

DOOSAN

New DX180LC-3 Product Presentation



March 2012



New Series “3”

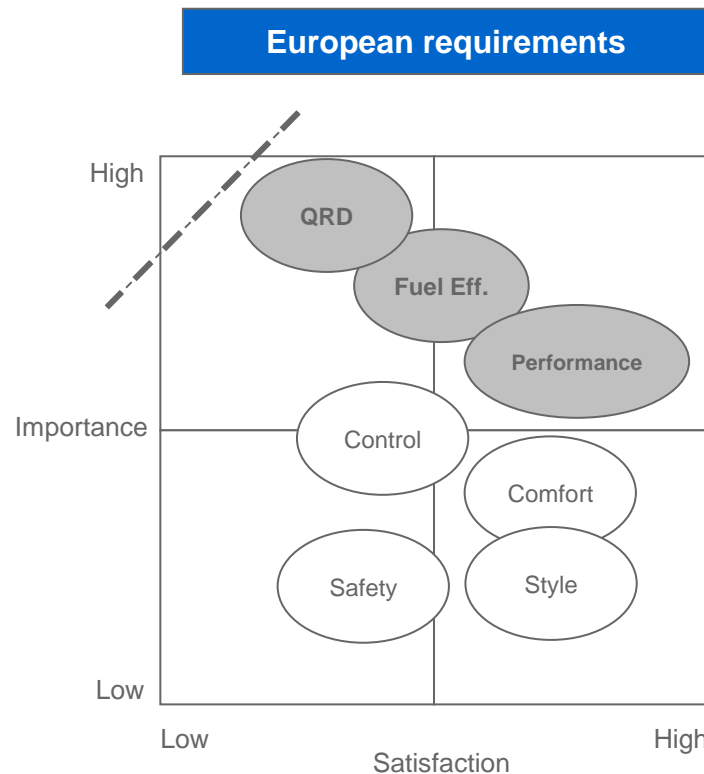
1. **Concept & Overview**
2. Stage IIIB / Tier 4i Engine
3. New Features & Benefits
 - a. Controllability, Comfort & Safety
 - b. Quality, Reliability, Durability
 - c. Serviceability
 - d. Productivity
 - e. Fuel Efficiency
4. Standard Equipment & Options
5. The 5 Key Selling Arguments



Development concepts

DX models were introduced in 2006 - 2007.

Series “3” => New generation based on European **Voice of Customer** requirements



