DL220-7 / DL250-7

TECHNICAL SPECIFICATIONS

ENGINE

Designed to deliver superior performance and fuel efficiency, the Doosan DL06 diesel engine fully meets the latest Stage V emission regulations. To optimize machine performance, the engine uses high-pressure fuel injectors, air-to-air intercooler and electronic engine controls. 4-Cycle Water-Cooled, Turbocharger with wastegate, Diesel Oxidation Catalyst (DOC) & Selective Catalytic Reduction (SCR) and Diesel Particulate Filter (DPF), no Exhaust Gas Recirculation (EGR).

	DL220-7	DL250-7
Model	Doosan DL06	
No. of cylinders	6	
Displacement	5.9 l	
Max. power (SAE J1995)	119 kW/160 hp at 2100 rpm	128 kW/172 hp at 2100 rpm
Max. torque (SAE J1995)	736 Nm at 1400 rpm	804 Nm at 1400 rpm
Bore × stroke	100 × 125 mm	100 × 125 mm
Starter	24 V - 6 kW	
Batteries - Alternator	2 x 12 V - 24 V/80 A	
Air filter	Centrifugal pre-cleaner Top Spin™ Donaldson® with 2-stage dry filter	
Cooling	Cooling package with automatic reversing fan to facilitate radiator cleaning. Automatic rotation speed adjustment according to temperature conditions.	
Radiator	Wide fin radiator - Intercooler/Hydraulic oil cooler/Transmission oil cooler	

AXLES

Front & rear axles manufactured by ZF with outboard planetary reduction gears.
11.2 t (DL220-7) and 11.8 t (DL250-7) traction force allows operation on slopes of 30°.

	DL220-7	DL250-7
LSD lock ratio	30% (front & rear)	
HDL lock ratio	100% (front)	
Oscillation angle	+/- 11°	
Tire size - standard	20.5 R25	

TRANSMISSION

Doosan offer you 4 gears or as a optional 5-gear powershift transmission with torque convertor. 3 operating modes: manual, fully automatic, or semi-automatic with 'kick-down' function. Based on high-quality components. Equipped with a modulation system for protection and smooth gear and direction changes. A manual transmission control lever is located to the left of the steering wheel. Direction change function also available in automatic or semi-automatic mode. Transmission can be disengaged by the brake pedal to deliver full engine power to the hydraulic system. A safety device prevents the engine from starting if the transmission is not in neutral. 5 gear transmission is equipped with Torque converter lock-up function from 2nd to 5th gear.

	DL220-7	DL250-7
Type	4-speed auto-powershift / 5-speed auto-powershift with lock-up (as option)	
Speeds - forward 1 /2 / 3 / 4	7.0 / 12.8 / 24.1 / 38.9	6.4 / 11.8 / 22.8 / 37.5
Speeds - forward 1 / 2 / 3 / 4 / 5	6.5 / 13.0 / 20.0 / 29.9 / 40.0	6.0 / 12.0 / 18.5 / 27.7 / 40.0
Speeds - reverse 1 / 2 / 3	7.4 / 13.4 / 25.3	6.8 / 12.4 / 24.0
Maximum traction (4-speed/5-speed)	11.2 t / 11.3 t	11.8 t / 13.2 t
Maximum gradeability	58% (30°)	

HYDRAULIC SYSTEM

	DL220-7	DL250-7
Type	Load sensing closed center hydraulic system	
Main pump	Dual variable displacement axial pistons pumps	
Maximum flow	155 l/min	
Maximum pressure	250 bar	265 bar
EMCV	Automatic functions for positioning the bucket ready to dig and a function for stopping the lift arm at the desired height.	
Filtration	In the oil return to the tank, the fibre glass filter has a filtering capability of 10 micron.	

LIFT ARM

Z-kinematics with simple lifting piston system designed for heavy-duty applications. 103 kN (DL220-7) & 117 kN (DL250-7) breakout force combined with a bucket angle that is maintained throughout the range of movement. Bucket angles are optimized in the travelling position and at ground level. Load Isolation System (LIS) is fitted as standard for improved operator comfort, output and lifetime.

