HYUNDAI
CONSTRUCTION EQUIPMENT

HW140A

WHEELED EXCAVATOR

SERVICE MANUAL

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1. STRUCTURE

This service manual has been prepared as an aid to improve the quality of repairs by giving the serviceman an accurate understanding of the product and by showing him the correct way to perform repairs and make judgements. Make sure you understand the contents of this manual and use it to full effect at every opportunity.
This service manual mainly contains the necessary technical information for operations performed in a service workshop.
For ease of understanding, the manual is divided into the following sections.

SECTION 1 GENERAL

This section explains the safety hints and gives the specification of the machine and major components.

SECTION 2 STRUCTURE AND FUNCTION

This section explains the structure and function of each component. It serves not only to give an understanding of the structure, but also serves as reference material for troubleshooting.

SECTION 3 HYDRAULIC SYSTEM

This section explains the hydraulic circuit, single and combined operation.

SECTION 4 ELECTRICAL SYSTEM

This section explains the electrical circuit, monitoring system and each component. It serves not only to give an understanding electrical system, but also serves as reference material for trouble shooting.

SECTION 5 MECHATRONICS SYSTEM

This section explains the computer aided power optimization system and each component.

SECTION 6 TROUBLESHOOTING

This section explains the troubleshooting charts correlating **problems** to **causes**.

SECTION 7 MAINTENANCE STANDARD

This section gives the judgement standards when inspecting disassembled parts.

SECTION 8 DISASSEMBLY AND ASSEMBLY

This section explains the order to be followed when removing, installing, disassembling or assembling each component, as well as precautions to be taken for these operations.

SECTION 9 COMPONENT MOUNTING TORQUE

This section shows bolt specifications and standard torque values needed when mounting components to the machine.

The specifications contained in this shop manual are subject to change at any time and without any advance notice. Contact your HD Hyundai Construction Equipment distributor for the latest information.

2. HOW TO READ THE SERVICE MANUAL

Distribution and updating

Any additions, amendments or other changes will be sent to HD Hyundai Construction Equipment distributors.

Get the most up-to-date information before you start any work.

Filing method

1. See the page number on the bottom of the page.
   File the pages in correct order.
2. Following examples shows how to read the page number.
   Example 1

   2 - 3
   - 2 : Item number (2. Structure and Function)
   - 3 : Consecutive page number for each item.

3. Additional pages : Additional pages are indicated by a hyphen(-) and number after the page number. File as in the example.

   10 - 4
   10 - 4 - 1 ┐
   10 - 4 - 2 ┘ Added pages
   10 - 5

Revised edition mark (①②③…)

When a manual is revised, an edition mark is recorded on the bottom outside corner of the pages.

Revisions

Revised pages are shown at the list of revised pages on the between the contents page and section 1 page.

Symbols

So that the shop manual can be of ample practical use, important places for safety and quality are marked with the following symbols.

Symbol	Item	Remarks
	Safety	Special safety precautions are necessary when performing the work.
		Extra special safety precautions are necessary when performing the work because it is under internal pressure.
	Caution	Special technical precautions or other precautions for preserving standards are necessary when performing the work.

3. CONVERSION TABLE

Method of using the Conversion Table
The Conversion Table in this section is provided to enable simple conversion of figures. For details of the method of using the Conversion Table, see the example given below.

Example

1. Method of using the Conversion Table to convert from millimeters to inches

Convert 55 mm into inches.

(1) Locate the number 50 in the vertical column at the left side, take this as ⓐ, then draw a horizontal line from ⓐ.

(2) Locate the number 5 in the row across the top, take this as ⓑ, then draw a perpendicular line down from ⓑ.

(3) Take the point where the two lines cross as ⓒ. This point ⓒ gives the value when converting from millimeters to inches. Therefore, 55 mm = 2.165 inches.

2. Convert 550 mm into inches.

(1) The number 550 does not appear in the table, so divide by 10 (Move the decimal point one place to the left) to convert it to 55 mm.

(2) Carry out the same procedure as above to convert 55 mm to 2.165 inches.

(3) The original value (550 mm) was divided by 10, so multiply 2.165 inches by 10 (Move the decimal point one place to the right) to return to the original value.
This gives 550 mm = 21.65 inches.

Millimeters to inches

1 mm = 0.03937 in

	0	1	2	3	4	5 (ⓑ)	6	7	8	9
0		0.039	0.079	0.118	0.157	0.197	0.236	0.276	0.315	0.354
10	0.394	0.433	0.472	0.512	0.551	0.591	0.630	0.669	0.709	0.748
20	0.787	0.827	0.866	0.906	0.945	0.984	1.024	1.063	1.102	1.142
30	1.181	1.220	1.260	1.299	1.339	1.378	1.417	1.457	1.496	1.536
40	1.575	1.614	1.654	1.693	1.732	1.772	1.811	1.850	1.890	1.929
ⓐ 50	1.969	2.008	2.047	2.087	2.126	ⓒ 2.165	2.205	2.244	2.283	2.323
60	2.362	2.402	2.441	2.480	2.520	2.559	2.598	2.638	2.677	2.717
70	2.756	2.795	2.835	2.874	2.913	2.953	2.992	3.032	3.071	3.110
80	3.150	3.189	3.228	3.268	3.307	3.346	3.386	3.425	3.465	3.504
90	3.543	3.583	3.622	3.661	3.701	3.740	3.780	3.819	3.858	3.898

Millimeters to inches

1 mm = 0.03937 in

	0	1	2	3	4	5	6	7	8	9
0		0.039	0.079	0.118	0.157	0.197	0.236	0.276	0.315	0.354
10	0.394	0.433	0.472	0.512	0.551	0.591	0.630	0.669	0.709	0.748
20	0.787	0.827	0.866	0.906	0.945	0.984	1.024	1.063	1.102	1.142
30	1.181	1.220	1.260	1.299	1.339	1.378	1.417	1.457	1.496	1.536
40	1.575	1.614	1.654	1.693	1.732	1.772	1.811	1.850	1.890	1.929
50	1.969	2.008	2.047	2.087	2.126	2.165	2.205	2.244	2.283	2.323
60	2.362	2.402	2.441	2.480	2.520	2.559	2.598	2.638	2.677	2.717
70	2.756	2.795	2.835	2.874	2.913	2.953	2.992	3.032	3.071	3.110
80	3.150	3.189	3.228	3.268	3.307	3.346	3.386	3.425	3.465	3.504
90	3.543	3.583	3.622	3.661	3.701	3.740	3.780	3.819	3.858	3.898

Kilogram to Pound

1 kg = 2.2046 lb

	0	1	2	3	4	5	6	7	8	9
0		2.20	4.41	6.61	8.82	11.02	13.23	15.43	17.64	19.84
10	22.05	24.25	26.46	28.66	30.86	33.07	35.27	37.48	39.68	41.89
20	44.09	46.30	48.50	50.71	51.91	55.12	57.32	59.5.	61.73	63.93
30	66.14	68.34	70.55	72.75	74.96	77.16	79.37	81.57	83.78	85.98
40	88.18	90.39	92.59	94.80	97.00	99.21	101.41	103.62	105.82	108.03
50	110.23	112.44	114.64	116.85	119.05	121.25	123.46	125.66	127.87	130.07
60	132.28	134.48	136.69	138.89	141.10	143.30	145.51	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.76	171.96	174.17
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.01	196.21
90	198.42	200.62	202.83	205.03	207.24	209.44	211.64	213.85	216.05	218.26

Liter to U.S. Gallon

1 ℓ = 0.2642 U.S.Gal

	0	1	2	3	4	5	6	7	8	9
0		0.264	0.528	0.793	1.057	1.321	1.585	1.849	2.113	2.378
10	2.642	2.906	3.170	3.434	3.698	3.963	4.227	4.491	4.755	5.019
20	5.283	5.548	5.812	6.6076	6.340	6.604	6.869	7.133	7.397	7.661
30	7.925	8.189	8.454	8.718	8.982	9.246	9.510	9.774	10.039	10.303
40	10.567	10.831	11.095	11.359	11.624	11.888	12.152	12.416	12.680	12.944
50	13.209	13.473	13.737	14.001	14.265	14.529	14.795	15.058	15.322	15.586
60	15.850	16.115	16.379	16.643	16.907	17.171	17.435	17.700	17.964	18.228
70	18.492	18.756	19.020	19.285	19.549	19.813	20.077	20.341	20.605	20.870
80	21.134	21.398	21.662	21.926	22.190	22.455	22.719	22.983	23.247	23.511
90	23.775	24.040	24.304	24.568	24.832	25.096	25.631	25.625	25.889	26.153

Liter to U.K. Gallon

1 ℓ = 0.21997 U.K.Gal

	0	1	2	3	4	5	6	7	8	9
0		0.220	0.440	0.660	0.880	1.100	1.320	1.540	1.760	1.980
10	2.200	2.420	2.640	2.860	3.080	3.300	3.520	3.740	3.950	4.179
20	4.399	4.619	4.839	5.059	5.279	5.499	5.719	5.939	6.159	6.379
30	6.599	6.819	7.039	7.259	7.479	7.969	7.919	8.139	8.359	8.579
40	8.799	9.019	9.239	9.459	9.679	9.899	10.119	10.339	10.559	10.778
50	10.998	11.281	11.438	11.658	11.878	12.098	12.318	12.528	12.758	12.978
60	13.198	13.418	13.638	13.858	14.078	14.298	14.518	14.738	14.958	15.178
70	15.398	15.618	15.838	16.058	16.278	16.498	16.718	16.938	17.158	17.378
80	17.598	17.818	18.037	18.257	18.477	18.697	18.917	19.137	19.357	19.577
90	19.797	20.017	20.237	20.457	20.677	20.897	21.117	21.337	21.557	21.777

