HYUNDAI
CONSTRUCTION EQUIPMENT

HX160A L, HX180A L

CRAWLER 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.

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

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2. HOW TO READ THE SERVICE MANUAL

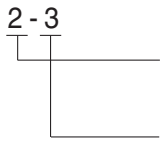
Distribution and updating

Any additions, amendments or other changes will be sent to HYUNDAI 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



Item number
(2. Structure and Function)
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.

8 - 4
8 - 4 - 1
8 - 4 - 2] Added pages
8 - 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.

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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

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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

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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

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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

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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

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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 1-10

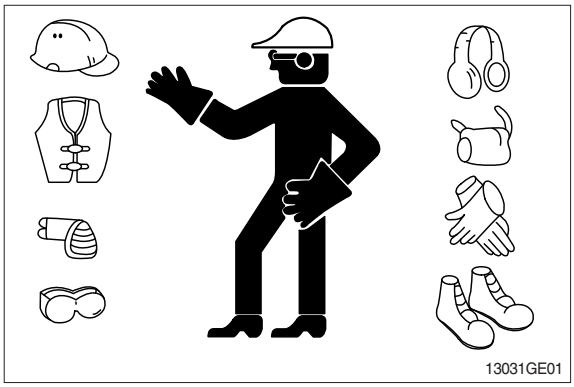
GROUP 1 SAFETY

FOLLOW SAFE PROCEDURE

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

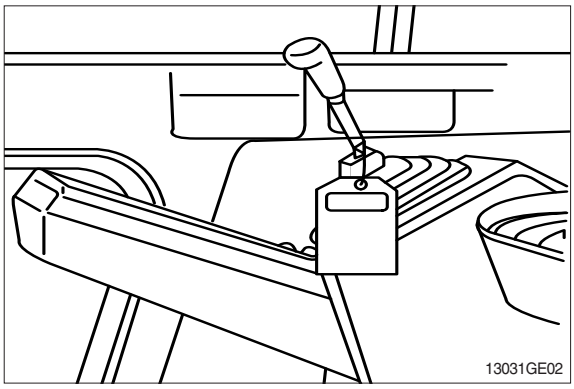
WEAR PROTECTIVE CLOTHING

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



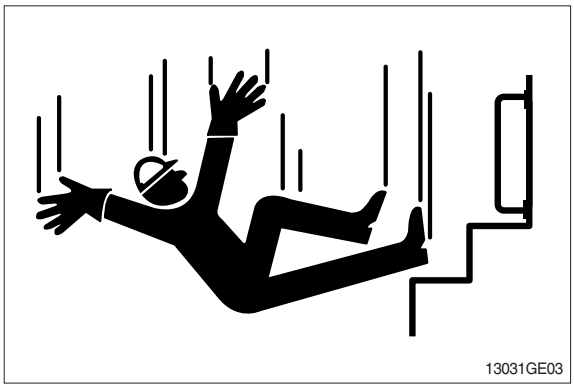
WARN OTHERS OF SERVICE WORK

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



USE HANDHOLDS AND STEPS

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

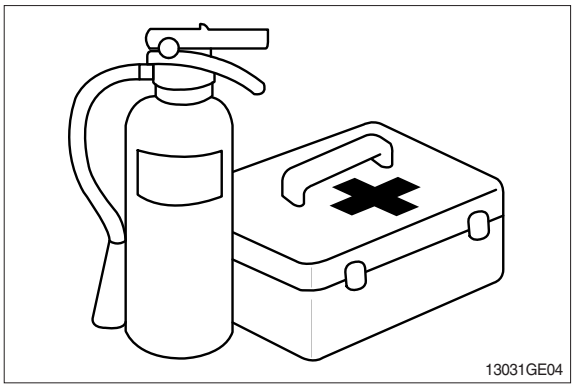


PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

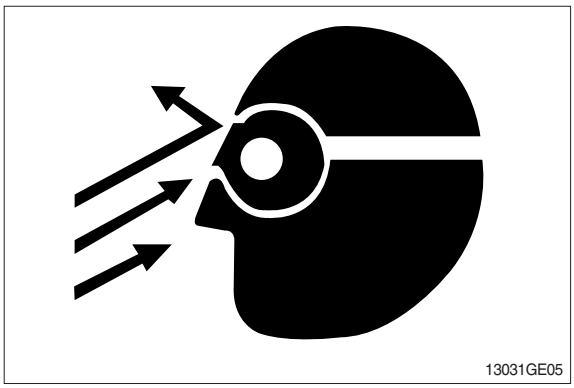
Keep a first aid kit and fire extinguisher handy.

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



PROTECT AGAINST FLYING DEBRIS

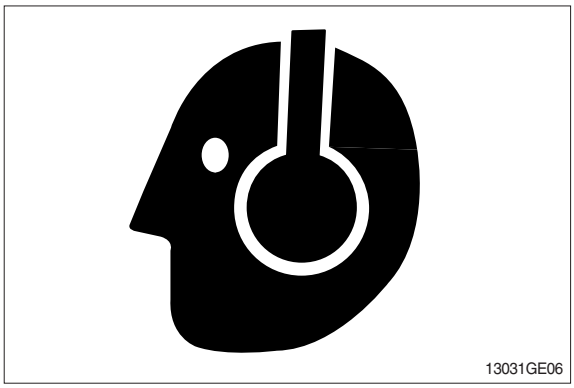
Guard against injury from flying pieces of metal or debris; Wear goggles or safety glasses.



PROTECT AGAINST NOISE

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

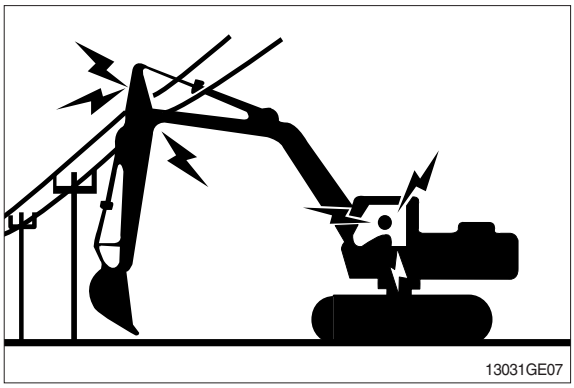
Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



AVOID POWER LINES

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

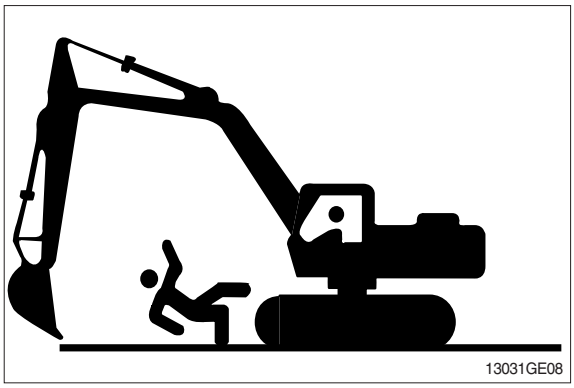
Never move any part of the machine or load closer to electric line than 3m(10ft) plus twice the line insulator length.



KEEP RIDERS OFF EXCAVATOR

Only allow the operator on the excavator. Keep riders off.

Riders on excavator are subject to injury such as being struck by foreign objects and being thrown off the excavator. Riders also obstruct the operator's view resulting in the excavator being operated in an unsafe manner.

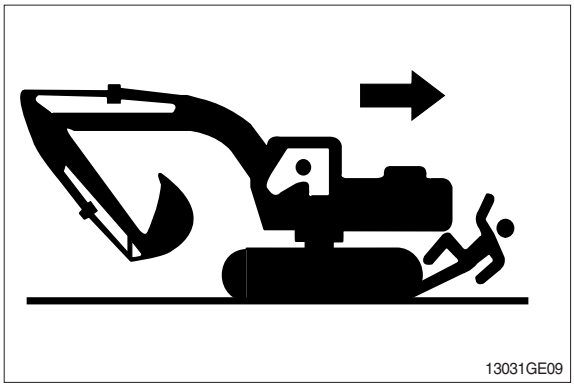


MOVE AND OPERATE MACHINE SAFELY

Bystanders can be run over. Know the location of bystanders before moving, swinging, or operating the machine.

Always keep the travel alarm in working condition. It warns people when the excavator starts to move.

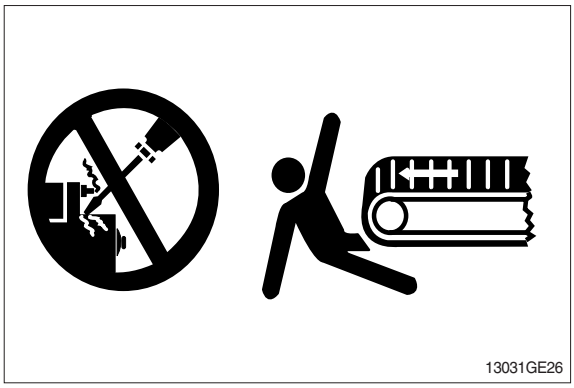
Use a signal person when moving, swinging, or operating the machine in congested areas. Coordinate hand signals before starting the excavator.



OPERATE ONLY FORM OPERATOR'S SEAT

Avoid possible injury machine damage. Do not start engine by shorting across starter terminals.

NEVER start engine while standing on ground. Start engine only from operator's seat.



PARK MACHINE SAFELY

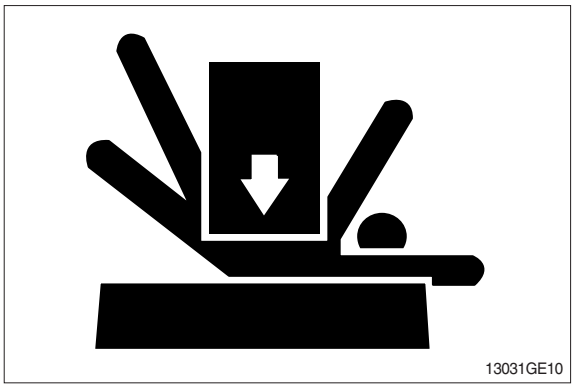
Before working on the machine:

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

SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment.

