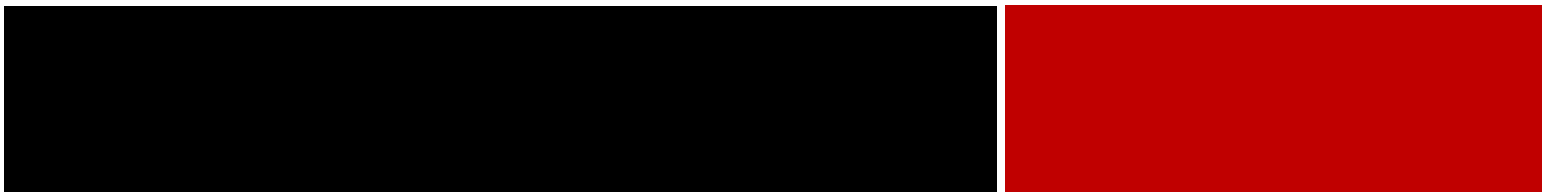




EARTH DRILL

OPERATION MANUAL



Earth Drill Type:

No:

Inspector:

Date of manufacture:

Product		Warranty	Remark
Auger Drive	Motor	12 Months	Shell cracking or output shaft fracture is not within the warranty scope.
	Gearbox	18 Months	
	Seal	3Months	
Auger Drill		-	
Hitch		-	
Hoses		-	
Other Accessories		-	

The warranty scope does not cover the following:

- 1. Wear and tear under normal working conditions.**
- 2. Malfunction due to incorrect assembly by dealer and faults caused by incorrect check or installment before delivery.**
- 3. Faults or failures due to operate overload the rated conditions.**
- 4. Hydraulic hoses and spare parts touch the ground such as auger flight, boring teeth and pilot.**
- 5. Transportation costs of spare parts.**
- 6. Consequential loss.**

Do operate in accordance with the specified procedures in the operation manual and the specification for drive unit of Earth Drill.

Do remember make the warranty claim in writing within 14 days of malfunction. Otherwise, it will be deemed as invalid.

We won't afford the maintenance fees (include spare parts charge) caused by unauthorized maintenance staff.

The freight must be paid in advance if any product, under warranty or for repair, returned to us by the customer, unless already been agreed with us.

SAFETY PRECAUTIONS

Never operate or assemble the Earth Drill without **fully** understanding the operating instructions of both the Earth Drill unit and the parent machine.

Receive “dealer instruction” before operating the Earth Drill unit.

Never operate the Earth Drill unless you are in good physical condition and mental health.

Never operate the Earth Drill under the influence of any substance (including drugs & alcohol), which might impair vision, dexterity or judgement.

Always survey the work area before work. Boring below ground risks electrocution and explosion through contact with unseen hazards such as electricity cables and gas pipes.

Always ensure that the parent machine is secure and stable with its engine switched off before carrying out any maintenance work.

Never operate the Earth Drill with worn, damaged or missing parts. Only use genuine replacement parts.

Never allow bystanders (including animals) within 6 metres of the work area or allow minors to operate the Earth Drill unit.

Never drill beyond the length of the auger.

Never expose fuel or lubricants to any possible source of ignition.

Always protect yourself and the environment. Hydraulic oil, lubricants and exhaust fumes are toxic.

Always tie back long hair and remove jewellery before work. Wear suitable clothing that is close fitting whilst allowing freedom of movement.

Never wear clothing that could become entangled with the auger or its drive.

Always protect hands - auger parts are sharp. Select gloves that are non-slip to improve grip and ones that protect against contact with oils and greases.

