



DX190WA

Engine Power : SAE J1349, net 116 kW (158 PS, 155 HP) @1,900 rpm

Operating Weight : 18,500 ~ 19,860 kg

Bucket / SAE : 0.38 ~ 0.93 m³





Great Productivity & High Fuel Efficiency with Excellent Quality

DX190WA has been built for the industry's No.1 productivity and fuel efficiency thanks to high durable parts with advanced fuel-control technology.



Reliability



Durable components guarantee enough working hours without any down-time.

Heavy-duty boom, arm & cylinders



EM bush



Durability-Improved Hydraulic hoses



Mechanical engine with high-efficient filters



Low center of gravity designed Counter-weight



Dry type Pre cleaner (Optional)



High Ground Clearance



Protection covers for Dozer & Outrigger



Performance & Stability

Maximum performance by Doosan in house engine

- Doosan in house engine perfectly harmonized with the hydraulic system and provides strong power.
- Mechanical engine providing high resistance to moisture, dust, and bad fuel quality.

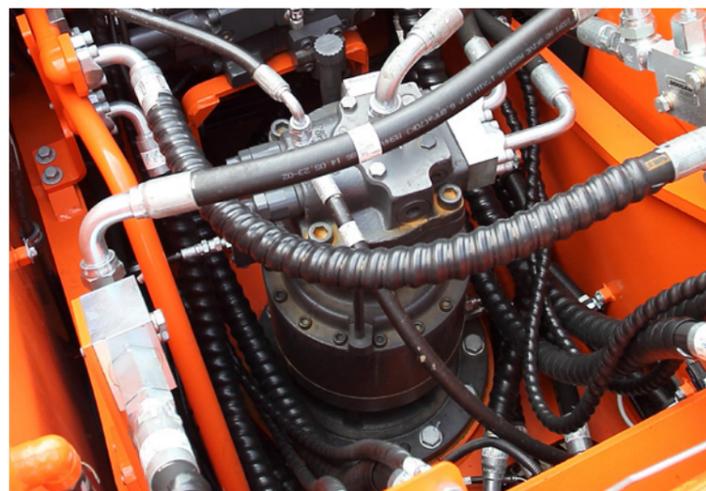
Doosan DX190WA Engine

Make and Model	Doosan DB58TIS 6-Cylinders
Type	Turbo charged
Rated Horse Power	123 kW (167 PS, 165 HP) @1,900 rpm (DIN 6271) 116 kW (158 PS, 155 HP) @1,900 rpm (SAE J1349)
Torque	70 kgf.m @ 1,400 rpm
Alternator	24 V X 60 A



Smooth swing with Increased Swing torque

New Doosan mottrol swing reduction gear minimizes shocks during rotation while making increased swing torque .



Swing Torque (kg.m)

4,965

7.9% UP

4,600

DX190WA

Previous Model

The Industry's Best stability

- 3.0 ton Counter weight (The biggest)
- 2,700 Wheel based (The widest)

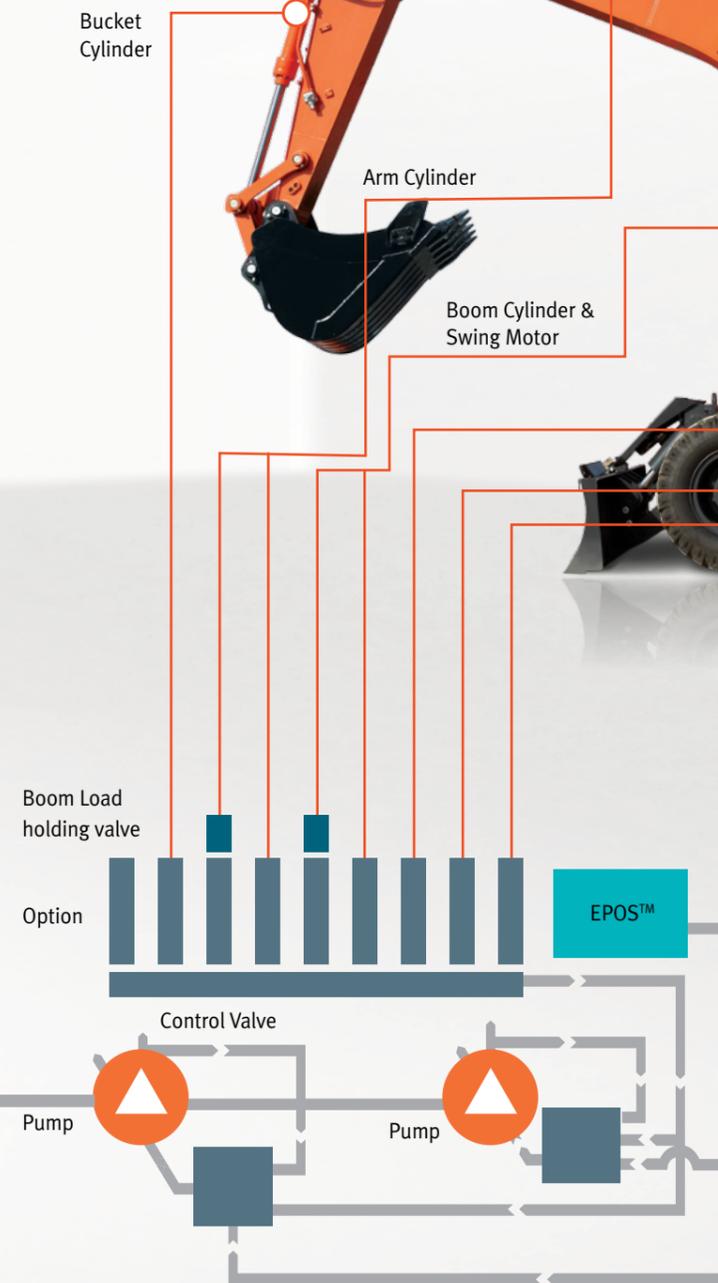


EXCAVATOR CONTROL

New EPOS™ system (Electronic Power Optimizing System). The brains of the hydraulic excavator, the EPOS™, have been improved, through a CAN (Controller Area Network) communication link, enabling a continuous exchange of information between the engine and the hydraulic system. These units are now perfectly synchronized.