Doosan development

Productivity

Fuel Efficiency

Controllability
Comfort

Quality
Reliability
Durability

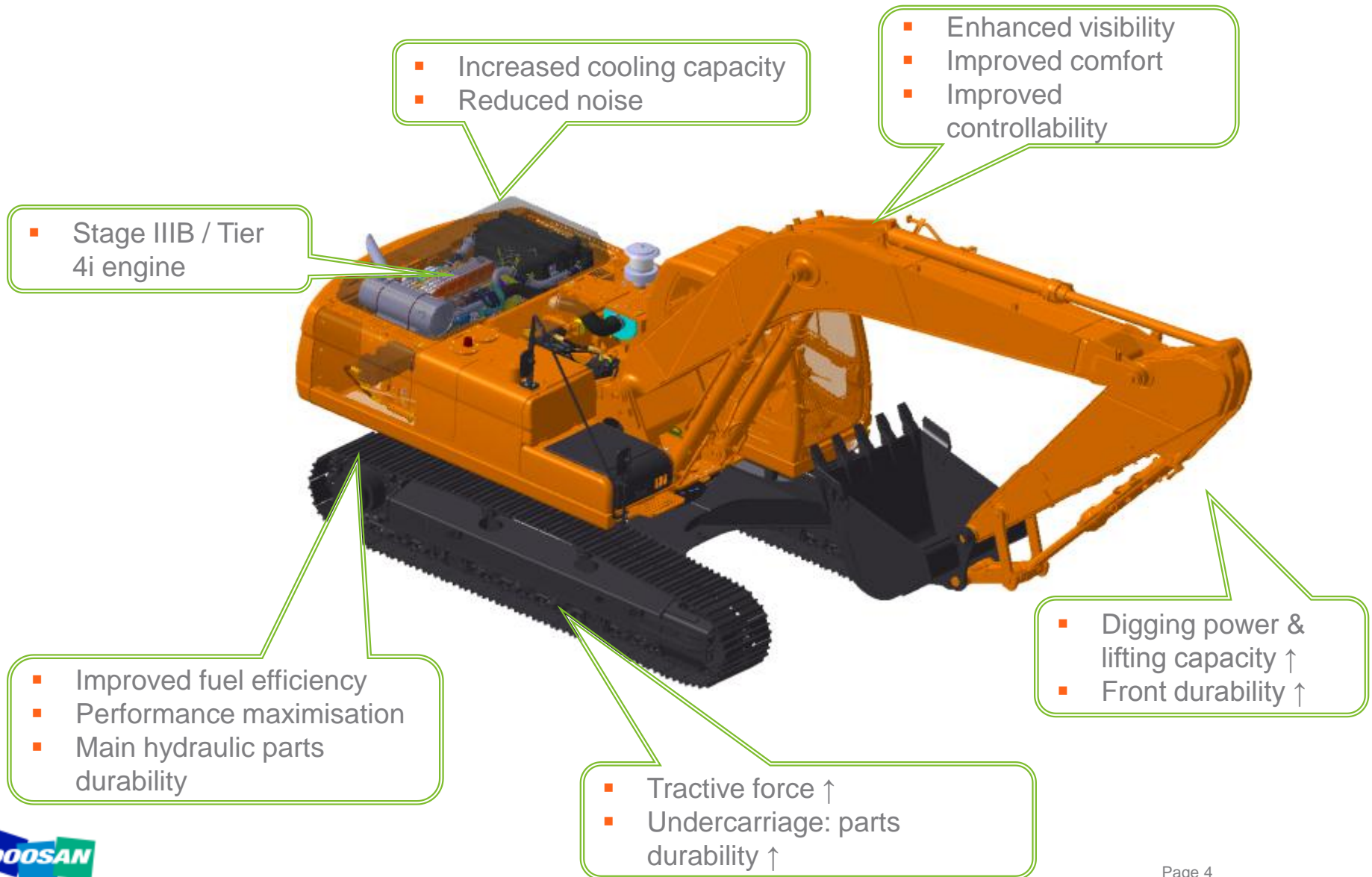
Development concepts

Series “3” => New generation based on European **Voice of Customer** requirements

3 Concepts:

- 1) Go beyond meeting the new emission requirements & establish a new benchmark in the industry.
- 2) Offer profitable machines by increasing productivity & controllability while optimising fuel efficiency.
- 3) Focus on TCO*, maximising uptime by improving quality, reliability & durability.

Heavy HEX overview - Stage IIIB compliant



Applications

- **Small to medium-sized projects for:**
 - drainage
 - digging
 - trenching
 - landscaping
 - road maintenance
 - site preparation
- **Customers:**
 - small-scale contractors
 - general construction companies

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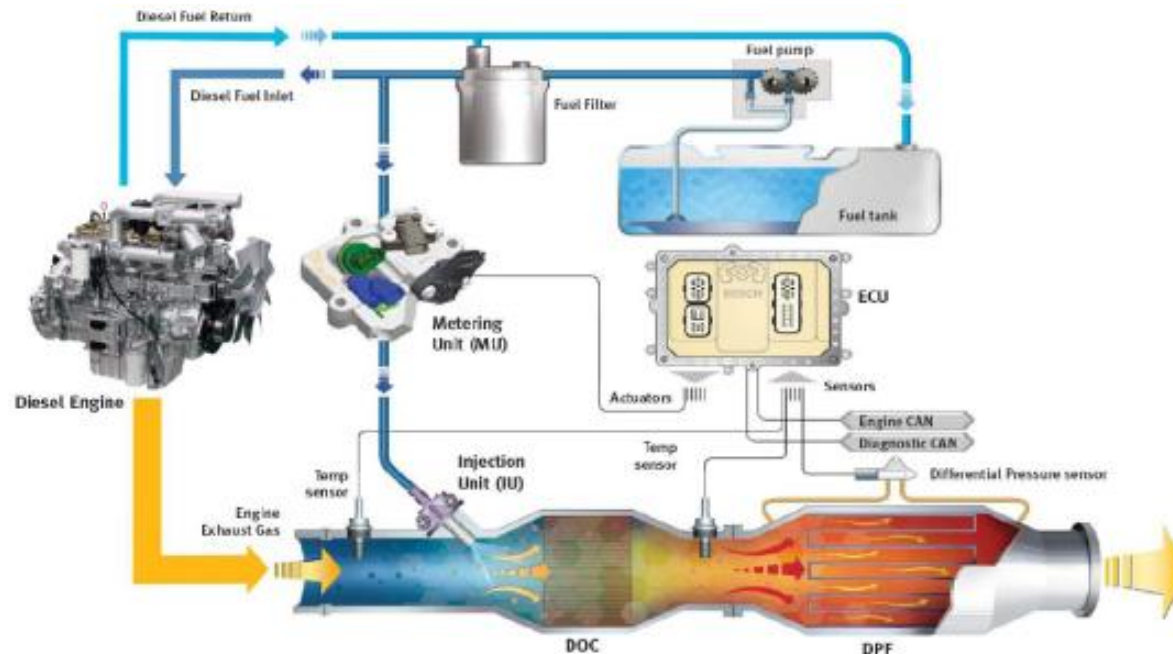
Stage IIIB / Tier 4i Engines: EGR + DPF

DX180LC-3 => **Doosan DL06K**

EGR (Exhaust Gas Recirculation) + **DPF** (Diesel Particulate Filter) technologies:

- no change in the engine
- no need for special service and maintenance procedures, special operating instructions or special additives

DPF regeneration is automatic, does not interfere with operation and does not lead to loss of engine performance.



Stage IIIB / Tier 4i Engines: Regeneration Concept

Active regeneration:

- No action by the operator required until 80% soot density is reached. Automatic activation by ECU.
- From 80% to 120%, the operator should activate manual regeneration (forced regeneration). From 120%, service is required and the filter needs to be cleaned.
- The operator can also "inhibit" active regeneration if operating conditions are not favourable to hot engine exhaust temperatures.
- The regeneration process can last for 30 minutes or longer.

