

SERVICE MANUAL

Crawler Dozer D180

Print No. 84151290



D180

(Tier 3)

CRAWLER DOZER

Workshop Manual

Print No. 84151290 English



THIS ALERT SYMBOL SIGNALS IMPORTANT MESSAGES INVOLVING YOUR SAFETY.

Read and heed carefully the safety instructions listed and follow the precautions recommended to avoid potential risks and to safeguard your health and your safety.

You will find this symbol in the text of this Manual referred to the following key words:

WARNING - Cautions directed to avoid improper repair interventions involving potential consequences for the safety of the personnel performing the repairs.

DANGER - These warnings qualify specifically potential dangers for the safety of the operator or other persons directly or indirectly involved.

IMPORTANT NOTICE

All maintenance and repair interventions explained in this Manual **must be performed exclusively by the Service Organisation of the Manufacturer**, observing strictly the instructions explained using, whenever necessary, the recommended specific tools.

Whoever performs the operations reported without following exactly the precautions is responsible on his own, for the damages that may result.

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In any case, no warranty of any kind is made or shall be imposed with respect to products manufactured or merchandised by the Factory, when failures are caused by the use of parts and/or components not approved by the Factory.

AVOID ACCIDENTS

Most accidents, whether they occur in industry, on the farm, at home or on the road, are caused by the failure of some individuals to follow simple and fundamental safety rules and precautions. For this reason **MOST ACCIDENTS CAN BE PREVENTED** by recognising the real cause and doing something about it before the accident occurs.

Regardless of the care used in the design and construction of any type of equipment, there are many conditions that cannot be completely safeguarded against without interfering in the reasonable accessibility and efficient operation.

A careful operator is the best insurance against an accident. The complete observance of one simple rule would prevent many serious accidents.

The rule is simple: never attempt to clean, lubricate or maintain a machine while it is in motion.



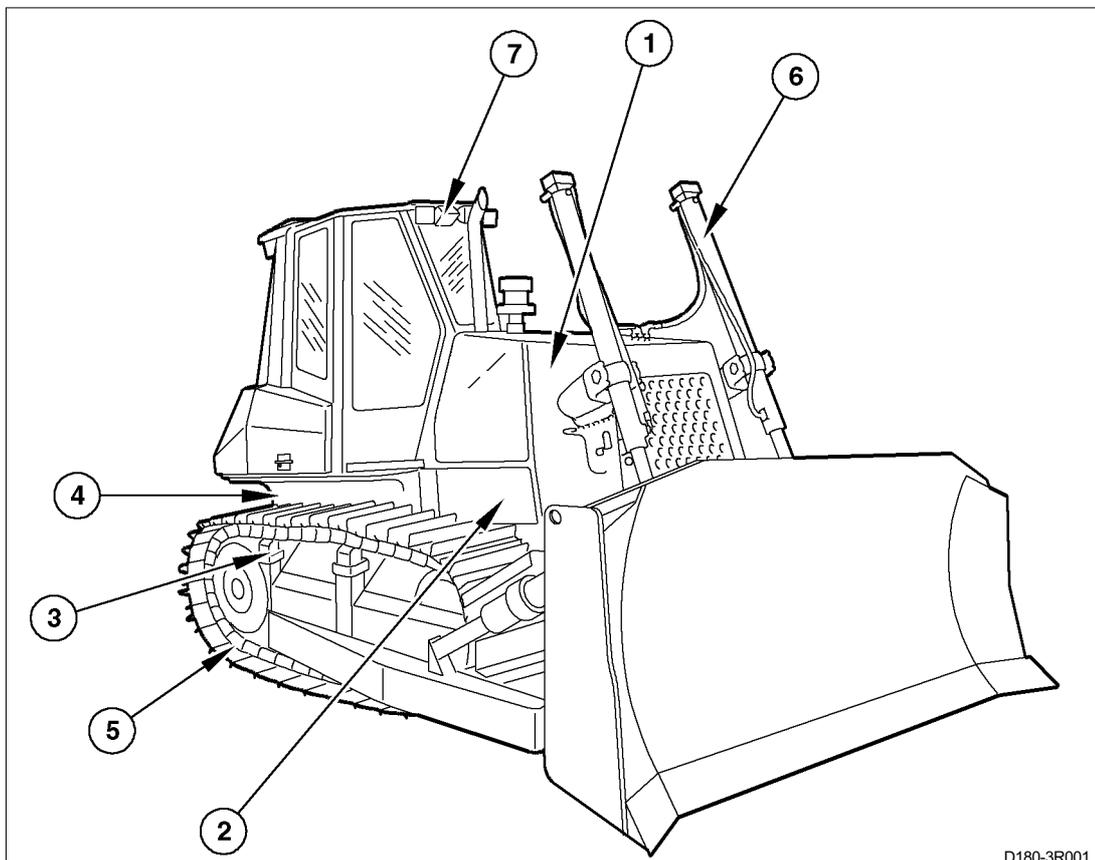
WARNING

Prior to engaging in any maintenance, adjustment or repair operation on machines having hydraulically, mechanically, and/or cable controlled equipment (such as shovels, loaders, dozers, excavators etc.) be certain the equipment is lowered to the ground.

If it is necessary to have the equipment partially or fully raised to gain access to certain items, be sure the equipment is suitably supported by means other than the devices used for controlling the equipment.

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D180-3R001

SECTION 0
GENERALITIES

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WARNING

Study carefully this Manual before starting, operating, maintaining, fuelling or servicing the machine.

Read and heed all safety rules before any intervention.

SAFETY RULES

- Do not allow unauthorised personnel to operate service or maintain this machine.
- Do not wear rings, wrist watches, jewellery, loose or hanging apparels, such as ties, torn clothing, scarves, unbuttoned or unzipped jackets that can catch on moving parts. Wear proper safety equipment as recommended for the job. Examples: hard hat, heavy gloves, ear protection, safety glasses or goggles, reflector vests, respirator. Consult your employer for specific safety equipment requirements.
- Keep operator's compartment, stepping points, grab-rails and handles clear of foreign objects, oil, grease, mud or snow accumulation to minimise the danger of slipping or stumbling. Clean mud or grease from shoes before attempting to mount or operate the machine.
- Do not jump on or off the machine. Keep two hands and one foot, or two feet and one hand in contact with step grab rails and handles at all times.
- Do not use controls or hoses as hand holds when climbing on or off machine. Hoses and controls are movable and do not provide a solid support. Also, controls may be inadvertently moved causing accidental machine or equipment movement.
- Never attempt to operate the machine or its tools from any position other than seated in the operator's seat.
- Keep head, body, limbs, hands and feet inside operator's compartment at all times, to reduce exposure to hazards outside the operator's compartment.
- Be careful of slippery conditions on stepping points, hand rails, and on the ground. Wear safety boots or shoes that have a high slip resistant sole material.
- Do not leave the machine until it is completely stopped.
- Check the seat safety belt at least twice a year. If there are signs of wear or fraying or other signs of weakness that could lead to failure, replace it.

STARTING

- NEVER START NOR OPERATE AN UNSAFE MACHINE.

Before operating a machine, always ensure that any unsafe condition has been satisfactorily remedied.

- Check brakes, steering and attachment controls before moving. Advise the proper maintenance authority of any malfunctioning part or system.
- Be sure all protective guards or panels are in place, and all safety devices provided are in place and in good operating conditions.
- Be sure exposed personnel in the area of operation are clear of the machine before moving it or its attachments. **WALK COMPLETELY AROUND** the machine before mounting. Sound horn.
- Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.
- Fasten your seat belt (when provided).
- Obey all flag signals and signs.
- Due to the presence on the machine of flammable fluids, never check or fill fuel reservoirs or batteries near open flames, smoking materials or sparks.
- REMEMBER THAT STARTING FLUID IS FLAMMABLE. Follow strictly the recommendations printed on containers and in the Operation and Maintenance Manual.
- DO NOT PUNCTURE OR BURN CONTAINERS.
- Containers must be stored in fresh, well ventilated places, out of reach of unauthorised persons. Follow strictly the instructions provided by the Manufacturer.
- Never use these products near open flames, smoking materials or sparks.

