Technical specifications

Engine

Designed to deliver superior performance and fuel efficiency, the Doosan Stage IV diesel engine fully meets the latest emissions regulations STAGE IV. To optimize machine performance, the engine uses high-pressure fuel injectors, air-to-air inter-cooler and electronic engine controls. Variable Geometry Turbocharged, Exhaust Gas Recirculation (EGR), Diesel Oxidation Catalyst (DOC) & Selective Catalytic Reduction (SCR) with no Diesel Particulate Filter (DPF).

	DL220-5	DL250-5
Model	Doosan DL06	
Regulation compliant	Stage IV	
No. of cylinders	6	
Nominal power - gross (SAE J1995)	160 hp (119 kW) at 2100 rpm	172 hp (128 kW) at 2100 rpm
Maximum torque - gross	735 Nm at 1400 rpm	804 Nm at 1400 rpm
Idle (low - max. revs.)	800 - 2290 [±20] rpm	800 - 2100 [±20] rpm
Displacement	5.9 litres	
Bore × stroke	100 mm × 125 mm	
Starter	24 V - 6 kW	
Batteries - alternator	2 × 12 V, 100 Ah - 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.	

Transmission

4-Gear powershift transmission with 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 hydraulics system. A safety device prevents the engine from starting if the transmission is not in neutral. Transmission testing and adjustment equipment available.

	DL220-5	DL250-5
Type	4-Gear Auto-Powershift	
Torque converter	Simple stage / mono phase / fixed wheel stator	
Speeds - Forward 1-2-3-4	7 - 13 - 24 - 40 km/h	6 - 12 - 23 - 39 km/h
Speeds - Reverse 1-2-3	7 - 14 - 26 km/h	7 - 13 - 25 km/h
Maximum traction	11.2 t	12.5 t
Maximum gradeability	58% / 30°	

Axles

Front & rear axles manufactured by ZF with outboard planetary reduction gears.
The front and the rear are equipped with Limited Slip Differential (LSD), which means the machine has the optimum traction in all conditions.
12 t traction power allows operation on slopes of 58%.

	DL220-5	DL250-5
LSD lock ratio	45% (Standard)	45% (Standard)
HDL lock ratio	100%	
Oscillation angle	+/- 12°	
Tire size - standard	20.5 R25 (L3)	

Hydraulic system

	DL220-5	DL250-5
Type	Closed Load Sensing hydraulic system	
Main pump	Dual variable displacement axial pistons pumps	
Maximum flow	155 l/min	
Maximum pressure	250 bar	265 bar
Pilot system	Automatic functions for positioning the bucket ready to dig, and a function for stopping the lift arm at the desired height, and low position adjusted manually by switch, are standard.	
Filtration	In the oil return to the tank, the fiber-glass filter has a filtering capability of 10 micron.	

Lift arm

Z-kinematics with simple lifting piston system designed for heavy-duty applications. High breakout force (DL220-5: 102kN / DL250-5: 115 kN / DL250TC-5: 102 kN) 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

	DL220-5	DL250-5	DL250-5 TC
Lift arm - up	6 s	5.9 s	5.9 s
Lift arm - down	3.5 s	3.4 s	3.4 s
Bucket - crowd	1.9 s	1.8 s	2.1 s
Bucket - dump	1.2 s	1.1 s	3.3 s

▸ Hydraulic cylinders

		DL220-5	DL250-5	DL250-5 TC
	Quantity	Bore × rod diameter × stroke (mm)		
Lift	2	115 × 75 × 790	115 × 75 × 790	115 × 75 × 785
Bucket	1 (TC:2)	130 × 80 × 515	130 × 80 × 515	105 × 65 × 881

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 38 l/min.
Operator can activate/deactivate the Clutch Cut Off - this intelligent system is initiated stepwise and the necessary brake pressure is calculated by VCU.
The emergency brakes are composed of a double system continually under pressure by accumulators.

	DL220-5	DL250-5
Braking distance	10.2 m at 35 km/h	6.5 m at 32 km/h
Number of disc brakes per wheel (front / rear)	5 / 5	
Accumulators	0.75 l - 30 bar	

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. Push-button 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.

