

New Doosan DL580-5 Wheel Loader Aimed at Heavier Work

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Doosan has launched the new DL580-5 top-of-the-range Stage IV compliant wheel loader. With a bucket capacity of 5.7 m³, the DL580-5 has a similar look to the existing DL550-5 model, but features robust structural components and an advanced sophisticated double circuit axle cooling system to provide an ideal solution for applications such as block lifting and other heavier material-handling needs in industrial, construction, recycling, mining and quarrying applications.

To meet these requirements, the DL580-5 has an operating weight of 36030 kg and higher static tipping loads (straight/full turn 40°) of 29700 and 26200 kg, respectively. The overall size of the DL580-5 is almost the same as the DL550-5, but the new model is equipped with a series of features that make the machine extremely reliable and durable.

For example, the front structure is more rugged, with greater rigidity and strength. The DL580-5 has reinforced Z-bar kinematics for heavier lifting with few moving parts. This design also helps stabilise the loader, enables rapid bucket movements and keeps the bucket at the right angle position at all times. As with all Doosan DL-5 models, the DL580-5 is also available with a High-lift configuration, with a longer arm enabling higher dumping of materials.

The DL580-5 incorporates all of the new safety and ergonomic features recently announced for the other six large Doosan wheel loaders from the DL280-5 to the DL550-5. It also features the new restyling common to all models in the Doosan wheel loader range. The new styling scheme involves a change of colour (from orange to dark grey) for the front lift arm, front frame and front and rear axle components on the machines. The more dynamic curved lines of the new styling are designed to reinforce the robustness and power of the Doosan wheel loader range.

The DL580-5 is powered by the Scania DC13 6-cylinder engine producing 283 kW (380 HP) of power at 1800 rpm. Providing a generous maximum torque of 1765 Nm at 1300 rpm, up to a 10% reduction in fuel consumption and excellent response, the Scania DC13 engine meets Stage IV emission regulations without the need of a diesel particulate filter (DPF), through the use of cooled exhaust gas recirculation (EGR) and selective catalyst reduction (SCR) after-treatment technologies.

Additional Fuel Savings

The engine Auto Idle system when activated saves further on fuel costs by lowering the idle level from 950 to 750 rpm – when the operator does not give any input to the steering wheel, arm and bucket for more than 10 seconds (ideal for applications where there is a lot of waiting time such as truck loading which can be up to 8% of the time). In all DL-5 loaders, the Engine Auto Shut Off shuts down the machine after it has been idling for a specified amount of time (3-60 minutes, configurable by the operator via the control panel). This feature saves on fuel and reduces operating costs.

As well as the powerful Scania DC13 Stage IV engine, the DL580-5 also features automatic 5-speed powershift transmission, heavy duty cooled axles, a high comfort cab, smooth and responsive hydraulics and auxiliary hydraulic connections, together providing a solution for the heaviest jobs that need to be done. As with all other Doosan DL-5 wheel loaders, most of these features are standard on the DL580-5 unlike other machines on the market where they are options and many have been developed to optimise fuel efficiency.

ZF 5-gear Transmission

The ZF 5-gear transmission transfers the power from the engine to the wheels and contributes significantly to the overall reduction in fuel consumption. Engine speed variation is less thanks to smaller gear steps, and lower engine speed throughout the whole drive range reduces fuel consumption. Thanks to higher shift quality, noise levels are lower while driving performance and productivity have been increased.

Like all Doosan wheel loaders, the DL580-5 is equipped with a Torque-converter-lock-up system which, when activated, is switched on automatically. The lock-up provides a direct drive between the engine and transmission, enabling 100% torque delivery without any loss from 2nd gear up to the top 5th gear. This makes the lock-up more efficient, giving faster acceleration on flat ground (10%) and higher climbing ability (up to 20%), together with around up to 15% fuel savings in daily operation. This contrasts with many of the drive systems on other machines, where the lock-up is engaged only in highest gear.