Load cycle	DL220-7	DL250-7
Lift arm - up	6.2 s	6.3 s
Lift arm - down	3.7 s	3.5 s
Bucket - dump	1.5 s	1.6 s

HYDRAULIC CYLINDERS

High-strength steel piston rods and cylinder bodies. Shock-absorbing mechanism fitted in all cylinders for shock-free operation and extended piston life.

Cylinders	Quantity	Bore × rod diameter × stroke (mm)	
		DL220-7	DL250-7
Lift	2	115 × 75 × 790	
Bucket	1	130 × 80 × 515	135 × 80 × 515

BRAKES

Dual multi-disc circuit with sintered metal discs for extended service life. Braking system activated by a pump and accumulator circuits. Spring-applied, hydraulically released parking brake is mounted on the transmission shaft and accumulator circuits and is electronically activated. Brake type: spring-applied / hydraulically released. Brake pump with variable displacement axial pistons provide 37.8 l/min. Operator can activate/deactivate the Clutch Cut Off on the brake pedal from a switch and can adjust the sensor proximity with the same switch. The emergency brakes are composed of a double system continually under pressure by accumulators.

	DL220-7	DL250-7
Braking distance	6.1 m at 32 km/h	6.3 m at 32 km/h

CAB

Safety compliance with Roll Over Protection System (ROPS) and Falling Object Protective Structure (FOPS) requirements. Spacious modular cab with excellent all-round visibility and ample storage space. Good overview of the bucket, tires and loading area thanks to wide windows. Pushbutton controlled air conditioning and heating with air recirculation function. Double cab air filter installed in the cab with extra protection for the operator in dusty or polluted environments. Viscous suspension mount for maximum comfort. Adjustable high-quality heated seat with air suspension, arm rests and height and tilt adjustable steering column. All operating information clearly displayed in front of the operator. Control functions are centralized on a console on the right.

	DL220-7	DL250-7
Safety standards	ROPS ISO 3471:2008 FOPS ISO 3449	

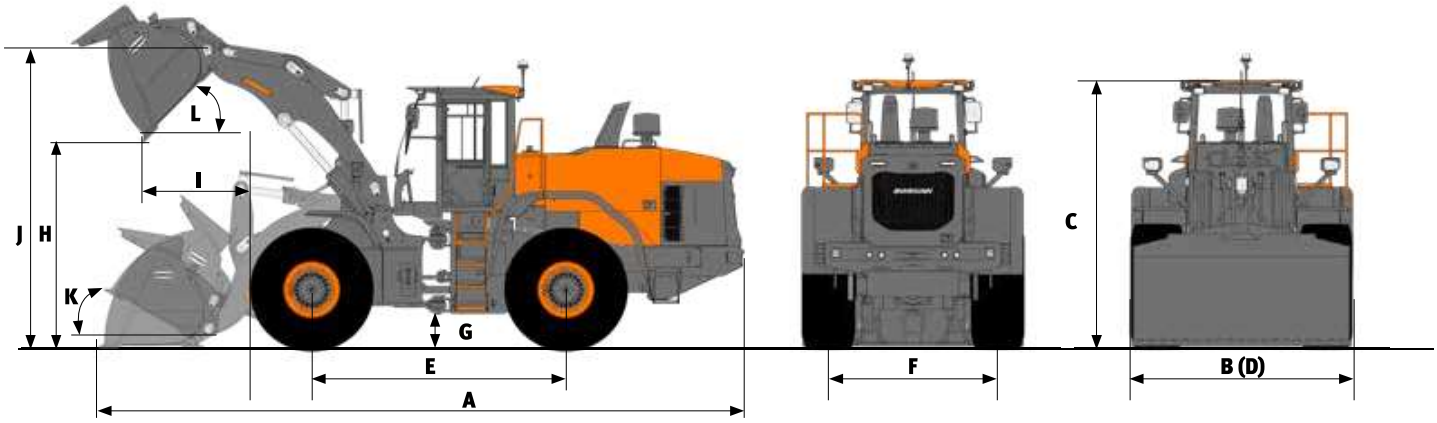
NOISE EMISSIONS

Noise emissions	DL220-7	DL250-7
Operator sound pressure level (ISO 6396)	72 dB	
Exterior sound power level (ISO 6395)	104 dB	