kgf · m to lbf · ft

1 kgf · m = 7.233 lbf · ft

	0	1	2	3	4	5	6	7	8	9
		7.2	14.5	21.7	28.9	36.2	43.4	50.6	57.9	65.1
10	72.3	79.6	86.8	94.0	101.3	108.5	115.7	123.0	130.2	137.4
20	144.7	151.9	159.1	166.4	173.6	180.8	188.1	195.3	202.5	209.8
30	217.0	224.2	231.5	238.7	245.9	253.2	260.4	267.6	274.9	282.1
40	289.3	396.6	303.8	311.0	318.3	325.5	332.7	340.0	347.2	354.4
50	361.7	368.9	376.1	383.4	390.6	397.8	405.1	412.3	419.5	426.8
60	434.0	441.2	448.5	455.7	462.9	470.2	477.4	484.6	491.8	499.1
70	506.3	513.5	520.8	528.0	535.2	542.5	549.7	556.9	564.2	571.4
80	578.6	585.9	593.1	600.3	607.6	614.8	622.0	629.3	636.5	643.7
90	651.0	658.2	665.4	672.7	679.9	687.1	694.4	701.6	708.8	716.1
100	723.3	730.5	737.8	745.0	752.2	759.5	766.7	773.9	781.2	788.4
110	795.6	802.9	810.1	817.3	824.6	831.8	839.0	846.3	853.5	860.7
120	868.0	875.2	882.4	889.7	896.9	904.1	911.4	918.6	925.8	933.1
130	940.3	947.5	954.8	962.0	969.2	976.5	983.7	990.9	998.2	10005.4
140	1012.6	1019.9	1027.1	1034.3	1041.5	1048.8	1056.0	1063.2	1070.5	1077.7
150	1084.9	1092.2	1099.4	1106.6	1113.9	1121.1	1128.3	1135.6	1142.8	1150.0
160	1157.3	1164.5	1171.7	1179.0	1186.2	1193.4	1200.7	1207.9	1215.1	1222.4
170	1129.6	1236.8	1244.1	1251.3	1258.5	1265.8	1273.0	1280.1	1287.5	1294.7
180	1301.9	1309.2	1316.4	1323.6	1330.9	1338.1	1345.3	1352.6	1359.8	1367.0
190	1374.3	1381.5	1388.7	1396.0	1403.2	1410.4	1417.7	1424.9	1432.1	1439.4

kgf/cm² to lbf/in²

1 kgf / cm² = 14.2233 lbf / in²

	0	1	2	3	4	5	6	7	8	9
		14.2	28.4	42.7	56.9	71.1	85.3	99.6	113.8	128.0
10	142.2	156.5	170.7	184.9	199.1	213.4	227.6	241.8	256.0	270.2
20	284.5	298.7	312.9	327.1	341.4	355.6	369.8	384.0	398.3	412.5
30	426.7	440.9	455.1	469.4	483.6	497.8	512.0	526.3	540.5	554.7
40	568.9	583.2	597.4	611.6	625.8	640.1	654.3	668.5	682.7	696.9
50	711.2	725.4	739.6	753.8	768.1	782.3	796.5	810.7	825.0	839.2
60	853.4	867.6	881.8	896.1	910.3	924.5	938.7	953.0	967.2	981.4
70	995.6	1010	1024	1038	1053	1067	1081	1095	1109	1124
80	1138	1152	1166	1181	1195	1209	1223	1237	1252	1266
90	1280	1294	1309	1323	1337	1351	1365	1380	1394	1408
100	1422	1437	1451	1465	1479	1493	1508	1522	1536	1550
110	1565	1579	1593	1607	1621	1636	1650	1664	1678	1693
120	1707	1721	1735	1749	1764	1778	1792	1806	1821	1835
130	1849	2863	1877	1892	1906	1920	1934	1949	1963	1977
140	1991	2005	2020	2034	2048	2062	2077	2091	2105	2119
150	2134	2148	2162	2176	2190	2205	2219	2233	2247	2262
160	2276	2290	2304	2318	2333	2347	2361	2375	2389	2404
170	2418	2432	2446	2460	2475	2489	2503	2518	2532	2546
180	2560	2574	2589	5603	2617	2631	2646	2660	2674	2688
200	2845	2859	2873	2887	2901	2916	2930	2944	2958	2973
210	2987	3001	3015	3030	3044	3058	3072	3086	3101	3115
220	3129	3143	3158	3172	3186	3200	3214	3229	3243	3257
230	3271	3286	3300	3314	3328	3343	3357	3371	3385	3399
240	3414	3428	3442	3456	3470	3485	3499	3513	3527	3542

TEMPERATURE

Fahrenheit-Centigrade Conversion.

A simple way to convert a fahrenheit temperature reading into a centigrade temperature reading or vice verse is to enter the accompanying table in the center or boldface column of figures.

These figures refer to the temperature in either Fahrenheit or Centigrade degrees.

If it is desired to convert from Fahrenheit to Centigrade degrees, consider the center column as a table of Fahrenheit temperatures and read the corresponding Centigrade temperature in the column at the left.

If it is desired to convert from Centigrade to Fahrenheit degrees, consider the center column as a table of Centigrade values, and read the corresponding Fahrenheit temperature on the right.

˚C		˚F	˚C		˚F	˚C		˚F	˚C		˚F
-40.4	-40	-40.0	-11.7	11	51.8	7.8	46	114.8	27.2	81	117.8
-37.2	-35	-31.0	-11.1	12	53.6	8.3	47	116.6	27.8	82	179.6
-34.4	-30	-22.0	-10.6	13	55.4	8.9	48	118.4	28.3	83	181.4
-31.7	-25	-13.0	-10.0	14	57.2	9.4	49	120.2	28.9	84	183.2
-28.9	-20	-4.0	-9.4	15	59.0	10.0	50	122.0	29.4	85	185.0
-28.3	-19	-2.2	-8.9	16	60.8	10.6	51	123.8	30.0	86	186.8
-27.8	-18	-0.4	-8.3	17	62.6	11.1	52	125.6	30.6	87	188.6
-27.2	-17	1.4	-7.8	18	64.4	11.7	53	127.4	31.1	88	190.4
-26.7	-16	3.2	-6.7	20	68.0	12.8	55	131.0	32.2	90	194.0
-26.1	-15	5.0	-6.7	20	68.0	12.8	55	131.0	32.2	90	194.0
-25.6	-14	6.8	-6.1	21	69.8	13.3	56	132.8	32.8	91	195.8
-25.0	-13	8.6	-5.6	22	71.6	13.9	57	134.6	33.3	92	197.6
-24.4	-12	10.4	-5.0	23	73.4	14.4	58	136.4	33.9	93	199.4
-23.9	-11	12.2	-4.4	24	75.2	15.0	59	138.2	34.4	94	201.2
-23.3	-10	14.0	-3.9	25	77.0	15.6	60	140.0	35.0	95	203.0
-22.8	-9	15.8	-3.3	26	78.8	16.1	61	141.8	35.6	96	204.8
-22.2	-8	17.6	-2.8	27	80.6	16.7	62	143.6	36.1	97	206.6
-21.7	-7	19.4	-2.2	28	82.4	17.2	63	145.4	36.7	98	208.4
-21.1	-6	21.2	-1.7	29	84.2	17.8	64	147.2	37.2	99	210.2
-20.6	-5	23.0	-1.1	35	95.0	21.1	70	158.0	51.7	125	257.0
-20.0	-4	24.8	-0.6	31	87.8	18.9	66	150.8	40.6	105	221.0
-19.4	-3	26.6	0	32	89.6	19.4	67	152.6	43.3	110	230.0
-18.9	-2	28.4	0.6	33	91.4	20.0	68	154.4	46.1	115	239.0
-18.3	-1	30.2	1.1	34	93.2	20.6	69	156.2	48.9	120	248.0
-17.8	0	32.0	1.7	35	95.0	21.1	70	158.0	51.7	125	257.0
-17.2	1	33.8	2.2	36	96.8	21.7	71	159.8	54.4	130	266.0
-16.7	2	35.6	2.8	37	98.6	22.2	72	161.6	57.2	135	275.0
-16.1	3	37.4	3.3	38	100.4	22.8	73	163.4	60.0	140	284.0
-15.6	4	39.2	3.9	39	102.2	23.3	74	165.2	62.7	145	293.0
-15.0	5	41.0	4.4	40	104.0	23.9	75	167.0	65.6	150	302.0
-14.4	6	42.8	5.0	41	105.8	24.4	76	168.8	68.3	155	311.0
-13.9	7	44.6	5.6	42	107.6	25.0	77	170.6	71.1	160	320.0
-13.3	8	46.4	6.1	43	109.4	25.6	78	172.4	73.9	165	329.0
-12.8	9	48.2	6.7	44	111.2	26.1	79	174.2	76.7	170	338.0
-12.2	10	50.0	7.2	45	113.0	26.7	80	176.0	79.4	172	347.0

SECTION 1 GENERAL

Group 1 Safety Hints 1-1
Group 2 Specifications 1-9

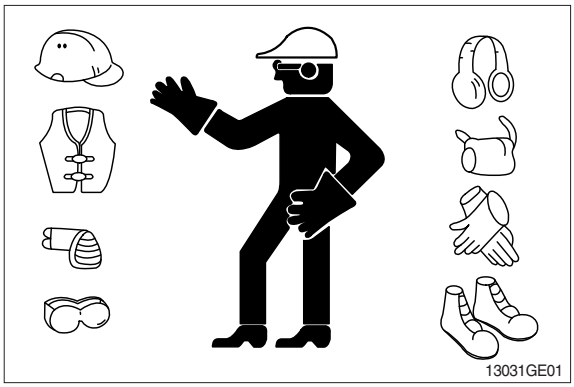
GROUP 1 SAFETY

FOLLOW SAFE PROCEDURE

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

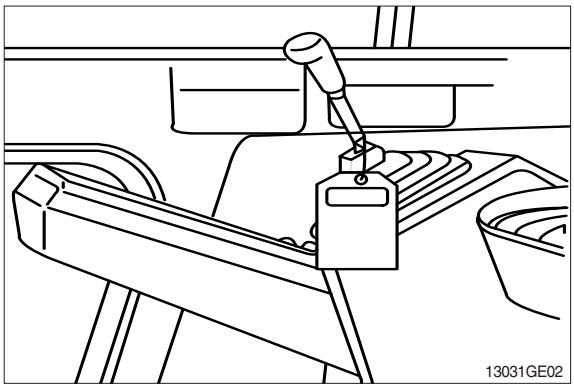
WEAR PROTECTIVE CLOTHING

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



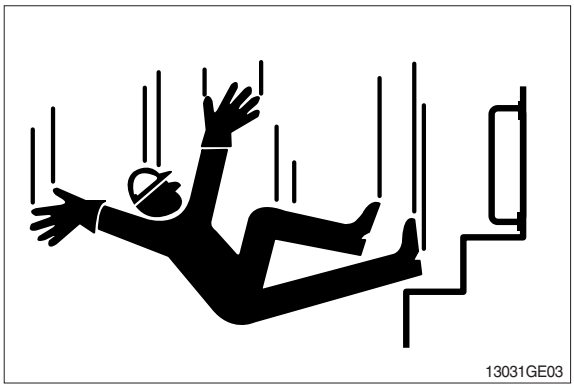
WARN OTHERS OF SERVICE WORK

Unexpected machine movement can cause serious injury.
Before performing any work on the excavator, attach a 「Do Not Operate」 tag on the right side control lever.