The advantages of the new EPOS™ impacts at several levels, Ease of operation and user-friendliness:

- The availability of a power mode and standard mode guarantee maximum efficiency under all conditions.
- The automatic deceleration mode enables fuel saving.
- Regulation and precise control of the flow rate required by the equipment are available as standard.
- A self-diagnosis function enables technical problems to be resolved quickly and efficiently.
- An operational memory provides a graphic display of the status of the machine.
- Maintenance and oil change intervals can be displayed.



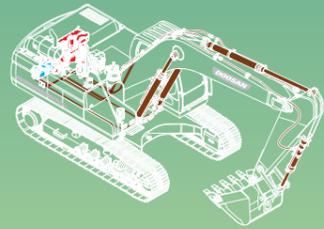
Fuel Efficiency



RELIEF CUTOFF

to prevent transfer of unnecessary flow

1. Typically, the pump tends to supply flow even when the maximum pressure on the system is reached due to severe working environments and large workloads.
2. Relief cutoff technology of Doosan prevent transfer of unnecessary flow to keep powerful working level at the maximum value while reducing consumption of fuel.



RELIEF CUTOFF

Relief cutoff technology saves 20~30% of fuel consumption in the heavy workload.



OPTIMIZED LEVER CONTROL

to prevent unnecessary fuel consumption

1. When operator takes break for rest with the joystick kept fixed, both of the engine and the pump are kept in standby mode with maximum rotation rate and hydraulic power. In such a case, unnecessary fuel consumption takes place.

& AUTO IDLE

2. The auto idle technology effectively controls the engine, and prevents unnecessary fuel consumption while the engine is kept in standby mode. Further, the optimized lever control technology effectively controls the pump to keep power of the pump maximum and prevent fuel consumption while the system is kept shut down.

When operating the joystick, rotation rate of the engine and maximum hydraulic power of the pump increase simultaneously for efficient consumption of fuel. The technologies of Doosan enable operation of the system with maximum power in time.

OPTIMIZED LEVER CONTROL

In auto idle, you can save 90% of fuel than in operation.

Fuel consumption in operation



Fuel consumption in auto idle



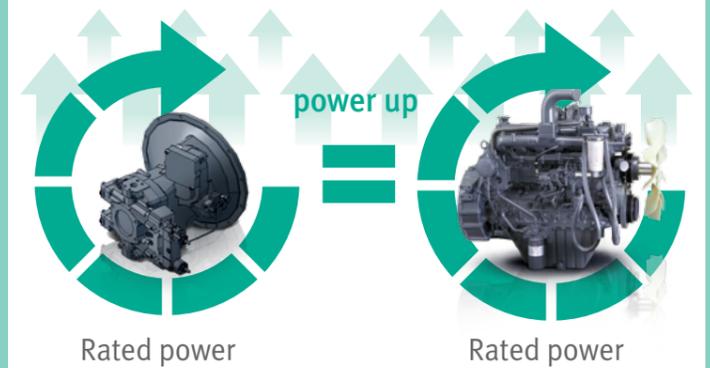
ENGINE & PUMP MATCHING

to reduce matching response time of the system

1. It is common that response time of the system (time for generating rated power from the minimum power) is slower than response speed of the pump. In such a case, the pump is kept in standby mode until the engine reaches the rated power to cause unnecessary fuel consumption. In addition, more fuel is supplied to the engine for matching the pump speed with the engine to result in more exhaust fumes.
2. Engine & pump matching, the new technology of Doosan, fully resolves these problems. Matching response time between pump and engine efficiently reduces unnecessary fuel consumption as well as exhaust fumes.

ENGINE & PUMP MATCHING

Matching response time between pump and engine makes higher performance with reduced fuel consumption.



The most Economic Model with Great Productivity in Middle Wheel Excavator



"NEW CONTROL LOGIC" for Better Fuel Efficiency

FUEL EFFICIENCY

↑ **12.4%**
BETTER

FUEL CONSUMPTION

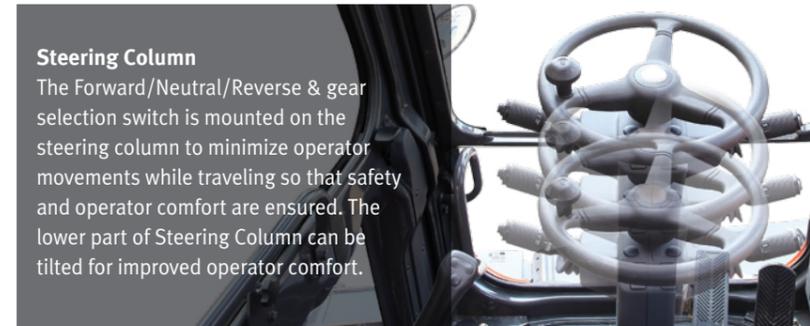
↓ **3.0%**
SAVING

Handling & Comfort



Steering Column

The Forward/Neutral/Reverse & gear selection switch is mounted on the steering column to minimize operator movements while traveling so that safety and operator comfort are ensured. The lower part of Steering Column can be tilted for improved operator comfort.



Third gear speed controller

Rear Camera



Dozer/Outrigger Control

The Dozer/Outrigger Control Lever, combined with the associated switches, allows for the operator to select between any combination of independent or simultaneous operation of the dozer/Outriggers.