	DL220-5	DL250-5
Safety standards	ROPS ISO 3471:2008 FOPS ISO 3449	
Door	1	
Emergency exits	2	

Noise emissions

	DL220-5	DL250-5
A weighted emission sound pressure level at the operator position (ISO 6396)	Declared: 72 dB(A) Measured: 71 dB(A)	Declared: 72 dB(A) Measured: 71 dB(A)
A weighted emission sound power level at external position (ISO 6395)	Declared: 103 dB(A) Measured: 102 dB(A)	Declared: 103 dB(A) Measured: 101 dB(A)

Fluid capacities

	DL220-5	DL250-5
Fuel tank	222 l	
Urea (AdBlue®) tank	31.5 l	
Cooling system	31 l	
Engine oil	27 l	
Transmission oil	40 l	40 l
Front axle	23 l	35 l
Rear axle	23 l	23 l
Hydraulic tank	85 l	
Hydraulic system	120 l	

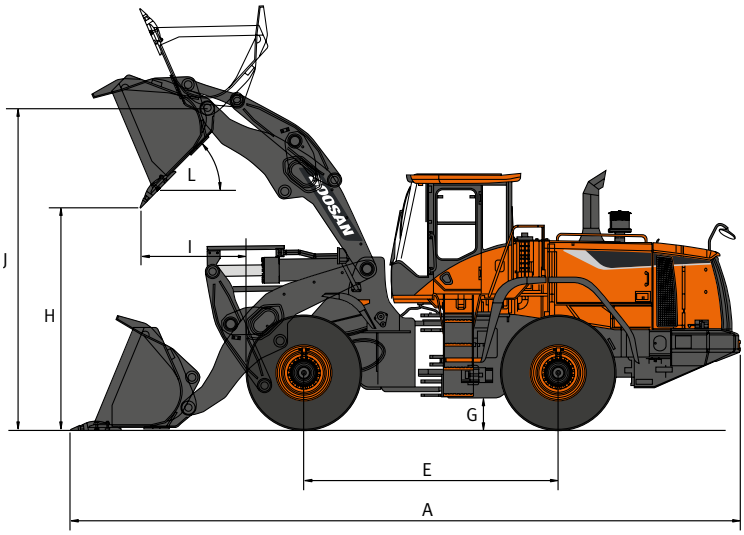
Steering system

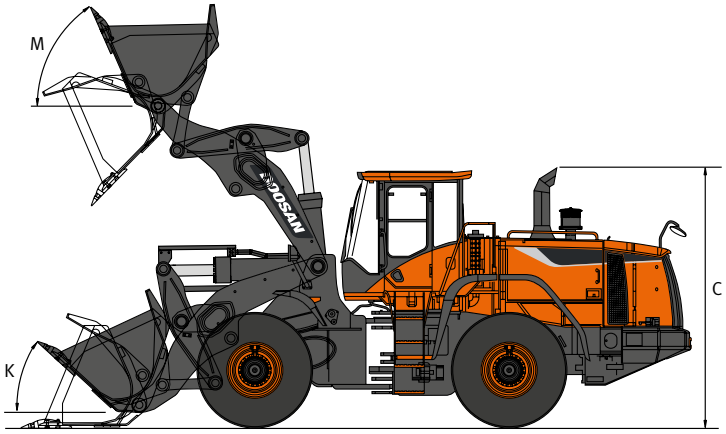
	DL220-5	DL250-5
Type	Load sensing hydraulic system	
Steering angle	40°	
Oil flow	155 l/min	
Operating pressure	195 bar	
Steering cylinders (2)	Emergency steering system with electric motor-driven hydraulic pump.	
Bore × rod diameter × stroke	70 × 45 × 425	