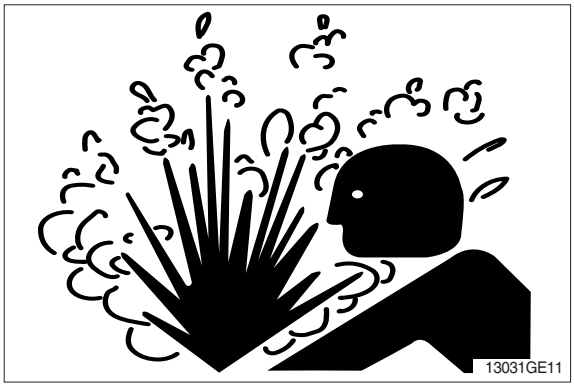
Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load.
Do not work under a machine that is supported solely by a jack.Follow recommended procedures in this manual.



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.



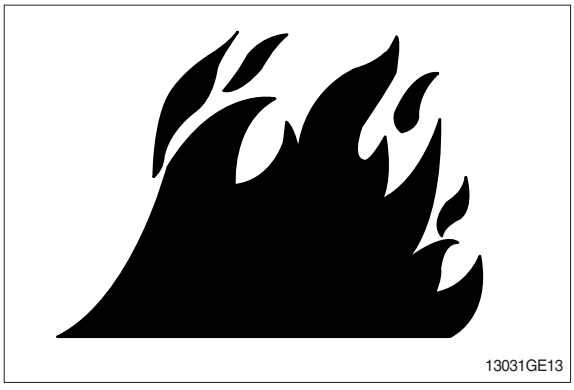
HANDLE FLUIDS SAFELY-AVOID FIRES

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.

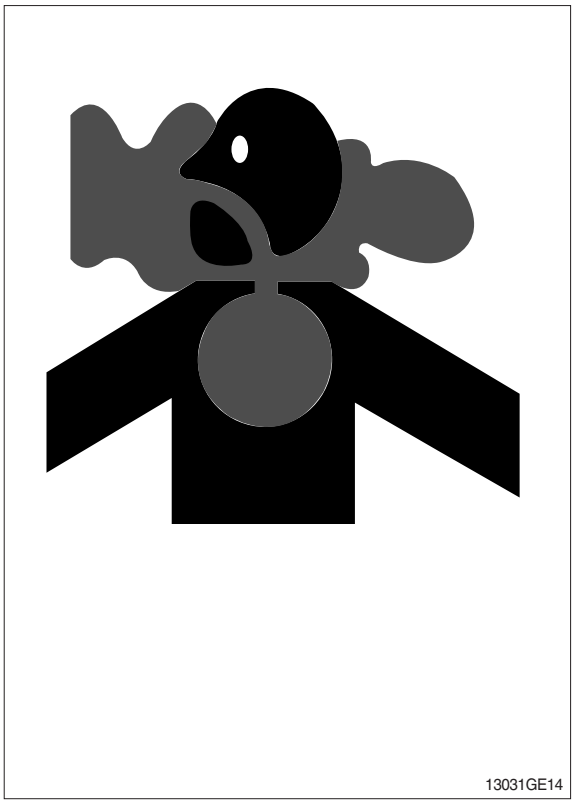
Do not store oily rags; They can ignite and burn spontaneously.



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.


13031GE14

REMOVE PAINT BEFORE WELDING OR HEATING

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

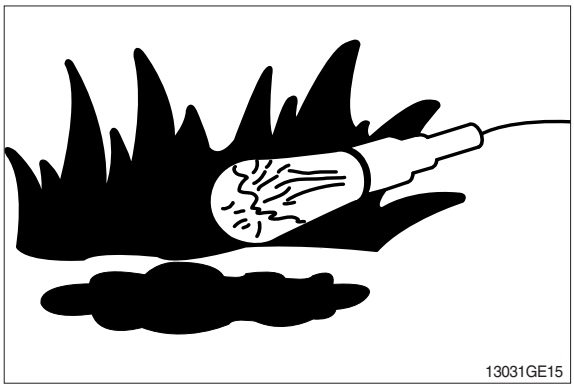
Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust.
  Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

ILLUMINATE WORK AREA SAFELY

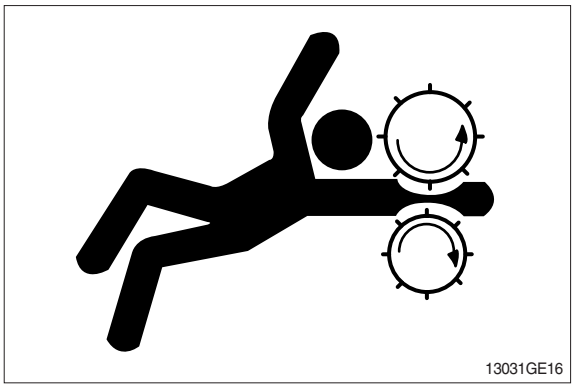
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.


13031GE15

SERVICE MACHINE SAFELY

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

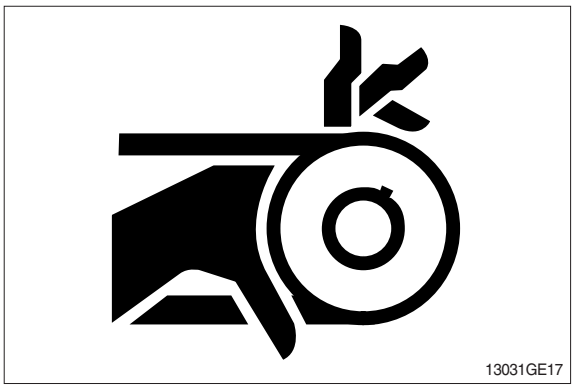
Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



STAY CLEAR OF MOVING PARTS

Entanglements in moving parts can cause serious injury.

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



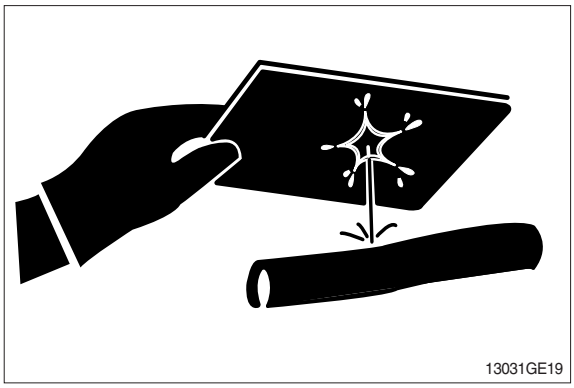
AVOID HIGH PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.



AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials.

Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area. Install fire resisting guards to protect hoses or other materials.

PREVENT BATTERY EXPLOSIONS

Keep sparks, lighted matches, and flame away from the top of battery.
Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; It may explode. Warm battery to 16℃ (60°F).

PREVENT ACID BURNS

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

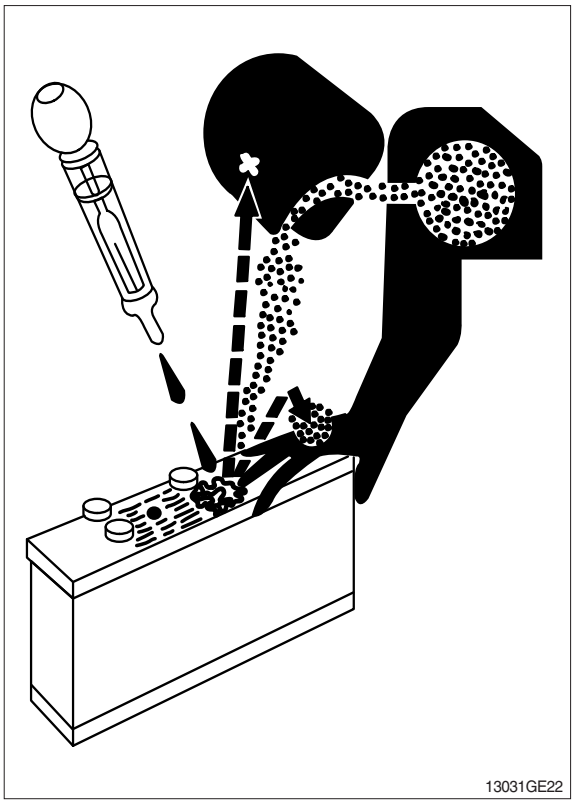
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling of dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

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

If acid is swallowed:

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



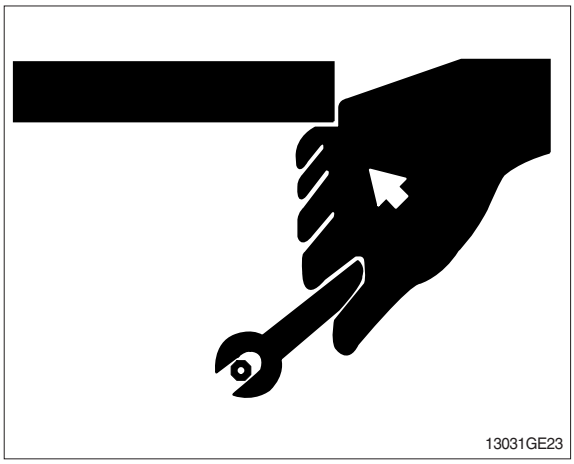
USE TOOLS PROPERLY

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

Use power tools only to loosen threaded tools and fasteners.