FLUID CAPACITIES

	DL220-7	DL250-7
Fuel tank	235 l	
DEF (AdBlue®) tank	30 l	
Cooling system (radiator)	34 l	
Engine oil	24,5 l	
Front axle	23 l	
Rear axle	23 l	
Transmission oil	32 l	
Hydraulic system	120 l	
Hydraulik tank	85 l	

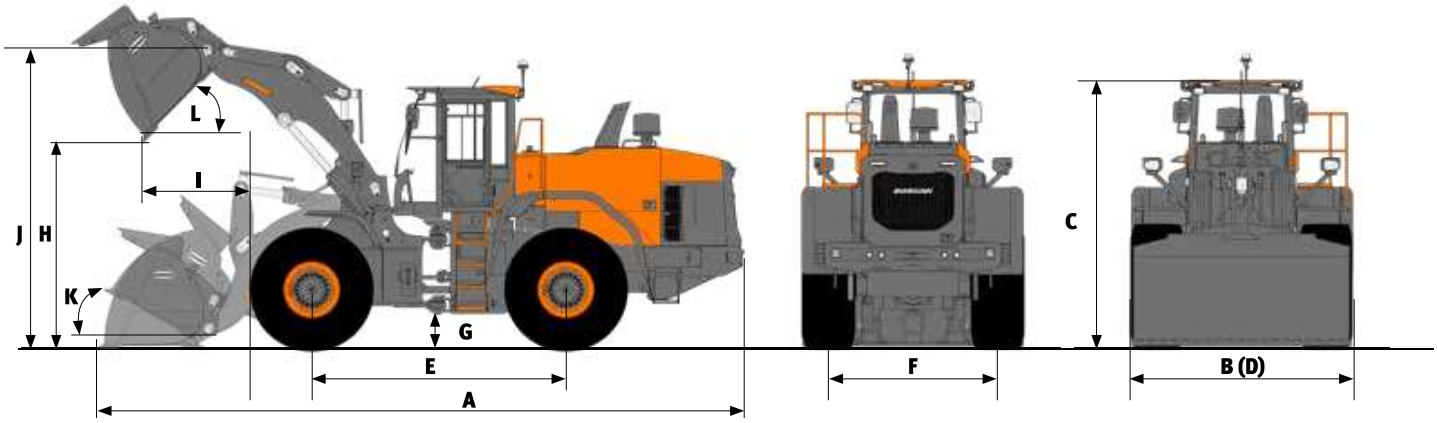
PERFORMANCE DATA & DIMENSIONS



DL220-7

	Pin-on	Unit	Eco bucket		Performance bucket				High lift
			General purpose		General purpose		Material handling		
	Ground engaging tools		2.2 m3 TEETH	2.3 m3 BOCE	2.5 m3 BOCE	2.4 m3 TEETH	2.5 m3 BOCE	2.4 m3 TEETH	
	Capacity heaped ISO/SAE	m³	2.2	2.3	2.5	2.4	2.5	2.4	=
	Capacity at 110% fill factor	m³	2.4	2.5	2.8	2.6	2.8	2.6	=
B	Bucket width	mm	2550	2550	2550	2550	2550	2550	=
	Breakout force	kN	103	97	91	96	96	102	=
	Static tipping load (straight)	kg	10709	10652	10390	10440	10472	10557	-1704
	Static tipping load (full turn - 40°)	kg	9440	9383	9125	9175	9204	9288	-1502
H	Dump height (at 45° - fully raised)	mm	2710	2784	2741	2664	2779	2702	+481
I	Dump reach (at 45°- fully raised)	mm	1068	1010	1042	1144	1009	1110	+10
	Digging depth	mm	67	61	66	42	66	42	+66
J	Height at bucket pivot point	mm	3853	3853	3853	3853	3853	3853	+449
	Max. tilt angle in carry position	°	47	47	45	45	45	45	+3
	Max. tilt angle fully raised	°	59	59	59	59	59	59	+2
K	Max. tilt angle on ground	°	43	43	41	40	41	40	+1
	Max. tilt angle at max. reach	°	59	59	59	59	59	59	-1
L	Max. dump angle fully raised	°	48	48	48	48	48	48	-2
	Max. dump angle at max. reach	°	65	65	65	65	65	65	-5
	Max. dump angle on ground	°	64	64	64	64	64	64	-1
	External radius - bucket edge	mm	6058	6016	6040	6085	6019	6063	+179
	External radius - tire side	mm	5502	5502	5502	5502	5502	5502	=
E	Wheel base	mm	3050	3050	3050	3050	3050	3050	=
D	Width at tires edge	mm	2539	2539	2539	2539	2539	2539	=
F	Tread	mm	1930	1930	1930	1930	1930	1930	=
G	Ground clearance (at 12° osc.)	mm	434	434	434	434	434	434	=
A	Overall length	mm	7557	7458	7515	7618	7465	7568	+393
C	Overall height	mm	3313	3313	3313	3313	3313	3313	=
	Operating weight	kg	13140	13198	13430	13379	13377	13291	+166