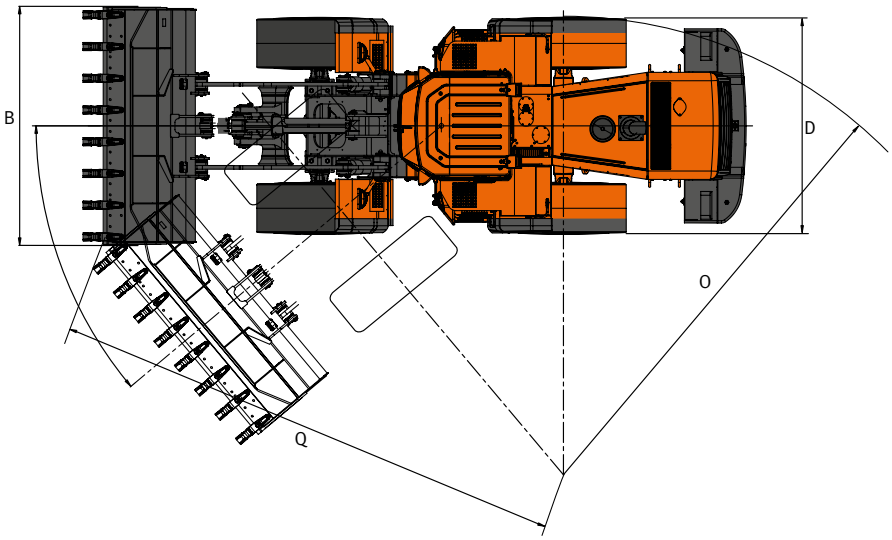
Pressure settings

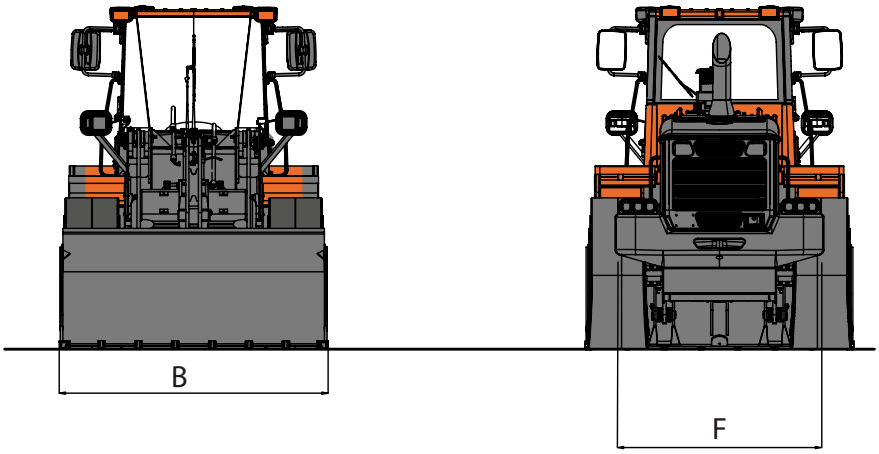
	DL220-5	DL250-5
Working (pump cut-off)	250 ± 5 bar	265 ± 5 bar
Steering relief – LS port side	175 ± 10 bar	
Steering relief – steering pump side	195 ± 10 bar	
Pilot control	33 ± 2 bar	
Brake accumulator charging	100~160 bar	
Service brake	60 ± 3 bar	
Fan motor	160 ± 10 bar	
Parking brake release	100 ± 5 bar	
Transmission selection pressure	16 ± 2 bar	

Technical specifications









Dimensions and operational data

DL220-5 – Pin-on		General purpose		High Lift	
Configuration		Teeth	Cutting edge	Teeth	Cutting edge
Capacity heaped ISO/SAE	m³	2.2	2.3	1.9	2.0
B Bucket width	mm	2550	2550	2550	2550
Breakout force	kN	102	101	113	112
Static tipping load (straight)	kg	9705	9630	8880	8805
Static tipping load (at full turn)	kg	8570	8505	7840	7775
H Dump height (at 45° – fully raised)*	mm	2755	2825	3200	3270
I Dump reach (at 45° – fully raised)*	mm	1130	1065	1100	1040
Dump height (at max. dump) – (at max. reach)*	mm	720	810	830	910
Dump reach (at max. dump) – (at max. reach)*	mm	1490	1455	1860	1820
Digging depth	mm	95	90	205	200
J Height at bucket pivot point	mm	3860	3860	4300	4300
Max. tilt angle in carry position	°	48	48	51	51
M Max. tilt angle fully raised	°	59	59	61	61
K Max. tilt angle on ground	°	42	42	43	43
Max. tilt angle at max. reach	°	59	59	58	58
Max. dump angle at max. reach	°	65	65	60	60
Max. dump angle on ground	°	64	64	63	63
L Max. dump angle fully raised	°	48	48	46	46
O External radius at tire side	mm	5475	5475	5475	5475
Q External radius at bucket edge	mm	5975	5950	6130	6100
E Wheel base	mm	3010	3010	3010	3010
D Width at tires	mm	2460	2460	2460	2460
F Tread	mm	1930	1930	1930	1930
G Ground clearance	mm	435	435	435	435
A Overall length	mm	7540	7445	7995	7905
C Overall height	mm	3280	3280	3280	3280
Operating weight	kg	12365	12420	12775	12835