Stage IIIB / Tier 4i Engines: Symbols & switches

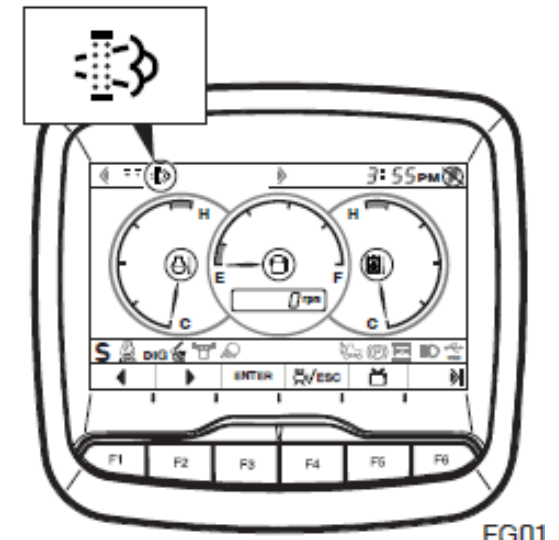
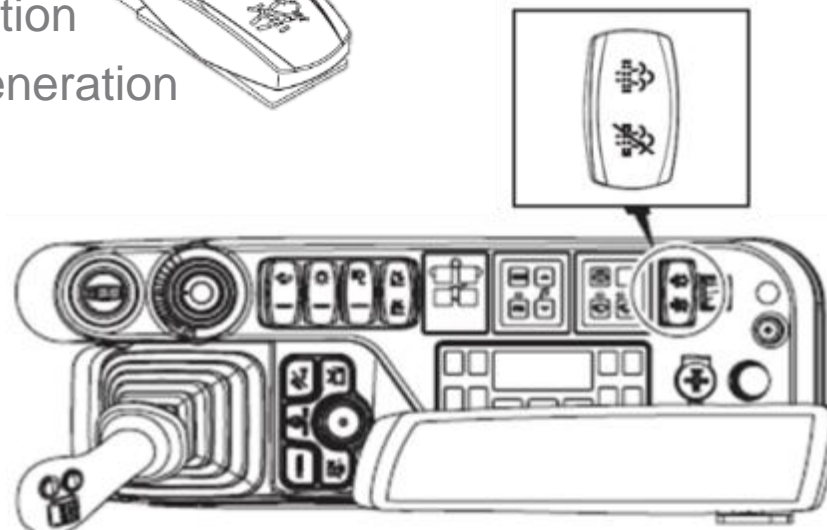
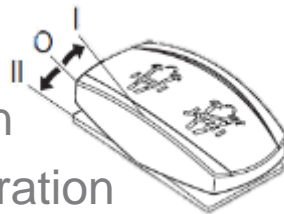
Control panel warning symbols:

- High temperature warning. Active or forced regeneration in process
- Forced regeneration required or in process
- Regeneration inhibited