Air conditioning with climate control

High performance, electronically controlled air conditioning features 5 different operating modes allowing the operator to adjust the airflow to suit conditions. A re-circulated air function is also available. Temperature is adjustable from 17°C (62°F) to 32°C (90°F) by 0.5°C (1°F) increments.



Control panel

The control panel is clear, simple to read and positioned for easy use, allowing you to work safely and confidently.



7 inch Monitor

- Gauges
- Navigation modes
- Rear view camera
- Display selector
- Working modes
- Auto-idle & flow rate control

Air suspension seat (Optional)

Air Suspension Seat is available as an option, which further reduces any vibration being transmitted to the operator while working or travelling. In addition, this option is fitted with a heating system for operator comfort in cold weather.



1 Storage space

2 Cellular phone box

Maintenance & Safety



Hydraulic oil return filter

The protection of the hydraulic system is more effective, using glass fiber filter technology in the main oil return filter. This means that with more than 99.5% of foreign particles filtered out, the oil change interval is increased.



Easy maintenance

Access to the various radiators and coolers is very easy, making cleaning easier. Access to the various parts of the engine is from the top and via side panels.



Convenient Fuse Box

The fuse box is conveniently located in a section of the storage compartment behind the operator's seat providing a clean environment and easy access.



New battery box

- a. Cut-off switch easier to reach
- b. New spring to facilitate fixing
- c. New locking device



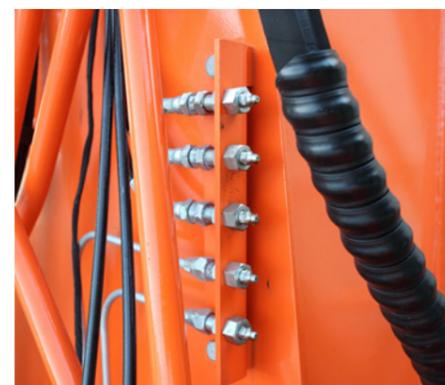
Fuel pre-filter

High efficiency fuel filtration is attained by the use of multiple filters, including a fuel pre-filter fitted with a water separator that removes most moisture from the fuel.



Air cleaner

The large capacity forced air cleaner removes over 99% of airborne particles, reducing the risk of engine contamination and making the cleaning and cartridge change intervals greater.



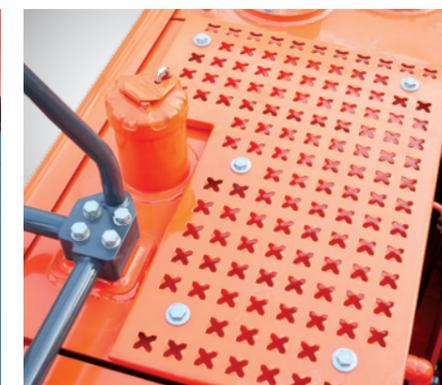
Remote greasing points

For comfortable maintenance, the arm and boom greasing points have been centralized. Remote & grouped greasing points on boom & arm.



PC monitoring

A PC monitoring function enables connection to the EPOS system. Thus, various parameters can be checked during maintenance, including pump pressures, engine rotation and engine speed. These can be stored and printed for analysis.



Larger anti-slip surface

High fraction coefficient guarantees user's safety while maintaining main parts in wet condition.



Improved Rim & Rubber space

New type Rim makes it possible to inject air from outside of machine. And expanded rubber space increases safety for maintenance.

Technical Specification

Engine

MODEL

DB58TIS
2 valves per cylinder, vertical injectors, water cooled, turbo charged with air to air intercooler. The emission levels are well below the values required for phase II.

NUMBER OF CYLINDERS

6

RATED HORSE POWER

123 kW (167 PS, 165 HP) @1,900 rpm (SAE J1995, Gross)
116 kW (158 PS, 155 HP) @1,900 rpm (SAE J1349, Net)

MAX TORQUE

70kgf.m @ 1,400 rpm

PISTON DISPLACEMENT

Ø102 mm x 118 mm

STARTER

24 V / 4.5 kW

BATTERIES

2 X 12 V / 100 AH

AIR CLEANER

Double element with auto dust evacuation.

Hydraulic System

The heart of the system is the EPOS (Electronic Power Optimizing System). It allows the efficiency of the system to be optimized for all working conditions and minimizes fuel consumption.

The new EPOS is connected to the engine electronic control via a data transfer link to harmonize the operation of the engine and hydraulics.

- The hydraulic system enables independent or combined operations.
- Cross-sensing pump system for fuel savings.
- Auto deceleration system.
- Two operating modes, two power modes.
- Button control of flow in auxiliary equipment circuits.
- Computer-aided pump power control.

MAIN PUMPS

2 variable displacement axial piston pumps
max flow: 2 X 200 l /min (2 X 61.21 US gpm, 2 X 50.97 lmp gpm)

PILOT PUMP

Gear pump - max flow: 26.1 l /min (7.24 US gpm, 6.03 lmp gpm)

MAXIMUM SYSTEM PRESSURE

Boom/arm/Bucket:
- Normal mode: 330 kgf/cm²(324 bar)
- Power mode: 350 kgf/cm²(343 bar)
Travel: 350 kgf/cm²(343 bar)
Swing: 270 kgf/cm²(265bar)

Hydraulic Cylinders

The piston rods and cylinder bodies are made of high-strength steel. A shock absorbing mechanism is fitted in all cylinders to ensure shock-free operation and extend piston life.

CYLINDERS	QUANTITY	BORE X ROD DIAMETER X STROKE
Boom	2	120 X 85 X 1,195 mm
Arm	1	125 X 90 X 1,470 mm
Bucket	1	115 X 80 X 1,025 mm

Undercarriage

Heavy-duty frame, all-welded stress-relieve structure. Top grade materials used for toughness. Specially heat-treated connecting pins. 10.0-20-14PR double tires with tire spacer. Front axle oscillating hydraulically.