DL250-5 – Pin-on		General purpose		High Lift		Parrallel kinematic (TC)	
Configuration		Teeth	Cutting edge	Teeth	Cutting edge	Teeth	Cutting edge
Capacity heaped ISO/SAE	m³	2.4	2.5	2.4	2.5	2.4	2.5
B Bucket width	mm	2740	2740	2740	2740	2740	2740
Breakout force	kN	115	107	116	107	102	102
Static tipping load (straight)	kg	11135	10885	9950	9725	9565	9285
Static tipping load (at full turn)	kg	9835	9610	8785	8585	8450	8200
H Dump height (at 45° – fully raised)*	mm	2725	2802	3169	3246	2672	2749
I Dump reach (at 45° – fully raised)*	mm	1143	1073	1104	1034	1369	1299
Dump height (at max. dump) – (at max. reach)*	mm	689	786	717	810	532	635
Dump reach (at max. dump) – (at max. reach)*	mm	1495	1456	1913	1866	892	907
Digging depth	mm	98	98	137	137	87	87
J Height at bucket pivot point	mm	3858	3858	4302	4325	3934	3934
Max. tilt angle in carry position	°	48	48	51	51	48	48
M Max. tilt angle fully raised	°	59	59	61	61	51	51
K Max. tilt angle on ground	°	42	42	43	43	40	40
Max. tilt angle at max. reach	°	59	59	58	58	41	41
Max. dump angle at max. reach	°	65	65	60	60	95	95
Max. dump angle on ground	°	64	64	63	63	69	69
L Max. dump angle fully raised	°	48	48	45	45	50	50
O External radius at tire side	mm	5475	5475	5475	5475	5475	5475
Q External radius at bucket edge	mm	6075	6045	6167	6134	6181	6147
E Wheel base	mm	3010	3010	3010	3010	3010	3010
D Width at tires	mm	2640	2640	2640	2640	2640	2640
F Tread	mm	2040	2040	2040	2040	2040	2040
G Ground clearance	mm	435	435	435	435	435	435
A Overall length	mm	7575	7470	7970	7865	7910	7805
C Overall height	mm	3280	3280	3280	3280	3280	3280
Operating weight	kg	13545	13660	14005	14120	14215	14330

(*): measured to the tip of the bucket teeth. Tire size 20.5 R25 (L3)

Attachments

A Doosan attachment for optimum performance in each activity

Robust construction, excellent penetration, covering several types of applications from light- up to severe-duty. These new Doosan loader attachments are designed and manufactured in Europe to meet local requirements and standards. A large range of attachments guarantees versatility and efficiency all the way. Each bucket is designed for a specific machine model to fit its key kinematic parameters perfectly. Critical bucket positions are optimized to improve digging and dumping. The Doosan attachment concept stands for high quality, perfect fit and excellent operational capabilities.

General purpose buckets

General purpose buckets provide good all-round performance for stockpiling and material-handling operations. With its sloped bottom design for optimum bucket filling capabilities and load retention, this is the perfect bucket for day-to-day material handling. It can be equipped with optional teeth, shrouds and cutting edge, depending on the customer's requirements.