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

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

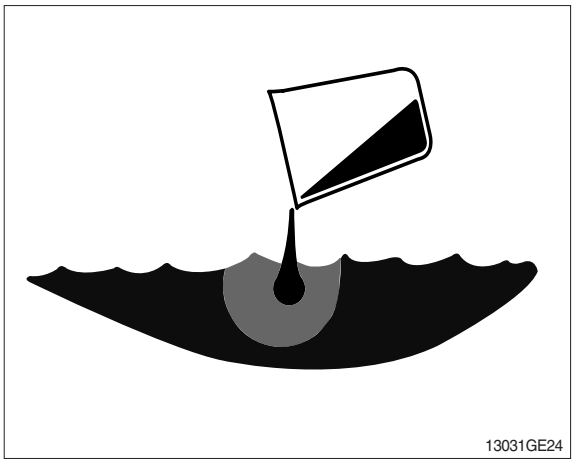


DISPOSE OF FLUIDS PROPERLY

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

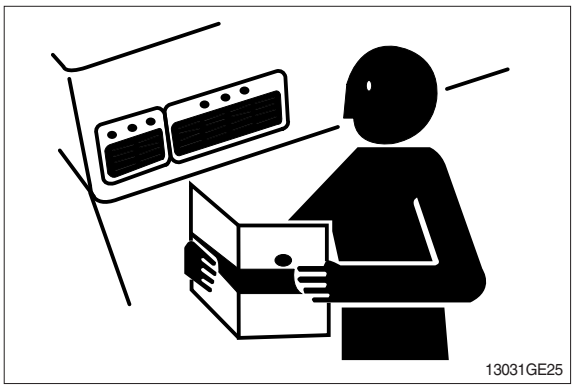
Use proper containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