The ICCO (Intelligent clutch cut-off) system allows the transmission output torque to be cut off according to the angle of the brake pedal, preventing unnecessary power use during braking, which in turn reduces brake wear and heat generation, while extending the oil change interval and promoting better fuel economy.

The outboard disc brakes enable easy servicing without dismounting the axles. The parking brake switch includes a safety unlock trigger. When the engine is turned off, this brake is automatically engaged and not released when the engine is started.

The ZF Type II axle with an automatic Hydraulic Differential Lock (HDL) for the new loader provides further protection of the drive system components, including tyre wear reduction and produces 100% tractive effort when necessary, contributing to further fuel savings. It also reduces the risk of skidding and prevents excessive tyre wear.

Available on the front and rear axles in the DL580-5, the oil cooler system is a new feature providing higher axle oil cooling capacity for demanding applications. It comprises two completely separate circuits for the front and rear axles; a Dedicated Cooling Control Unit for 'optimized flow rate' and 'De-aeration' to maintain a proper level of oil cooling, with temperature sensors for axle oil circulation control in low temperatures.

Load-sensing Hydraulic System

Like all latest generation Doosan large wheel loaders, the DL580-5 has a load sensing hydraulic system, whereby the variable axial piston pump generates the flow upon demand in the amount necessary to perform the work. This also gives better traction for penetrating into the stockpile, as less force is necessary to operate the bucket in many situations. Load sensing hydraulics also minimise loss in the hydraulic circuit during a carrying operation in which the loader is usually running, which is an essential technology for wheel loaders. In response to customer feedback, the load-sensing system has been designed so that the bucket has higher priority when the boom and the bucket operate at the same time and there is limited force available.

Joystick control on the new wheel loader is designed to easily combine several movements at the same time. As an option, 3-lever fingertip control can be provided for smooth and near-effortless control. Both of these controls use electrohydraulic piloting.

The DL580-5 has a boom Kick-out function as standard, which is useful when working in confined spaces or when repeating similar operations in specific work ranges (for example, when a certain dump height must be reached every day). The same system is used to set the bucket automatically to the Return-to-Dig position.

The LIS (Load Isolation System), often called 'Ride Control', provides the operator with a smoother ride over rough terrain and enables a more comfortable ride at higher speeds. The benefits are reduced cycle times, higher productivity and better fuel efficiency while performing load and carry applications. LIS also contributes to longer frame and machine life.

The loader also offers a 'third function' to power a hydraulic system on a work tool, allowing greater machine versatility in a number of applications. The third function valve's capacity has been increased significantly to at least 250 l/min discharge.

High Comfort Cab

The cab demonstrates how Doosan has placed operator comfort at the very centre of its design priorities. Offering generous headroom and an ultra-comfortable, fully adjustable, heated Grammer air suspension seat, the DL580-5 cab features a novel steering column design giving more clearance for the operator's legs and knees. The steering wheel can also be tilted and moved telescopically to match the operator's preferred position. Electric joystick steering is incorporated to ensure operator driving comfort and improve productivity.

Many of the new features on the cab in the large DL-5 wheel loaders such as DL580-5, are aimed at increased safety and visibility in and around the operator's cab. For example, a new handrail has been installed around the cab roof with three holding points, allowing operators to move very safely all around the cab to clean windows and to perform other tasks.

A new large step and access platform has also been added on the front of the cab and a change in the wiring routing has allowed the horn to be repositioned below the road light. Together these changes ensure maximum safety and confidence, with very safe and faster movements around the cab (without any obstacles) during daily maintenance.

New Joystick Control

Inside the cab, there is a new ergonomic joystick control with a progressive thumb wheel added for the auxiliary hydraulic line (3rd valve). The progressive thumb wheel ensures that no additional lever is needed, providing the easiest combination of movements to manage the 3rd valve operations. FNR control has been relocated on the back of the joystick, via a three-position rocker switch, which is much more convenient and intuitive to use.

