTING CAPACITIES

1) ROBEX 80-7

(1) 3.7m (12' 2") boom, 1.67m (5' 6") arm equipped with 0.32m³ (SAE heaped) bucket and 450mm (18") triple grouser shoe and dozer blade up with400kg (890lb) counterweight.

Load point height		Load radius						At max. reach		
		1.5m(5ft)		3.0m(10ft)		4.5m(15ft)		Capacity		Reach
										m(ft)
4.5m (15.0ft)	kg			*1800	*1800			1130	1020	5.06
	lb			*3970	*3970			2490	2250	(16.6)
3.0m (10.0ft)	kg	*3890	*3890	*2370	*2370	1350	1220	850	760	5.75
	lb	*8580	*8580	*5220	*5220	2980	2690	1870	1680	(18.9)
1.5m (5.0ft)	kg			2490	2190	1260	1130	760	680	5.95
	lb			5490	4830	2780	2490	1680	1500	(19.5)
Ground Line	kg			2300	2000	1180	1060	800	720	5.70
	lb			5070	4410	2600	2340	1760	1590	(18.7)
-1.5m (-5.0ft)	kg	*4810	*4810	2260	1970	1170	1040	1030	920	4.93
	lb	*10600	*10600	4980	4340	2580	2290	2270	2030	(16.2)
-3.0m (-10.0ft)	kg	*4000	*4000	*2360	2060					
	lb	*8820	*8820	*5200	4540					

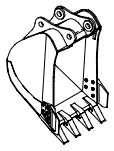
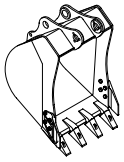
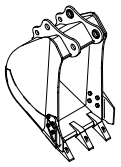
(2) 3.7m (12' 2") boom, 1.67m (5' 6") arm equipped with 0.32m³ (SAE heaped) bucket and 450mm (18") triple grouser shoe and dozer blade down with 400kg (890lb) counterweight.

Load point height		Load radius						At max. reach		
		1.5m(5ft)		3.0m(10ft)		4.5m(15ft)		Capacity		Reach
										m(ft)
4.5m (15.0ft)	kg			*1800	*1800			*1680	1090	5.06
	lb			*3970	*3970			*3700	2400	(16.6)
3.0m (10.0ft)	kg	*3890	*3890	*2370	*2370	*1930	1300	*1710	820	5.75
	lb	*8580	*8580	*5220	*5220	*4250	2870	*3770	1810	(18.9)
1.5m (5.0ft)	kg			*3330	2350	*2230	1210	*1760	740	5.95
	lb			*7340	5180	*4920	2670	*3880	1630	(19.5)
Ground Line	kg			*3820	2160	*2430	1140	*1810	770	5.70
	lb			*8420	4760	*5360	2510	*3990	1700	(18.7)
-1.5m (-5.0ft)	kg	*4810	*4810	*3580	2130	*2230	1120	*1790	990	4.93
	lb	*10600	*10600	*7890	4700	*4920	2470	*3950	2180	(16.2)
-3.0m (-10.0ft)	kg	*4000	*4000	*2360	2220					
	lb	*8820	*8820	*5200	4980					

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

6. BUCKET SELECTION GUIDE

1) GENERAL BUCKET

		
0.28m³ SAE heaped bucket	※0.32m³ SAE heaped bucket	0.15m³ SAE heaped bucket

Capacity		Width		Weight	Recommendation
					3.7m (12' 2") Mono boom
SAE heaped	CECE heaped	Without side cutter	With side cutter		1.67m arm (5' 6")
0.28m³ (0.37yd³)	0.25m³ (0.33yd³)	665mm (26.2")	760mm (29.9")	230kg (510lb)	
※0.32m³ (0.42yd³)	0.27m³ (0.35yd³)	720mm (28.3")	815mm (32.1")	245kg (540lb)	
0.15m³ (0.19yd³)	0.13m³ (0.17yd³)	390mm (15.4")	460mm (18.1")	190kg (420lb)	

※ : Standard bucket

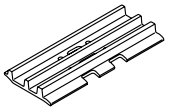
Applicable for materials with density of 1600kg/m³ (2700lb/yd³) or less

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	
				
R80-7	Shoe width	mm(in)	450(18)	600(24)
	Operating weight	kg(lb)	7800(17196)	7960(17550)
	Ground pressure	kgf/cm²(psi)	0.37(5.26)	0.28(3.98)
	Overall width	mm(ft-in)	2260(7' 5")	2350(7' 9")

3) NUMBER OF ROLLERS AND SHOES ON EACH SIDE

Item	Quantity
Carrier rollers	1EA
Track rollers	5EA
Track shoes	38EA

4) SELECTION OF TRACK SHOE

Suitable track shoes should be selected according to operating conditions.