USE HANDHOLDS AND STEPS

Falling is one of the major causes of personal injury.
When you get on and off the machine, always maintain a three point contact with the steps and handrails and face the machine. Do not use any controls as handholds.
Never jump on or off the machine. Never mount or dismount a moving machine.
Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine.

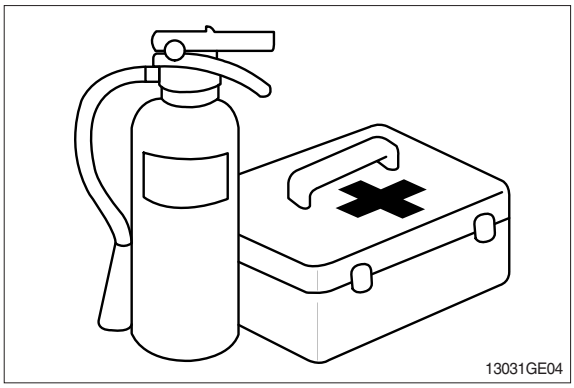


PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

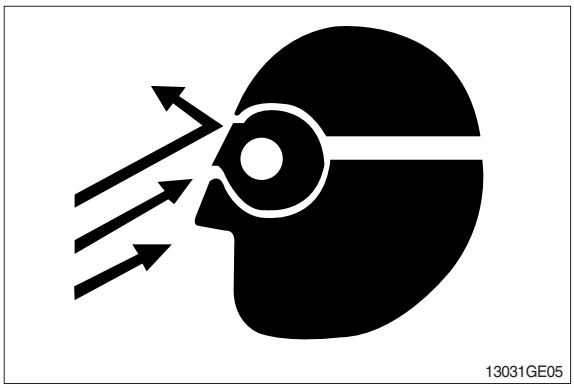
Keep a first aid kit and fire extinguisher handy.

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



PROTECT AGAINST FLYING DEBRIS

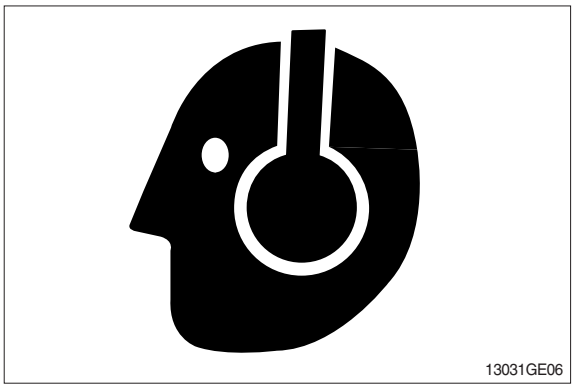
Guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.



PROTECT AGAINST NOISE

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

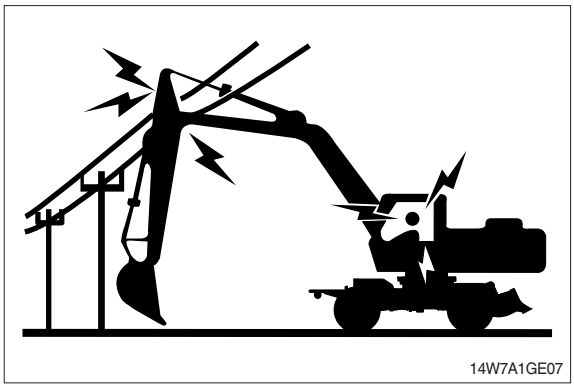
Wear a suitable hearing protective device such as ear-
muffs or earplugs to protect against objectionable or uncomfortable loud noises.



AVOID POWER LINES

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

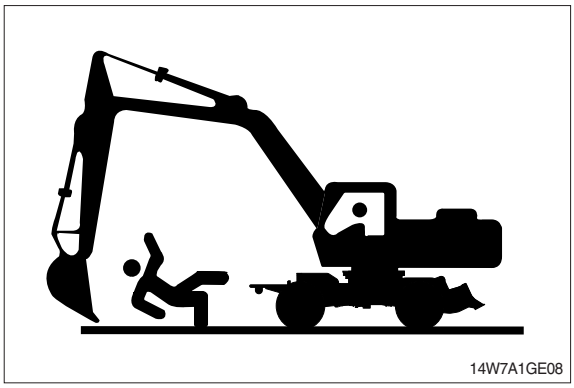
Never move any part of the machine or load closer to electric line than 3m(10ft) plus twice the line insulator length.



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.

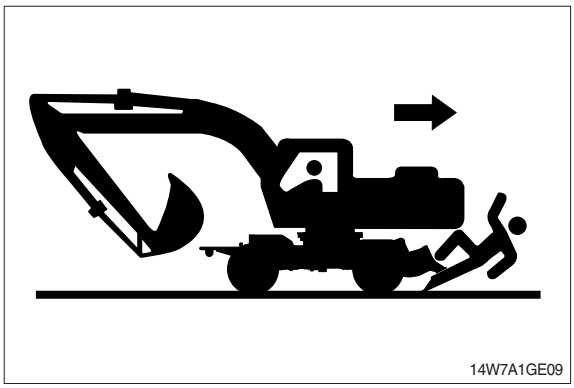


MOVE AND OPERATE MACHINE SAFELY

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.

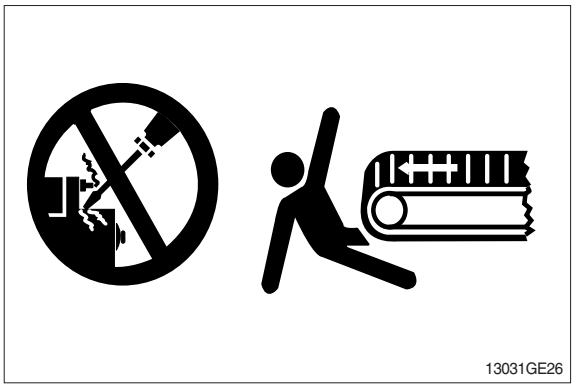
Use a signal person when moving, swinging, or operating the machine in congested areas. Coordinate hand signals before starting the excavator.



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

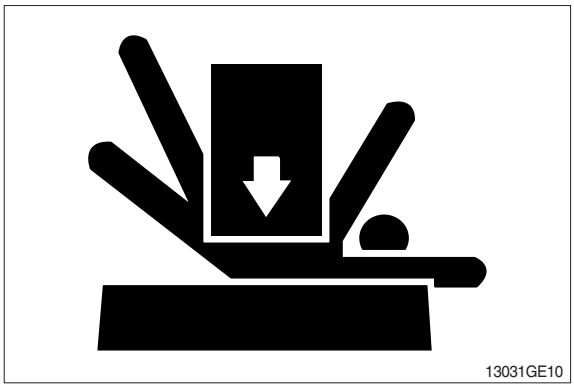
Before working on the machine:

- Park machine on a level surface.
- Lower bucket to the ground.
- Turn auto idle switch off.
- Run engine at 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.

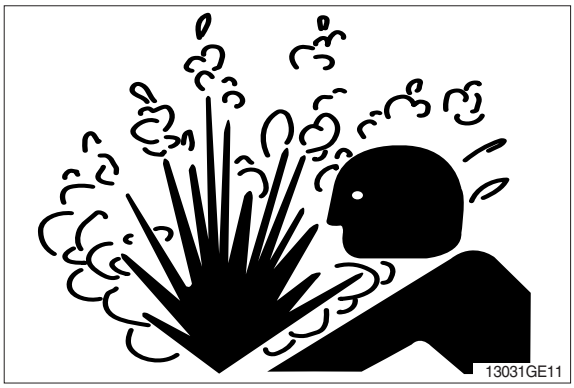
Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load.
Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



SERVICE COOLING SYSTEM SAFELY

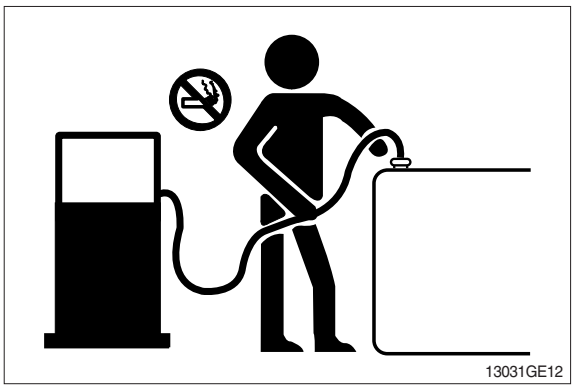
Explosive release of fluids from pressurized cooling system can cause serious burns.

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



HANDLE FLUIDS SAFELY-AVOID FIRES

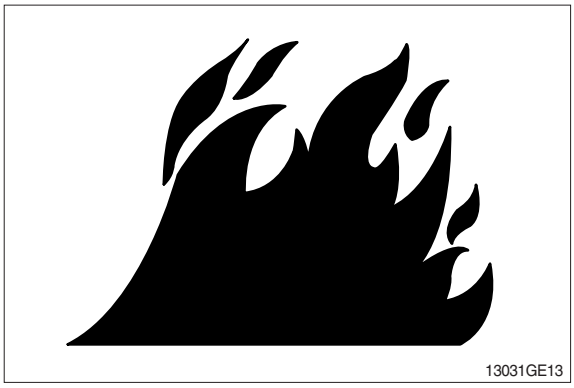
Handle fuel with care; it is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks. Always stop engine before refueling machine.
Fill fuel tank outdoors.



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

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

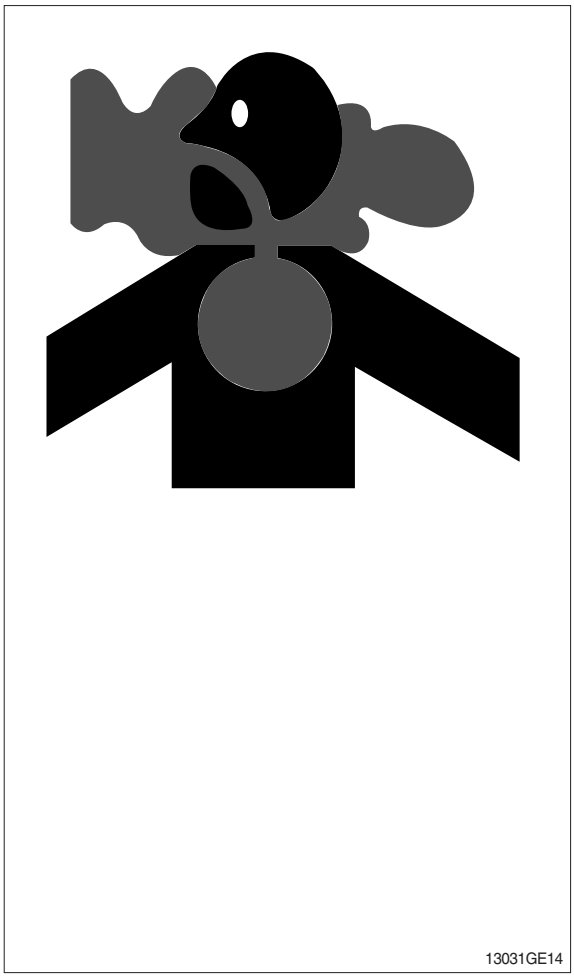
Do not store oily rags ; they can ignite and burn spontaneously.