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



REPLACE SAFETY LABELS

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

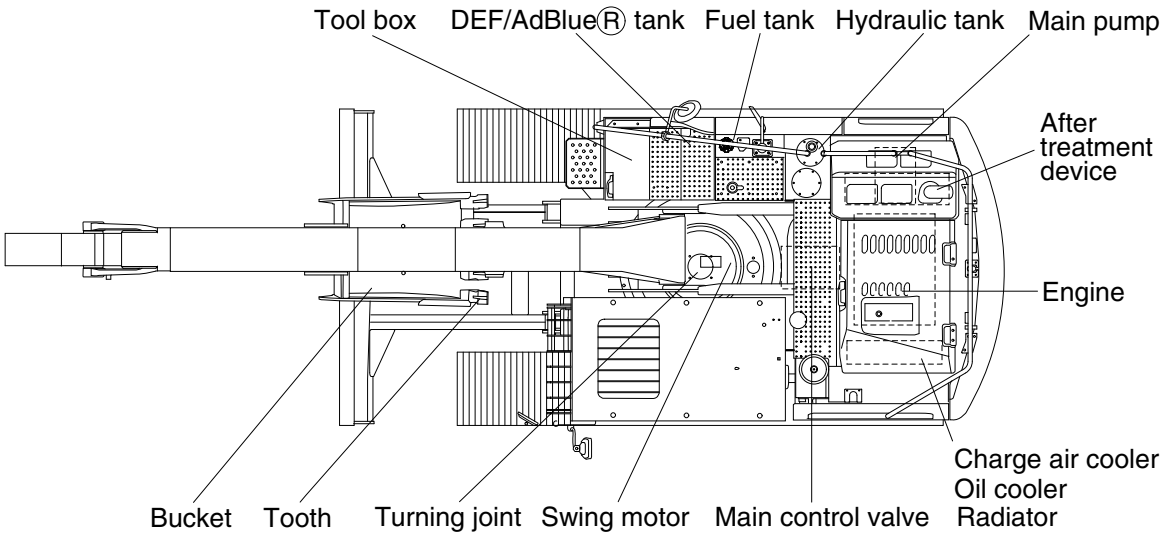


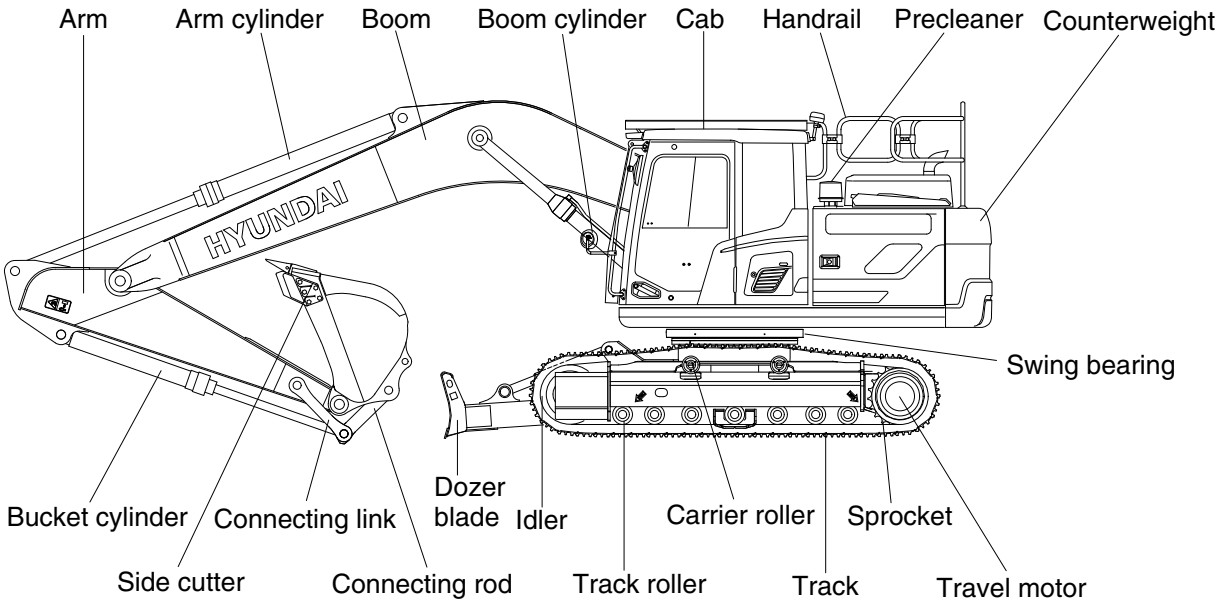
LIVE WITH SAFETY

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

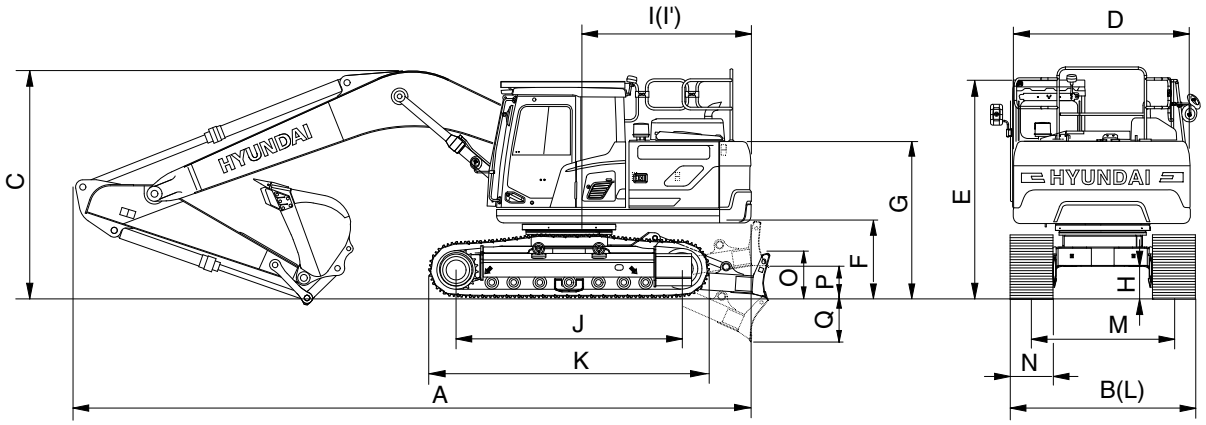




160A2SP01

2. SPECIFICATIONS

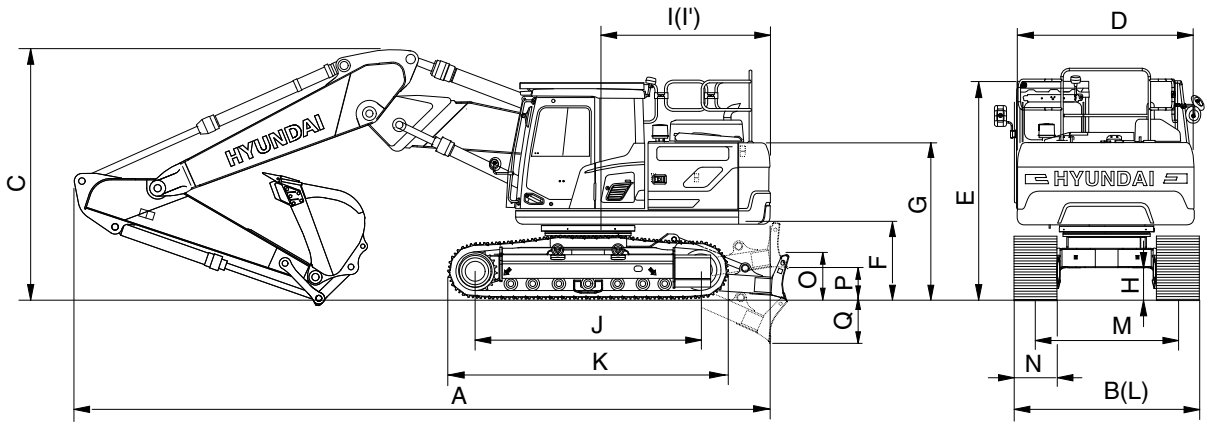
1) HX160A L, MONO BOOM



160A2SP02

Description		Unit		Specification		
		m (ft-in)	Boom	5.1 (16' 9")		
			Arm	2.2 (7' 3")	2.6 (8' 6")	3.1 (10' 2")
		mm (in)	Shoe	600 (24)		
Operating weight		kg (lb)		17645 (38900)	17695 (39010)	17720 (39070)
Overall length	A	mm (ft-in)		8650 (28' 5")	8660 (28' 5")	8670 (28' 5")
Overall width	B			2590 (8' 6")	2590 (8' 6")	2590 (8' 6")
Overall width with add footboard	B'			2590 (8' 6")	2590 (8' 6")	2590 (8' 6")
Overall height of boom	C			3030 (9' 11")	3040 (10' 0")	3195 (10' 6")
Overall width of upper structure	D			2475 (8' 1")	2475 (8' 1")	2475 (8' 1")
Overall height of cab	E			2980 (9' 9")	2980 (9' 9")	2980 (9' 9")
Ground clearance of counterweight	F			1060 (3' 6")	1060 (3' 6")	1060 (3' 6")
Overall height of engine hood	G			2535 (8' 4")	2535 (8' 4")	2535 (8' 4")
Overall height of handrail	G'			3250 (10' 8")	3250 (10' 8")	3250 (10' 8")
Minimum ground clearance	H			460 (1' 6")	460 (1' 6")	460 (1' 6")
Rear-end distance	I			2490 (8' 2")	2490 (8' 2")	2490 (8' 2")
Rear-end swing radius	I'			2490 (8' 2")	2490 (8' 2")	2490 (8' 2")
Distance between tumblers	J			3170 (10' 5")	3170 (10' 5")	3170 (10' 5")
Undercarriage length (without grouser)	K			3910 (12' 10")	3910 (12' 10")	3910 (12' 10")
Undercarriage length (with grouser)	K'			3960 (13' 0")	3960 (13' 0")	3960 (13' 0")
Undercarriage width	L			2590 (8' 6")	2590 (8' 6")	2590 (8' 6")
Undercarriage width with add footboard	L'			2590 (8' 6")	2590 (8' 6")	2590 (8' 6")
Track gauge	M			1990 (6' 6")	1990 (6' 6")	1990 (6' 6")
Track shoe width, standard	N			600 (2' 0")	600 (2' 0")	600 (2' 0")
Height of blade	O			640 (2' 1")	640 (2' 1")	640 (2' 1")
Ground clearance of blade up	P			615 (2' 0")	615 (2' 0")	615 (2' 0")
Depth of blade down	Q			670 (2' 2")	670 (2' 2")	670 (2' 2")
Track shoe link quantity		EA		49	49	49
Travel speed (low/high)		km/hr (mph)		3.1 / 5.4 (1.9/3.4)	3.1 / 5.4 (1.9/3.4)	3.1 / 5.4 (1.9/3.4)
Swing speed		rpm		10.3	10.3	10.3
Gradeability		Degree (%)		35 (70)	35 (70)	35 (70)
Ground pressure		kgf/cm² (psi)		0.43 (6.10)	0.43 (6.12)	0.43 (6.12)
Max traction force		kg (lb)		16700 (36820)	16700 (36820)	16700 (36820)

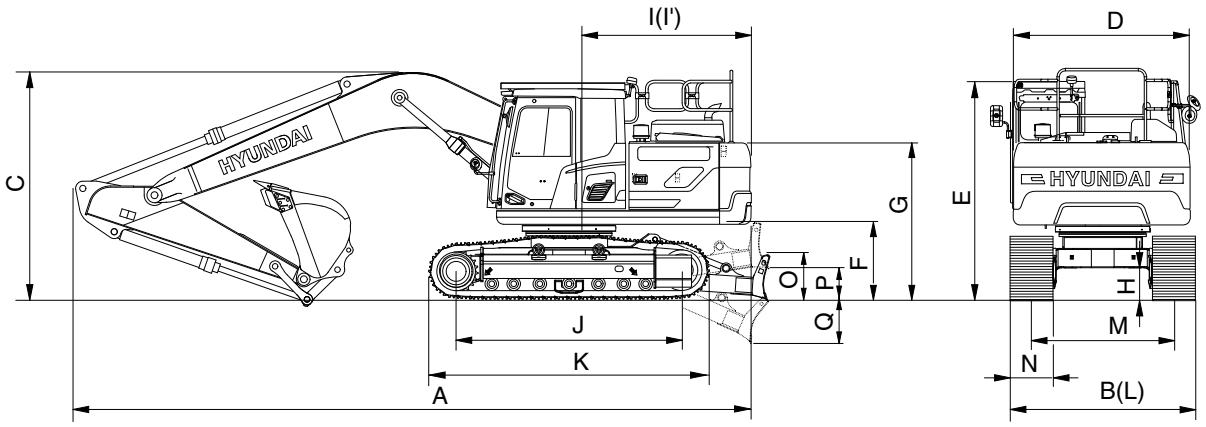
2) HX160A L, 2-PIECE BOOM



160A2SP03

Description		Unit		Specification	
		m (ft-in)	Boom	5.1 (16' 9")	
			Arm	2.2 (7' 3")	2.6 (8' 6")
		mm (in)	Shoe	600 (24)	
Operating weight		kg (lb)		18810 (41470)	18865 (41590)
Overall length	A	mm (ft-in)		8575 (28' 2")	8585 (28' 2")
Overall width	B			2590 (8' 6")	2590 (8' 6")
Overall width with add footboard	B'			2590 (8' 6")	2590 (8' 6")
Overall height of boom	C			3060 (10' 0")	3035 (9' 11")
Overall width of upper structure	D			2475 (8' 1")	2475 (8' 1")
Overall height of cab	E			2980 (9' 9")	2980 (9' 9")
Ground clearance of counterweight	F			1060 (3' 6")	1060 (3' 6")
Overall height of engine hood	G			2535 (8' 4")	2535 (8' 4")
Overall height of handrail	G'			3250 (10' 8")	3250 (10' 8")
Minimum ground clearance	H			460 (1' 6")	460 (1' 6")
Rear-end distance	I			2490 (8' 2")	2490 (8' 2")
Rear-end swing radius	I'			2490 (8' 2")	2490 (8' 2")
Distance between tumblers	J			3170 (10' 5")	3170 (10' 5")
Undercarriage length (without grouser)	K			3910 (12' 10")	3910 (12' 10")
Undercarriage length (with grouser)	K'			3960 (13' 0")	3960 (13' 0")
Undercarriage width	L			2590 (8' 6")	2590 (8' 6")
Undercarriage width with add footboard	L'			2590 (8' 6")	2590 (8' 6")
Track gauge	M			1990 (6' 6")	1990 (6' 6")
Track shoe width, standard	N			600 (2' 0")	600 (2' 0")
Height of blade	O			640 (2' 1")	640 (2' 1")
Ground clearance of blade up	P			615 (2' 0")	615 (2' 0")
Depth of blade down	Q			670 (2' 2")	670 (2' 2")
Track shoe link quantity		EA		49	49
Travel speed (low/high)		km/hr (mph)		3.1 / 5.4 (1.9/3.4)	3.1 / 5.4 (1.9/3.4)
Swing speed		rpm		10.3	10.3
Gradeability		Degree (%)		35 (70)	35 (70)
Ground pressure		kgf/cm² (psi)		0.46 (6.50)	0.46 (6.52)
Max traction force		kg (lb)		16700 (36820)	16700 (36820)