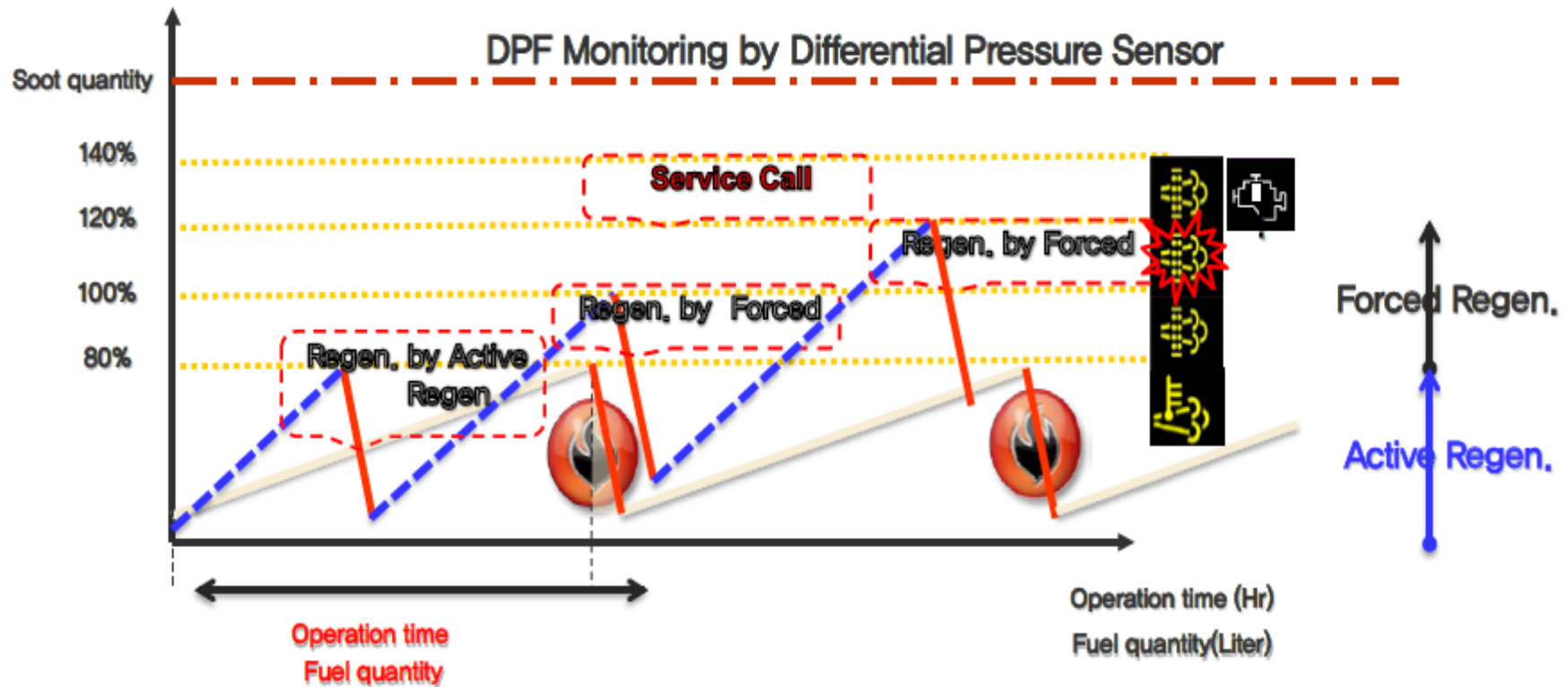
Regeneration switch

- 0 Automatic
- I No regeneration
- II Forced regeneration



FG01

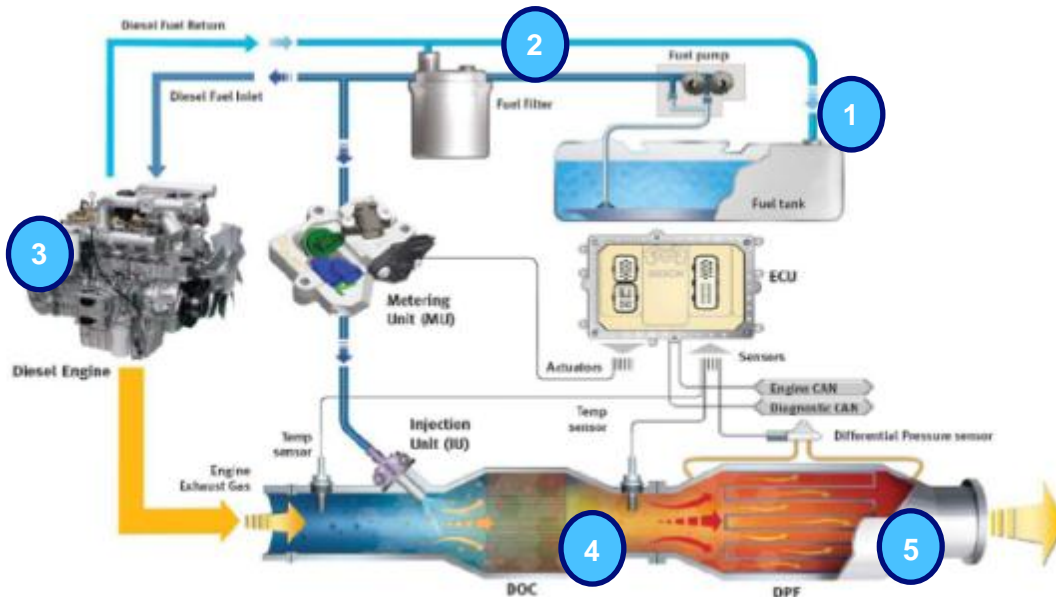
Stage IIIB / Tier 4i Engines: Summary regeneration process



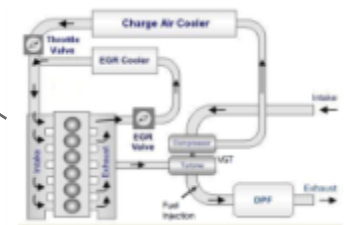
- If soot quantity is below 80% → Active Regen.
- If soot quantity is below 100% → Forced Regen.
- If soot quantity is below 120% → Forced Regen.
- If soot quantity is over 120% → Service Call

Stage IIIB / Tier 4i Engines: Regeneration process

Fuel & exhaust gas cycle

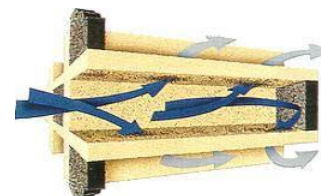


- 3) Fuel is burnt in the engine and a share of exhaust gas is recycled in the combustion chamber to maximise output & to burn as many particles as possible (EGR process) The recirculation process uses an EGR cooler for this share of exhaust gas to lower the oxide concentration & maximise combustion temperature, before it goes back to the engine. Recirculation is controlled by the opening and closing of the EGR valve

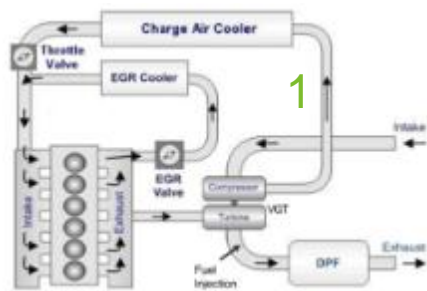


- 4) Exhaust gas is sent to DPF muffler made of 2 elements: DOC (Diesel Oxidation Catalyst) & DPF (Diesel Particulate Filter). DOC is a chemical reaction catalyst oxidizing NO to NO² in order to reduce soot density for the DPF process as much as possible. It also filters HC, CO, SOF (Soluble Organic Fraction) to convert them into harmless gas, by burning these gases up to 600°C ECU is controlling heating temperature by injecting fuel through a metering unit

- 5) Remaining particles are captured by DPF filter.



Air cycle



- 1) Low-sulphur rate fuel enters while air-intake is filtered (by pre-cleaner & cleaner), compressed with a variable geometry TC
- 2) Fuel is filtered through pre-filters which remove water & particles.