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.

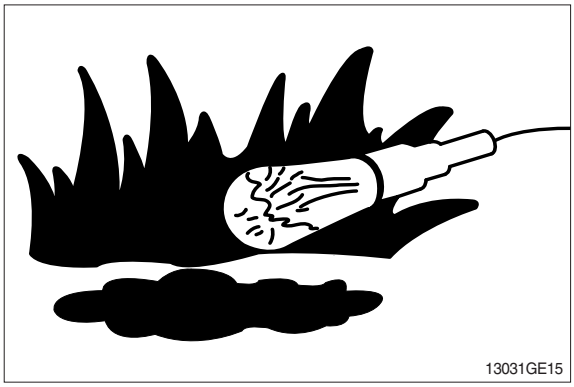
Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

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

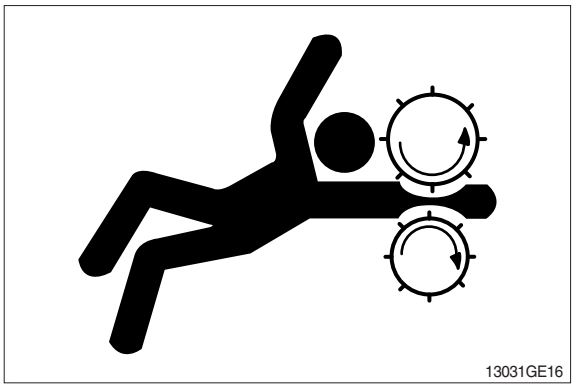
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.



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.

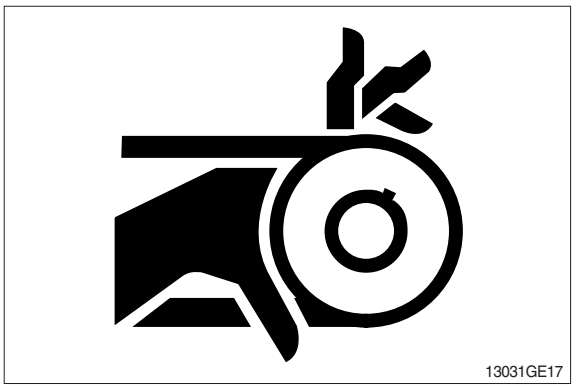
Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



STAY CLEAR OF MOVING PARTS

Entanglements in moving parts can cause serious injury.

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



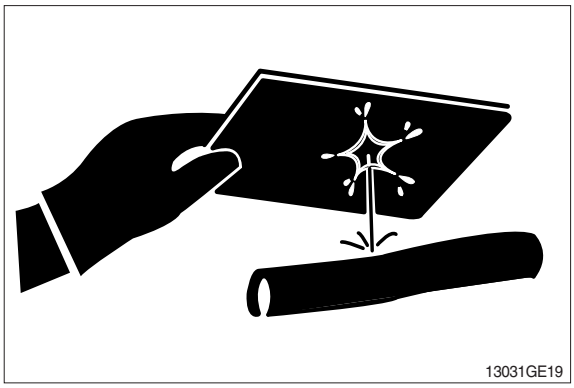
AVOID HIGH PRESSURE FLUIDS

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.

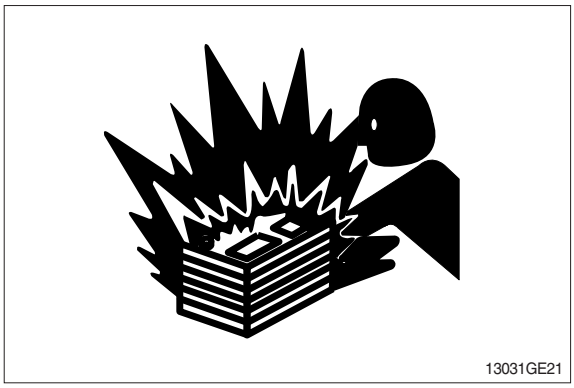

13031GE20

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 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:

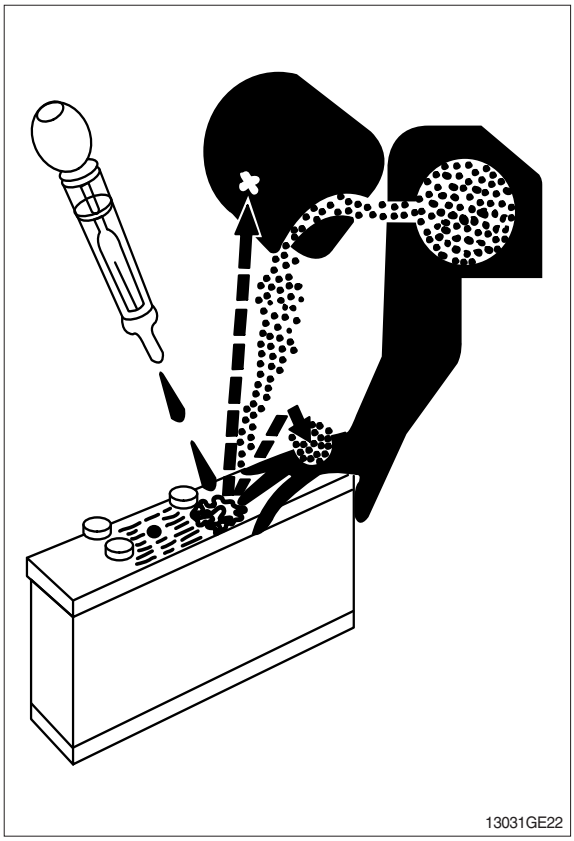
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling of dripping electrolyte.
5. Use proper jump start procedure.

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

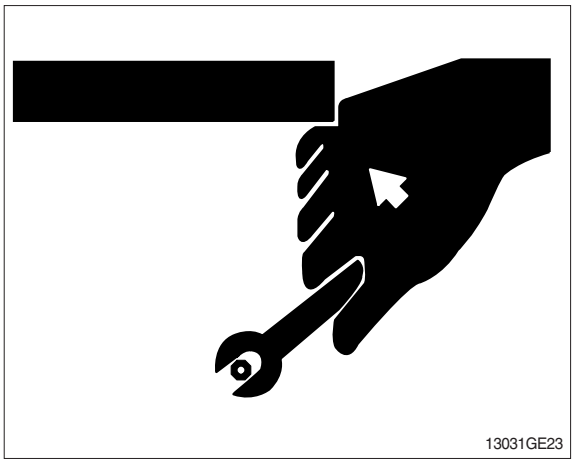
USE TOOLS PROPERLY

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 manual.)

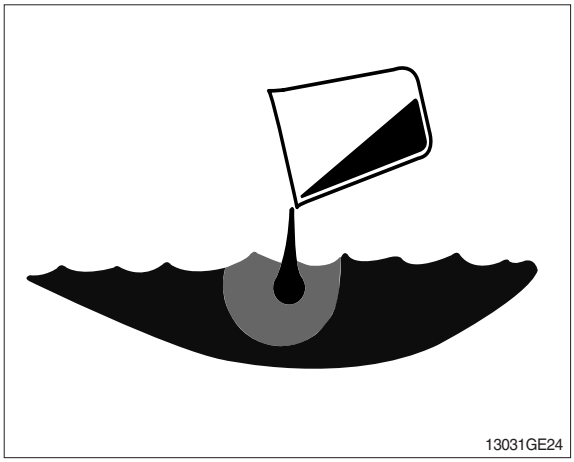


DISPOSE OF FLUIDS PROPERLY

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

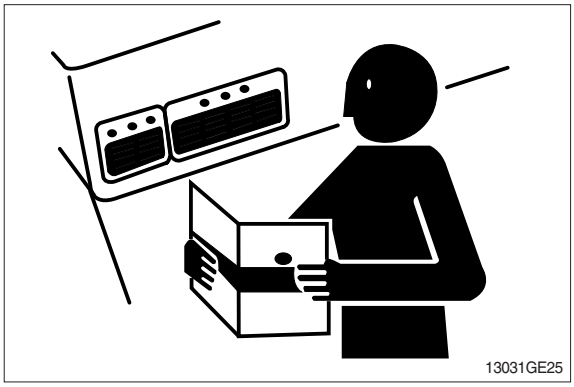
Use proper containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