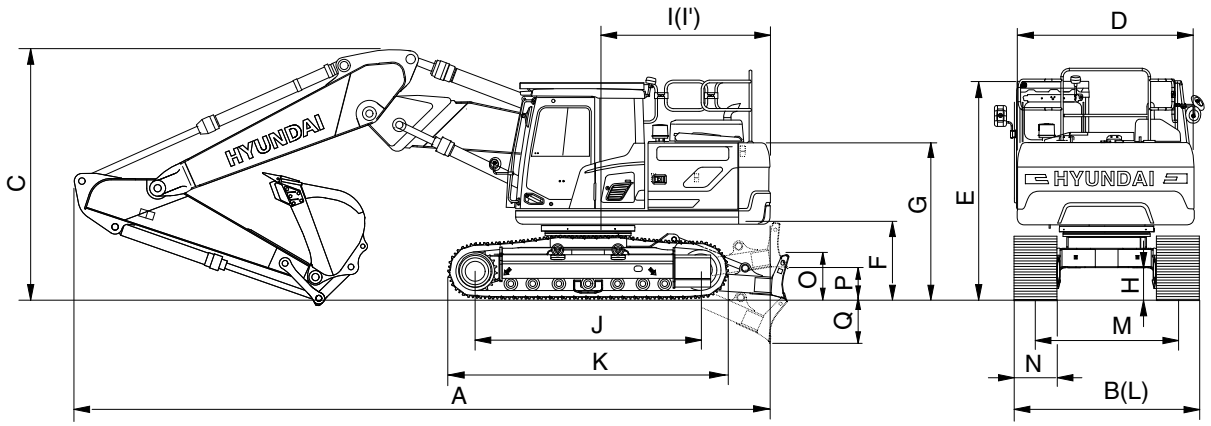
3) HX180A L, MONO BOOM



160A2SP02

Description		Unit		Specification		
		m (ft-in)	Boom	5.1 (16' 9")		
			Arm	2.2 (7' 3")	2.6 (8' 6")	3.1 (10' 2")
		mm (in)	Shoe	700 (28)		
Operating weight		kg (lb)		18610 (41030)	18665 (41150)	18690 (41200)
Overall length	A	mm (ft-in)		8650 (28' 5")	8660 (28' 5")	8670 (28' 5")
Overall width	B			2950 (9' 8")	2950 (9' 8")	2950 (9' 8")
Overall width with add footboard	B'			2950 (9' 8")	2950 (9' 8")	2950 (9' 8")
Overall height of boom	C			3030 (9' 11")	3040 (10' 0")	3195 (10' 6")
Overall width of upper structure	D			2475 (8' 1")	2475 (8' 1")	2475 (8' 1")
Overall height of cab	E			2980 (9' 9")	2980 (9' 9")	2980 (9' 9")
Ground clearance of counterweight	F			1060 (3' 6")	1060 (3' 6")	1060 (3' 6")
Overall height of engine hood	G			2535 (8' 4")	2535 (8' 4")	2535 (8' 4")
Overall height of handrail	G'			3250 (10' 8")	3250 (10' 8")	3250 (10' 8")
Minimum ground clearance	H			460 (1' 6")	460 (1' 6")	460 (1' 6")
Rear-end distance	I			2490 (8' 2")	2490 (8' 2")	2490 (8' 2")
Rear-end swing radius	I'			2490 (8' 2")	2490 (8' 2")	2490 (8' 2")
Distance between tumblers	J			3360 (11' 0")	3360 (11' 0")	3360 (11' 0")
Undercarriage length (without grouser)	K			4100 (13' 5")	4100 (13' 5")	4100 (13' 5")
Undercarriage length (with grouser)	K'			4150 (13' 7")	4150 (13' 7")	4150 (13' 7")
Undercarriage width	L			2950 (9' 8")	2950 (9' 8")	2950 (9' 8")
Undercarriage width with add footboard	L'			2950 (9' 8")	2950 (9' 8")	2950 (9' 8")
Track gauge	M			2250 (7' 5")	2250 (7' 5")	2250 (7' 5")
Track shoe width, standard	N			700 (2' 4")	700 (2' 4")	700 (2' 4")
Height of blade	O			640 (2' 1")	640 (2' 1")	640 (2' 1")
Ground clearance of blade up	P			615 (2' 0")	615 (2' 0")	615 (2' 0")
Depth of blade down	Q			670 (2' 2")	670 (2' 2")	670 (2' 2")
Track shoe link quantity		EA		51	51	51
Travel speed (low/high)		km/hr (mph)		3.1 / 5.4 (1.9/3.4)	3.1 / 5.4 (1.9/3.4)	3.1 / 5.4 (1.9/3.4)
Swing speed		rpm		10.3	10.3	10.3
Gradeability		Degree (%)		35 (70)	35 (70)	35 (70)
Ground pressure		kgf/cm² (psi)		0.37 (5.22)	0.37 (5.24)	0.37 (5.25)
Max traction force		kg (lb)		16700 (36820)	16700 (36820)	16700 (36820)

4) HX180A L, 2-PIECE BOOM

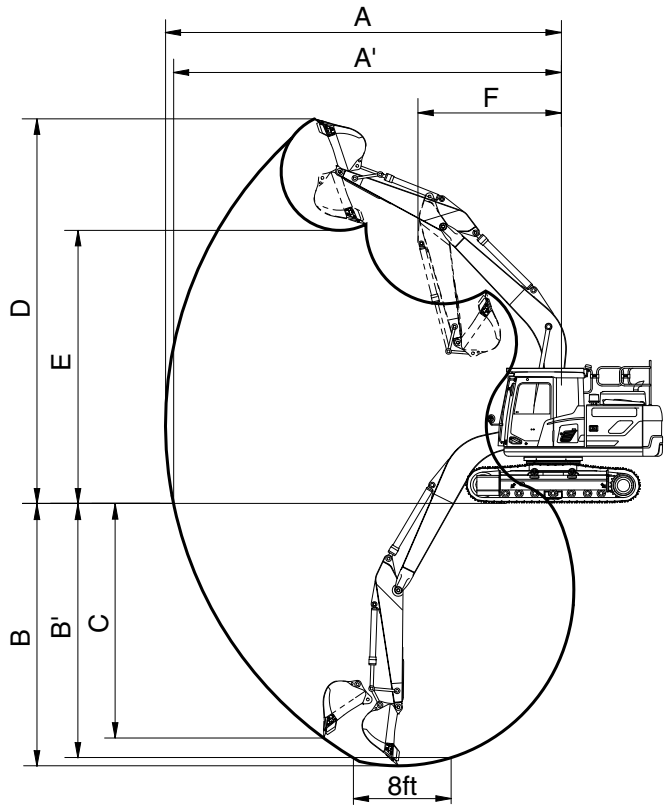


160A2SP03

Description		Unit		Specification	
		m (ft-in)	Boom	5.1 (16' 9")	
			Arm	2.2 (7' 3")	2.6 (8' 6")
		mm (in)	Shoe	700 (28)	
Operating weight		kg (lb)		19480 (42950)	19535 (43070)
Overall length	A	mm (ft-in)		8575 (28' 2")	8585 (28' 2")
Overall width	B			2950 (9' 8")	2950 (9' 8")
Overall width with add footboard	B'			2950 (9' 8")	2950 (9' 8")
Overall height of boom	C			3060 (10' 0")	3035 (9' 11")
Overall width of upper structure	D			2475 (8' 1")	2475 (8' 1")
Overall height of cab	E			2980 (9' 9")	2980 (9' 9")
Ground clearance of counterweight	F			1060 (3' 6")	1060 (3' 6")
Overall height of engine hood	G			2535 (8' 4")	2535 (8' 4")
Overall height of handrail	G'			3250 (10' 8")	3250 (10' 8")
Minimum ground clearance	H			460 (1' 6")	460 (1' 6")
Rear-end distance	I			2490 (8' 2")	2490 (8' 2")
Rear-end swing radius	I'			2490 (8' 2")	2490 (8' 2")
Distance between tumblers	J			3360 (11' 0")	3360 (11' 0")
Undercarriage length (without grouser)	K			4100 (13' 5")	4100 (13' 5")
Undercarriage length (with grouser)	K'			4150 (13' 7")	4150 (13' 7")
Undercarriage width	L			2950 (9' 8")	2950 (9' 8")
Undercarriage width with add footboard	L'			2950 (9' 8")	2950 (9' 8")
Track gauge	M			2250 (7' 5")	2250 (7' 5")
Track shoe width, standard	N			700 (2' 4")	700 (2' 4")
Height of blade	O			640 (2' 1")	640 (2' 1")
Ground clearance of blade up	P			615 (2' 0")	615 (2' 0")
Depth of blade down	Q			670 (2' 2")	670 (2' 2")
Track shoe link quantity		EA		51	51
Travel speed (low/high)		km/hr (mph)		3.1 / 5.4 (1.9/3.4)	3.1 / 5.4 (1.9/3.4)
Swing speed		rpm		10.3	10.3
Gradeability		Degree (%)		35 (70)	35 (70)
Ground pressure		kgf/cm² (psi)		0.38 (5.47)	0.39 (5.48)
Max traction force		kg (lb)		16700 (36820)	16700 (36820)

3. WORKING RANGE AND DIGGING FORCE

1) HX160A L, MONO BOOM

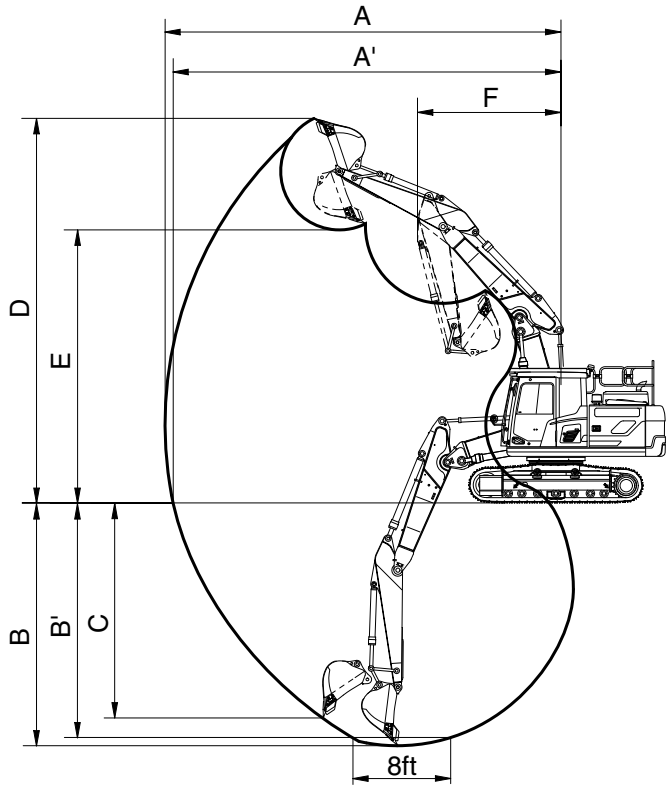


160A2SP10

Description	m (ft-in)	Boom	5.1 (16' 9")		
		Arm	2.2 (7' 3")	2.6 (8' 6")	3.1 (10' 2")
Max digging reach	mm (ft-in)	A	9020 (29' 7")	8690 (28' 6")	9450 (31' 0")
Max digging reach on ground		A'	8860 (29' 1")	8530 (28' 0")	9300 (30' 6")
Max digging depth		B	6030 (19' 9")	5630 (18' 6")	6530 (21' 5")
Max digging depth (8 ft level)		B'	5825 (19' 1")	5410 (17' 9")	6340 (20' 10")
Max vertical wall digging depth		C	3600 (11' 10")	3410 (11' 2")	3845 (12' 7")
Max digging height		D	8750 (28' 8")	8670 (28' 5")	8880 (29' 2")
Max dumping height		E	6250 (20' 6")	6140 (20' 2")	6410 (21' 0")
Min swing radius		F	3170 (10' 5")	3180 (10' 5")	3160 (10' 4")
Bucket digging force	kN	SAE	107.9 [117.2]	107.7 [117]	107.9 [117.2]
	kgf		11004 [11950]	10987 [11930]	11006 [11950]
	lbf		24259 [26345]	24222 [26301]	24264 [26345]
	kN	ISO	126.4 [137.3]	126.2 [137.1]	126.5 [137.3]
	kgf		12892 [14000]	12872 [13980]	12894 [14000]
	lbf		28421 [30865]	28379 [30821]	28427 [30865]
Arm digging force	kN	SAE	77.3 [83.8]	87.2 [94.6]	69 [74.9]
	kgf		7878.9 [8550]	8888.7 [9650]	7035 [7640]
	lbf		17370 [18850]	19596 [21275]	15510 [16843]
	kN	ISO	80.8 [87.7]	91.6 [99.4]	71.7 [77.9]
	kgf		8236.5 [8940]	9339.4 [10140]	7313.9 [7940]
	lbf		18158 [19709]	20590 [22355]	16124 [17505]