Environment

Noise levels comply with environmental regulations (dynamic values).

LWA EXTERNAL SOUND LEVEL

101 dB(A) (2000/14/EC)

LPA OPERATOR SOUND LEVEL

75 dB(A) (ISO 6396)

Swing Mechanism

- An axial piston motor with two-stage planetary reduction gear is used for the swing.
- Increased swing torque reduces swing time.
- Internal induction-hardened gear.
- Internal gear and pinion immersed in lubricant bath.
- The swing brake for parking is activated by spring and released hydraulically.

Swing speed: 0 to 10.9 rpm

Drive

Fully hydrostatic driven, 3 speed power shift transmission, variable displacement, high torque, axial piston motor, foot pedal controls provide smooth travel, hub reduction type front steering axle and rear rigid axle.

TRAVEL SPEED (HIGH)

36 km/h

MAXIMUM TRACTION FORCE

10,900 kgf

MAXIMUM GRADE

37.4° / 75 %

Refill Capacities

FUEL TANK

310 l

COOLING SYSTEM (RADIATOR CAPACITY)

24 l

ENGINE OIL

25 l

HYDRAULIC TANK

116 l

Weight

Operating weight including Boom, Arm, Bucket, Undercarriage attachment, operator, lubricant, coolant, full fuel tank and the standard equipment.

Front Combination		Undercarriage Type		Operating Weight
Boom	Arm	Front	Rear	
5,200 mm	2,600 mm	Cradle	Dozer	18,500 kg / 18,610 kg
5,200 mm	2,600 mm	Dozer	Outrigger	19,600 kg / 19,710 kg
5,360 mm (Two-Piece)	2,300 mm	Cradle	Dozer	18,600 kg / 18,710 kg
5,360 mm (Two-Piece)	2,600 mm	Dozer	Outrigger	19,750 kg / 19,860 kg

Digging Forces (SAE)

DX190WA	Unit	Boom : 5,200 mm Arm : 2,600 mm	Boom : 5,200 mm Arm : 2,200 mm	Boom : 5,200 mm Arm : 3,100 mm
Bucket (Normal/Boost)	kN	115.7 / 122.6	115.7 / 122.6	115.7 / 122.6
	t	11.8 / 12.5	11.8 / 12.5	11.8 / 12.5
Arm (Normal/Boost)	kN	82.4 / 88.3	96.1 / 102.0	76.5 / 81.4
	t	8.4 / 9.0	9.8 / 10.4	7.8 / 8.3

Technical Specification

Bucket

Bucket Type	Capacity (m ³)		Width (mm)		Track C/W (ton)	F/C + R/D Up				
						3.2				
	SAE/PCSA	CECE	W/O Cutter	With Cutter	Weight (kg)	2.2 m Arm	5.2 m Boom	3.1 m Arm	Arti Boom (5.36 m)	
GP	0.38	0.35	604	640	425	A	A	A	A	A
	0.45	0.41	727	775	448	A	A	A	A	A
	0.57	0.51	865	913	510	A	A	B	B	B
	0.70	0.62	1,015	1,063	559	B	C	D	C	D
	0.76	0.67	1,079	1,127	592	C	C	D	D	D
	0.80	0.70	1,123	1,171	606	C	D	D	D	D
	0.93	0.81	1,267	1,315	654	D	D	X	X	X
H Class	0.51	0.47	750	N/A	588	A	A	B	A	B
	0.65	0.58	900	N/A	651	B	C	D	C	D
	0.78	0.70	1,050	N/A	735	D	D	X	D	X
	0.82	0.74	1,100	N/A	756	D	D	X	X	X
	0.91	0.82	1,200	N/A	798	D	X	X	X	X
Maximum load pin-on (payload+bucket)						1,899	1,792	1,598	1,671	1,602

Bucket Type	Capacity (m ³)		Width (mm)		Track C/W (ton)	F/D DN + R/O DN = F/O DN + R/D DN				
						3.2				
	SAE/PCSA	CECE	W/O Cutter	With Cutter	Weight (kg)	2.2 m Arm	5.2 m Boom	3.1 m Arm	Arti Boom (5.36 m)	
GP	0.38	0.35	604	640	425	A	A	A	A	A
	0.45	0.41	727	775	448	A	A	A	A	A
	0.57	0.51	865	913	510	A	A	A	A	A
	0.70	0.62	1,015	1,063	559	A	A	A	A	A
	0.76	0.67	1,079	1,127	592	A	A	A	A	A
	0.80	0.70	1,123	1,171	606	A	A	A	A	A
	0.93	0.81	1,267	1,315	654	A	A	A	A	A
H Class	0.51	0.47	750	N/A	588	A	A	A	A	A
	0.65	0.58	900	N/A	651	A	A	A	A	A
	0.78	0.70	1,050	N/A	735	A	A	A	A	A
	0.82	0.74	1,100	N/A	756	A	A	A	A	A
	0.91	0.82	1,200	N/A	798	A	A	A	A	A
Maximum load pin-on (payload+bucket)						3,538	3,290	3,048	3,242	3,062