Heavy-duty buckets

Heavy-duty bucket suitable for a range of applications that require a robust construction (such as sand handling or occasional severe loading). Parts subjected to high stress – such as the edge, sidebars and corner protections – are made of hardened steel. Optional teeth, shrouds and reversible cutting edge allow you to tailor the bucket to the customer's needs.

Light material buckets

When you need to move large amounts of light material, this bucket is the most profitable and rewarding choice. Its convex sides allow high capacity and avoid material spilling. Comes standard with a bolted reversible cutting edge.

High dump bucket

The high dump bucket is suitable for light material handling applications. This bucket improves the unload height and increases the versatility of the wheel loader. Its convex sides allow high capacity and avoid material spilling. Comes standard with a bolted reversible cutting edge.

Grapple bucket

The grapple bucket is designed to provide good all-round performance for material-handling applications. Depending on the application, the side can be convex for good capacity, or carved to improve the material grip. Different types of grapple available; comes standard with a bolted reversible cutting edge.

Pallet forks

For loading and unloading different types of pallets as well as normal forklift operations.

Quick-coupler

Particularly interesting when the machine has a wide variety of jobs to carry out, this hydraulic quick-coupler enables a variety of attachments to be changed quickly and safely. The attachment can be locked with the quick coupler hydraulically, simply operated inside the cab.

Bucket selection chart DL220-5

				Material Density [t/m³]													
Lift arm	Bucket	Type	m³	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4
Standard lift arm	General purpose	Mono teeth	2.2								2.5 m³				2.1 m³			
		Cutting edge	2.3							2.6 m³				2.2 m³				
		Adapter teeth	2.3							2.6 m³				2.2 m³				
		Cutting edge	2.4						2.8 m³				2.3 m³					
High lift arm	General purpose	Mono teeth	1.9									2.2 m³				1.8 m³		
		Cutting edge	2								2.3 m³				1.9 m³			
		Adapter teeth	2.2						2.5 m³				2.1 m³					
		Cutting edge	2.3					2.6 m³				2.2 m³						

Bucket selection chart DL250-5

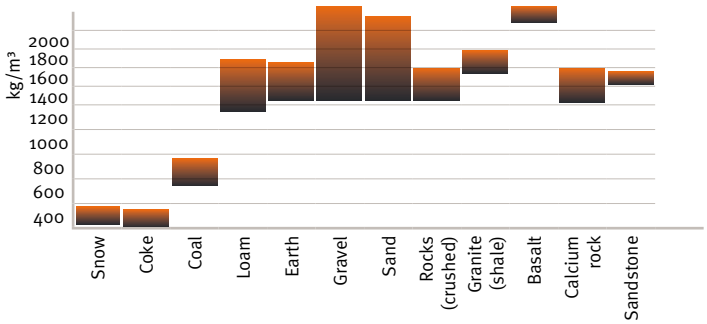
				Material Density [t/m³]													
Lift arm	Bucket	Type	m³	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4
Standard lift arm	General purpose	Mono teeth	2.4								2.8 m³					2.3 m³		
		Cutting edge	2.5							2.9 m³					2.4 m³			
		Adapter teeth	2.6						3.0 m³					2.5 m³				
		Cutting edge	2.7					3.1 m³					2.6 m³					
Long boom	General purpose	Mono teeth	2.4								2.8 m³					2.3 m³		
		Cutting edge	2.5							2.9 m³					2.4 m³			
		Adapter teeth	2.6						3.0 m³					2.5 m³				
		Cutting edge	2.7					3.1 m³					2.6 m³					
TC	General purpose	Mono teeth	2.4								2.8 m³					2.3 m³		
		Cutting edge	2.5							2.9 m³					2.4 m³			
		Adapter teeth	2.6						3.0 m³					2.5 m³				
		Cutting edge	2.7					3.1 m³					2.6 m³					

Compliant with ISO 14397-1 (2007). The filling factor depends on the type of material, the working conditions and the experience of the operator.

Bucket filling factor

115% 100% 95%

Density of operating materials



The specific weight of the material largely depends on the level of humidity, the degree of compaction, composition, etc.