[ ] : Power boost

2) HX160A L, 2-PIECE BOOM

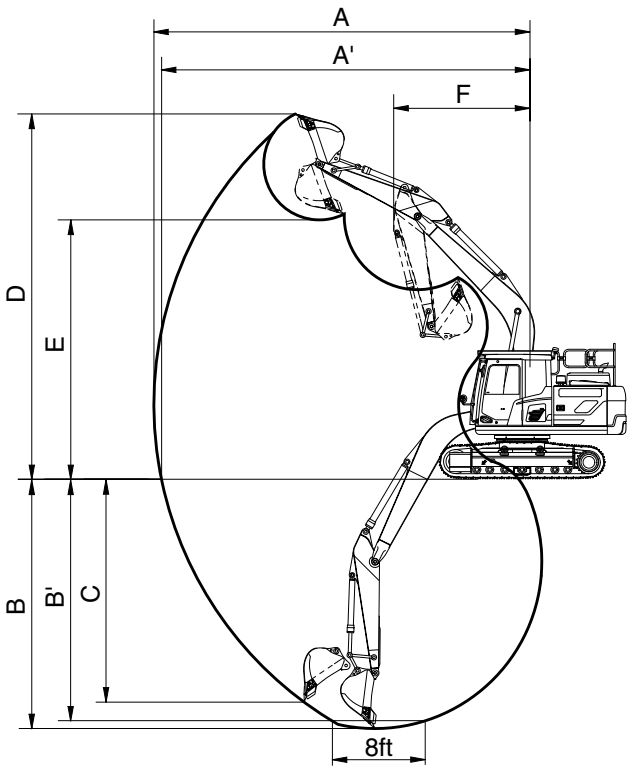


160A2SP11

Description	m (ft-in)	Boom	5.1 (16' 9")	
		Arm	2.2 (7' 3")	2.6 (8' 6")
Max digging reach	mm (ft-in)	A	8760 (28' 9")	9110 (29' 11")
Max digging reach on ground		A'	8600 (28' 3")	8955 (29' 5")
Max digging depth		B	5690 (18' 8")	5305 (17' 5")
Max digging depth (8 ft level)		B'	5590 (18' 4")	5200 (17' 1")
Max vertical wall digging depth		C	3790 (12' 5")	3520 (11' 7")
Max digging height		D	9380 (30' 9")	9560 (31' 4")
Max dumping height		E	6720 (22' 1")	6920 (22' 8")
Min swing radius		F	3090 (10' 2")	2970 (9' 9")
Bucket digging force	kN	SAE	107.9 [117.2]	107.7 [117]
	kgf		11004 [11950]	10987 [11930]
	lbf		24259 [26345]	24222 [26301]
	kN	ISO	126.4 [137.3]	126.2 [137.1]
	kgf		12892 [14000]	12872 [13980]
	lbf		28421 [30865]	28379 [30821]
Arm digging force	kN	SAE	77.3 [83.8]	87.2 [94.6]
	kgf		7878.9 [8550]	8888.7 [9650]
	lbf		17370 [18850]	19596 [21275]
	kN	ISO	80.8 [87.7]	91.6 [99.4]
	kgf		8236.5 [8940]	9339.4 [10140]
	lbf		18158 [19709]	20590 [22355]

[ ] : Power boost

3) HX180A L, MONO BOOM

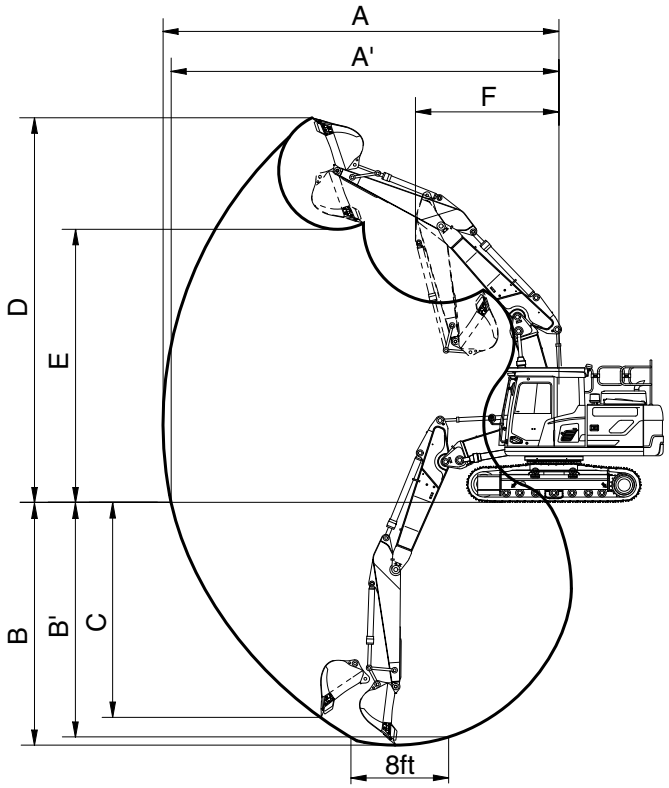


160A2SP10

Description	m (ft-in)	Boom	5.1 (16' 9")		
		Arm	2.2 (7' 3")	2.6 (8' 6")	3.1 (10' 2")
Max digging reach	mm (ft-in)	A	9020 (29' 7")	8690 (28' 6")	9450 (31' 0")
Max digging reach on ground		A'	8860 (29' 1")	8530 (28' 0")	9300 (30' 6")
Max digging depth		B	6030 (19' 9")	5630 (18' 6")	6530 (21' 5")
Max digging depth (8 ft level)		B'	5825 (19' 1")	5410 (17' 9")	6340 (20' 10")
Max vertical wall digging depth		C	3600 (11' 10")	3410 (11' 2")	3845 (12' 7")
Max digging height		D	8750 (28' 8")	8670 (28' 5")	8880 (29' 2")
Max dumping height		E	6250 (20' 6")	6140 (20' 2")	6410 (21' 0")
Min swing radius		F	3170 (10' 5")	3180 (10' 5")	3160 (10' 4")
Bucket digging force	kN	SAE	107.9 [117.2]	107.7 [117]	107.9 [117.2]
	kgf		11004 [11950]	10987 [11930]	11006 [11950]
	lbf		24259 [26345]	24222 [26301]	24264 [26345]
	kN	ISO	126.4 [137.3]	126.2 [137.1]	126.5 [137.3]
	kgf		12892 [14000]	12872 [13980]	12894 [14000]
	lbf		28421 [30865]	28379 [30821]	28427 [30865]
Arm digging force	kN	SAE	77.3 [83.8]	87.2 [94.6]	69 [74.9]
	kgf		7878.9 [8550]	8888.7 [9650]	7035 [7640]
	lbf		17370 [18850]	19596 [21275]	15510 [16843]
	kN	ISO	80.8 [87.7]	91.6 [99.4]	71.7 [77.9]
	kgf		8236.5 [8940]	9339.4 [10140]	7313.9 [7940]
	lbf		18158 [19709]	20590 [22355]	16124 [17505]

[ ] : Power boost

4) HX180A L, 2-PIECE BOOM



160A2SP11

Description	m (ft-in)	Boom	5.1 (16' 9")	
		Arm	2.2 (7' 3")	2.6 (8' 6")
Max digging reach	mm (ft-in)	A	8760 (28' 9")	9110 (29' 11")
Max digging reach on ground		A'	8600 (28' 3")	8955 (29' 5")
Max digging depth		B	5690 (18' 8")	5305 (17' 5")
Max digging depth (8 ft level)		B'	5590 (18' 4")	5200 (17' 1")
Max vertical wall digging depth		C	3790 (12' 5")	3520 (11' 7")
Max digging height		D	9380 (30' 9")	9560 (31' 4")
Max dumping height		E	6720 (22' 1")	6920 (22' 8")
Min swing radius		F	3090 (10' 2")	2970 (9' 9")
Bucket digging force	kN	SAE	107.9 [117.2]	107.7 [117]
	kgf		11004 [11950]	10987 [11930]
	lbf		24259 [26345]	24222 [26301]
	kN	ISO	126.4 [137.3]	126.2 [137.1]
	kgf		12892 [14000]	12872 [13980]
	lbf		28421 [30865]	28379 [30821]
Arm digging force	kN	SAE	77.3 [83.8]	87.2 [94.6]
	kgf		7878.9 [8550]	8888.7 [9650]
	lbf		17370 [18850]	19596 [21275]
	kN	ISO	80.8 [87.7]	91.6 [99.4]
	kgf		8236.5 [8940]	9339.4 [10140]
	lbf		18158 [19709]	20590 [22355]