OPERATION

- Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.
- Roll Over Protective Structures are required on loaders, dozers, graders, excavators.

SAFETY RULES

NEVER OPERATE machines without ROPS.

- Make sure the Operator's compartment is free of foreign objects, especially if not firmly secured. Never use the machine to transport objects, unless proper securing points are provided.
- Check monitoring instruments at start-up and frequently during operations. In case the brake pressure gauge shows a pressure lower than the minimum operating pressure, stop immediately the machine .
- DO NOT CARRY RIDERS ON MACHINE
- Study and familiarise with escape routes alternate to normal exit routes.
- Seat belts are required by current regulations to be provided with Roll Over Protection Structures or cabs. Keep safety belts fastened around you during operation.
- For your personal protection, do not climb on or off machine while machine is in motion.
- Make sure that exposed persons in the area of operation are clear of the machine, before starting the engine and operating the equipment. Sound horn. Obey all indications provided by flags and signals.
- NEVER COAST the machine down grades and slopes with the transmission in neutral or neutralised.

Choose and shift into the most appropriate gear to keep the speed required, thus preventing any loss of control.

- Do not operate machinery in a condition of extreme fatigue or illness. Be especially careful towards the end of working shift.
- Do not operate machine with brakes out of adjustment.
- Operate the machine at speeds slow enough to ensure complete control at all times.
- Travel slowly over rough terrain, on slopes or near drop-offs, in congested areas or on ice or slippery surfaces.
- When backing, always look to where the machine is to be moved. Be alert to the position of exposed personnel. DO NOT OPERATE if exposed personnel enter the immediate work area. STOP THE MACHINE.
- Maintain a safe distance from other machines. Provide sufficient clearance for ground and visibility conditions. Yield right-of-way to loaded machines.
- Maintain clear vision of areas of travel or work.

Keep cab windows clean and repaired.

- When machines are operating in tandem, the pusher (rear) must be equipped with the appropriate deflectors to protect the unit in front from the air stream coming from the radiator.
- When pulling or towing through a cable or chain, do not start suddenly at full throttle; take-up slack carefully.

Inspect carefully for flaws or troubles before using.

- Avoid kinking chains or cables. Do not pull through a kinked chain or cable to the high stresses and possibility of failure of the kinked area. Always wear heavy gloves when handling chains or cables.
- Be sure chains and cables are anchored and the anchor points are strong enough to handle the expected load. Keep exposed personnel clear of anchor points and cables or chains.
- DO NOT PULL UNLESS OPERATOR'S COMPARTMENT OF MACHINES INVOLVED ARE PROPERLY GUARDED AGAINST POTENTIAL CABLE OR CHAIN BACKLASH.
- Be alert to soft ground conditions close to newly constructed walls. The fill material and weight of the machine may cause the wall collapse under the machine.
- In darkness, check area of operation carefully before moving in with machine. Use all lights provided. Do not move into area of restricted visibility.
- If engine has a tendency to stall for any reason under load or idle, report this for adjustment to proper maintenance authority immediately. Do not continue to operate machine, until condition has been corrected.
- On machines supplied with suction radiator fans, be sure to periodically check engine exhaust parts for leaks, as exhaust fumes are dangerous to the operator.
- In case of closed type cabs, always keep an opening with the outside, to ensure a constant air circulation.
- Operators must know thoroughly the performances of the machine they are operating. When working on slopes or near sudden level drops of the terrain, avoid areas where ground is loose or soft since rolling-over or loss of control of machine could result.
- Where noise exposure exceeds 90 dBA for 8 hours, wear approved ear protection.
- When counterweights are provided, do not work machine if they have been removed.

SAFETY RULES

- Overtaking manoeuvres must be performed only when absolutely necessary and unavoidable. Beware of possible uneven terrains, poor visibility conditions, the presence of other machinery or persons out of sight.
- Operate the machine at a speed adequate to the working conditions in the site and slow enough to ensure complete control at all times.
- Never use the machine as a work platform or scaffolding, nor other inappropriate operations (i.e. pushing railway cars, trucks or other machines).
- Be alert of people in the operating area of the machine.
- When operating a machine, know in advance what clearances will be encountered, overhead doors, cables, pipes, bearing load limitations of ground, bridges, floors or ramps.
- When roading, find-out what conditions are likely to be encountered, clearances, traffic congestion, type of road surfacing, etc. Beware of fog, smoke or dust elements that obscure visibility.
- When crossing gullies or ditches, move at an angle with reduced speed after ensuring ground conditions will permit a safe traverse.
- Explore the working area to identify potential risks such as: slopes, overhangs, pits, demolition rubble, fires, ravines, ditches, soft terrain, heavy traffic, crowded parking areas, closed ambients. In such conditions, proceed with extreme care.
- Whenever possible, avoid going over obstacles such as rough terrain, rocks, logs highly irregular ground, steps, ditches, railroad tracks. When obstructions must be crossed, do so with extreme care at an angle, if possible. Reduce speed, shift-down. Ease up to the break over point, pass the balance point slowly on the obstruction and ease down on the other side.
- In steep down-hill operation, do not allow engine to over-speed. Select proper gear before starting down grade.
- Avoid side hill travel, whenever possible. Drive up and down the slope. Should the machine slipping sideways, turn it immediately downhill.
- The grade of slope you should attempt will be limited by factors such as condition of the ground, load being handled, type of machine, speed of machine and visibility.
- There is no substitute for good judgement when working on slopes.
- Avoid operating equipment too close to an overhang or high wall, either above or below the machine. Be on the look-out for caving edges, falling objects and slides. Beware of concealment by brush and undergrowth of these danger.
- When pushing-over trees, the machine must be equipped with proper overhead guarding. Never allow a machine to climb up on the root structure particularly while the tree is being felled. Use extreme care when pushing over any tree with dead branches.
- When pushing trees with dead limbs, proceed with extreme care. Avoid brush piles, logs or rocks.
- NEVER DRIVE OVER THEM or other surface irregularities that brake traction with the ground, especially when on slopes or near drop-offs.
- Be alert to avoid changes in traction conditions that could cause loss of control. DO NOT DRIVE on ice or frozen ground conditions when working the machine on steep slopes or near drop-offs.
- Working in virgin and rough terrains is characterised by the presence of all the perils and risks listed above. In these conditions, it is emphasised the danger represented by large tree limbs (possibly falling on the machine), large roots (acting as a leverage under the machine when up-rooted causing the roll-over of the unit) etc..

STOPPING

- When the machine is stopped for whatever reason, follow the instructions of chapters "**Stopping the machine**" and "**Stopping the engine**" of the Operation and Maintenance Instruction Manual.
- Always remember to position the transmission drive control in neutral and engage the control lock to secure the machine.
- The parking brake is automatically set, when the transmission safety lever is lowered.
- NEVER LEAVE THE MACHINE UNATTENDED with the engine running.
- Always, before leaving the operator's seat and after making sure all people are clear of the machine, slowly lower the attachments or tools flat to the ground in a positive ground support position.