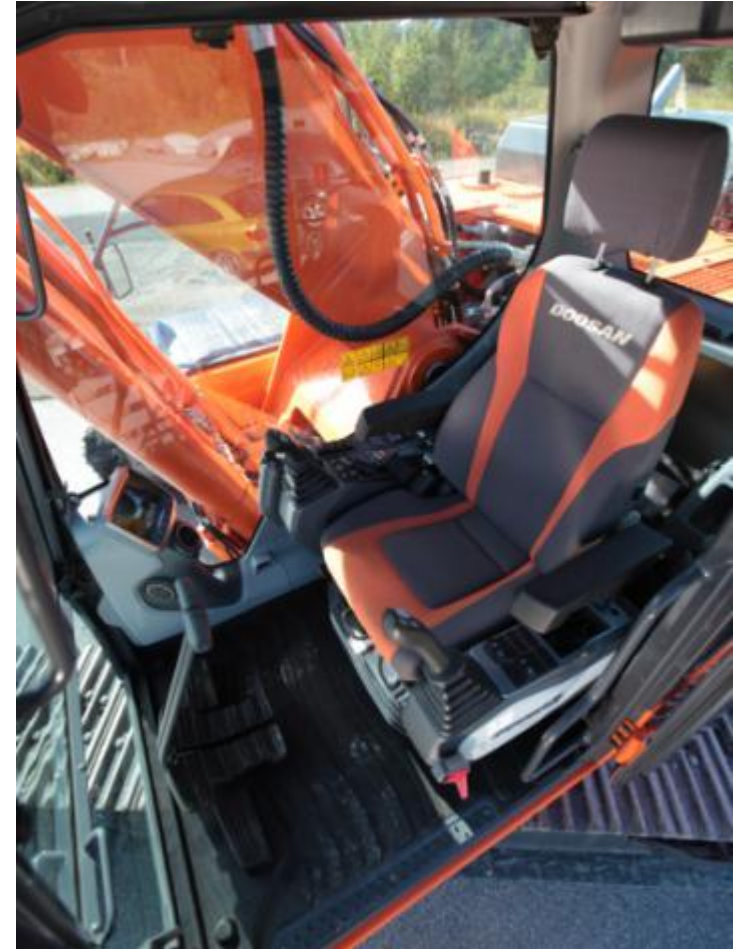
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a. Comfort & controllability

- More spacious cab (+ 6%)
- Cab noise level lowered to 70 dB(A)



a. Comfort & controllability

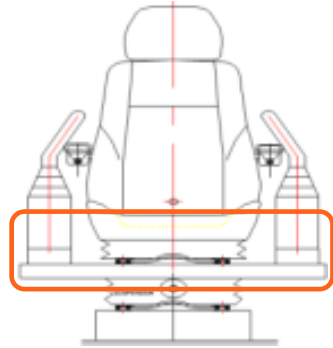


- Ergonomic grouping of controls on the right console for easy reach

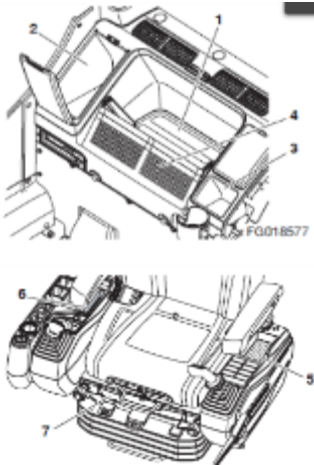


- Proportional thumb wheel switch

a. Comfort & controllability



- New heated high-quality seat with console installed on the suspension to reduce vibration & improve controllability



- More storage compartments



- New door opening and safety lever

a. Comfort & controllability



1. New locker/stopper on side windows

2. Box for sunglasses

3. More side visibility

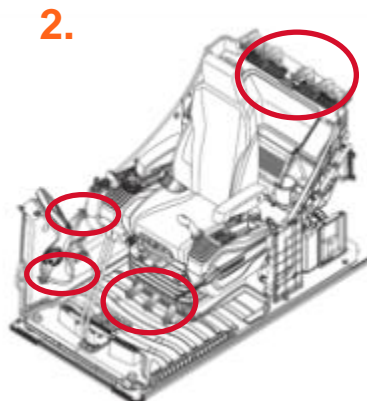
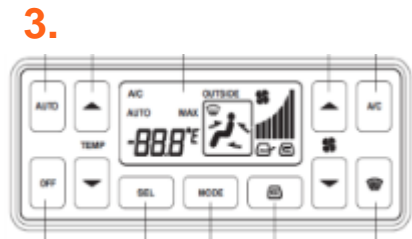
4. Hour meter easy to read from the ground

5. Wiper integrated in the side frame of the cab

6. More visibility

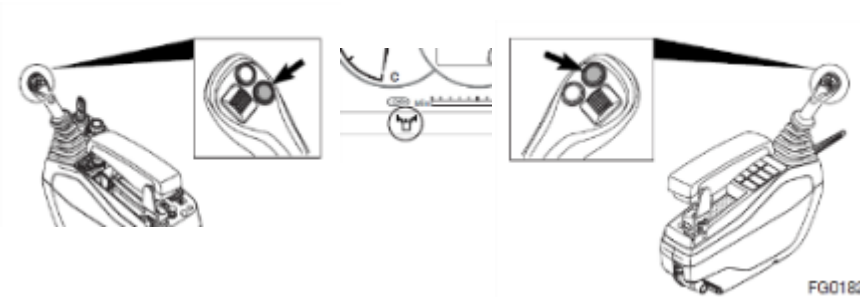
7. Auto shut-off fuel pump

a. Comfort & controllability



1. Pressurized cab (ISO 10263-3)
2. 6 adjustable air outlets
3. Automatic climate control
4. USB port for charging cell phone etc.

a. Comfort & controllability



- Automatic deceleration & power boost function

- Joystick stroke angle reduced to 19° to reduce fatigue



- New 7" colour high-quality control console with day/night modes

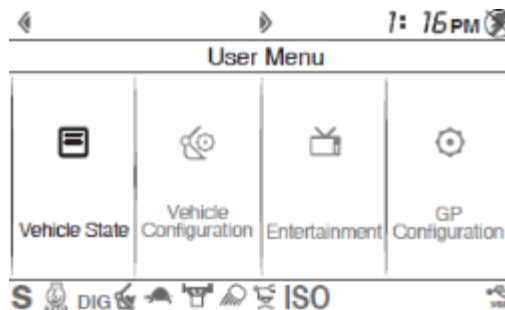
a. Comfort & controllability



- Easy navigation between functions directly on the instrument panel or via a joggle switch next to the joystick