All capacities according ISO 7546, with straight blade [measure at the tip of bucket teeth or cutting edge], tires Bridgestone 20.5 VJT (L3), base EU configuration.



DL250-7

	Pin-on / Ground engaging tools	Unit	Eco bucket		Performance bucket				High lift
			General purpose		General purpose		Material handling		
			2.4 m3 TEETH	2.5 m3 BOCE	2.7 m3 BOCE	2.6 m3 TEETH	2.7 m3 BOCE	2.6 m3 TEETH	
	Capacity heaped ISO/SAE	m³	2.4	2.5	2.7	2.6	2.7	2.6	=
	Capacity at 110% fill factor	m³	2.6	2.8	3.0	2.9	3.0	2.9	=
B	Bucket width	mm	2740	2740	2550	2550	2550	2550	=
	Breakout force	kN	117	116	99	104	104	110	+1
	Static tipping load (straight)	kg	11128	11015	10800	10851	10888	10938	-1783
	Static tipping load (full turn - 40°)	kg	9809	9696	9490	9540	9574	9624	-1572
H	Dump height (at 45° - fully raised)	mm	2679	2762	2696	2620	2734	2657	+482
I	Dump reach (at 45°- fully raised)	mm	1082	1017	1082	1184	1048	1150	+11
	Digging depth	mm	77	71	66	42	66	42	+66
J	Height at bucket pivot point	mm	3853	3853	3853	3853	3853	3853	+449
	Max. tilt angle in carry position	°	47	47	45	45	45	45	+3
	Max. tilt angle fully raised	°	59	59	59	59	59	59	+2
K	Max. tilt angle on ground	°	43	43	41	40	41	40	+1
	Max. tilt angle at max. reach	°	59	59	59	59	59	59	-1
L	Max. dump angle fully raised	°	48	48	48	48	48	48	-2
	Max. dump angle at max. reach	°	65	65	65	65	65	65	-5
	Max. dump angle on ground	°	64	64	64	64	64	64	-1
	External radius - bucket edge	mm	6161	6115	6066	6111	6045	6089	+178
	External radius - tire side	mm	5502	5502	5502	5502	5502	5502	=
E	Wheel base	mm	3050	3050	3050	3050	3050	3050	=
D	Width at tires edge	mm	2539	2539	2539	2539	2539	2539	=
F	Tread	mm	1930	1930	1930	1930	1930	1930	=
G	Ground clearance (at 12° osc.)	mm	434	434	434	434	434	434	=
A	Overall length	mm	7597	7487	7575	7678	7525	7628	+392
C	Overall height	mm	3313	3313	3313	3313	3313	3313	
	Operating weight	kg	13732	13847	13989	13938	13936	13885	+165

All capacities according ISO 7546, with straight blade [measure at the tip of bucket teeth or cutting edge], tires Bridgestone 20.5 VJT (L3), base EU configuration.