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



REPLACE SAFETY SIGNS

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

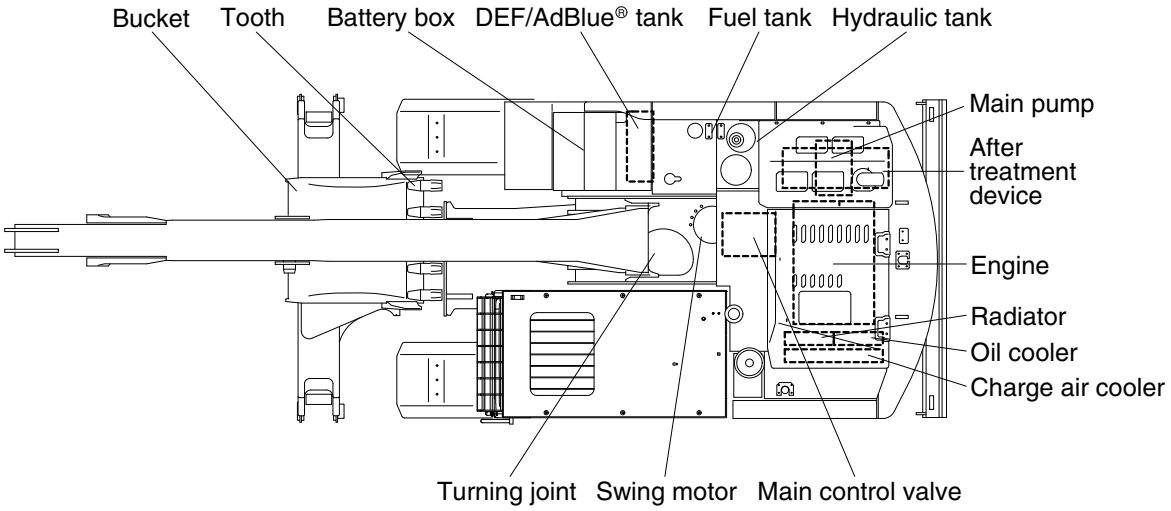


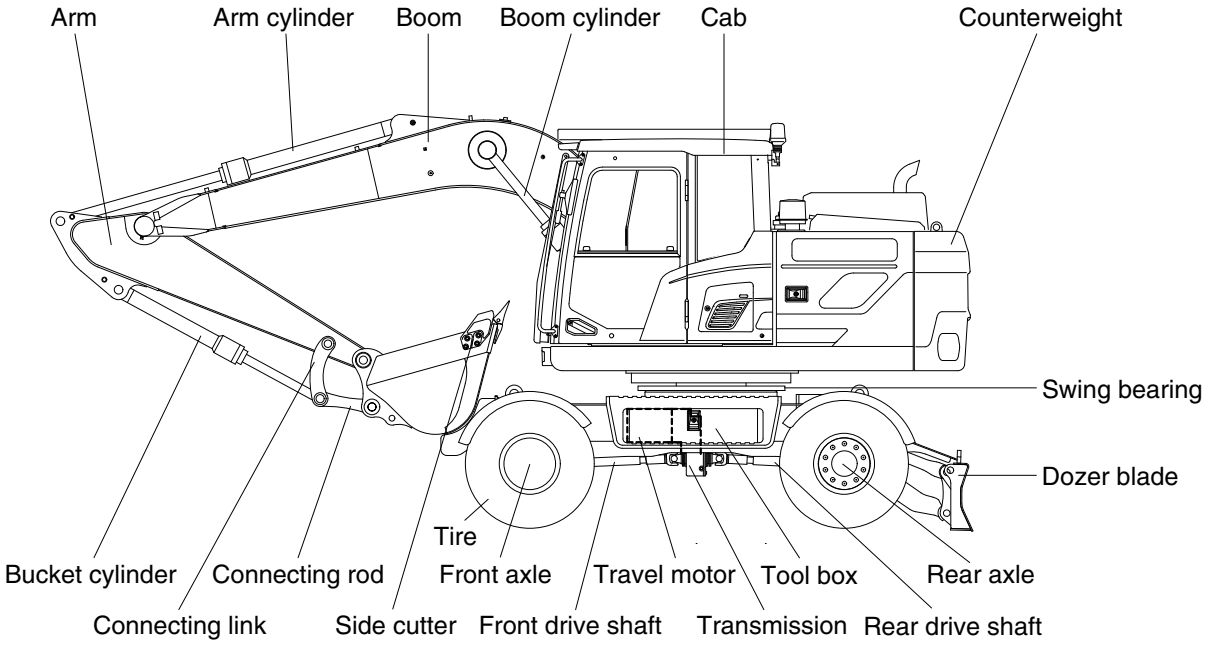
LIVE WITH SAFETY

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

GROUP 2 SPECIFICATIONS

1. MAJOR COMPONENT

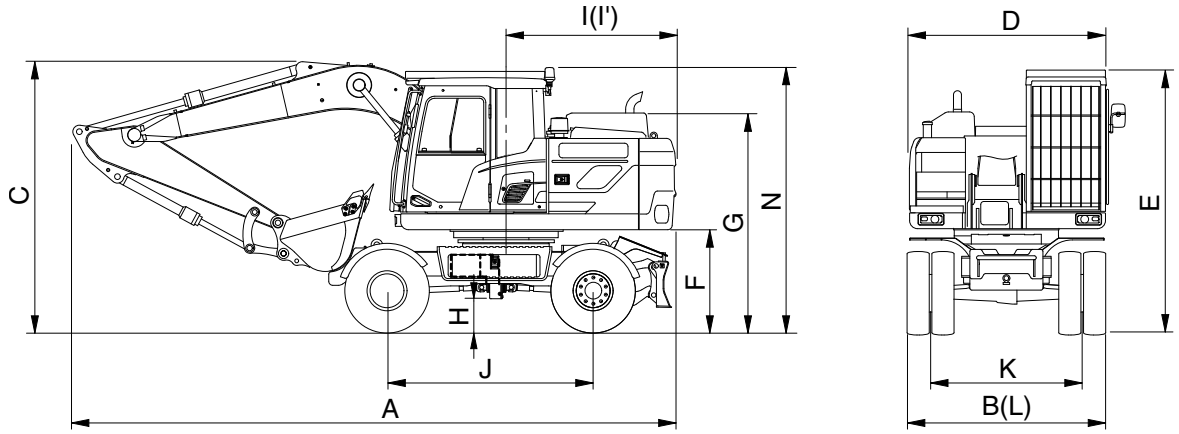




140WA2SP01

2. SPECIFICATIONS

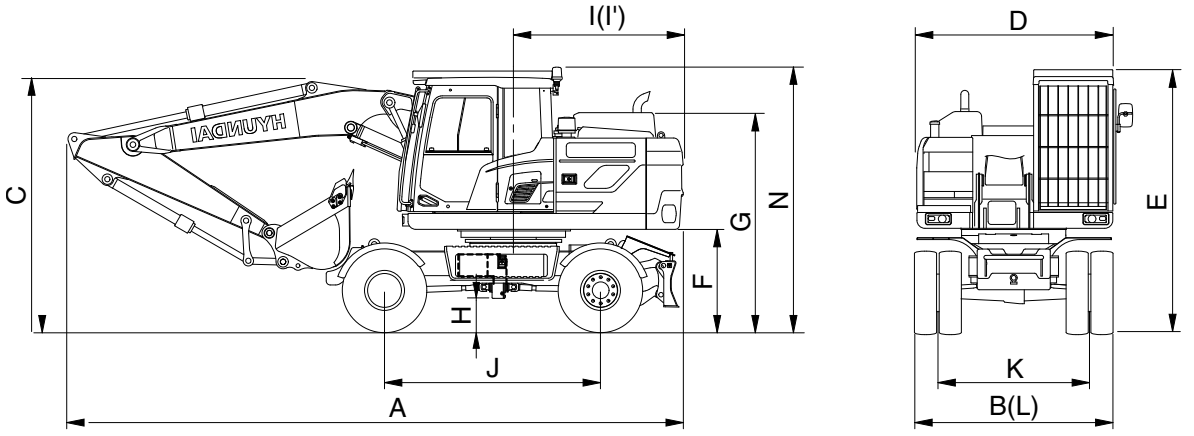
1) HW140A. MONO BOOM



140WF2SP02A

Description		Unit		Specification			
		m (ft-in)	Boom	4.6 (15' 1")			
			Arm	2.45 (8' 0")	2.00 (6' 50")	2.60 (8' 5")	3.10 (10' 20")
Operating weight		kg (lb)		14900 (32850)	14840 (32720)	14920 (32890)	14970 (33000)
Bucket capacity (SAE heaped), standard		m^3 (yd^3)		0.58 (0.76)	0.58 (0.76)	0.58 (0.76)	0.58 (0.76)
Overall length (traveling)	A	mm (ft-in)		7560 (24' 10")	7740 (25' 5")	7470 (24' 6")	7360 (24' 2")
Overall length (shipping)	A			7660 (25' 2")	7600 (24' 11")	7670 (25' 2")	7600 (24' 11")
Overall width	B			2530 (8' 4")	2530 (8' 4")	2530 (8' 4")	2530 (8' 4")
Overall height of boom	C			3805 (12' 6")	3420 (11' 3")	3925 (12' 11")	4000 (13' 1")
Upperstructure width	D			2485 (8' 2")	2485 (8' 2")	2485 (8' 2")	2485 (8' 2")
Cab height	E			3255 (10' 8")	3255 (10' 8")	3255 (10' 8")	3255 (10' 8")
Ground clearance of counterweight	F			1260 (4' 2")	1260 (4' 2")	1260 (4' 2")	1260 (4' 2")
Engine cover height	G			2760 (9' 1")	2760 (9' 1")	2760 (9' 1")	2760 (9' 1")
Minimum ground clearance	H			390 (1' 3")	390 (1' 3")	390 (1' 3")	390 (1' 3")
Rear-end distance	I			2150 (7' 1")	2150 (7' 1")	2150 (7' 1")	2150 (7' 1")
Rear-end swing radius	I'			2170 (7' 1")	2170 (7' 1")	2170 (7' 1")	2170 (7' 1")
Wheel base	J			2600 (8' 6")	2600 (8' 6")	2600 (8' 6")	2600 (8' 6")
Tread	K			1944 (6' 5")	1944 (6' 5")	1944 (6' 5")	1944 (6' 5")
Dozer blade width	L			2490 (8' 2")	2490 (8' 2")	2490 (8' 2")	2490 (8' 2")
Overall height of guardrail	N			3475 (11' 5")	3475 (11' 5")	3475 (11' 5")	3475 (11' 5")
Travel speed	Low	km/hr (mph)		10 (6.2)	10 (6.2)	10 (6.2)	10 (6.2)
Travel speed	High			40 (24.9)	40 (24.9)	40 (24.9)	40 (24.9)
Travel speed	Creep			3 (1.9)	3 (1.9)	3 (1.9)	3 (1.9)
Swing speed		rpm		9.50	9.50	9.50	9.50
Gradeability		Degree (%)		35 (70)	35 (70)	35 (70)	35 (70)
Max traction force		kg (lb)		8163 (17996)	8163 (17996)	8163 (17996)	8163 (17996)