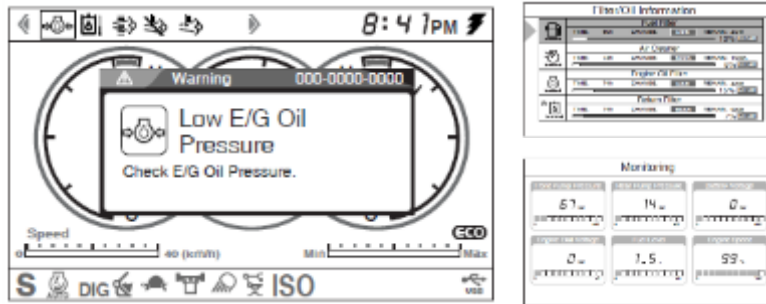


- Easy reading of warning indicators & functions selected



- Multiple menus accessible

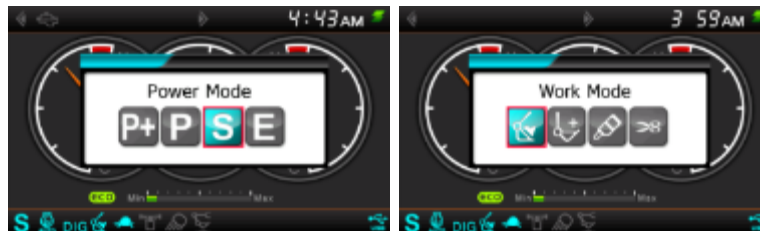
a. Comfort & controllability



- Maintenance & operation monitoring with 13 different warnings



- 10 preset configurations for attachments with adjustable rpm, flow & pressure

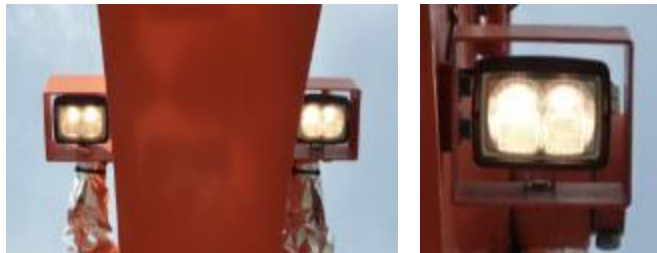


- New “POWER”+ & work modes

a. Comfort & controllability



- ECO gauge with engine load indicator

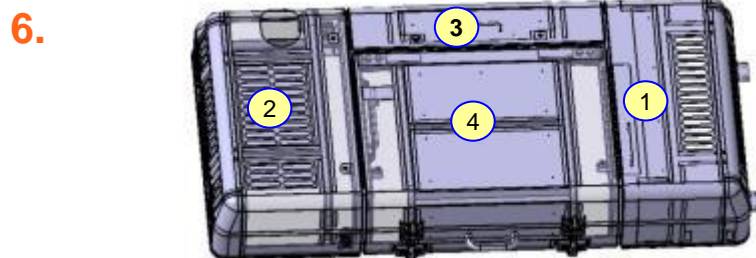
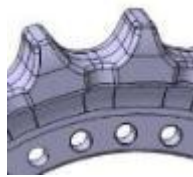
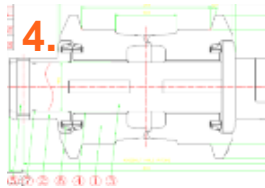
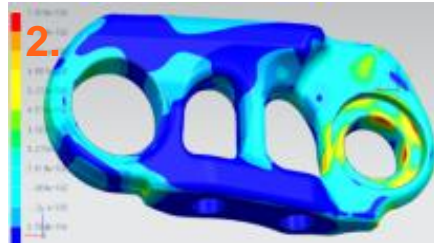
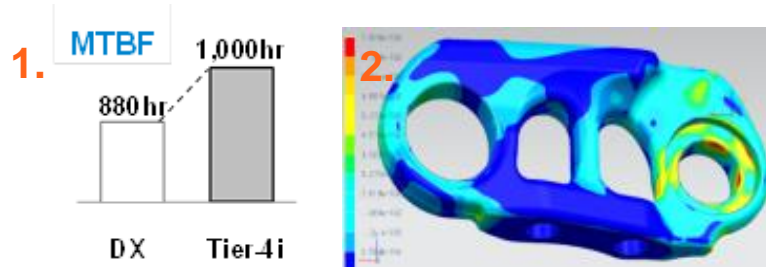


- 100% more light on front equipment



- New cab suspension system

b. QRD (Quality, Reliability, Durability)



1. M.T.B.F. (main time before failure) reaching 1000 hrs

2. Track link reinforcement

3. Idler seals & body of cylinder rod reinforced

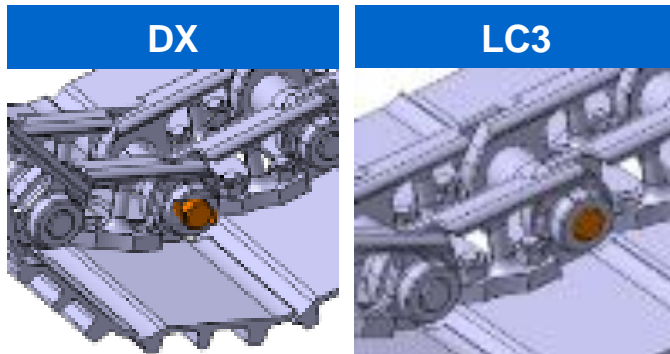
4. Upper & lower rollers reinforced

5. New shape of sprocket teeth

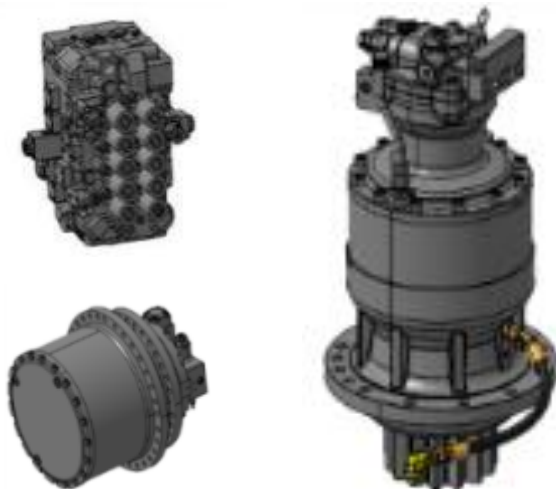
6. 4-Element bonnet

b. QRD (Quality, Reliability, Durability)