SAFETY RULES

- Return the controls to rest position. Place the gearshift lever in neutral. Disconnect the master switch and extract the key.
- Park in a non-operating and no-traffic area or as instructed. Park on firm level ground if possible. Where not possible, position machine at a right angle to the slope, making sure there is no danger of uncontrolled sliding movements.
- If parking in traffic lanes cannot be avoided, provide appropriate flags, barriers, flares and signals as required. Also provide advance warning signals in the traffic lane of approaching traffic.
- Keep head, body, limbs, feet, fingers or hands away from bucket, blade or ripper when in raised position.
- Always disconnect the master switch before any intervention (i.e. cleaning, repairing, maintaining, refuelling etc.). Do the same when parking for prolonged periods of time to avoid accidental or unauthorised starting.
- Never lower attachments or tools other than seated in operator's seat. Sound horn. Make sure area near the attachment is clear. Lower the attachment slowly. **DO NOT USE FLOAT POSITION** of hydraulic system.
- Place master switch in **OFF**, securely block the machine and lock it every time you leave it unattended. Return keys to authorised security. Heed all shut-down operations of the Operation and Maintenance Instruction Manual are followed.
- Keep operator's compartment free of all loose objects that are not properly secured.
- Do not wear rings, wrist watches, jewellery, loose or hanging apparels, such as ties, torn clothing, scarves, unbuttoned or unzipped jackets that can catch on moving parts. Wear proper safety equipment as recommended for the job. Examples: hard hat, heavy gloves, ear protection, safety glasses or goggles, reflector vests, respirator. Consult your employer for specific safety equipment requirements.
- Do not use controls or hoses as hand holds when climbing on or off machine. Hoses and controls are movable and do not provide a solid support. Also, controls may be inadvertently moved causing accidental machine or equipment movement.
- Do not jump on or off the machine. Keep two hands and one foot, or two feet and one hand in contact with step grab rails and handles at all times.
- Do not perform any service operation on the machine with a person seated in the operator's compartment, unless he is an authorised operator co-operating in the operation to be performed.
- Keep operator's compartment, stepping points, grab-rails and handles clear of foreign objects, oil, grease, mud or snow accumulation to minimise the danger of slipping or stumbling.

Clean mud or grease from shoes before attempting to mount or operate the machine.

MAINTENANCE

GENERALITIES

- Before operating or performing any intervention on the machine:
 - read carefully all the rules contained by this Manual;
 - read and obey all safety related plates and instructions located on the machine.
- Do not allow unauthorised personnel to perform any maintenance operation. Do not perform maintenance operation without prior authorisation. Follow all recommended maintenance and service procedures.
- Keep shoes free of mud or grease before climbing or driving the machine.
- Never attempt to operate the machine or its tools from any position other than seated in the operator's seat.
- When maintenance operations require moving hydraulically operated attachments by means of machine's hydraulic system remember that all manoeuvres must be made only when seated in the operator's seat. Before starting machine or moving attachment or tools, set brakes, sound horn and call for an all clear. Raise attachment slowly.
- Always block booms or parts of the machine which must be raised to perform interventions under them with external devices. Do not allow persons to move into the vicinities nor standing under equipment not being blocked. Unless you are totally sure about your safety, avoid staying under raised equipment, even in case it is blocked.

SAFETY RULES

- Do not place the body, limbs or fingers into sharp articulation uncontrolled openings of the machine and without proper protections, unless they are blocked in a safe manner.
 - Never perform interventions with engine running, except as called for in a Manual. Do not wear loose clothing or jewellery near moving parts.
 - When servicing or maintenance require access to areas that cannot be reached from the ground, use a ladder or step platform that meet local and national regulations, to reach the service point. If such ladder or platform are not available, use the machine hand holds and steps as provided. Perform all service or maintenance carefully.
 - Shop and/or field service platforms or ladders must be constructed and maintained in accordance with local and national regulations.
 - Disconnect batteries and tag all controls according to current regulations to warn that work is in progress. Block machine and all attachments that must be raised according to current regulations.
- Due to the presence of flammable fluids, never check or fill fuel tanks, batteries, nor use starting fluid near lighted smoking materials or open flames.
- BRAKES ARE INOPERATIVE when manually released for servicing. Provisions must be made to maintain control of the machine by blocking or other means.
 - The fuel filling nose must be kept constantly inside the filling neck. Keep this contact from the beginning to the end of the fuelling operation to avoid the possibility that sparks due to static electricity are generated.
 - Use only designated towing or attaching points. Use care in making attachments. Make sure pins and/or locks are secure before pulling. Stay clear of drawbars, cables or chains under load.
 - To move a disabled machine, use a trailer or a low-boy, if available. In case towing is needed, use all necessary signals required by local and national regulations, and follow the directions provided in this Manual.
 - To load/unload a machine from transporter, choose a level surface ensuring firm support to the wheels of truck or trailer. Use strong access ramps, with adequate height and angle. Keep surface free of mud, oil or slippery materials.
 - Anchor the machine securely to the bed of truck or trailer and block wheels or tracks with appropriate wedges.
 - Never align holes with fingers or hands; always use appropriate aligning tools.
 - Eliminate all sharp edges and burrs from re-worked parts.
 - Use only approved grounded auxiliary power sources for heaters, chargers, pumps and similar equipment to reduce the hazards of electrical shocks.
 - Lift and handle heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch-out for people in the vicinity.
 - Never pour gasoline or diesel fuel into open, wide and low containers. Never use gasoline, solvent or other flammable fluid to clean parts. Use exclusively qualified, non-flammable, non-toxic commercial solvents.
 - When using compressed air for cleaning parts, use safety glasses with side shields or goggles. Limit pressure to 2 bar, in accordance with local and national regulations.
 - Do not run the engine in closed areas without proper ventilation to remove deadly exhaust fumes.
 - Do not smoke or permit any open flames or spark near when re-fuelling or handling flammable materials.
 - Do not use an open flame as a light source to look for leaks or for inspection anywhere on the machine.
 - Make sure that all mechanic's tools are in good conditions. NEVER USE tools with mushroomed heads or frayed. Always wear eye protections.
 - Move with extreme care when working under the machine, its attachments and or on or near them. Always wear protective safety equipment as required, such as hard hat, goggles, safety shoes, ear plugs.
 - When performing operations requiring running of the engine, have a qualified operator in the operator's seat at all times with the mechanic on sight. Place the transmission in neutral and set the brakes and safety lock.
 - KEEP HANDS AND CLOTHING AWAY FROM MOVING PARTS.
 - For field service, move machine to level ground, if possible, and block it. If work on an incline is absolutely necessary, first block machine and its attachments securely, than move it to level ground as soon as possible.

SAFETY RULES

- Do not trust worn and /or kinked chains and cables: do not use them for lifting or pulling operations. To handle them, always use heavy gloves.
- Be sure chains and cables are anchored and the anchor points are strong enough to handle the expected load. Keep exposed personnel clear of anchor points and cables or chains.
- No bystanders are allowed near the hooking points, chains or cables.
- **DO NOT PULL UNLESS OPERATOR'S COMPARTMENT OF MACHINES INVOLVED ARE PROPERLY GUARDED AGAINST POTENTIAL CABLE OR CHAIN BACKLASH.**
- Keep the area where maintenance operations are performed **CLEAN** and **DRY**. Eliminate immediately all water and oil spillages.
- Do not pile oily or greasy rags; they represent a fire hazard. Store in closed metal container.
- Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine. Be sure exposed personnel in the area of operation are clear of the machine before moving it or its attachments. Sound horn.
- Rust inhibitors are volatile and flammable Use only in well ventilated areas. Keep open flames away - **DO NOT SMOKE** - Store containers in a cool well ventilated place, secure against unauthorised personnel.
- Do not carry loose objects in pockets that might fall unnoticed into open compartments.
- Wear proper protective equipment such as safety goggles or safety glasses with side shields, hard hat, safety shoes, heavy gloves when metal or other particles are apt to fly or fall.
- Wear welders protective equipment such as dark safety glasses, helmets, protective clothing, gloves and safety shoes, when welding or burning. Wear dark safety glasses near welding zones.

DO NOT LOOK AT ARC WITHOUT PROPER EYE PROTECTION.

- Know your jacking equipment and its capacity. Be sure the jacking point used on the machine is appropriate for the load to be applied. Be sure the support of the jack at the machine and under jack is appropriate and stable.

- The load lifted by jacks is always dangerous: it is necessary to transfer loads to appropriate blocking as a safety measure, before proceeding with service or maintenance work, according to local or national regulations.
- Steel cables are frayed after prolonged use; always wear appropriate protections (heavy gloves, goggles etc.).
- Handle all parts carefully. Keep hands and fingers away from structures, gears or moving parts. Use and wear always the appropriate protections
- Compressed air systems can have water deposits created by moisture condensation due to changes of atmospheric conditions. If required, discharge deposits, as instructed.

STARTING

- Do not run the engine in closed areas without proper ventilation to remove deadly exhaust fumes.
- Do not place head, body, limbs, feet, hands or fingers, near rotating fans or belts. Be especially alert near pusher fans.