※ **Table 1**

Track shoe	Specification	Category
450mm triple grouser	Standard	A
600mm triple grouser	Option	A

※ **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

8. SPECIFICATIONS FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification
Model	KOEL 4R1040NA
Type	4-cycle diesel engine
Cooling method	Water cooling
Number of cylinders and arrangement	4 cylinders, in-line
Firing order	1-3-4-2
Combustion chamber type	Direct injection type
Cylinder bore × stroke	105× 120mm (4.13" × 4.72")
Piston displacement	4160cc (254cu in)
Compression ratio	18:1
Rated gross horse power(SAE J1995)	76Hp at 2200rpm (57kW at 2200rpm)
Maximum torque at 1400rpm	29.6kgf · m (214lbf · ft)
Engine oil quantity	11.5 ℓ (3.0U.S. gal)
Dry weight	500kg (584lb)
High idling speed	2400± 50rpm
Low idling speed	1000± 50rpm
Rated fuel consumption	167g/Hp · hr at 2200rpm
Starting motor	Lucas 24V-4.5kW
Alternator	Lucas 24V-55A
Battery	2 × 12V × 68Ah

2) MAIN PUMP

Item	Specification
Type	Variable displacement axis piston pumps
Capacity	2 × 36cc/rev
Maximum pressure	280kgf/cm^2 (3983psi)
Rated oil flow	2 × 73.8 ℓ /min (2 × 19.5U.S.gpm)
Rated speed	2050rpm

3) GEAR PUMP

Item	Specification
Type	Fixed displacement gear pump single stage
Capacity	8.9cc/rev
Maximum pressure	35kgf/cm^2(500psi)
Rated oil flow	18.2 ℓ/min(4.8U.S.gpm/4.0U.K.gpm)

4) MAIN CONTROL VALVE

Item	Specification
Type	11 spools mono-block
Operating method	Hydraulic pilot system
Main relief valve pressure	280kgf/cm^2(3980psi)
Overload relief valve pressure	310kgf/cm^2(4410psi)

5) SWING MOTOR

Item	Specification
Type	Axial piston motor
Capacity	43cc/rev
Relief pressure	210kgf/cm^2(2990psi)
Braking system	Automatic, spring applied hydraulic released
Braking torque	14kgf · m^2(101lbf · ft)
Brake release pressure	20~40kgf/cm^2(284~569psi)
Reduction gear type	2 - stage planetary
Swing speed	11.4rpm

6) TRAVEL MOTOR

Item	Specification
Type	Variable displacement axial piston motor
Relief pressure	300kgf/cm^2(4270psi)
Reduction gear type	2 stage planetary
Braking system	Automatic, spring applied hydraulic released
Brake release pressure	More then 9kgf/cm^{22}(128psi)
Braking torque	8.4kgf · m^2(61lbf · ft)

7) REMOTE CONTROL VALVE

Item		Specification
Type		Pressure reducing type
Operating pressure	Minimum	5kgf/cm^2 (71psi)
	Maximum	20kgf/cm^2 (284psi)
Push rod stroke	Lever	6.5/8.5mm (0.26/0.34in)

8) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	ø115 × ø70 × 980mm
	Cushion	Extend only
Arm cylinder	Bore dia × Rod dia × Stroke	ø95 × ø60 × 860mm
	Cushion	Extend and retract
Bucket cylinder	Bore dia × Rod dia × Stroke	ø85 × ø55 × 665mm
	Cushion	Extend only
Dozer cylinder	Bore dia × Rod dia × Stroke	ø110 × ø65 × 152mm
	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
R80-7	Standard	450mm (18")	0.37kgf/cm^2 (5.26psi)	38	2200mm (7' 3")
	Option	600mm (24")	0.28kgf/cm^2 (3.98psi)	38	2350mm (7' 9")

10) BUCKET

Item		Capacity		Tooth quantity	Width	
		SAE heaped	CECE heaped		Without side cutter	With side cutter
R80-7	STD	0.28m^3 (0.37yd^3)	0.25m^3 (0.33yd^3)	4	670mm (26.4")	750mm (29.5")

9. RECOMMENDED OILS

Use only oils listed below or equivalent.
Do not mix different brand oil.

Service point	Kind of fluid	Capacity ℓ (U.S. gal)	Ambient temperature ℃(°F) -20 (-4) / -10 (14) / 0 (32) / 10 (50) / 20 (68) / 30 (86) / 40 (104)
Engine oil pan	Engine oil	11.5(3)	SAE 30 SAE 10W SAE 10W-30 SAE 15W-40
Swing drive Final drive	Gear oil	1.2×2 (0.32×2)	SAE 85W-140
Swing drive	Grease	0.2kg(0.4lb)	NLGI NO.1 NLGI NO.2
Hydraulic tank	Hydraulic oil	Tank:75(19.8) System: 130(34.3)	ISO VG 32 ISO VG 46 ISO VG 68
Fuel tank	Diesel fuel	135(35.7)	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 water 50 : 50	11(2.9)	Ethylene glycol base permanent type

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