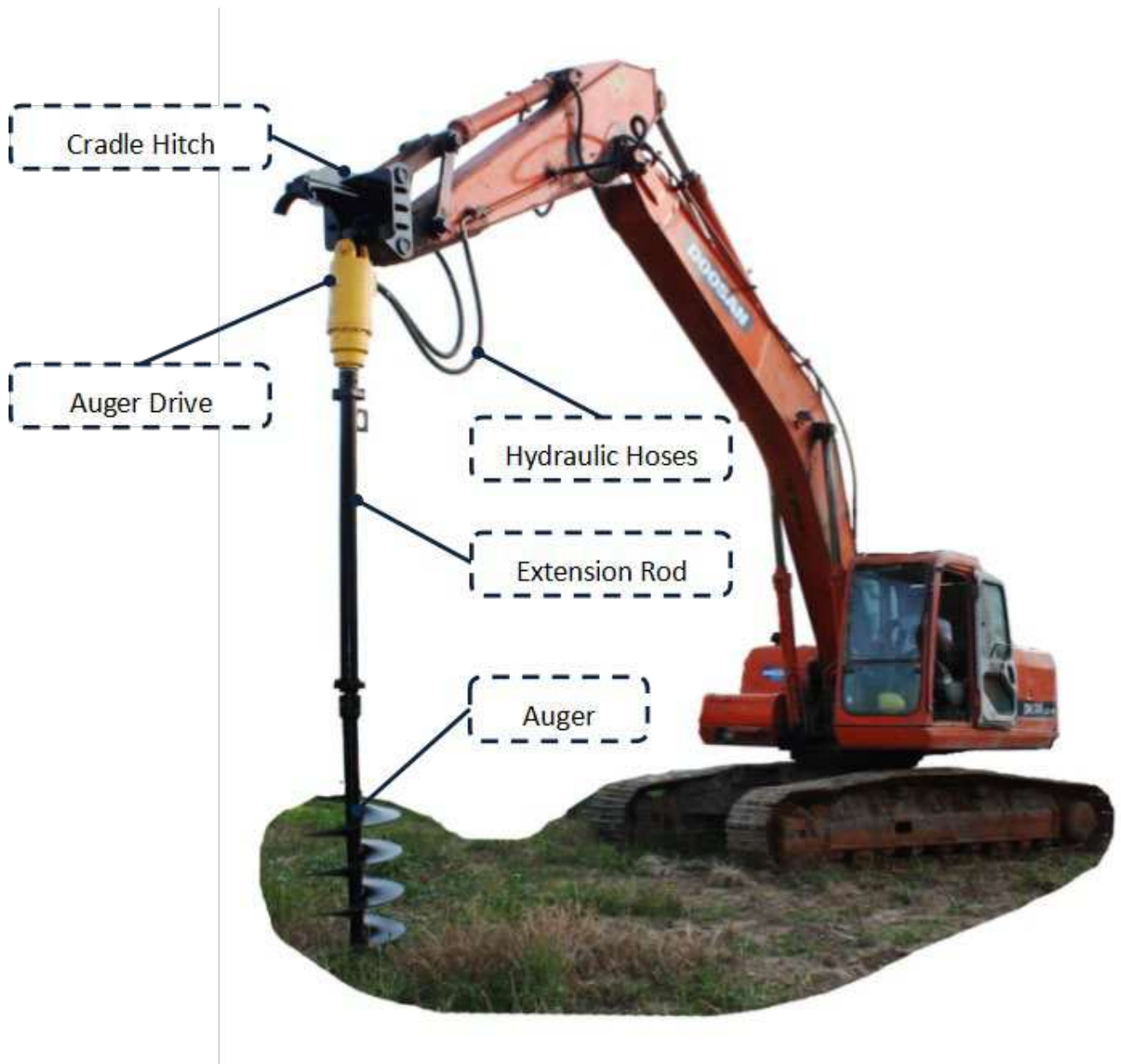
Always protect feet with safety boots (non-slip soles and steel-toe are recommended). Auger and drive parts are heavy and sharp.

Always wear head protection and eye protection when working on the Earth Drill.