ENGINE

- Loosen the radiator cap very slowly, to release pressure from the system, before removing it. All coolant level top-ups must be performed with engine OFF.
- Avoid that flammable materials touch exhaust parts. Should this be possible, provide the necessary protections.
- Do not run engine when refuelling and use care if the engine is hot due to the increased possibility of a fire if fuel is spilled.
- Never attempt to check or adjust fan belts when engine is running.
- Do not adjust engine fuel pump when machine is moving.
- Do not lubricate the machine with engine running.
- Do not run the engine with air intakes, door or protections open.

SAFETY RULES

ELECTRICAL SYSTEM

- Disconnect batteries prior to any intervention on machine or electrical system (cleaning, repair, maintenance).
- Should booster batteries be used, remember to connect both ends of the booster cables in the proper manner (+) with (+) and (-) with (-). Avoid short-circuits of the terminals. Follow thoroughly the instructions of this Manual.
- Before any intervention, make sure that the main switch is OFF.
- BATTERY GAS IS HIGHLY FLAMMABLE. Leave battery box open to improve ventilation when recharging batteries. Never check charge by placing metal objects across the posts. Keep sparks or open flames away from batteries. Do not smoke near battery to guard against the possibility of causing an explosion.
- Before any intervention, make sure that there are no fuel or electrolyte leakages; eliminate them before proceeding with further work. When recharging batteries in closed ambients, make sure that there is appropriate ventilation to prevent possible accidental explosions due to the accumulation of gases generated during the recharge.

HYDRAULIC SYSTEM

- Fluid escaping under pressure from a very small hole can be almost invisible and can have sufficient force to penetrate the skin. Use a piece of cardboard or wood to search for suspected pressure leaks. **DO NOT USE HANDS.** If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

- Stop the engine and release all pressures in the system before removing panels, housings, plugs or covers.
- In case pressures must be measured, use instruments of adequate capacity. Always follow the recommended procedures.

TOOLS

- Keep head, body, limbs, feet, fingers or hands away from bucket, blade or ripper when in raised position.

Prior to any intervention, install all safety devices according to current rules and regulations.
- In case equipment on the machine must be operated by hydraulic systems, remember to proceed only after seating in the operator's compartment. Make sure that there are no persons in the operating area of the machine. Alert people before operating using the horn and by voice. Move the equipment very carefully.
- Do not use machine to transport loose objects, unless proper devices for this purpose are provided.
- Clutches and brakes of this machine and eventual auxiliary equipment and attachments (such as operating cylinder or winches control valves) must always be properly adjusted in accordance with the instructions provided by the Manuals of the Manufacturer.
- Never perform adjustments with engine running, except when called for by the above instructions.

When changing work shift, check that wheel or rim securing screws and brackets are not loosen; if necessary, retighten to the prescribed torque.



WARNING

On machines having hydraulically, mechanically, and/or cable controlled equipment (such as shovels, loaders, dozers, excavators etc.) be certain the equipment is lowered to the ground before servicing, adjusting and/or repairing. If it is necessary to have the hydraulically, mechanically, and/or cable controlled equipment partially or fully raised to gain access to certain items, be sure the equipment is suitably supported by means other than the hydraulic lift cylinders, cable and/or mechanical devices used for controlling the equipment.

SAFETY RULES

SAFETY RULES FOR SEALS

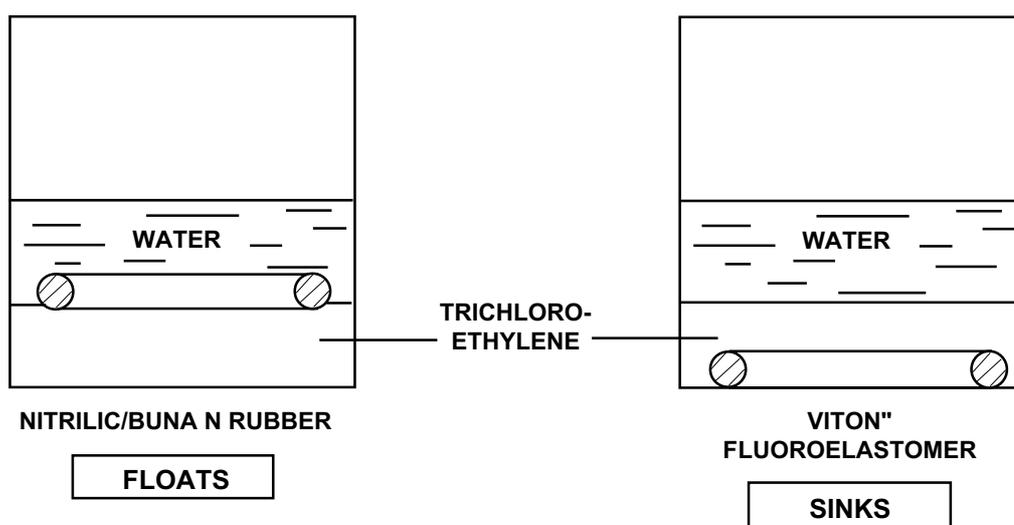
VITON SEALS (fluoroelastomer)

Seals, especially VITON O-Rings, (normally coloured red) are used in systems operating at high temperatures, since this material resists the effects of heat. However, in the event this material is subject to heat exceeding 315 °C (599 °F) (in practice, only in case of fire or when using welding flames) fluoridic acid is generated. **This acid is highly corrosive and could cause severe burns**, if in contact with the skin.

Every time it is necessary to intervene on components equipped with VITON rings, for which an exposure to excessive temperatures is suspected, the following procedures must be applied:

- 1) inspect visually, without touching them, all seals showing signs of damage due to high temperature. They look black and tacky;
- 2) identify the type of material of the seals, if they are VITON, performing the test illustrated below, on the spare parts;
- 3) in case it is verified, or there is a reasonable doubt that the components are made of VITON, the contaminated area **MUST** be decontaminated before proceeding with further operations;
- 4) wear neoprene rubber or PVC gloves and protection goggles or face screen, and wash accurately the contaminated zone with a solution of hydraulic lime (found at building stores) and water, so that a milky liquid is obtained. Rinse carefully with steam or running water;
- 5) dispose of the materials removed and the protective gloves in a safe manner, without burning them.

TEST FOR THE DISCRIMINATION OF RUBBER (BUNA N) MATERIALS AND "VITON" (FLUOROELASTOMER) MATERIAL



D180

DOZERS

TECHNICAL DATA TABLES

IDENTIFICATION DATA

A. Engine data plate

The engine data plate is visible by opening the engine left side panel and it includes all the identification data and other important information related to the engine. Record the information below for quick reference in case of necessity.

MODEL No. _____

SERIAL No. _____

DATE CODE _____

IMPORTANT ENGINE INFORMATION
 This engine conforms to 2003 U.S. EPA
 And California Tier 3 and EU Stage III
 regulations for heavy duty non-road
 compression ignition diesel cycle
 engines as applicable.
**THIS ENGINE IS CERTIFIED TO OPERATE
 ON DIESEL FUEL**

CNH U.K. LIMITED IMPORTANT ENGINE INFORMATION <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	ENGINE TYPE: _____ ENGINE FAMILY: _____ SERIAL NUMBER: _____ EEC APPR. N°: _____ <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin: 5px auto;">E3</div>
EPA family: _____ Model: _____ Date of MFG (mo yr): _____	Displac. _____ cu. in. Adv. H.P. _____ r.p.m. Idle speed _____ r.p.m. Fuel rate @ adv. pow. _____ mm ³ /Str. Valve lash: Intake _____ Exhaust _____
This engine conforms to _____ U.S. EPA & CARB regulations for large _____ <small>non-road compression ignition engines. This engine is certified to operate on diesel fuel When making adjustments, set parking brake and block wheels, EMISSION CONTROL SYSTEM: _____</small>	

1850-M0044

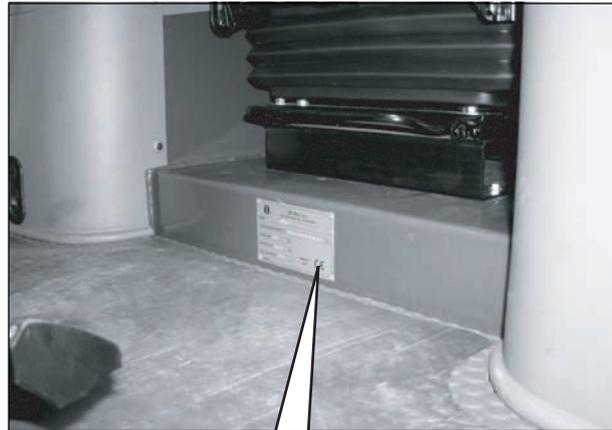
B. Machine identification plate

The identification plate includes the main data of the machine and it is visible under the operator's seat. Record the data of your machine below.