2) HW140A, 2-PIECE BOOM

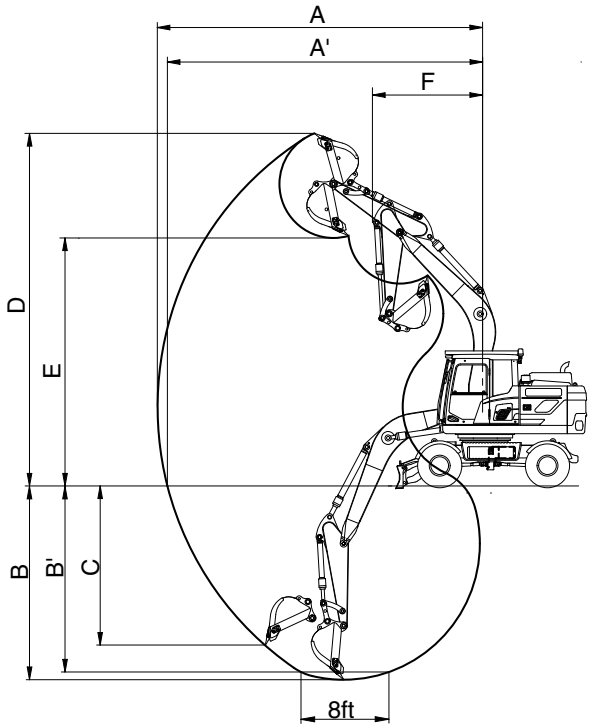


140WA2SP03A

Description		Unit		Specification		
		m (ft-in)	Boom	4.71 (15' 5")		
			Arm	2.45 (8' 0")	2.00 (6' 50")	2.60 (8' 5")
Operating weight		kg (lb)		15860 (34970)	15800 (34830)	15880 (35010)
Bucket capacity (SAE heaped), standard		m^3 (yd^3)		0.58 (0.76)	0.58 (0.76)	0.58 (0.76)
Overall length (traveling)	A	mm (ft-in)		5810 (19' 1")	5840 (19' 2")	5785 (19' 0")
Overall length (shipping)				7770 (25' 6")	7770 (25' 6")	7780 (25' 6")
Overall width	B			2530 (8' 4")	2530 (8' 4")	2530 (8' 4")
Overall height of boom	C			3990 (13' 1")	4000 (13' 1")	4000 (13' 1")
Upperstructure width	D			2485 (8' 2")	2485 (8' 2")	2485 (8' 2")
Cab height	E			3255 (10' 8")	3255 (10' 8")	3255 (10' 8")
Ground clearance of counterweight	F			1260 (4' 2")	1260 (4' 2")	1260 (4' 2")
Engine cover height	G			2760 (9' 1")	2760 (9' 1")	2760 (9' 1")
Minimum ground clearance	H			390 (1' 3")	390 (1' 3")	390 (1' 3")
Rear-end distance	I			2150 (7' 1")	2150 (7' 1")	2150 (7' 1")
Rear-end swing radius	I'			2170 (7' 1")	2170 (7' 1")	2170 (7' 1")
Wheel base	J			2600 (8' 6")	2600 (8' 6")	2600 (8' 6")
Tread	K			1944 (6' 5")	1944 (6' 5")	1944 (6' 5")
Dozer blade width	L			2490 (8' 2")	2490 (8' 2")	2490 (8' 2")
Overall height of guardrail	N			3475 (11' 5")	3475 (11' 5")	3475 (11' 5")
Travel speed	Low	km/hr (mph)		10 (6.2)	10 (6.2)	10 (6.2)
	High			40 (24.9)	40 (24.9)	40 (24.9)
	Creep			3 (1.9)	3 (1.9)	3 (1.9)
Swing speed		rpm		9.50	9.50	9.50
Gradeability		Degree (%)		35 (70)	35 (70)	35 (70)
Max traction force		kg (lb)		8163 (17996)	8163 (17996)	8163 (17996)

3. WORKING RANGE AND DIGGING POWER

1) HW140A, MONO BOOM

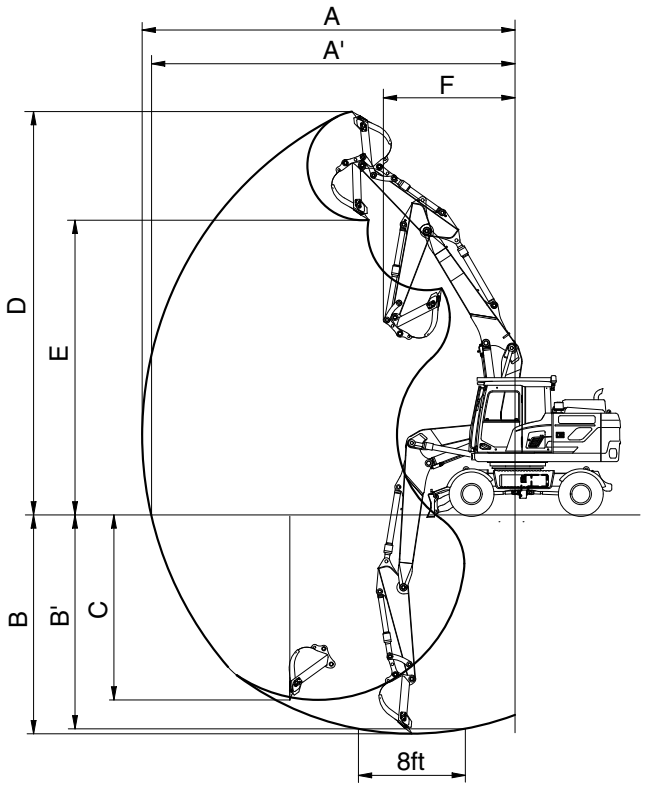


140WA2SP04

Description		2.45 m (8' 0") Arm	2.00 m (6' 7") Arm	2.60 m (8' 6") Arm	3.10 m (10' 2") Arm
Max digging reach	A	8310 (27' 3")	7880 (25' 10")	8450 (27' 9")	8910 (29' 3")
Max digging reach on ground	A'	8080 (26' 6")	7640 (25' 1")	8230 (27' 0")	8700 (28' 7")
Max digging depth	B	5110 (16' 9")	4660 (15' 3")	5260 (17' 3")	5760 (18' 11")
Max digging depth (8 ft level)	B'	4895 (16' 1")	4400 (14' 5")	5060 (16' 7")	5580 (18' 4")
Max vertical wall digging depth	C	4655 (15' 3")	4200 (13' 9")	4800 (15' 9")	5310 (17' 5")
Max digging height	D	8850 (29' 0")	8540 (28' 0")	8940 (29' 4")	9210 (30' 3")
Max dumping height	E	6400 (21' 0")	6100 (20' 0")	6490 (21' 4")	6760 (22' 2")
Min swing radius	F	2680 (8' 10")	2670 (8' 9")	2690 (8' 10")	2720 (8' 11")
Bucket digging force	SAE	87.9 [95.9]	87.8 [95.8]	87.9 [95.9]	87.8 [95.8]
		8961 [9780]	8957 [9770]	8961 [9780]	8957 [9770]
		19760 [21560]	19750 [21540]	19760 [21560]	19750 [21540]
	ISO	102.9 [112.3]	102.9 [112.2]	102.9 [112.3]	102.9 [112.2]
		10494 [11450]	10489.4 [11440]	10494 [11450]	10488.6 [11440]
		23140 [25240]	23130 [25220]	23140 [25240]	23120 [25220]
Arm digging force	SAE	63.6 [69.3]	74.2 [81.0]	61.1 [66.7]	54.7 [59.7]
		6485 [7070]	7569 [8260]	6230 [6800]	5579 [6090]
		14300 [15590]	16690 [18210]	13740 [14990]	12300 [13430]
	ISO	66.3 [72.4]	77.9 [84.9]	63.6 [69.4]	56.7 [61.9]
		6764 [7380]	7942 [8660]	6486 [7080]	5782 [6310]
		14910 [16270]	17510 [19090]	14300 [15610]	12750 [13910]

[ ] : Power boost

2) HW140A, 2-PIECE BOOM



140WA2SP05

Description		2.45 m (8' 0") Arm	2.00 m (6' 7") Arm	2.60 m (8' 6") Arm
Max digging reach	A	8490 (27' 10")	8050 (26' 5")	8630 (28' 4")
Max digging reach on ground	A'	8270 (27' 2")	7820 (25' 8")	8420 (27' 7")
Max digging depth	B	5000 (16' 5")	4550 (14' 11")	5150 (16' 11")
Max digging depth (8 ft level)	B'	4890 (16' 1")	4430 (14' 6")	5040 (16' 6")
Max vertical wall digging depth	C	4410 (14' 6")	3930 (12' 11")	4555 (14' 11")
Max digging height	D	9480 (31' 1")	9120 (29' 11")	9600 (31' 6")
Max dumping height	E	6990 (22' 11")	6640 (21' 9")	7110 (23' 4")
Min swing radius	F	2600 (8' 6")	2620 (8' 7")	2650 (8' 8")
Bucket digging force	SAE	87.9 [95.9]	87.8 [95.8]	87.9 [95.9]
		8961 [9780]	8957 [9770]	8961 [9780]
		19760 [21560]	19750 [21540]	19760 [21560]
	ISO	102.9 [112.3]	102.9 [112.2]	102.9 [112.3]
		10494 [11450]	10489 [11440]	10494 [11450]
		23140 [25240]	23130 [25220]	23140 [25240]
Arm digging force	SAE	63.6 [69.3]	74.2 [81.0]	61.1 [66.7]
		6485 [7070]	7569 [8260]	6230 [6800]
		14300 [15590]	16690 [18210]	13740 [14990]
	ISO	66.3 [72.4]	77.9 [84.9]	63.6 [69.4]
		6764 [7380]	7942 [8660]	6486 [7080]
		14910 [16270]	17510 [19090]	14300 [15610]

[ ] : Power boost

4. WEIGHT

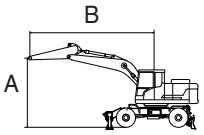
Item	HW140A	
	kg	lb
Upperstructure assembly	7005	15440
· Main frame weld assembly	1273	2810
· Engine assembly	378	830
· Aftertreatment assembly	64	140
· Main pump assembly	91	200
· Main control valve assembly	144	320
· Swing motor assembly	148	330
· Hydraulic oil tank WA	135	300
· Fuel tank WA	138	300
· Counterweight	1704	3760
· Cab assembly	495	1090
Lower chassis assembly	5145	11340
· Lower frame weld assembly	1255	2770
· Swing bearing	260	570
· Travel motor assembly (2EA)	56	120
· Turning joint	117	260
· Transmission assembly	135	300
· Front axle assembly	637	1400
· Rear axle assembly	534	1180
· Dozer blade assembly (front)	632	1390
· Dozer blade assembly (rear)	632	1390
Front attachment assembly (4.6 m boom, 2.45 m arm, 0.58 m^3 SAE heaped bucket)	2750	6060
· 4.6 m boom assembly	829	1830
· 4.75 m 2pcs boom assembly	938	2070
· 2.00 m arm assembly	380	840
· 2.45 m arm assembly	437	960
· 2.60 m arm assembly	457	1010
· 3.10 m arm assembly	492	1080
· 0.58 m^3 SAE heaped bucket assembly	484	1070
· 0.52 m^3 SAE heaped bucket assembly	461	1020
· 0.65 m^3 SAE heaped bucket assembly	513	1130
· 0.71 m^3 SAE heaped bucket assembly	536	1180
· 0.50 m^3 SAE heaped bucket assembly	439	970
· 0.61 m^3 SAE heaped bucket assembly	490	1080
· 0.45 m^3 SAE heaped bucket assembly	410	900
· 0.55 m^3 SAE heaped bucket assembly	585	1290
· Bucket control link assembly	113	250
· Boom cylinder assembly (2EA)	238	520
· Adjustable boom cylinder assembly (2EA)	246	540
· Arm cylinder assembly	145	320
· Bucket cylinder assembly	104	230
· Adjustable cylinder assembly	168	370
· Oscillating cylinder assembly (2EA)	98	220
· Outrigger cylinder assembly (2EA)	136	300
· Blade cylinder assembly (front) (2EA)	102	220
· Blade cylinder assembly (rear) (2EA)	102	220
· Front outrigger assembly	833	1840
· Rear outrigger assembly	833	1840