Bucket Type	Capacity (m ³)		Width (mm)		Track C/W (ton)	F/C + R/D DN				
						3.2				
	SAE/PCSA	CECE	W/O Cutter	With Cutter	Weight (kg)	2.2 m Arm	5.2 m Boom	3.1 m Arm	Arti Boom (5.36 m)	
GP	0.38	0.35	604	640	425	A	A	A	A	A
	0.45	0.41	727	775	448	A	A	A	A	A
	0.57	0.51	865	913	510	A	A	A	A	A
	0.70	0.62	1,015	1,063	559	A	A	A	A	A
	0.76	0.67	1,079	1,127	592	A	A	B	B	B
	0.80	0.70	1,123	1,171	606	A	B	B	B	B
	0.93	0.81	1,267	1,315	654	B	C	C	C	C
H Class	0.51	0.47	750	N/A	588	A	A	A	A	A
	0.65	0.58	900	N/A	651	A	A	A	A	A
	0.78	0.70	1,050	N/A	735	A	B	C	B	C
	0.82	0.74	1,100	N/A	756	B	B	C	C	C
	0.91	0.82	1,200	N/A	798	C	C	D	C	D
Maximum load pin-on (payload+bucket)						2,418	2,245	2,064	2,173	2,046

Bucket Type	Capacity (m ³)		Width (mm)		Track C/W (ton)	F/O DN + R/O DN				
						3.2				
	SAE/PCSA	CECE	W/O Cutter	With Cutter	Weight (kg)	2.2 m Arm	5.2 m Boom	3.1 m Arm	Arti Boom (5.36 m)	
GP	0.38	0.35	604	640	425	A	A	A	A	A
	0.45	0.41	727	775	448	A	A	A	A	A
	0.57	0.51	865	913	510	A	A	A	A	A
	0.70	0.62	1,015	1,063	559	A	A	A	A	A
	0.76	0.67	1,079	1,127	592	A	A	A	A	A
	0.80	0.70	1,123	1,171	606	A	A	A	A	A
	0.93	0.81	1,267	1,315	654	A	A	A	A	A
H Class	0.51	0.47	750	N/A	588	A	A	A	A	A
	0.65	0.58	900	N/A	651	A	A	A	A	A
	0.78	0.70	1,050	N/A	735	A	A	A	A	A
	0.82	0.74	1,100	N/A	756	A	A	A	A	A
	0.91	0.82	1,200	N/A	798	A	A	A	A	A
Maximum load pin-on (payload+bucket)						4,300	3,996	3,709	3,966	3,746

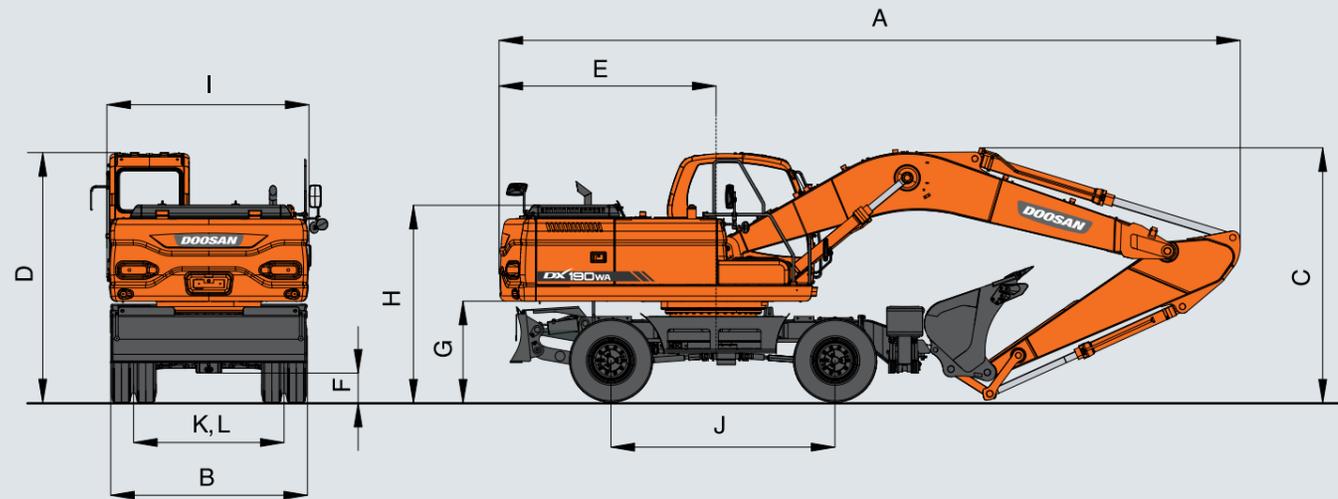
Based on ISO 10567 and SAE J296, arm length without quick change clamp
 A : Suitable for materials with density of 2,100kg/m³ (3500lb/yd³) or less
 B : Suitable for materials with density of 1,800kg/m³ (3000lb/yd³) or less
 C : Suitable for materials with density of 1,500kg/m³ (2500lb/yd³) or less
 D : Suitable for materials with density of 1,200kg/m³ (2000lb/yd³) or less
 X : Not recommended

This bucket recommendation is based on machine stability considering the tipping load with certain density of handling material, and should be strictly followed. It's more recommendable to use a smaller size of bucket than recommendation under the severe working condition and application to avoid the durability risks.