TECHNICAL TYPE/MODEL _____

UNIT SERIAL No. _____

YEAR _____



 CNH ITALIA S.p.A. Viale delle Nazioni, 55 - 41100 Modena	
Model _____	
Product Identification Number ☆ _____ ☆	
Engine Power _____	Kg
Operative Mass _____	Kg
Year Construction _____	MADE IN ITALY 

D180-2M171

C. Marking and serial number

On the right side of the transmission housing it is possible to read the MARKING of the machine, composed of:

- manufacturer code (the first three digits) FNH;
- machine code (5 digits);
- check letter "N";
- year of production "6" for 2006;
- manufacturing plant "H" (Lecce Plant);
- product line "C" (Dozer);
- machine serial number (last 5 digits).

MODEL	MARKING
D180 LT (Power Steering)	*FNH183LTN6HC44001*
D180 XLT (Power Steering)	*FNH183XTN6HC45001*
D180 LGP (Power Steering)	*FNH183LPN6HC46001*
D180 LT (Clutch)	*FNH183B1N6HC47001*
D180 XLT (Clutch)	*FNH183B2N6HC48001*

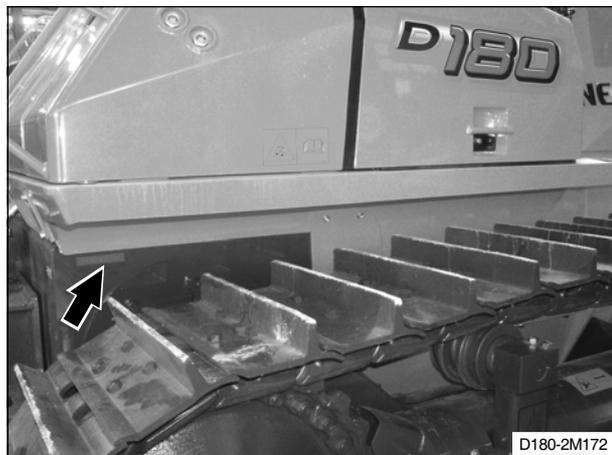


TABLE OF FLUID CAPACITIES

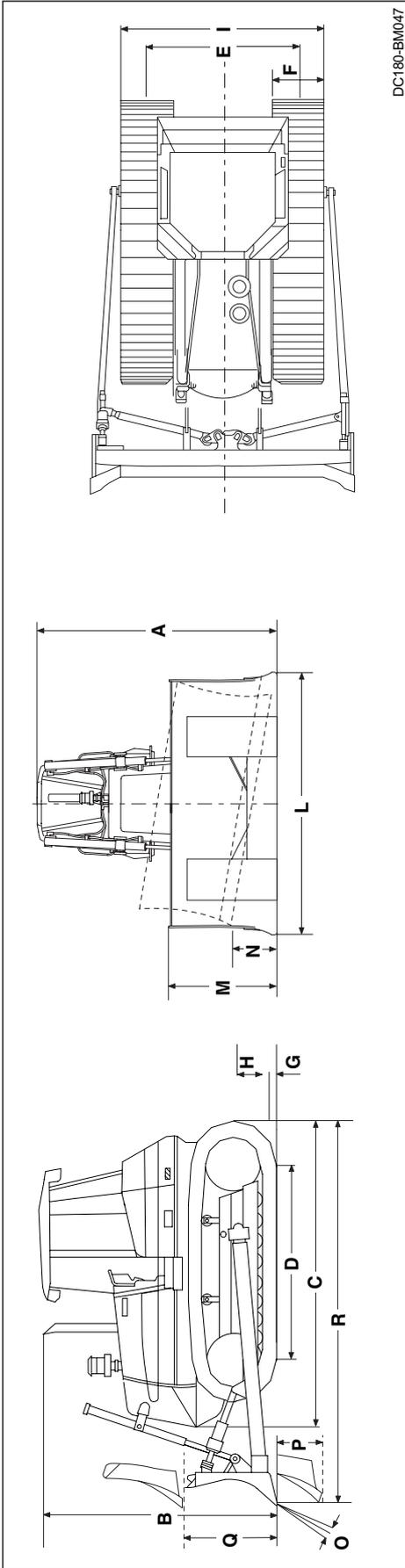
ITEM	QUANTITY (Litres)	Fluids and lubricants 	VISCOSITY GRADE	Outdoortemperatures of reference	International Classification
Cooling system	24	Agriflù	-	Down to -35° C (-31 °F)	Mixture of water and antifreeze at 50%. The mixture provides oxidation, foaming, corrosion, scaling and freezing protection properties down to -35 °C (-31 °F).
Fuel reservoir	400	-	-	-	DIESEL FUEL ASTM No. 2D Grade TT of reputable quality and make
Engine	19	MasterGold HSP	SAE 10W - 30 SAE 15W - 40	-25 to 20 °C (-13 to 68 °F) -15 to 40 °C (-5 to 104 °F)	API CH4 - ACEA 5
		SuperGold	SAE 10W - 30 SAE 15W - 40	-25 to 25 °C (-13 to 68 °F) 15 to 40 °C (-5 to 104 °F)	API CF-4/SG or MIL-L-2104E
Torque converter Transmission	48	Hydropower	SAE 10W	All season	ATF Type A Suffix A
Transmission housing steering/brakes	70	Super Gold	SAE 10W - 30	-25 to 20 °C (-13 to 68 °F)	API CF-4/SG or CCMCD4 or MIL-L-2104E
Hydraulic system	116 121	Hi - Tech 46 or Hydrosystem 46 HV	ISO 46	-20 °C to 50 °C (- 4 to 122 °F)	DIN 51524 PART - 1 DIN 51524 PART - 2 ISO VG 46
Final drives (each)		33	Hypoide 90	SAE 80W - 90	All season
Idlers Rollers and track chains	7	Super Gold	SAE 10W - 30	-25 to 20 °C (-13 to 68 °F)	API CF-4/SG or CCMCD4 or MIL-L-2104E
Grease fittings		GR9	NH710A - NLGI2	All season	-
Cab tilting pump	0.5	Hydropower	SAE 10W	All season	ATF Type A Suffix A

If the content of sulphur of the fuel exceeds 0.5 %, change the engine oil as follows:

Down to 0.5 % sulphur	Periodical change
from 0.5 to 1 %	Half normal interval
Over 1 %	One quarter normal interval

Notes: - Oil quantities indicated are those required for periodical changes.
- In case of a lower classification of CH4 engine oil, the change must be done every 250 hours.
- The change interval must be reduced when present sulfur in the fuel exceed to 0.5% or the ambient temperature exceed to 38 °C.