- Indented master pin



- Main hydraulic parts durability

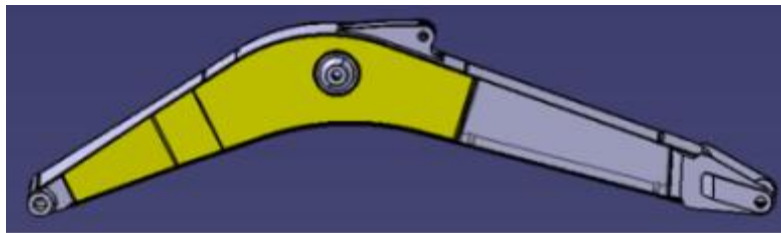


	DX180LC-3
Main pump	Same: Rexroth
Swing motor	Upgraded: Doosan Mottrol
Main control valve	Same: Rexroth
Travel device	Upgraded: Doosan Mottrol

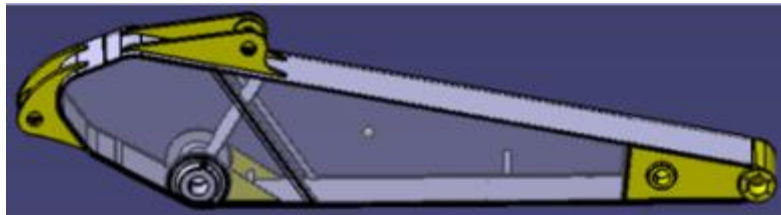
b. QRD (Quality, Reliability, Durability)



- Reduced gap between pipe flange and rubber cushion



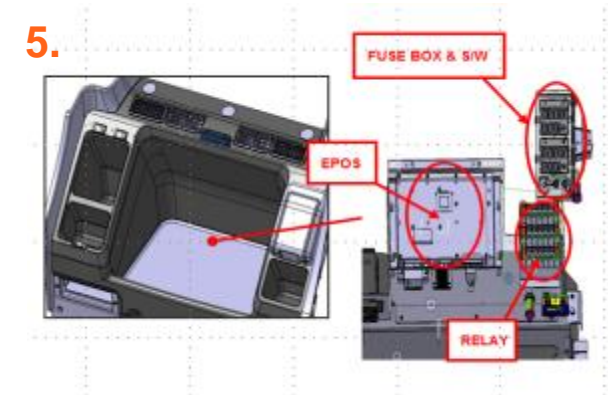
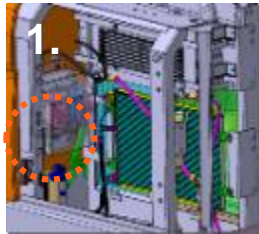
- Boom: thickness of side plates increased by 20%



- Arm: reinforcement of arm link boss and side plates

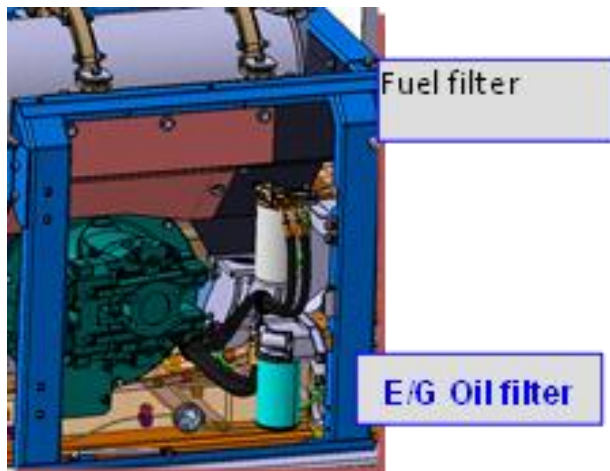


c. Serviceability



1. ECU fitted on radiator support
2. Drain valves on pre-filter & fuel tank lines
3. Battery cut-off switch
4. New anti-slip material
5. Grouped electronic devices

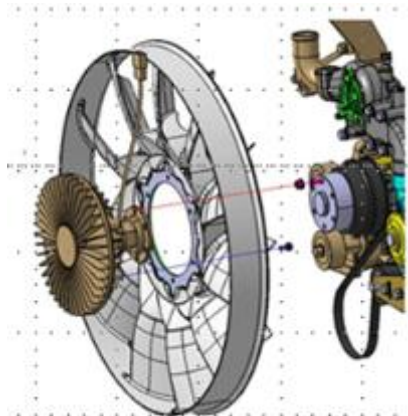
c. Serviceability



- Filters grouped in the pump compartment



- New high-strength sintered bushings on boom & cylinders and noise-free EM bushings on bucket linkage