[ ] : Power boost

4. WEIGHT

1) HX160A L

Item	Qty	HX160A L		HX160A LD	
	EA	kg	lb	kg	lb
Upperstructure assembly					
· Main frame weld assembly	1	1,413	3,115	1,413	3,115
· Engine assembly	1	383	844	383	844
· Aftertreatment assy	1	64	141	64	141
· Main pump assembly	1	89	196	89	196
· Main control valve assembly	1	140	309	140	309
· Swing motor assembly	1	261	575	261	575
· Hydraulic oil tank WA	1	136	300	136	300
· Fuel tank WA	1	147	324	147	324
· Counterweight	1	2,600	5,732	2,600	5,732
· Cab assembly	1	495	1,090	495	1,090
Lower chassis assembly					
· Track frame weld assembly	1	2,002	4,414	2,230	4,916
· Dozer blade assembly	1	-	-	652	1,437
· Swing bearing	1	260	573	260	573
· Travel motor assembly	2	600	1,323	600	1,323
· Turning joint	1	56	123	63	139
· Sprocket	2	49	109	49	109
· Track recoil spring	2	132	291	132	291
· Idler	2	151	332	151	332
· Upper roller	4	21	45	21	45
· Lower roller	14	40	88	40	88
· Track Guard	2	41	90	41	90
· Track-chain assembly (500 ㎜, 49 link)	2	1,061	2,338	1,061	2,338
· Track-chain assembly (600 ㎜, 49 link)	2	1,181	2,605	1,181	2,605
· Track-chain assembly (700 ㎜, 49 link)	2	1,305	2,877	1,305	2,877
Front attachment assembly					
· 5.1 m mono boom assembly	1	1,041	2,295	1,041	2,295
· 5.1 m 2-piece boom assembly	1	1,293	2,851	1,293	2,851
· 2.60 m arm assembly	1	550	1,213	550	1,213
· 2.20 m arm assembly	1	497	1,096	497	1,096
· 3.10 m arm assembly	1	578	1,274	578	1,274
· 2.60 m arm assembly (w/o reinforce)	1	543	1,197	543	1,197
· 3.10 m arm assembly (w/o reinforce)	1	570	1,257	570	1,257
· 0.88 ㎥ bucket assembly	1	662	1,459	662	1,459
· 0.96 ㎥ bucket assembly	1	726	1,601	726	1,601
· 0.73 ㎥ bucket assembly	1	617	1,361	617	1,361
· 0.85 ㎥ bucket assembly	1	669	1,476	669	1,476
· Boom cylinder assembly	2	280	617	280	617
· Arm cylinder assembly	1	172	379	172	379
· Bucket cylinder assembly	1	121	267	121	267
· 2-piece boom cylinder assembly	1	215	474	215	474
· Dozer cylinder assembly	2	-	-	132	291
· Bucket control linkage total	1	158	348	158	348

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

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

2) HX180A L

Item	Qty	HX180A L		HX180A LD	
	EA	kg	lb	kg	lb
Upperstructure assembly					
· Main frame weld assembly	1	1,413	3,115	1,413	3,115
· Engine assembly	1	383	844	383	844
· Aftertreatment assy	1	64	141	64	141
· Main pump assembly	1	89	196	89	196
· Main control valve assembly	1	140	309	140	309
· Swing motor assembly	1	261	575	61	134
· Hydraulic oil tank WA	1	136	300	136	300
· Fuel tank WA	1	147	324	147	324
· Counterweight	1	2,900	6,393	2,900	6,393
· Cab assembly	1	495	1,090	495	1,090
Lower chassis assembly					
· Track frame weld assembly	1	2,164	4,771	2,381	5,249
· Dozer blade assembly	1	0	0	700	1,543
· Swing bearing	1	260	573	260	573
· Travel motor assembly	2	600	1,323	600	1,323
· Turning joint	1	56	123	63	139
· Sprocket	2	49	109	49	109
· Track recoil spring	2	132	291	132	291
· Idler	2	152	332	152	332
· Upper roller	4	21	45	21	45
· Lower roller	14	48	105	48	105
· Track Guard	2	41	90	41	90
· Track-chain assembly (500 ㎜, 51 link)	2	1,109	2,445	1,109	2,445
· Track-chain assembly (600 ㎜, 51 link)	2	1,239	2,731	1,239	2,731
· Track-chain assembly (700 ㎜, 51 link)	2	1,371	3,022	1,371	3,022
· Track-chain assembly (800 ㎜, 51 link)	2	1,500	3,306	1,500	3,306
Front attachment assembly					
· 5.1 ㎡ mono boom assembly	1	1,041	2,295	1,041	2,295
· 5.1 ㎡ piece boom assembly	1	1,293	2,851	1,293	2,851
· 2.60 ㎡ arm assembly	1	550	1,213	550	1,213
· 2.20 ㎡ arm assembly	1	497	1,096	497	1,096
· 3.10 ㎡ arm assembly	1	578	1,274	578	1,274
· 2.60 ㎡ arm assembly (w/o reinforce)	1	543	1,197	543	1,197
· 3.10 ㎡ arm assembly (w/o reinforce)	1	570	1,257	570	1,257
· 0.88 ㎥ bucket assembly	1	662	1,459	662	1,459
· 0.96 ㎥ bucket assembly	1	726	1,601	726	1,601
· 0.73 ㎥ bucket assembly	1	617	1,361	617	1,361
· 0.85 ㎥ bucket assembly	1	669	1,476	669	1,476
· Boom cylinder assembly	2	280	617	280	617
· Arm cylinder assembly	1	172	379	172	379
· Bucket cylinder assembly	1	121	267	121	267
· 2-piece boom cylinder assembly	1	215	474	215	474
· Dozer cylinder assembly	2	-	-	132	291
· Bucket control linkage total	1	158	348	158	348

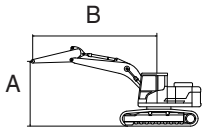
※ This information is different with operating and transportation weight because it is not including harness, pipe, oil, fuel so on.

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

5. LIFTING CAPACITIES

Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HX160A L	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		5100	2200	2600	600	-	-	-	-	-

· : 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									*3850	3340	5.86
	lb									*8490	7360	(19.2)
4.5 m (14.8 ft)	kg					*5320	5000	*4750	3200	*3630	2630	6.74
	lb					*11730	11020	*10470	7050	*8000	5800	(22.1)
3.0 m (9.8 ft)	kg					*6540	4670	4990	3070	*3650	2310	7.20
	lb					*14420	10300	11000	6770	*8050	5090	(23.6)
1.5 m (4.9 ft)	kg					7500	4360	4840	2940	3600	2200	7.33
	lb					16530	9610	10670	6480	7940	4850	(24.0)
0.0 m (0.0 ft)	kg					7310	4200	4730	2840	3700	2250	7.13
	lb					16120	9260	10430	6260	8160	4960	(23.4)
-1.5 m (-4.9 ft)	kg			*9400	7730	7270	4170	4710	2820	4150	2510	6.58
	lb			*20720	17040	16030	9190	10380	6220	9150	5530	(21.6)
-3.0 m (-9.8 ft)	kg			*9400	7900	*6720	4250			*4980	3200	5.58
	lb			*20720	17420	*14820	9370			*10980	7050	(18.3)

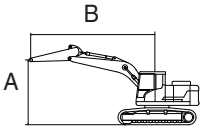
Note 1. Lifting capacity are based on ISO 10567.
2. Lifting capacity of the HX series does not exceed 75% of tipping load with the machine on firm, level ground or 87% of full hydraulic capacity.
3. The Lift-point is bucket pivot mounting pin on the arm (without bucket mass).
4. *Indicates load limited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

⚠ Failure to comply to the rated load can cause serious 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	
HX160A L	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		5100	2600	2600	600	-	-	-	-	-

· : 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											*3410	*3410	4.85
	lb											*7520	*7520	(15.9)
6.0 m (19.7 ft)	kg							*3840	3280			*2970	*2970	6.27
	lb							*8470	7230			*6550	*6550	(20.6)
4.5 m (14.8 ft)	kg					*4870	*4870	*4430	3230			*2850	2430	7.10
	lb					*10740	*10740	*9770	7120			*6280	5360	(23.3)
3.0 m (9.8 ft)	kg			*9370	8720	*6120	4740	*4940	3090	*3110	2170	*2880	2150	7.54
	lb			*20660	19220	*13490	10450	*10890	6810	*6860	4780	*6350	4740	(24.7)
1.5 m (4.9 ft)	kg					*7380	4390	4840	2940	3470	2120	*3060	2050	7.66
	lb					*16270	9680	10670	6480	7650	4670	*6750	4520	(25.1)
0.0 m (0.0 ft)	kg			*5290	*5290	7300	4190	4720	2820			*3420	2080	7.47
	lb			*11660	*11660	16090	9240	10410	6220			*7540	4590	(24.5)
-1.5 m (-4.9 ft)	kg	*5090	*5090	*9190	7630	7230	4120	4670	2780			3800	2290	6.95
	lb	*11220	*11220	*20260	16820	15940	9080	10300	6130			8380	5050	(22.8)
-3.0 m (-9.8 ft)	kg	*9360	*9360	*10170	7770	*7120	4180	4740	2840			4720	2830	6.01
	lb	*20640	*20640	*22420	17130	*15700	9220	10450	6260			10410	6240	(19.7)
-4.5 m (-14.8 ft)	kg			*6860	*6860							*4560	*4560	4.39
	lb			*15120	*15120							*10050	*10050	(14.4)

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.