5. LIFTING CAPACITIES

1) 4.6 m MONO BOOM+1700 kg COUNTERWEIGHT

Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	2000	1700	-	500	-	Down	-	-

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



Lift-point height (A)		Lift-point radius (B)								At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		Capacity		Reach
												m (ft)
6.0 m (19.7 ft)	kg					*4420	3670			*3330	2910	5.15
	lb					*9740	8090			*7340	6420	(16.9)
4.5 m (14.8 ft)	kg					*4790	3570	3560	2240	*3110	2190	6.08
	lb					*10560	7870	7850	4940	*6860	4830	(19.9)
3.0 m (9.8 ft)	kg					5500	3350	3490	2180	3050	1900	6.53
	lb					12130	7390	7690	4810	6720	4190	(21.4)
1.5 m (4.9 ft)	kg					5250	3140	3400	2090	2940	1810	6.62
	lb					11570	6920	7500	4610	6480	3990	(21.7)
0.0 m (0.0 ft)	kg			*6510	5520	5120	3020	3340	2040	3090	1890	6.34
	lb			*14350	12170	11290	6660	7360	4500	6810	4170	(20.8)
-1.5 m (-4.9 ft)	kg	*6490	*6490	*9460	5580	5120	3020			3650	2230	5.66
	lb	*14310	*14310	*20860	12300	11290	6660			8050	4920	(18.6)
-3.0 m (-9.8 ft)	kg			*6990	5760					*4600	3300	4.37
	lb			*15410	12700					*10140	7280	(14.3)

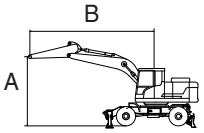
Note 1. Lifting capacity are based on ISO 10567.
2. Lifting capacity of the HX series does not exceed 75% of tipping load with the machine on firm, level ground or 87% of full hydraulic capacity.
3. The Lift-point is bucket pivot mounting pin on the arm (without bucket mass).
4. *Indicates load limited 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 with your local HD Hyundai Construction Equipment dealer regarding the lifting capacities for specific work tools and attachments.

⚠ Failure to comply to the rated load can cause surious injury, death, or property damage. Make adjustments to the rated load as necessory for non-standard configurations.

Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	2000	1700	-	500	-	Up	-	-

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



Lift-point height (A)		Lift-point radius (B)								At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		Capacity		Reach
												m (ft)
6.0 m (19.7 ft)	kg					*4420	3330			*3330	2640	5.15
	lb					*9740	7340			*7340	5820	(16.9)
4.5 m (14.8 ft)	kg					*4790	3230	3560	2020	*3110	1970	6.08
	lb					*10560	7120	7850	4450	*6860	4340	(19.9)
3.0 m (9.8 ft)	kg					5500	3010	3490	1960	3050	1710	6.53
	lb					12130	6640	7690	4320	6720	3770	(21.4)
1.5 m (4.9 ft)	kg					5250	2810	3400	1880	2940	1620	6.62
	lb					11570	6190	7500	4140	6480	3570	(21.7)
0.0 m (0.0 ft)	kg			*6510	4840	5120	2700	3340	1820	3090	1700	6.34
	lb			*14350	10670	11290	5950	7360	4010	6810	3750	(20.8)
-1.5 m (-4.9 ft)	kg	*6490	*6490	*9460	4900	5120	2690			3650	1990	5.66
	lb	*14310	*14310	*20860	10800	11290	5930			8050	4390	(18.6)
-3.0 m (-9.8 ft)	kg			*6990	5080					*4600	2950	4.37
	lb			*15410	11200					*10140	6500	(14.3)

Note 1. Lifting capacity are based on ISO 10567.
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4. *Indicates load limited by hydraulic capacity.

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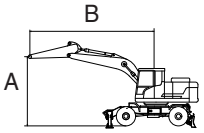
Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	2450	1700	-	500	-	Down	-	-

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



Lift-point height (A)		Lift-point radius (B)								At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		Capacity		Reach
7.5 m (24.6 ft)	kg									*2890	*2890	4.16
	lb									*6370	*6370	(13.6)
6.0 m (19.7 ft)	kg					*3880	3740			*2390	*2390	5.70
	lb					*8550	8250			*5270	*5270	(18.7)
4.5 m (14.8 ft)	kg					*4330	3620	3590	2270	*2250	1940	6.55
	lb					*9550	7980	7910	5000	*4960	4280	(21.5)
3.0 m (9.8 ft)	kg			*7850	6310	*5330	3390	3500	2180	*2260	1700	6.97
	lb			*17310	13910	*11750	7470	7720	4810	*4980	3750	(22.9)
1.5 m (4.9 ft)	kg			*5690	5650	5270	3150	3390	2080	*2410	1630	7.05
	lb			*12540	12460	11620	6940	7470	4590	*5310	3590	(23.1)
0.0 m (0.0 ft)	kg			*6760	5460	5100	3000	3310	2010	*2740	1690	6.79
	lb			*14900	12040	11240	6610	7300	4430	*6040	3730	(22.3)
-1.5 m (-4.9 ft)	kg	*5600	*5600	*9980	5480	5060	2960	3300	2000	3190	1940	6.16
	lb	*12350	*12350	*22000	12080	11160	6530	7280	4410	7030	4280	(20.2)
-3.0 m (-9.8 ft)	kg			*7990	5620	5160	3050			4400	2650	5.01
	lb			*17610	12390	11380	6720			9700	5840	(16.4)

Note 1. Lifting capacity are based on ISO 10567.
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3. The Lift-point is bucket pivot mounting pin on the arm (without bucket mass).
4. *Indicates load limited by hydraulic capacity.

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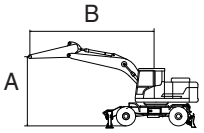
⚠ Failure to comply to the rated load can cause surious injury, death, or property damage. Make adjustments to the rated load as necessory for non-standard configurations.

Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	2450	1700	-	500	-	Up	-	-

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



Lift-point height (A)		Lift-point radius (B)								At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		Capacity		Reach
												m (ft)
7.5 m (24.6 ft)	kg									*2890	*2890	4.16
	lb									*6370	*6370	(13.6)
6.0 m (19.7 ft)	kg					*3880	3390			*2390	2250	5.70
	lb					*8550	7470			*5270	4960	(18.7)
4.5 m (14.8 ft)	kg					*4330	3280	3590	2050	*2250	1750	6.55
	lb					*9550	7230	7910	4520	*4960	3860	(21.5)
3.0 m (9.8 ft)	kg			*7850	5600	*5330	3050	3500	1970	*2260	1530	6.97
	lb			*17310	12350	*11750	6720	7720	4340	*4980	3370	(22.9)
1.5 m (4.9 ft)	kg			*5690	4970	5270	2810	3390	1860	*2410	1460	7.05
	lb			*12540	10960	11620	6190	7470	4100	*5310	3220	(23.1)
0.0 m (0.0 ft)	kg			*6760	4790	5100	2670	3310	1790	*2740	1510	6.79
	lb			*14900	10560	11240	5890	7300	3950	*6040	3330	(22.3)
-1.5 m (-4.9 ft)	kg	*5600	*5600	*9980	4800	5060	2640	3300	1790	3190	1730	6.16
	lb	*12350	*12350	*22000	10580	11160	5820	7280	3950	7030	3810	(20.2)
-3.0 m (-9.8 ft)	kg			*7990	4940	5160	2720			4400	2370	5.01
	lb			*17610	10890	11380	6000			9700	5220	(16.4)

Note 1. Lifting capacity are based on ISO 10567.
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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.
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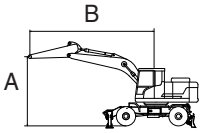
⚠ Failure to comply to the rated load can cause surious injury, death, or property damage. Make adjustments to the rated load as necessory for non-standard configurations.

Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	2600	1700	-	500	-	Down	-	-

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



Lift-point height (A)		Lift-point radius (B)								At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		Capacity		Reach
												m (ft)
7.5 m (24.6 ft)	kg									*2660	*2660	4.40
	lb									*5860	*5860	(14.4)
6.0 m (19.7 ft)	kg									*2230	*2230	5.87
	lb									*4920	*4920	(19.3)
4.5 m (14.8 ft)	kg					*4180	3650	3610	2280	*2100	1870	6.70
	lb					*9220	8050	7960	5030	*4630	4120	(22.0)
3.0 m (9.8 ft)	kg			*7510	6380	*5190	3410	3510	2190	*2110	1650	7.12
	lb			*16560	14070	*11440	7520	7740	4830	*4650	3640	(23.3)
1.5 m (4.9 ft)	kg			*6430	5680	5280	3150	3390	2080	*2250	1580	7.19
	lb			*14180	12520	11640	6940	7470	4590	*4960	3480	(23.6)
0.0 m (0.0 ft)	kg			*6820	5440	5090	2990	3300	2000	*2540	1630	6.94
	lb			*15040	11990	11220	6590	7280	4410	*5600	3590	(22.8)
-1.5 m (-4.9 ft)	kg	*5360	*5360	*10110	5440	5040	2950	3290	1990	3060	1860	6.33
	lb	*11820	*11820	*22290	11990	11110	6500	7250	4390	6750	4100	(20.8)
-3.0 m (-9.8 ft)	kg	*9520	*9520	*8270	5580	5120	3020			4130	2490	5.21
	lb	*20990	*20990	*18230	12300	11290	6660			9110	5490	(17.1)

Note 1. Lifting capacity are based on ISO 10567.