- Fan clutch with electrically controlled fan speed

d. Productivity

- Tonnage increased to 18040 kg (+ 230 kg)
- Overall length reduced to 8630 cm (- 7 cm)
- Working diagram identical
- Lifting capacity & forces identical
- Noise level 70 dB(A) (- 4)
- Power (SAE J1349) 125 HP (+3)
- Max engine torque 54 kgf.m @ 1400 rpm (+ 8)
- Travel speed 5.1/3.1 km/h (5.0/3.2)
- Drawbar pull 17.4 t (15.3)
- Swing Torque 4,864 kg.m (4,699)

e. Fuel efficiency

More than 5% reduction of fuel consumption on average, depending on operating mode

Consumption at rated speed at 1950 rpm:

- 160 g/ps.hr (vs. 168 g/ps.hr)

Overall reduction of fuel consumption thanks to :

- ✓ Improved cooling efficiency
- ✓ An ECO gauge that provides fuel consumption guidance for the operator
- ✓ Improved main control valve (more efficient, reduced loss of energy)
- ✓ Additional sensors for improved electronic management of pump/engine/main control valve

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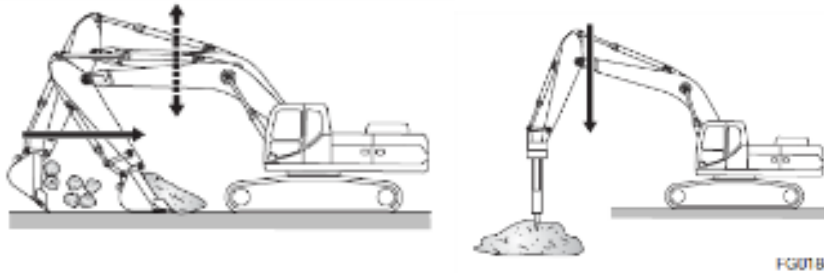


Standard equipment & options

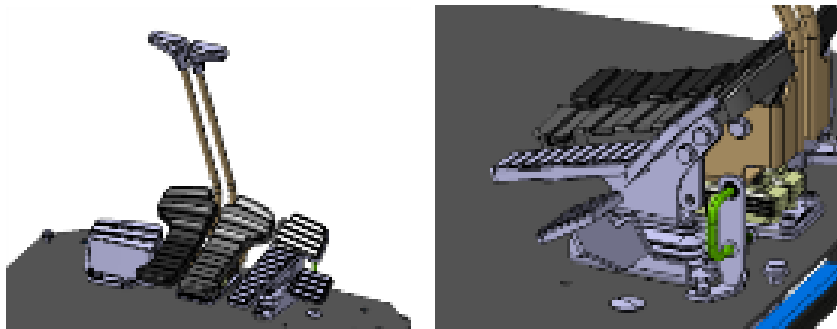
Standard configuration:

- Standard tracks without dozer blade
- 5.2 m boom
- 2.6 m arm
- 600 mm triple grouser shoes
- No bucket
- Breaker piping
- Air suspension seat
- Cab package
- Work light package
- Lock valves
- Overload warning device
- Fuel filling pump
- Rear camera
- Side mirror
- ROPS cab

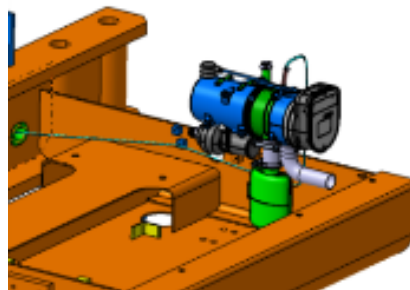
New options



- Floating boom with 2 modes
 - Flotation: leaves the boom free to move upwards & downwards following the bucket & arm movements
 - Breaker: boom is free to move downwards to maintain the optimum hammering effect



- Straight travel pedal

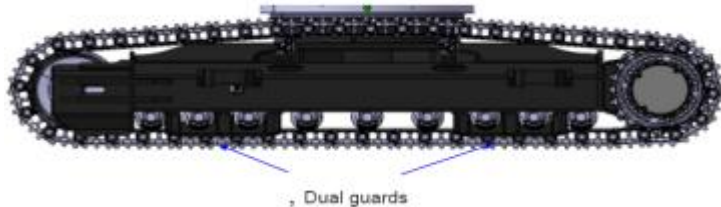


- Engine coolant heater



All current options will be available :
narrow track, arti boom, short & long arms, grousers, hydraulic lines, FOGS, etc.

New options



- Full track or dual track guards



- Radio
 - AM/FM/USB
 - AM/FM/USB/CD



- Two pumps
 - The attachment can use both the first and second pump for increased flow. The second pump always works at full flow.

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8. Standard Equipment & Options
9. **The Key Selling Arguments**



The key selling arguments

- ✓ **The standard features** are among the best in the market: improved visibility, comfort, controllability and ease of operation.
- ✓ **The number of options** has been significantly increased, offering new opportunities.
- ✓ **Quality, reliability & durability** have been significantly improved, in addition to reduced fuel consumption along with a considerable increase in productivity.
- ✓ These improvements clearly position Doosan as a manufacturer offering customers construction equipment with the **lowest total cost of ownership**.
- ✓ **EGR/DPF** is the optimum solution in the heavy excavator segment during this interim period, ensuring an optimised resale value.
- ✓ The DX180LC-3 will continue to be leading in its class with its renowned & proven 6-cylinder Doosan engine
- ✓ The DX180LC3 offers a **considerable increase in performance** compared to the previous generation:
 - MTBF at 1000 hours (DX180LC: 880)
 - Drawbar pull: +13% more force
 - Swing torque: +4%
 - Power: +2,5% with +14% engine torque
 - More than 5% reduction of fuel consumption
 - Noise levels: reduced by as much as 4 dB(A)

Good sales !



THANK YOU

DOOSAN