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Lifting capacities will vary with different work tools, ground conditions and attachments.
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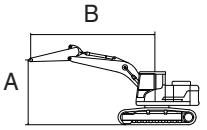
Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HX160A L	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		5100	3100	2600	600	-	-	-	-	-

· : 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											*2710	*2710	5.51
	lb											*5970	*5970	(18.1)
6.0 m (19.7 ft)	kg							*3700	3330			*2430	*2430	6.79
	lb							*8160	7340			*5360	*5360	(22.3)
4.5 m (14.8 ft)	kg							*4020	3260	*2570	2230	*2340	2190	7.56
	lb							*8860	7190	*5670	4920	*5160	4830	(24.8)
3.0 m (9.8 ft)	kg			*7930	*7930	*5540	4810	*4580	3110	3540	2170	*2380	1950	7.97
	lb			*17480	*17480	*12210	10600	*10100	6860	7800	4780	*5250	4300	(26.2)
1.5 m (4.9 ft)	kg			*6760	*6760	*6920	4430	4850	2930	3450	2100	*2530	1860	8.09
	lb			*14900	*14900	*15260	9770	10690	6460	7610	4630	*5580	4100	(26.5)
0.0 m (0.0 ft)	kg			*6160	*6160	7280	4160	4690	2790	3380	2030	*2820	1880	7.91
	lb			*13580	*13580	16050	9170	10340	6150	7450	4480	*6220	4140	(25.9)
-1.5 m (-4.9 ft)	kg	*4790	*4790	*8770	7480	7150	4050	4610	2720			*3360	2040	7.42
	lb	*10560	*10560	*19330	16490	15760	8930	10160	6000			*7410	4500	(24.3)
-3.0 m (-9.8 ft)	kg	*8080	*8080	*10910	7580	7170	4070	4630	2740			4090	2440	6.55
	lb	*17810	*17810	*24050	16710	15810	8970	10210	6040			9020	5380	(21.5)
-4.5 m (-14.8 ft)	kg			*8260	7850	*5640	4230					*4650	3560	5.11
	lb			*18210	17310	*12430	9330					*10250	7850	(16.8)

Note 1. Lifting capacity are based on ISO 10567.

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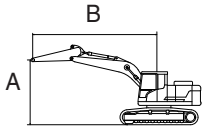
Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HX160A L	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		5100	2200	3250	600	-	-	-	-	-

· : 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									*3850	3690	5.86
	lb									*8490	8140	(19.2)
4.5 m (14.8 ft)	kg					*5320	*5320	*4750	3530	*3630	2920	6.74
	lb					*11730	*11730	*10470	7780	*8000	6440	(22.1)
3.0 m (9.8 ft)	kg					*6540	5160	*5200	3410	*3650	2580	7.20
	lb					*14420	11380	*11460	7520	*8050	5690	(23.6)
1.5 m (4.9 ft)	kg					*7690	4840	5270	3270	*3850	2470	7.33
	lb					*16950	10670	11620	7210	*8490	5450	(24.0)
0.0 m (0.0 ft)	kg					7960	4680	5160	3180	4050	2530	7.13
	lb					17550	10320	11380	7010	8930	5580	(23.4)
-1.5 m (-4.9 ft)	kg			*9400	8590	*7910	4650	5140	3160	4530	2810	6.58
	lb			*20720	18940	*17440	10250	11330	6970	9990	6190	(21.6)
-3.0 m (-9.8 ft)	kg			*9400	8760	*6720	4740			*4980	3570	5.58
	lb			*20720	19310	*14820	10450			*10980	7870	(18.3)

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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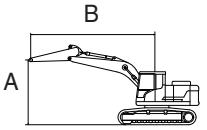
Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HX160A L	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		5100	2600	3250	600	-	-	-	-	-

· : 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											*3410	*3410	4.85
	lb											*7520	*7520	(15.9)
6.0 m (19.7 ft)	kg							*3840	3610			*2970	*2970	6.27
	lb							*8470	7960			*6550	*6550	(20.6)
4.5 m (14.8 ft)	kg					*4870	*4870	*4430	3560			*2850	2700	7.10
	lb					*10740	*10740	*9770	7850			*6280	5950	(23.3)
3.0 m (9.8 ft)	kg			*9370	*9370	*6120	5220	*4940	3430	*3110	2430	*2880	2410	7.54
	lb			*20660	*20660	*13490	11510	*10890	7560	*6860	5360	*6350	5310	(24.7)
1.5 m (4.9 ft)	kg					*7380	4880	5280	3270	3790	2370	*3060	2300	7.66
	lb					*16270	10760	11640	7210	8360	5220	*6750	5070	(25.1)
0.0 m (0.0 ft)	kg			*5290	*5290	7960	4670	5150	3160			*3420	2340	7.47
	lb			*11660	*11660	17550	10300	11350	6970			*7540	5160	(24.5)
-1.5 m (-4.9 ft)	kg	*5090	*5090	*9190	8490	7880	4600	5100	3110			*4130	2570	6.95
	lb	*11220	*11220	*20260	18720	17370	10140	11240	6860			*9110	5670	(22.8)
-3.0 m (-9.8 ft)	kg	*9360	*9360	*10170	8630	*7120	4660	*4910	3180			*4890	3170	6.01
	lb	*20640	*20640	*22420	19030	*15700	10270	*10820	7010			*10780	6990	(19.7)
-4.5 m (-14.8 ft)	kg			*6860	*6860							*4560	*4560	4.39
	lb			*15120	*15120							*10050	*10050	(14.4)

Note 1. Lifting capacity are based on ISO 10567.

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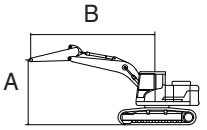
Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HX160A L	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		5100	3100	3250	600	-	-	-	-	-

· : 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											*2710	*2710	5.51
	lb											*5970	*5970	(18.1)
6.0 m (19.7 ft)	kg							*3700	3670			*2430	*2430	6.79
	lb							*8160	8090			*5360	*5360	(22.3)
4.5 m (14.8 ft)	kg							*4020	3600	*2570	2480	*2340	*2340	7.56
	lb							*8860	7940	*5670	5470	*5160	*5160	(24.8)
3.0 m (9.8 ft)	kg			*7930	*7930	*5540	5300	*4580	3440	*3790	2430	*2380	2190	7.97
	lb			*17480	*17480	*12210	11680	*10100	7580	*8360	5360	*5250	4830	(26.2)
1.5 m (4.9 ft)	kg			*6760	*6760	*6920	4910	*5230	3270	3770	2350	*2530	2090	8.09
	lb			*14900	*14900	*15260	10820	*11530	7210	8310	5180	*5580	4610	(26.5)
0.0 m (0.0 ft)	kg			*6160	*6160	*7830	4650	5120	3130	3700	2290	*2820	2120	7.91
	lb			*13580	*13580	*17260	10250	11290	6900	8160	5050	*6220	4670	(25.9)
-1.5 m (-4.9 ft)	kg	*4790	*4790	*8770	8340	7810	4530	5040	3050			*3360	2300	7.42
	lb	*10560	*10560	*19330	18390	17220	9990	11110	6720			*7410	5070	(24.3)
-3.0 m (-9.8 ft)	kg	*8080	*8080	*10910	8440	*7450	4550	5060	3070			4480	2750	6.55
	lb	*17810	*17810	*24050	18610	*16420	10030	11160	6770			9880	6060	(21.5)
-4.5 m (-14.8 ft)	kg			*8260	*8260	*5640	4710					*4650	3970	5.11
	lb			*18210	*18210	*12430	10380					*10250	8750	(16.8)

Note 1. Lifting capacity are based on ISO 10567.

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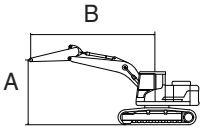
Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HX160A L	2-PIECE BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		5097	2200	3250	600	-	-	-	-	-

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



Lift-point height (A)		Lift-point radius (B)								At max. reach		
		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									*4850	*4850	4.43
	lb									*10690	*10690	(14.5)
6.0 m (19.7 ft)	kg			*4510	*4510					*3970	3580	5.95
	lb			*9940	*9940					*8750	7890	(19.5)
4.5 m (14.8 ft)	kg			*5110	*5110	*4560	3530			*3670	2840	6.82
	lb			*11270	*11270	*10050	7780			*8090	6260	(22.4)
3.0 m (9.8 ft)	kg			*6280	5140	*5010	3390			*3620	2520	7.28
	lb			*13850	11330	*11050	7470			*7980	5560	(23.9)
1.5 m (4.9 ft)	kg			*7440	4810	5280	3250			*3750	2410	7.40
	lb			*16400	10600	11640	7170			*8270	5310	(24.3)
0.0 m (0.0 ft)	kg			7980	4640	5170	3150			4000	2470	7.20
	lb			17590	10230	11400	6940			8820	5450	(23.6)
-1.5 m (-4.9 ft)	kg	*8360	*8360	*7890	4620	5160	3130			4470	2760	6.66
	lb	*18430	*18430	*17390	10190	11380	6900			9850	6080	(21.9)

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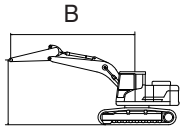
Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HX160A L	2-PIECE BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		5097	2600	3250	600	-	-	-	-	-

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



Lift-point height (A)		Lift-point radius (B)								At max. reach		
		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			*4310	*4310					*3570	*3570	5.00
	lb			*9500	*9500					*7870	*7870	(16.4)
6.0 m (19.7 ft)	kg					*4130	3610			*3050	*3050	6.39
	lb					*9110	7960			*6720	*6720	(21.0)
4.5 m (14.8 ft)	kg			*4680	*4680	*4250	3560			*2870	2620	7.20
	lb			*10320	*10320	*9370	7850			*6330	5780	(23.6)
3.0 m (9.8 ft)	kg			*5870	5210	*4750	3410	*3660	2410	*2850	2340	7.63
	lb			*12940	11490	*10470	7520	*8070	5310	*6280	5160	(25.0)
1.5 m (4.9 ft)	kg			*7130	4850	5290	3250	3800	2350	*2970	2240	7.75
	lb			*15720	10690	11660	7170	8380	5180	*6550	4940	(25.4)
0.0 m (0.0 ft)	kg			*7880	4630	5160	3130	3750	2310	*3250	2280	7.56
	lb			*17370	10210	11380	6900	8270	5090	*7170	5030	(24.8)
-1.5 m (-4.9 ft)	kg	*8290	*8290	7900	4570	5110	3090			*3800	2510	7.05
	lb	*18280	*18280	17420	10080	11270	6810			*8380	5530	(23.1)
-3.0 m (-9.8 ft)	kg			*7200	4640							
	lb			*15870	10230							

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 Hyundai dealer regarding the lifting capacities for specific work tools and attachments.

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

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