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4. *Indicates load limited by hydraulic capacity.

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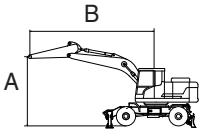
Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	2600	1700	-	500	-	Up	-	-

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



Lift-point height (A)		Lift-point radius (B)								At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		Capacity		Reach
												m (ft)
7.5 m (24.6 ft)	kg									*2660	*2660	4.40
	lb									*5860	*5860	(14.4)
6.0 m (19.7 ft)	kg									*2230	2140	5.87
	lb									*4920	4720	(19.3)
4.5 m (14.8 ft)	kg					*4180	3300	3610	2060	*2100	1690	6.70
	lb					*9220	7280	7960	4540	*4630	3730	(22.0)
3.0 m (9.8 ft)	kg			*7510	5670	*5190	3070	3510	1970	*2110	1480	7.12
	lb			*16560	12500	*11440	6770	7740	4340	*4650	3260	(23.3)
1.5 m (4.9 ft)	kg			*6430	5000	5280	2820	3390	1870	*2250	1410	7.19
	lb			*14180	11020	11640	6220	7470	4120	*4960	3110	(23.6)
0.0 m (0.0 ft)	kg			*6820	4770	5090	2660	3300	1790	*2540	1460	6.94
	lb			*15040	10520	11220	5860	7280	3950	*5600	3220	(22.8)
-1.5 m (-4.9 ft)	kg	*5360	*5360	*10110	4760	5040	2620	3290	1770	3060	1660	6.33
	lb	*11820	*11820	*22290	10490	11110	5780	7250	3900	6750	3660	(20.8)
-3.0 m (-9.8 ft)	kg	*9520	*9520	*8270	4900	5120	2690			4130	2220	5.21
	lb	*20990	*20990	*18230	10800	11290	5930			9110	4890	(17.1)

Note 1. Lifting capacity are based on ISO 10567.
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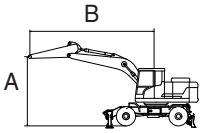
Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	3100	1700	-	500	-	Down	-	-

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



Lift-point height (A)		Lift-point radius (B)										At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		7.5 m (24.6 ft)		Capacity		Reach
														m (ft)
7.5 m (24.6 ft)	kg											*2150	*2150	5.13
	lb											*4740	*4740	(16.8)
6.0 m (19.7 ft)	kg							*2670	2340			*1860	*1860	6.43
	lb							*5890	5160			*4100	*4100	(21.1)
4.5 m (14.8 ft)	kg							*3310	2310			*1770	1660	7.20
	lb							*7300	5090			*3900	3660	(23.6)
3.0 m (9.8 ft)	kg			*6350	*6350	*4690	3470	3530	2210	*2090	1510	*1790	1480	7.58
	lb			*14000	*14000	*10340	7650	7780	4870	*4610	3330	*3950	3260	(24.9)
1.5 m (4.9 ft)	kg			*9370	5840	5330	3190	3400	2080	2400	1460	*1900	1410	7.65
	lb			*20660	12870	11750	7030	7500	4590	5290	3220	*4190	3110	(25.1)
0.0 m (0.0 ft)	kg			*7170	5460	5100	2990	3290	1980			*2120	1450	7.42
	lb			*15810	12040	11240	6590	7250	4370			*4670	3200	(24.3)
-1.5 m (-4.9 ft)	kg	*4710	*4710	*9570	5380	5010	2910	3240	1940			*2570	1620	6.85
	lb	*10380	*10380	*21100	11860	11050	6420	7140	4280			*5670	3570	(22.5)
-3.0 m (-9.8 ft)	kg	*7920	*7920	*9090	5470	5040	2940					3430	2070	5.84
	lb	*17460	*17460	*20040	12060	11110	6480					7560	4560	(19.1)

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Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	3100	1700	-	500	-	Up	-	-

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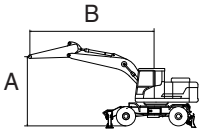

Lift-point height (A)		Lift-point radius (B)										At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		7.5 m (24.6 ft)		Capacity		Reach
														m (ft)
7.5 m (24.6 ft)	kg											*2150	*2150	5.13
	lb											*4740	*4740	(16.8)
6.0 m (19.7 ft)	kg							*2670	2120			*1860	1850	6.43
	lb							*5890	4670			*4100	4080	(21.1)
4.5 m (14.8 ft)	kg							*3310	2090			*1770	1490	7.20
	lb							*7300	4610			*3900	3280	(23.6)
3.0 m (9.8 ft)	kg			*6350	5900	*4690	3130	3530	1990	*2090	1350	*1790	1320	7.58
	lb			*14000	13010	*10340	6900	7780	4390	*4610	2980	*3950	2910	(24.9)
1.5 m (4.9 ft)	kg			*9370	5150	5330	2860	3400	1870	2400	1310	*1900	1260	7.65
	lb			*20660	11350	11750	6310	7500	4120	5290	2890	*4190	2780	(25.1)
0.0 m (0.0 ft)	kg			*7170	4780	5100	2660	3290	1770			*2120	1290	7.42
	lb			*15810	10540	11240	5860	7250	3900			*4670	2840	(24.3)
-1.5 m (-4.9 ft)	kg	*4710	*4710	*9570	4710	5010	2580	3240	1730			*2570	1440	6.85
	lb	*10380	*10380	*21100	10380	11050	5690	7140	3810			*5670	3170	(22.5)
-3.0 m (-9.8 ft)	kg	*7920	*7920	*9090	4790	5040	2610					3430	1840	5.84
	lb	*17460	*17460	*20040	10560	11110	5750					7560	4060	(19.1)

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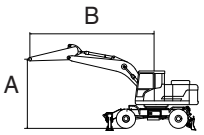
2) 4.6 m MONO BOOM+2200 kg COUNTERWEIGHT

Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	2000	2200	-	500	-	Down	-	-

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



Lift-point height (A)		Lift-point radius (B)								At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		Capacity		Reach
												m (ft)
6.0 m (19.7 ft)	kg					*4420	4000			*3330	3180	5.15
	lb					*9740	8820			*7340	7010	(16.9)
4.5 m (14.8 ft)	kg					*4790	3890	*3600	2460	*3110	2410	6.08
	lb					*10560	8580	*7940	5420	*6860	5310	(19.9)
3.0 m (9.8 ft)	kg					*5740	3670	3780	2400	*3140	2100	6.53
	lb					*12650	8090	8330	5290	*6920	4630	(21.4)
1.5 m (4.9 ft)	kg					5680	3460	3680	2320	3190	2010	6.62
	lb					12520	7630	8110	5110	7030	4430	(21.7)
0.0 m (0.0 ft)	kg			*6510	6090	5550	3350	3620	2260	3350	2100	6.34
	lb			*14350	13430	12240	7390	7980	4980	7390	4630	(20.8)
-1.5 m (-4.9 ft)	kg	*6490	*6490	*9460	6150	5540	3340			3960	2470	5.66
	lb	*14310	*14310	*20860	13560	12210	7360			8730	5450	(18.6)
-3.0 m (-9.8 ft)	kg			*6990	6340					*4600	3630	4.37
	lb			*15410	13980					*10140	8000	(14.3)

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Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	2000	2200	-	500	-	Up	-	-

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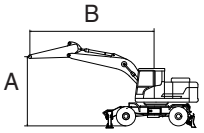

Lift-point height (A)		Lift-point radius (B)								At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		Capacity		Reach
												m (ft)
6.0 m (19.7 ft)	kg					*4420	3630			*3330	2900	5.15
	lb					*9740	8000			*7340	6390	(16.9)
4.5 m (14.8 ft)	kg					*4790	3540	*3600	2240	*3110	2190	6.08
	lb					*10560	7800	*7940	4940	*6860	4830	(19.9)
3.0 m (9.8 ft)	kg					*5740	3320	3780	2180	*3140	1900	6.53
	lb					*12650	7320	8330	4810	*6920	4190	(21.4)
1.5 m (4.9 ft)	kg					5680	3110	3680	2090	3190	1820	6.62
	lb					12520	6860	8110	4610	7030	4010	(21.7)
0.0 m (0.0 ft)	kg			*6510	5380	5550	3000	3620	2040	3350	1900	6.34
	lb			*14350	11860	12240	6610	7980	4500	7390	4190	(20.8)
-1.5 m (-4.9 ft)	kg	*6490	*6490	*9460	5430	5540	3000			3960	2220	5.66
	lb	*14310	*14310	*20860	11970	12210	6610			8730	4890	(18.6)
-3.0 m (-9.8 ft)	kg			*6990	5610					*4600	3270	4.37
	lb			*15410	12370					*10140	7210	(14.3)

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Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HW140A	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		4600	2450	2200	-	500	-	Down	-	-

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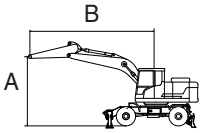

Lift-point height (A)		Lift-point radius (B)								At max. reach		
		1.5 m (4.9 ft)		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		Capacity		Reach
												m (ft)
7.5 m (24.6 ft)	kg									*2890	*2890	4.16
	lb									*6370	*6370	(13.6)
6.0 m (19.7 ft)	kg					*3880	*3880			*2390	*2390	5.70
	lb					*8550	*8550			*5270	*5270	(18.7)
4.5 m (14.8 ft)	kg					*4330	3940	*3790	2490	*2250	2140	6.55
	lb					*9550	8690	*8360	5490	*4960	4720	(21.5)
3.0 m (9.8 ft)	kg			*7850	6880	*5330	3710	3790	2410	*2260	1890	6.97
	lb			*17310	15170	*11750	8180	8360	5310	*4980	4170	(22.9)
1.5 m (4.9 ft)	kg			*5690	*5690	5700	3470	3670	2300	*2410	1810	7.05
	lb			*12540	*12540	12570	7650	8090	5070	*5310	3990	(23.1)
0.0 m (0.0 ft)	kg			*6760	6030	5530	3320	3590	2230	*2740	1880	6.79
	lb			*14900	13290	12190	7320	7910	4920	*6040	4140	(22.3)
-1.5 m (-4.9 ft)	kg	*5600	*5600	*9980	6050	5490	3290	3590	2230	*3430	2150	6.16
	lb	*12350	*12350	*22000	13340	12100	7250	7910	4920	*7560	4740	(20.2)
-3.0 m (-9.8 ft)	kg			*7990	6200	*5350	3370			*4450	2930	5.01
	lb			*17610	13670	*11790	7430			*9810	6460	(16.4)

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