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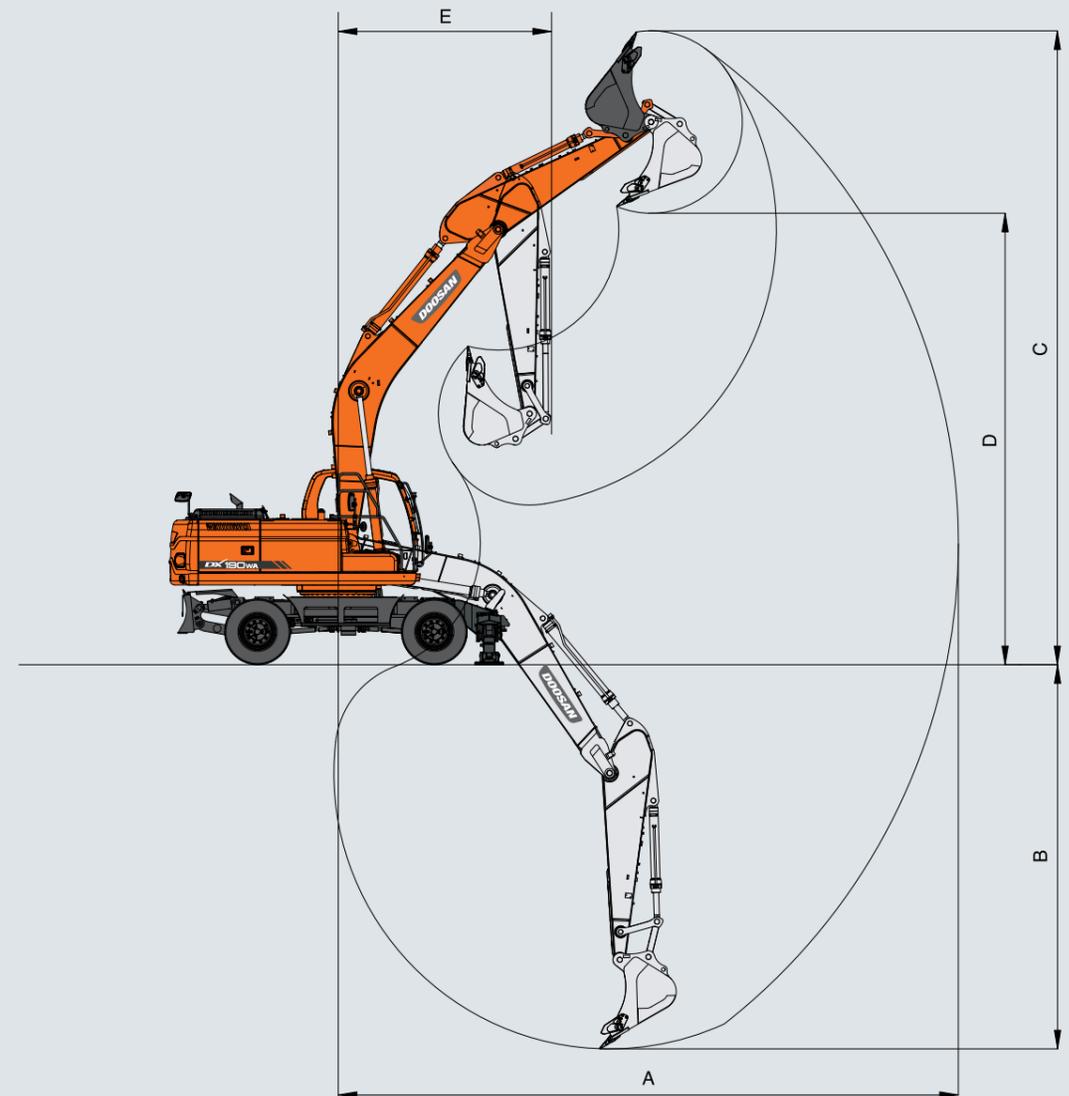
Dimensions



Dimensions

Reference	Description	Dimension		
		2.6 m Arm	5.2m One-Piece Boom	3.1 m Arm
A	Shipping Length	8,659 mm	8,715 mm	8,507 mm
B	Shipping Width	2,496 mm	←	←
C	Shipping Height (Boom)	3,310 mm	3,212 mm	3,772 mm
D	Height Over Cab	3,135 mm	←	←
E	Counter Weight Swing Clearance	2,450 mm	←	←
F	Ground Clearance	350 mm	←	←
G	Counter Weight Clearance	1,249 mm	←	←
H	Engine Cover Height	2,530 mm	←	←
I	Upper Housing Width	2,494 mm	←	←
J	Wheel Base	2,700 mm	←	←
K,L	Tread Width	1,944 mm	←	←

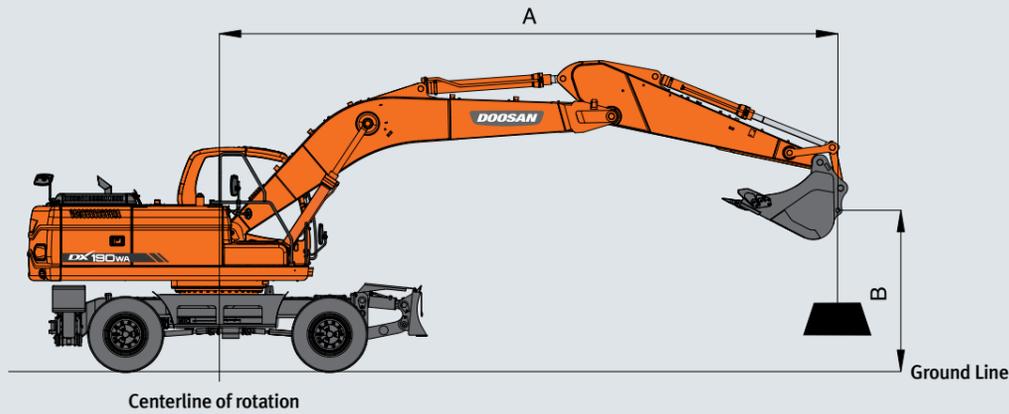
Working Ranges



Working Ranges

Reference	Description	Dimension		
		2.6 m Arm	5.2 m One-Piece Boom	3.1 m Arm
A	Max. Digging Reach	9,190 mm	8,810 mm	9,545 mm
B	Max. Digging Reach(Ground)	8,985 mm	8,600 mm	9,350 mm
C	Max. Digging Depth	5,950 mm	5,550 mm	6,450 mm
D	Max. Loading Height	6,665 mm	6,435 mm	6,660 mm
E	Min. Loading Height	2,540 mm	2,960 mm	2,040 mm
F	Max. Digging Height	9,335 mm	9,105 mm	9,265 mm
G	Max. Bucket Pin Height	8,080 mm	7,850 mm	8,075 mm
H	Max. Vertical Wall Depth	4,855 mm	4,475 mm	4,950 mm
J	Max. Radius Vertical	6,130 mm	5,990 mm	6,560 mm
J	Max. Depth to 2.5m Line	5,740 mm	5,310 mm	6,235 mm
K	Min. Radius 2.5m Line	2,425 mm	2,415 mm	2,325 mm
L	Min. Digging Reach	215 mm	1,195 mm	-350 mm
M	Min Swing Radius	3,200 mm	3,195 mm	3,185 mm