Standard and optional equipment

Performances	DL220-5	DL250-5
Doosan DL06 Stage IV compliant diesel engine with variable turbo charger and air-to-air intercooler	●	●
No DPF	●	●
Engine power mode selector switch (standard / Eco & power mode)	●	●
Power-up pedal function by full stroke of acceleration	●	●
Auto shut-off engine	●	●
Auto idle function	●	●
Fuel heater	●	●
Transmission clutch cut-off via the brake pedal	●	●
Transmission mode selector switch (Manual / Auto 1 ‹–› 4 / Auto 2 ‹–› 4 with kick-down)	●	●
Automatic hydraulic load sensing system, variable displacement pump	●	●
Limited slip differentials on front and rear axles	●	●
Counterweight	●	●
Robust Z bar lifting system	●	●
Hydraulic lock differentials on front axle	○	○
High lift arm	○	○
Quick coupler	○	○
Wide range of buckets	○	○
Additional counterweight	○	○

Comfort		
Load isolation system (LIS)	●	●
Automatic lift arm kick-out	●	●
Automatic return to dig	●	●
Levelling function	●	●
3rd hydraulic function	●	●
Automatic air conditioning with electronic climate control	●	●
Grammer air-suspension seat with safety belt 2 points	●	●
Mono control lever with FNR switch	●	●
Adjustable steering column (tiltable & telescopic)	●	●
Tinted safety glass	●	●
Left sliding window	●	●
Right opening window (180°)	●	●
Floor mat	●	●
Multiple storage compartments	●	●
Cup holder	●	●
Loudspeakers and connections for radio	●	●
Shark antenna for radio	●	●
Lift arm float kick-out	●	●
Alternator 24 V / 80 A	●	●
Dashboard monitoring with LCD display (dials, gauges and lamps)	●	●
Interior cab light	●	●
Cigarette lighter and 12 & 24 Volt power sockets	●	●
Fingertip levers	○	○
Gammer air-suspension seat with safety belt 3 point	○	○
Weighing system	○	○

Safety		
Emergency steering pump driven by electric motor	●	●
Full fenders with rubber protection	●	●
ROPS cab (SAE J 394, SAE 1040, ISO 3471)	●	●
FOPS cab (SAE J 231, ISO 3449)	●	●
Double filtered air cab	●	●
Right opening window (emergency exit)	●	●
Front and rear wiper and washer	●	●
Retractable roller sun visor	●	●
Road lights: low and high beam, tail indicators, stop, reversing lights	●	●
Work lights: 2 LED at the front and 4 at the rear (6 × 70 W)	●	●
Reverse travel alarm	●	●
Rotating beacon	●	●
Horn	●	●
Heated external mirrors	●	●
Interior rear view mirrors	●	●
Anti-slip steps & platforms	●	●
Starting safety system	●	●
Engine exhaust brake	●	●
Brake circuits with accumulator	●	●
Dual service brake pedals	●	●
Electric parking brake on the transmission, spring-applied hydraulic release	●	●
Wheel chocks	●	●
Work lights: 2 xenon at the front and 4 halogen at the rear (6 × 70 W)	○	○

Other		
Bottom protection plates	●	●
Tie hooks	●	●
Articulation lock in the transport position	●	●
Towing hitch	●	●
Tires 20.5 R25 (L3)	●	●
Tires 20.5 R25 (L2)	○	○
Tires 20.5 R25 (L5)	○	○

Maintenance	DL220-5	DL250-5
Hydraulic reversing engine fan	●	●
Doosan Connect Telematic system	●	●
Self-diagnosis system & monitoring indicator by the dashboard, plus electronic plug for fast adjustment	●	●
Fast couplers for hydraulic check	●	●
External drains for engine oil and coolant changes	●	●
Automatic lubrication system	○	○
Bio oil	○	○
3-year warranty	○	○
Protection+ warranty	○	○
5-year warranty	○	○

Standard: ●
Optional: ○

Parrallel Kinematic (Tool Carrier)

Fingertip control

High lift arm

Differential hydraulic lock

Heavy-duty tire

Quick coupler

Protection+ warranty

Attachments

Some of these options may be standard in some markets. Some of these options may not be available for certain markets. Please check with your local DOOSAN dealer for more information about availability or to adapt your machine to your application needs.