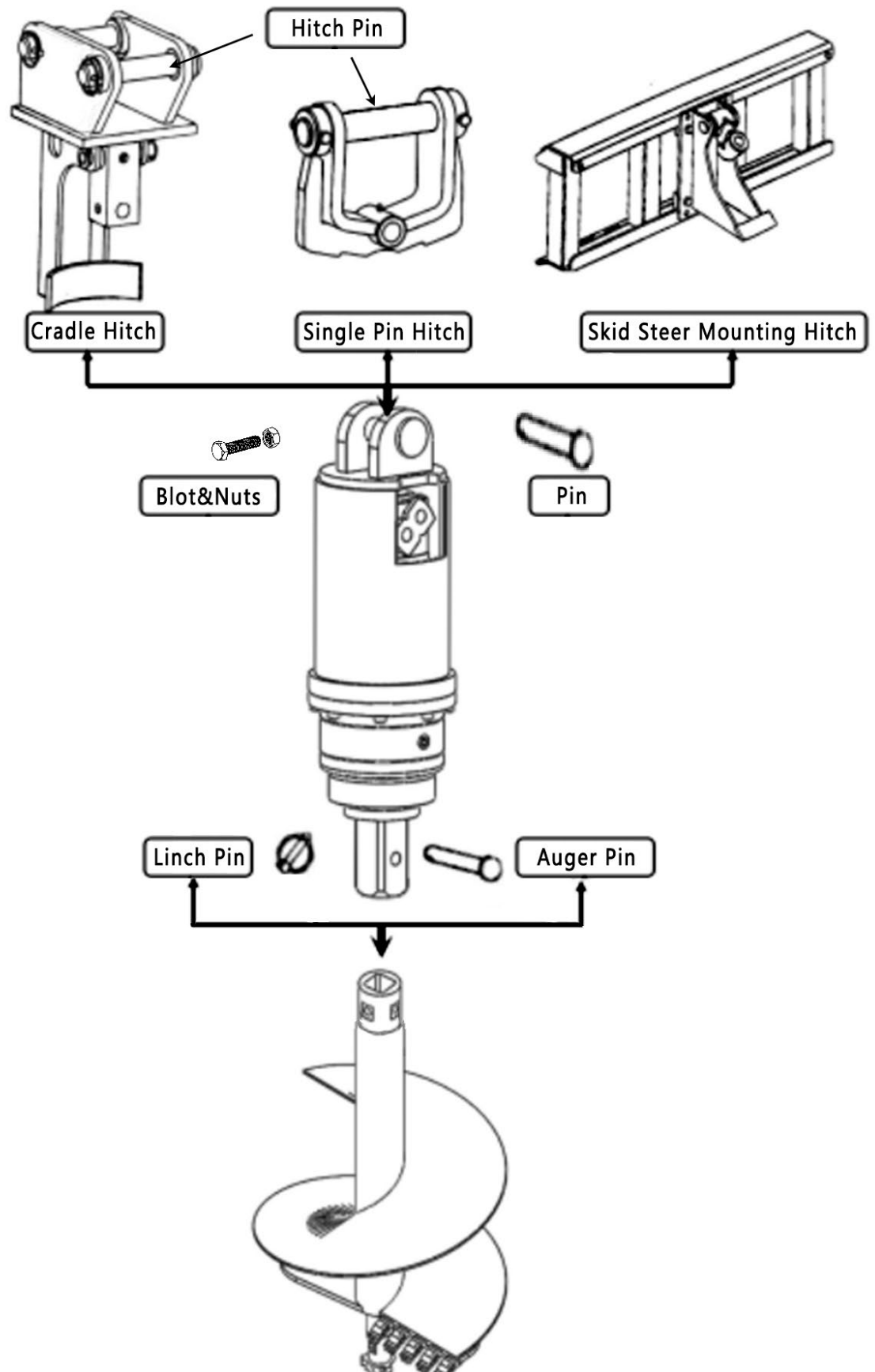
Always follow parent machine instructions regarding noise protection.



EARTH DRILL ASSEMBLING



IDENTIFICATION - ATTACHMENTS PART



MOUNTING FRAME FITTING - HITCH

Always work in pairs (2 skilled operatives) whenever Earth Drill unit components are being assembled or disassembled from the parent machine.

Always check the weight of the attachment and ensure you have the correct equipment for handling it.

ALWAYS check parent machine:

- Is in correct working order
- Is parked correctly on flat ground
- Has its hand brake **ON**, its hydraulic circuit locked out and its engine switched **OFF**.

Check that the mounting frame is of the correct model and type to fit the parent machine.

Ensure mounting frame and attachment points are clean before fitting.

Use suitably rated lifting equipment if required (see data plate for weight).

FITTING ensure all components are greased on assembly

MOUNTING EARTH DRILL ON THE HITCH:

The connecting frame can be placed on a horizontal plane;

Align the connecting block with the inside of the earth drive lifting lug to align the position of the hole;

Thread the pin into the hole and tighten the bolt and lock nut. The fixing shall reach 100 nm torque.