Lifting Capacity



Standard

Boom : 5.6m(18'04") One-Piece Boom Arm : 3.0m (9'10") Bucket : Without Bucket Counterweight : 3,800 kg

Metric

Unit : 1,000kg

A(m) B(m)	Chassis Frame Attachment	1.5		3		4.5		6		7.5		Max. Reach		A(m)
7.5	R-Rear Dozer Only Up											*3.31	*3.31	5.34
	R-Rear Dozer Only Down											*3.31	*3.31	
	F-Dozer + R-Outrigger Down											*3.31	*3.31	
	4-Outrigger Down											*3.31	*3.31	
6	R-Rear Dozer Only Up							*4.75	2.85			*2.95	2.39	6.59
	R-Rear Dozer Only Down							*4.75	3.5			*2.95	*2.95	
	F-Dozer + R-Outrigger Down							*4.75	*4.75			*2.95	*2.95	
	4-Outrigger Down							*4.75	*4.75			*2.95	*2.95	
4.5	R-Rear Dozer Only Up					*6.36	4.34	4.77	2.76			*2.84	1.95	7.33
	R-Rear Dozer Only Down					*6.36	5.38	*5.59	3.42			*2.84	2.44	
	F-Dozer + R-Outrigger Down					*6.36	*6.36	*5.59	4.88			*2.84	*2.84	
	4-Outrigger Down					*6.36	*6.36	*5.59	*5.59			*2.84	*2.84	
3	R-Rear Dozer Only Up					7.2	3.97	4.6	2.61	3.25	1.83	*2.89	1.74	7.71
	R-Rear Dozer Only Down					*7.91	4.99	*6.24	3.26	*4.19	2.3	*2.89	2.19	
	F-Dozer + R-Outrigger Down					*7.91	7.36	*6.24	4.71	*4.19	3.33	*2.89	*2.89	
	4-Outrigger Down					*7.91	*7.91	*6.24	5.73	*4.19	4.04	*2.89	*2.89	
1.5	R-Rear Dozer Only Up					6.81	3.64	4.42	2.45	3.18	1.77	3.01	1.67	7.78
	R-Rear Dozer Only Down					*9.31	4.64	*6.90	3.09	*5.04	2.23	*3.07	2.11	
	F-Dozer + R-Outrigger Down					*9.31	6.96	*6.90	4.53	*5.04	3.26	*3.07	*3.07	
	4-Outrigger Down					*9.31	8.72	*6.90	5.54	*5.04	3.96	*3.07	*3.07	
0	R-Rear Dozer Only Up			*6.89	6.18	6.6	3.46	4.3	2.35	3.14	1.73	3.11	1.71	7.55
	R-Rear Dozer Only Down			*6.89	*6.89	*9.91	4.45	*7.26	2.98	*3.96	2.19	*3.45	2.17	
	F-Dozer + R-Outrigger Down			*6.89	*6.89	*9.91	6.75	*7.26	4.41	*3.96	3.22	*3.45	3.19	
	4-Outrigger Down			*6.89	*6.89	*9.91	8.49	*7.26	5.42	*3.96	3.92	*3.45	*3.45	
-1.5	R-Rear Dozer Only Up	*7.10	*7.10	11.52	6.23	6.55	3.42	4.27	2.31			3.46	1.9	6.99
	R-Rear Dozer Only Down	*7.10	*7.10	11.52	8.34	*9.61	4.41	*7.05	2.95			*4.17	2.42	
	F-Dozer + R-Outrigger Down	*7.10	*7.10	11.52	11.52	*9.61	6.7	*7.05	4.38			*4.17	3.55	
	4-Outrigger Down	*7.10	*7.10	11.52	11.52	*9.61	8.44	*7.05	5.38			*4.17	*4.17	
-3	R-Rear Dozer Only Up	11.94	11.94	11.57	6.4	6.64	3.5					4.37	2.4	5.99
	R-Rear Dozer Only Down	11.94	11.94	11.57	8.52	*8.27	4.49					*5.63	3.04	
	F-Dozer + R-Outrigger Down	11.94	11.94	11.57	11.57	*8.27	6.79					*5.63	4.48	
	4-Outrigger Down	11.94	11.94	11.57	11.57	*8.27	*8.27					*5.63	5.49	
-4.5	R-Rear Dozer Only Up											*5.19	4.23	4.12
	R-Rear Dozer Only Down											*5.19	*5.19	
	F-Dozer + R-Outrigger Down											*5.19	*5.19	

1. Ratings are based on SAE J1097
2. Load point is the end of arm.
3. * Rated loads are based on hydraulic capacity.
4. Rated loads do not exceed 87% of hydraulic capacity or 75% of tipping capacity.