The increased space, better visibility and plentiful storage space in the cab allows operators to work for hours without fatigue or discomfort. Meeting ROPS/FOPS regulations, the cab also offers a wide emergency exit (located on the right hand side) to provide fast and easy evacuation in critical situations.

The 5.7 inch full colour LCD panel is suitable for day and night work. The user-friendly monitor has two customisable screen displays to suit the operator's preference, giving a full readout of machine settings and maintenance data.

The rear-view camera greatly enhances visibility and safety. The screen in the cab shows the operator what the camera sees and includes several lines to help judge distances; it also has other functions, including light intensity control, viewing angle control, language setting and power on/off setting.

On the control panel, all the switches are clearly arranged and within easy reach of the operator. Rocker type switches have been replaced by a multi-selection touch pad. Accurate and smooth joystick controls provide further comfort and operators can save time and reduce the number of operations with the 'Boom Kick-out' and 'Return-to-Dig' systems. These functions are operated electronically from inside the cab.

The cab air is filtered twice to eliminate all particles larger than 2 microns in size and the fully automatic climate control system adjusts the air temperature and fan speed to maintain the ideal climate setting for the operator.

To make life more comfortable and easier for operators, Doosan has added a rolling sunshield on the rear window to avoid any disturbance from sunlight during operations. The cup holder has also been relocated to the front right of the cab and a new double hanger hook allows both a helmet and a jacket to be hung inside the cab.

The operator has the benefit of additional convex mirrors installed on the lateral mirror frames. The wider angle and additional visibility provided by the convex mirrors along the side of the machine ensure safer manoeuvring of the wheel loader on site and in the quarry.

A new external, steel tool box installed below the ladder on the left hand side of the wheel loader is a convenient location for gathering and storing tools. The tools are now accessible from ground level, with no need to climb up the side of the cab to reach them, so the cab stays cleaner and there is no obstruction of the cab entrance for safer access.

DoosanConnect Fleet Management System as Standard

The DL580-5 is factory-installed with the latest DoosanConnect state-of-art wireless fleet monitoring system, a feature now incorporated as standard in all new DL-5 generation machines. The DoosanConnect system is a tool designed specifically for the Doosan range, providing comprehensive information about machine performance in a dual mode (satellite, Mobile network).

The DoosanConnect system offers a web-based fleet and asset management solution which is very useful for managing the performance and security of machines and promoting preventative maintenance. The system can support multiple Doosan machines in different locations, helping customers to monitor machine utilisation rates to assess that the right mix of machines is being used; it can also guide drivers to help them to operate equipment with higher efficiency and to locate replacement machines in the event of maintenance work or breakdowns, all under the umbrella of vigorous anti-theft and theft recovery protection systems.

Easy Maintenance and Servicing

The exhaust and after-treatment system for the engine is installed on the left-hand side of the machine, whilst the components for maintenance are grouped on the right-hand side. All the daily checking of gauges can take place from ground level to ensure it is a quick and safe process. Doosan has also installed an automatic greasing system as standard to reduce working time and increase operating comfort. To facilitate access and mobility on the machine, multiple hand-rails ensure that the operator always has a firm support to hold on to.

The wheel loader features a new lockable steel cap on the transmission oil filler, the shape of which has been changed to allow it to be locked with a padlock. When the transmission oil filler tube is locked, the transmission oil cannot be polluted with other types of oil or liquid, dust and other substances. It is also an additional guarantee of security for the customer.

The efficient all aluminium cooling system is separated from the engine compartment to prevent warm and dusty air from entering and to allow better control of the air intake. An automatically variable-speed reversing fan is a standard feature providing the best possible cooling while optimizing fuel consumption. The radiator fan is hydraulically driven and controlled by an ECU. Changing the fan direction for cleaning the radiator can be done manually from the cab, without having to switch off the engine. Fan reverse intervals (30 minutes to 2 hours) can be set via the menu.

Source: DIEU PR; DOOSAN INFRACORE EUROPE B.V.