STANDARD AND OPTIONAL EQUIPMENT

● Standard ○ Optional

Engine
- ● Exhaust aftertreatment (DOC + DPF + SCR)
- ● Auto idle function
- ● Auto shutdown function
- ● Air pre-cleaner (centrifugal)
- ● Engine management
- ● Fan – reversible, variable speed, with automatic function
- ● Wide fin radiator

Powertrain
- ● 4-gear powershift transmission with torque convertor
- ● Transmission mode managment
- ● I.C.C.O. (Intelligent Clutch Cut-Off)
- ● Axle differential – Limited Slip Differential (LSD)
- ○ 5-gear powershift transmission with torque convertor with lock-up
- ○ Axle differential – Hydraulic Differential Lock (HDL)

Hydraulic
- ● Load sensing hydraulic system, variable displacement pump
- ● EMCV (Electric main control valve)
- ● 3rd spool valve
- ○ MCV (Hydraulic pilot control)
- ○ 4th spool valve

Lift arm
- ● Standard lift arm, Z-bar kinematic
- ● Hydraulic lift arm suspension – Load Isolation System (LIS)
- ● Smooth end position bucket & arm (only with EMCV)
- ● Position memories
- ● Automatic bucket position "return to dig"
- ○ High lift arm, Z-bar kinematic

Work tools
- ○ DOOSAN quick coupler
- ○ DOOSAN bucket
- ○ DOOSAN performance bucket

Cab & operator comfort
- ● ROPS (ISO 3471:2008)/FOPS (ISO 3449) pressurized cab
- ● Grammer seat with vertical and horizontal low-frequency suspension, pneumatic lumbar support, heating, 3-point safety belt
- ● Joystick lever with FNR and thumbwheel roller integrated to the seat's right armrest
- ● DOOSAN Smart Key
- ● Door remote opening
- ● DOOSAN Smart Touch – 8" touch screen, all-in-one
- ● DOOSAN Smart Guidance System
- ● Rear-view mirrors – heated
- ● DoosanConnect (telematic system)
- ● 12V socket
- ● USB socket
- ○ Fingertip control
- ○ Rear-view mirrors – heated, electric adjustment

Safety
- ● Safety belt alarm
- ● Rear-view camera
- ● Strobe reversing light
- ● LED working lights on cab (2× front + 2× rear)
- ○ LED working lights on cab (4× front + 4× rear)
- ○ LED working lights on cab (6× front + 6× rear)

Other
- ● 20.5R25 (L3)
- ○ 20.5R25 (L4)
- ○ 20.5R25 (L5)
- ○ Automatic lubrication system
- ○ Additional counterweight

DOOSAN CONNECT

OPERATION TREND
Total operation hours and operation hours by mode

FUEL EFFICIENCY*
Fuel level and fuel consumption

LOCATION
GPS and geo-fence

REPORTS
Operation report & utilization

WARNING & ALERT
Detect machine warnings, antenna disconnection, and geo/time fence

FILTER & OIL MANAGEMENT
Preventive maintenance by item replacement cycle

TELEMATICS TERMINAL
Terminal device is installed and connected to a machine to get machine data.

TELECOMMUNICATION
Doosan provides dual-mode (Mobile, Satellite) communication to maximize communication coverage.

DOOSANCONNECT WEB
Users can monitor machine status from DoosanCONNECT Web.

*Functions may not be applied to all models. Please contact your sales representative for more information on this feature.