DIMENSION D180 BD



DC180-BM047

TRACTOR DIMENSION

A Height over cab	mm	LT BD	3235 (127.3 in.)	Angolabile (HA)	3,18 (112.3 ft ³)	Straight (HS)	3,9 (12.7 ft ³)
B Height over muffler	mm		3195 (125.7 in.)		4000 (157.5 in.)		3385 (133.3 in.)
C Tractor length	mm		4195 (165.1 in.)		3650 (143.7 in.)		1215 (47.8 in.)
D Length of track on ground	mm		2700 (106.2 in.)		1030 (40.5 in.)		758 (29.9 in.)
E Gauge	mm		1900 (74.8 in.)		380 (14.9 in.)		±5°
F Track shoes width	mm		560-610 (22-24 in.)		452 (17.8 in.)		481 (18.5 in.)
G Shoe grouser height	mm		71.5 (2.8 in.)		1148 (45.2 in.)		1100 (43.3 in.)
H Ground clearance	mm		390 (15.3 in.)		5487 (216 in.)		5440 (214.1 in.)
I Overall width with shoes 560 (22 in)	mm		2460 (96.8 in.)		20530 (45260 lb)		20300 (44753 lb)
Overall width with shoes 610 (24 in)	mm		2510 (98.8 in.)				
Overall width with shoes 760 (30 in)	mm		—				
Overall width with shoes 915 (36 in)	mm		17290				
Shipping weight w/blade****	kg						

BLADES DIMENSIONS

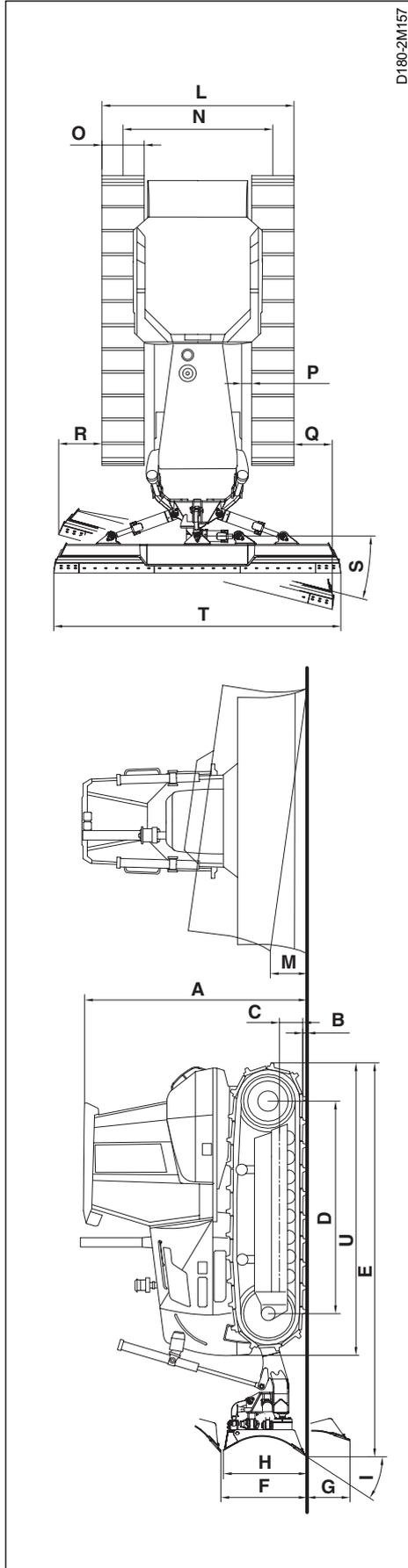
Blade capacity SAE J1265	m ³	Semi-U (HSU)	5,6 (197.8 ft ³)	Angolabile (HA)	3,18 (112.3 ft ³)	Straight (HS)	3,9 (12.7 ft ³)
L Width of blade	mm		3460 (136.2 in.)		4000 (157.5 in.)		3385 (133.3 in.)
M Height of blade	mm		1425 (56.1 in.)		3650 (143.7 in.)		1215 (47.8 in.)
N Max. tilt	mm		840 (33.5 in.)		1030 (40.5 in.)		758 (29.9 in.)
O Max. pitch	deg		±5°		380 (14.9 in.)		±5°
P Digging depth	mm		481 (18.9 in.)		452 (17.8 in.)		481 (18.5 in.)
Q Max. lift above ground	mm		1100 (43.3 in.)		1148 (45.2 in.)		1100 (43.3 in.)
R Overall length with blade**	mm		5487 (216 in.)		5316 (209.3 in.)		5440 (214.1 in.)
Operating weight with blade*	kg		20530 (45260 lb)		19650 (43320 lb)		20300 (44753 lb)

XLT BD	3235 (127.4 in.)	Angolabile (HA)	3,18 (112.3 ft ³)	Straight (HS)	3,7 (130.7 ft ³)
	3195 (125.7 in.)		4000 (157.5 in.)		3900 (153.5 in.)
	4340 (170.8 in.)		3650 (143.7 in.)		1110 (43.7 in.)
	3205 (126.2 in.)		1030 (40.5 in.)		836 (32.9 in.)
	1900 (74.8 in.)		380 (14.9 in.)		±5°
	560-610 (22-24 in.)		452 (17.8 in.)		535 (21 in.)
	71.5 (2.8 in.)		1148 (45.2 in.)		1160 (45.7 in.)
	390 (15.3 in.)		5487 (216 in.)		5675 (223.4 in.)
	2460 (96.8 in.)		20530 (45260 lb)		22730 (50111 lb)
	2510 (98.8 in.)				
	—				
	—				
	18390 (157.5 lb)				

LGP BD	3235 (127.4 in.)	Semi-U (HSU)	5,6 (197.7 ft ³)	Angolabile (HA)	3,18 (112.3 ft ³)	Straight (HS)	3,7 (130.7 ft ³)
	3195 (125.7 in.)		3460 (136.2 in.)		4000 (157.5 in.)		3900 (153.5 in.)
	4340 (170.8 in.)		1425 (56.1 in.)		3650 (143.7 in.)		1110 (43.7 in.)
	3205 (126.2 in.)		850 (33.5 in.)		1030 (40.5 in.)		836 (32.9 in.)
	2082 (81.9 in.)		±5°		380 (14.9 in.)		±5°
	762-915 (29-36 in.)		550 (21.6 in.)		452 (17.8 in.)		535 (21 in.)
	71.5 (2.8 in.)		1190 (46.8 in.)		1148 (45.2 in.)		1160 (45.7 in.)
	390 (15.3 in.)		5878 (231.4 in.)		5316 (209.3 in.)		5675 (223.4 in.)
	2460 (96.8 in.)		21630 (47686 lb)		19650 (43320 lb)		22730 (50111 lb)
	2510 (98.8 in.)						
	—						
	—						
	18390 (157.5 lb)						

* Includes ROPS Cab, 610 mm (24 in) shoes (915 mm (36 in) for LGP), fuel oil and operator, for unit with ROPS canopy deduct 300 kg (661.4 lb).
 ** With ripper raised, add 935 mm (36.8 in) to dozer length.
 *** Includes ROPS Cab, 610 mm (24 in) shoes (915 mm (36 in) for LGP), 10% fuel, blade lift cylinders, lubricants, coolant.