: Rating Over Front
 : Rating Over Side or 360 degree

Feet

Unit : 1,000lb

A(ft) B(ft)	Chassis Frame Attachment	5		10		15		20		25		Max. Reach		A(ft)			
25	R-Rear Dozer Only Up													17.05			
	R-Rear Dozer Only Down																
	F-Dozer + R-Outrigger Down																
	4-Outrigger Down																
20	R-Rear Dozer Only Up									*9.82	6.1		*6.53	5.37	21.42		
	R-Rear Dozer Only Down									*9.82	7.51		*6.53	*6.53			
	F-Dozer + R-Outrigger Down									*9.82	*9.82		*6.53	*6.53			
	4-Outrigger Down									*9.82	*9.82		*6.53	*6.53			
15	R-Rear Dozer Only Up							13.77	9.37	10.27	5.95		*6.27	4.34	23.98		
	R-Rear Dozer Only Down							13.77	11.6	12.20	7.36		*6.27	5.41			
	F-Dozer + R-Outrigger Down							13.77	13.77	12.20	10.5		*6.27	*6.27			
	4-Outrigger Down							13.77	13.77	12.20	12.20		*6.27	*6.27			
10	R-Rear Dozer Only Up							26.90	15.25	15.51	8.59	9.91	5.63	6.99	3.93	25.28	
	R-Rear Dozer Only Down							26.90	19.93	17.08	10.78	13.56	7.02	*7.67	4.94		
	F-Dozer + R-Outrigger Down							26.90	26.90	17.08	15.84	13.56	10.14	*7.67	7.17		
	4-Outrigger Down							26.90	26.90	17.08	17.08	13.56	12.33	*7.67	*7.67		
5	R-Rear Dozer Only Up									14.66	7.87	9.53	5.29	6.85	3.8	25.53	
	R-Rear Dozer Only Down									20.13	10.01	14.96	6.67	*9.50	4.81		
	F-Dozer + R-Outrigger Down									20.13	14.99	14.96	9.76	*9.50	7.03		
	4-Outrigger Down									20.13	18.74	14.96	11.93	*9.50	8.54		
0	R-Rear Dozer Only Up							15.78	13.3	14.19	7.47	9.27	5.06		6.85	3.77	24.77
	R-Rear Dozer Only Down							15.78	15.78	21.47	9.59	15.73	6.43		*7.60	4.79	
	F-Dozer + R-Outrigger Down							15.78	15.78	21.47	14.52	15.73	9.5		*7.60	7.03	
	4-Outrigger Down							15.78	15.78	21.47	18.24	15.73	11.66		*7.60	*7.60	
-5	R-Rear Dozer Only Up							15.86	15.86	26.21	13.4	14.08	7.38	9.2	5	22.88	
	R-Rear Dozer Only Down							15.86	15.86	26.21	17.88	20.81	9.49	15.23	6.36		
	F-Dozer + R-Outrigger Down							15.86	15.86	26.21	26.21	20.81	14.42	15.23	9.43		
	4-Outrigger Down							15.86	15.86	26.21	26.21	20.81	18.12	15.23	11.59		
-10	R-Rear Dozer Only Up									26.84	26.84	25.01	13.77	14.28	7.55	19.55	
	R-Rear Dozer Only Down									26.84	26.84	25.01	18.29	17.79	9.68		
	F-Dozer + R-Outrigger Down									26.84	26.84	25.01	25.01	17.79	14.62		
	4-Outrigger Down									26.84	26.84	25.01	25.01	17.79	17.79		

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: Rating Over Front
 : Rating Over Side or 360 degree

Standard and Optional Equipment

Standard Equipment

HYDRAULIC SYSTEM

- Boom and arm flow regeneration
- Boom and arm holding valves
- Swing anti-rebound valves
- Spare ports(valve)
- One-touch power boost

CABIN & INTERIOR

- Viscous cab mounts
- All weather sound suppressed type cab
- Air conditioner
- Adjustable suspension seat with head rest and adjustable arm rest
- Pull-up type front window and removable lower front window
- Room light
- Intermittent windshield wiper
- Cigarette lighter and ashtray
- Cup holder
- Hot & Cool box
- LCD color monitor panel
- Engine speed (RPM) control dial
- AM/FM radio and cassette player
- Remote radio ON/OFF switch
- 12V spare powers socket
- Serial communication port for laptop PC interface
- Joystick lever with 3 switches
- Sunvisor
- Sun roof
- wiper

SAFETY

- Large handrails and step
- Punched metal anti-slip plates
- Seat belt
- Hydraulic safety lock lever
- Safety glass
- Hammer for emergency escape
- Right and left rearview mirrors
- Reverse travel alarm
- Emergency engine stop
- LED stop lamps

OTHERS

- Double element air cleaner
- Fuel pre-filter
- Dust screen for radiator/oil cooler/charged air cooler
- Engine overheat prevention system
- Engine restart prevention system
- Self-diagnostic system
- Large capacity alternator(24V, 60 amps)
- Electric horn
- Halogen working lights(frame mounted 2, boom mounted 2)

UNDERCARRIAGE

- 10.0-20-14PR double tires
- Heavy duty axles
- Parallel dozer balde & outriggers
- Tool box
- Front axle oscillation auto lock

Optional Equipment

Some of these optional equipments may be standard in some markets. Some of these optional equipments cannot be available on some markets. You must check with the local DOOSAN dealer to know about the availability or to release the adaptation following the needs of the applications.

SAFETY

- Boom and arm hose rupture protection valve
- Overload warning device
- Cabin Top/Front guard(ISO 10262, FOGS standard)
- Travel & swing alarm
- Rotation beacon
- Mirror & Lamp on counter weight
- Rear View Camera

CABIN & INTERIOR

- Air suspension seat
- MP3/CD player
- Rain shield
- 2 front lamps
- 4 front + 2 rear lamps

OTHERS

- Piping for crusher
- Piping for quick clamp
- Piping for front attachment rotation
- Breaker filter
- Lower wiper
- Fuel heater
- Fuel filler pump

UNDERCARRIAGE

- 10.0-20-16PR double tires



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