DIMENSION D180 PAT



TRACTOR DIMENSION

		LTPAT	XLT PAT	LGP PAT
Blades dimensions	m ³	12 ft (144 in.)	12 ft (144 in.)	13.5 ft (162 in.)
Blade capacity SAE J1265	mm	3235 (127.4 in.)	3235 (127.4 in.)	3235 (127.4 in.)
A Height over cab	mm	71.5 (2.8 in.)	71.5 (2.8 in.)	71.5 (2.8 in.)
B Shoe grouser height	mm	390 (15.3 in.)	390 (15.3 in.)	390 (15.3 in.)
C Luce libera da terra	mm	2700 (106.2 in.)	3205 (126.2 in.)	3205 (126.2 in.)
D Passo	mm	5617 (221.1 in.)	5931 (233.5 in.)	5931 (233.5 in.)
E Lunghezza macchina con lama	mm	1133 (44.6 in.)	1260 (49.6 in.)	1260 (49.6 in.)
F Sollevamento lama da terra	mm	776 (30.1 in.)	800 (31.5 in.)	800 (31.5 in.)
G Profondità di scavo	mm	1324 (52.1 in.)	1324 (52.1 in.)	1324 (52.1 in.)
H Ground clearance	mm	33.5 (1.3 in.)	33.5 (1.3 in.)	33.5 (1.3 in.)
I Cutting edge angle	mm	2460 (96.8 in.)	2460 (96.8 in.)	2460 (96.8 in.)
L Overall width with shoes 560 (22 in)	mm	2510 (98.8 in.)	2510 (98.8 in.)	2510 (98.8 in.)
Overall width with shoes 610 (24 in)	mm	19089 (42084 lb)	20325 (44809 lb)	2844 (112 in.)
Overall width with shoes 762 (29.9 in)	mm	480 (18.9 in.)	480 (18.9 in.)	21059 (46427.1 lb)
Shipping weight w blade***	kg	480 (18.9 in.)	568 (22.4 in.)	568 (22.4 in.)
M Blade tilt (7.6 DEG)	mm	1900 (74.8 in.)	1900 (74.8 in.)	2082 (82 in.)
N Gauge	mm	560-610 (22-24 in.)	560-610 (22-24 in.)	762 (30 in.)
O Track shoes width	mm	100 (3.9 in.)	100 (3.9 in.)	100 (3.9 in.)
P Minimum distance shoes-mainframe	mm	184 (7.2 in.)	388 (15.3 in.)	221 (8.7 in.)
Q Track reach	mm	614 (24.2 in.)	822 (32.4 in.)	654 (25.7 in.)
R Cut reach	mm	3610 (142.1 in.)	4067 (160.1 in.)	4067 (160.1 in.)
S Blade angle	deg	25°	25°	25°
T Width of blade	mm	4195 (165.1 in.)	4340 (170.9 in.)	4340 (170.9 in.)
U Tractor length	mm	20382 (44934.6 lb)	20518 (45234.6 lb)	22488 (49578 lb)
Operating weight with blade*	kg	20382 (44934.6 lb)	20518 (45234.6 lb)	22488 (49578 lb)

* Includes ROPS Cab, 610 mm (24 in) shoes (915 mm (36 in) for LGP), fuel oil and operator, for unit with ROPS canopy deduct 300 kg (661.4 lb).
 ** With ripper raised, add 935 mm (36.8 in) to dozer length.
 *** Includes ROPS Cab, 610 mm (24 in) shoes (915 mm (36 in) for LGP), 10% fuel, blade lift cylinders, lubricants, coolant.

TECHNICAL DATA D180 Power Steering - D180 Steering Clutch

TECHNICAL	DATAS	LT/XLT	LGP	
PERFORMANCES	Max. speeds			
	FORWARD			
	1st	km/h (mph)	4.3 (2.7)	4.3 (2.7)
	2nd	km/h (mph)	6.7 (4.1)	6.7 (4.1)
	3rd	km/h (mph)	10.9 (6.7)	10.9 (6.7)
	REVERSE			
	1st	km/h (mph)	5.2 (3.2)	5.2 (3.2)
	2nd	km/h (mph)	8.4 (5.2)	8.4 (5.2)
	3rd	km/h (mph)	13.0 (8)	13.0 (8)
	Max. towbar pulling effort			
FORWARD				
1st	kN	290	305	
2nd	kN	165	174	
3rd	kN	93	99	
REVERSE				
1st	kN	228	240	
2nd	kN	129	136	
3rd	kN	72	76	
Ground pressure				
in operating conditions	kPa	65		
in operating conditions - multi-shank ripper	kPa	71.5		
Climbing capacity (FWD)				
	LT/XLT	LGP		
1st	3 km/h (1.87 mph)	3,4 km/h (2.1 mph)	%	
2nd	5 km/h (3.1 mph)	5,6 km/h (3.5 mph)	%	
3rd	9.0 km/h (5.6 mph)	10 km/h (6.2 mph)	%	
Front equipment cycle times (ref. semi-U blade)				
Raising time (from ground to max. height)	sec	2.9		
Controlled lowering	sec	1.4		
Floating	sec	1.4		
Noise				
Outside (2000/14/CE)LwA	dB(A)	111		
SAFETY DEVICES	Back-up alarm Left safety lever It blocks the equipment, cuts-off the transmission and engages the parking brake Right safety lever It blocks the equipment, cuts-off the transmission and engages the parking brake			

Carefully read personal and machine SAFETY PRECAUTIONS at the beginning of this Manual

TECHNICAL DATA D180

ENGINE AND ACCESSORIES	Engine manufacturer	-	IVECO
	Engine model	-	667TA - 6.7
	Engine type: Direct injection, 4-stroke turbocharged, after-cooling		
	Bore and stroke	mm (in)	104 x 132 (4.0x5.1)
	Total displacement	L (gal.)	6.7 (1.7)
	Number of cylinders	-	6
	D180 LT/XLT	kW	HP
	Net power kW hp	rated @ 2000 rpm	rated @ 2000 rpm
	DIN 6270	139	187
	SAE J1349	137	184
	ISO9249	139	186
	EEC 80/1269	139	187
	D180 LGP	kW	HP
	Net power kW hp	rated @ 2000 rpm	rated @ 2000 rpm
	DIN 6270	151	202
	SAE J1349	148	199
	ISO9249	150	201
	EEC 80/1269	151	202
	Torque limit	deg	45
	Fuel consumption (MAX. POWER)	kg/h (lb/h)	30.7 (67.7)
	Starting capacity		
	Standard configuration	°C (°F)	-12 (10)
	With cold starting system	°C (°F)	-25 (-13)
	Electrical system		
	System voltage	Volt	24
	Capacity of starter motor	kW (HP)	7.8 (10.5)
	Capacity of alternator	Amp	70
	Drivetrain oil heat exchanger matrix		
Dimensions	mm	640x520x111 (25x20.5x4.3)	
Type of fins	-	Corrugated	
Fin spacing	mm (in)	5 (0.20)	
Fin material	-	AL	
Matrix effective area	dmq	33.28	
Tube size	mm (in)	4.5x111 (0.17x4.3)	
Tube spacing	mm (in)	15.6 (0.61)	
Number of tubes	-	32	
Tube material	-	AL	
Test pressure	bar (psi)	20 (290)	

TECHNICAL DATA D180

ENGINE AND ACCESSORIES	Hydraulic oil heat exchanger matrix		
	Dimensions	mm (in)	635x127x94 (25x5x3.7)
	Type of fins	-	Corrugated
	Fin spacing	mm (in)	5 (0.20)
	Fin material	-	AL
	Matrix effective area	dmq	8.64
	Tube size	mm (in)	4.5x61 (0.17x2.4)
	Tube spacing	mm (in)	15.6 (0.61)
	Number of tubes	-	7
	Tube material	-	AL
	Test pressure	bar (psi)	16 (232)
	Aftercooler heat exchanger unit		
	Dimensions	mm (in)	670x293x111 (26.3x11.5x4.3)
	Type of fins	-	Corrugated
	Fin spacing	mm (in)	5 (0.20)
	Fin material	-	AL
	Matrix effective area	dmq	19.63
	Tube size	mm (in)	7.5x111 (0.30x4.3)
	Tube spacing	mm (in)	19.6 (0.77)
	Number of tubes	-	14
	Tube material	-	AL
Test pressure	bar (psi)	7 (101.5)	
Water-air heat exchanger matrix			
Dimensions	mm (in)	1026x750x109 (40.3x29.5x4.2)	
Type of fins	-	Flat	
Fin spacing	mm (in)	4.4 (0.17)	
Fin material	-	CU	
Matrix effective area	dmq	76.95	
Tube size	mm (in)	13.6x2.5 (0.53x0.09)	
Tube spacing	mm (in)	10 (0.39)	
Number of tubes	-	444	
Tube material	-	OT67	
Test pressure	bar (psi)	2 (29)	

TECHNICAL DATA D180

	Fan (Blowing) / Soundproof blowing fan		TRUFLO ABB	
		Fan diameter	mm (in)	762 (30)
	Blade pitch	deg	26	27
	Number of blade	-	6	6
	Dimension of blades	mm (in)	178x258 (7x10.2)	-
	Drive ratio (fan/engine)	-	0.87:1	0.87:1
ENGINE AND ACCESSORIES	Air cleaner		Donaldson	
	Brand		FHG12-0345	
	Type			
	Dry type, two stages with safety element and centrifugal separator			
	Setting of clogging indicator	bar in H ₂ O	0.062 (25)	
	Initial clogging (@ 13 cum /min)	bar in H ₂ O	0.023 (9.4)	
	Dust containment capacity (@ 13 cum /min)	g/CFM	21	
	Dimensions	mm (in)	304.8 (12)	
	Pre-cleaner		85%	
	Rotor/centrifuge assembly, it uses centrifugal force to separate contaminants carried by the air		efficiency	9910.9 to 19821.8 (350 ÷ 700)
Recommended operation range		L/min (CFM)		
	Silencer		Donaldson	
	Horizontal type. Under hood.			
	Dimensions	mm (in)	155x257x600 (6.1x10.1x23.6)	
	Max. counter-pressure	bar (mmHg)	0.10 (75)	
FUEL TANK	Total volume	L (US gal)	400 (106)	
	Specifications of filler cap		-	
TORQUE CONVERTER AND HOUSING	Brand:	Twin Disc		
	Model:	15" MS 335		
	Type:	Single stage, single phase		
	Stall ratio	-	2.28 : 1	
	Nominal diameter	mm (in)	381 (15)	
	Setting of pressure relief valve @ 10 L/min (2.642 gpm)	bar (psi)	10.5 (152.3)	
	Nominal flow of transmission pump @ 17 bar (246.5 psi)	L/min (US gpm)	66.0 (17.4)	
	Nominal flow of TC @3 bar (43.5 psi)	L/min (US gpm)	116.0 (30.6)	
	Wet TC housing with scavenger pump			

TECHNICAL DATA D180

BEVEL GEAR GROUP	Gleason type, modular pinion assembly. Forced lube pinion bearings		
	Ratio:	D180 Power Steering	D180 Steering Clutch
	Module: mm (in)	17/36 10 (0.4)	13/40 9.23 (0.36)
STEERING SYSTEM	<p>The machine uses a differential steering system; this consists of a hydraulic pump, a hydraulic motor, controls, two planetary modules and a steering gear train.</p> <p>The rear transmission has two power inlets. One from the bevel gear for the speed and Forward reverse, the other from the motor, to turn.</p> <p>The steering system is actuated by two "finger tip" (potentiometric levers), located on the left side of the operator's seat.</p>		
	<p>The levers send an electric signal to the microprocessor controlling the two proportional solenoid valves; these valves convert the electric signal into a hydraulic one, piloting the steering section of the main valve.</p> <p>This section controls the pump flow to the hydraulic motor that through the steering gear train, actuates the two planetary modules and the right track chain.</p>		
	<p>The open hydrostatic circuit includes:</p> <ul style="list-style-type: none"> - main pump the same of the equipment (see hydraulic system) cc/rev - hydraulic motor Bent axis design, axial pistons, fixed displacement motor (with bolt-on movement control valve) 	130	
	<p>Displacement cc/rev Max. operating pressure bar (psi)</p> <ul style="list-style-type: none"> - Steering control valve Closed centre. This section is included in the implement control valve - Steering control Electro-Hydraulic control with two proportional valves Integrated CPU for steering and TM control - Priority valve It provides priority to the steering over the equipment control (blade raising) - Make-up valve It provides pressure to both equipment control pilot valves and to the proportional solenoid valves bar (psi) - Oil radiator Aluminium body mm (in) By-pass setting bar (psi) 	90 350 (5076)	
	<p>Planetary modules See "power train" diagram</p> <p>Gear ratio straight travel conditions -</p>	30 (435.1) 590x179x63 (23.2x7x2.5) 5 (72.5)	
	<p>Steering line See "power train" diagram</p>	1.44	

TECHNICAL DATA D180

STEERING SYSTEM D180 POWER STEERING	Gear ratio Hydraulic motor to sprocket	-	1.92
	Performance		
	Min. steering radius	m (in)	1.0 (39.4)
	Max. differ. track chain speed, no load condition	km/h (mph)	4.0 (2.5)
	Max. differ. track chain torque at 350 bar	daNm (lbf.ft)	0.72 (5.3)
STEERING SYSTEM D180	The steering system is driven by two levers located on the left side of the operator's compartment. During translation, the lever sends a modulated pressure through the electronic control unit and the electroproportional valves to the steering control valve. The first pressure controls the steering clutch disconnection. The second pressure is equal to zero until the first pressure reaches 16 bar (50% of lever stroke). It applies the steering brakes positively. The service brake system is negatively controlled by the brake pedal or by pulling the two levers at the same time. The pedal operation cuts the brake system counterpressure with modulation and applies the braking load with the springs.		
	Steering clutches: - Typology - Control Number of clutch driven discs (sintered) Number of driving discs (sintered) Total area for one clutch Inner diameter Outer diameter		with multiple discs, oil bath through spring electro-hydraulic 7 (per clutch) 8 (per clutch) 7612 cm ³ 280 mm 350 mm
BRAKES	Steering filters		
	Suction		
	Metal mesh + magnetic rod	mesh	100
	Aligned filters:		
	Screwed-on	Micron	25 abs.
	Setting of by-pass valve	bar (psi)	3.44 (49.9)
	Collecting capacity @ 3.44 bar (ISO 4572)	g (lb)	50 (0.11)
	Filtering area	cm ² (m ³)	3075 (476.6)
	Loss of charge @ 80 L/min	bar (psi)	0.71 (1029.7)
	Nominal pressure of element	bar (psi)	34.5 (500.4)
Rupture pressure of element	bar (psi)	70 (1015.5)	
	Multiple discs, spring actuated, oil released, oil cooled		
	No. of clutch discs	-	5
	Outer diameter	mm (in)	350 (13.8)
	Inner diameter	mm (in)	280 (11)
	Total friction area	cm ² (in ²)	2771 (429.5)
	Friction material	-	sintered
	No of springs	-	20

TECHNICAL DATA D180

BRAKES	Max. braking torque	daN (lb)	1016 (2284)	
	Pump flow (@engine max. speed)	L/min	50	
	System pressure	bar (psi)	25 (362.6)	
SECTION STEER/BRAKES	Fabricated housing			
FINAL DRIVE	Countershaft, double reduction, modular assembly			
	Total ratio	-	12.286	
SPROCKET	Segments. 9 Elements			
	No. of teeth	-	27	
	Pitch diameter	mm (in)	880.25 (34.6)	
TRACK FRAME	Fabricated structure with two sealed boxes Sealed track tensioner compartment			
UNDER-CARRIAGE			LT	XLT/LGP
	Link pitch	mm (in)	203 (8)	203 (8)
	No. of links	-	40	45
	Link height	mm (in)	128 (5)	128 (5)
	Shoe height	mm (in)	71.5 (2.8)	71.5 (2.8)
	Weight of shoes per metre	kg/m (lb/in)	38.2 (2.13)	38.2 (2.13)
	Width of standard shoe	mm (in)	560 (22)	915 (36)
	Width of optional shoes	mm (in)	610 (24)	762 (30)
			LT	XLT/LGP
	No. of track rollers	-	7	8
	Sequence of rollers from sprocket	-	SF-DF-SF-DF -SF-DF-SF	SF-DF-SF-DF SF-SF-DF-SF
	Diameter of rollers	mm (in)	210 (8.3)	210 (8.3)
	No. of support rollers	-	2	2
	Diameter of rollers (support)	mm (in)	187.5 (7.4)	187.5 (7.4)
	Diameter of idler wheel	mm (in)	690 (27.2)	690 (27.2)
TRACK TENSION SYSTEM	Sliding idler guides with replaceable wear strips Sealed track tensioner compartment. Grease piston for track tension adjustment Single spring.			
	Nominal load of spring assembly	daN (lb)	19509 (430173)	
	Outside diameter of spring	mm (in)	245 (9.6)	
	Diameter of wire	mm (in)	53 (2.1)	
	Diameter of grease piston	mm (in)	75 (2.9)	
	Setting of relief valve	bar (psi)	900 (35.4)	
	Pivot shaft (near sprocket) and fixed frond cross-member All joints permanently sealed			