MOUNTING FRAME FITTING- CRADLE HITCH:

Align the boom of the excavator with the corresponding hole of the cradle hitch, push the shaft(pay attention to the alignment of the shaft hole with the fixing hole of the cradle hitch);

Thread the bolt into the pin hole, tighten it with the lock nut, and fix it to torque of 26 nm;

Similarly, align the excavator jib with the cradle hitch hole, push the shaft completely, and pay attention to the alignment of the shaft hole with the fixing hole of the cradle hitch;

Thread the bolt into the pin hole and tighten it with the lock nut to torque of 26 nm.

MOUNTING FRAME FITTING-SINGLE PIN HITCH:

Align the pin holes of the mounting frame and parent machine. Align bolt location holes fit spacers if required to centralize the frame. Push the pin fully home, taking care to line up the through bolt holes. Fit the through bolts and nylon insert nuts and tighten to 26 Nm.

Once fitted, check the drive unit swings freely in all directions.

HYDRAULIC CONNECTIONS

All Earth Drill Units require a 'Flow' and 'return' of hydraulic oil from the parent machine's auxiliary hydraulic power supply to operate.

All gearboxes are reversible, but require the host machine to be fitted with a two way flow auxiliary circuit.

(Check with parent machine dealer for advice).

When fitting hydraulic hoses, ensure that they are tightened to the correct torque for the hose fittings .

Quick Release Coupler are required for connection to the parent machine, but are not supplied with the unit. These should be sourced locally and be compatible with the auxiliary hydraulic Quick Release Couplers on the parent machine.

The parent machine auxiliary hydraulic connections are normally located near the end of the loader arms, excavator dipper or truck crane booms.

Ensure that the drilling rotation of the Earth Drill Unit is clockwise.

It is critical that the supply of oil is within the stated flow & pressure limits for the particular drive unit.

Warning: If pressure and oil flow exceed the maximum value which auger drive marks, hydraulic motor and gearbox will be damaged. And as a consequence, no warranty will be provided, factory only provide paid maintenance services.

Warning: Intermittent working conditions, running of the motor per minute shall not exceed 5%. Therefore, if earth drive encounters resistance greater than the torque and cannot operate normally, the oil supply shall be stopped immediately. Illegal operations such as increasing the throttle, pressing down or not loosening the throttle shall not be carried out, and the reverse operation shall be carried.

Earth Drive Torque (NM)	Max Pressure (bar)	Max Oil Flow (Lpm)	Earth Drive (NM)	Max Pressure (bar)	Max Oil Flow (Lpm)
Mini	200	45	9000-10000	200	95
1200	220	50	12000-15000	240	150
1500-4000	200	75	20000-25000	240	170
4500-5000	210	95	30000-40000	210	170
5500-6000	210	115	50000-70000	350	200
7000-8000	240	150	100000-150000	350	280

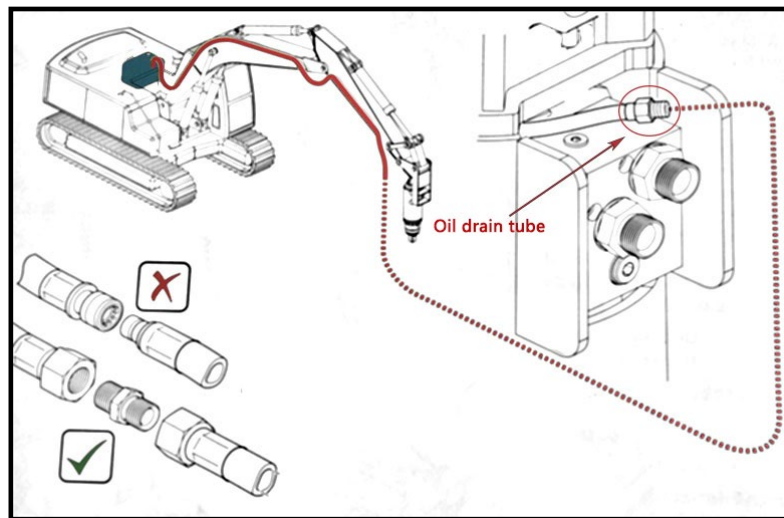
HYDRAULIC CONNECTIONS-CASE DRAIN LINE FITTING

Some of the larger drive units are fitted with a case drain line.

This is a flexible hose protruding from the drive unit hood and must be connected to a line that returns to the machined hydraulic fluid reservoir, the parts required to complete this circuit will vary, depending on the machine and the hydraulic equipment fitted. Consequently, case drain hose fittings are not supplied with the EARTH DRILL and must be separately.

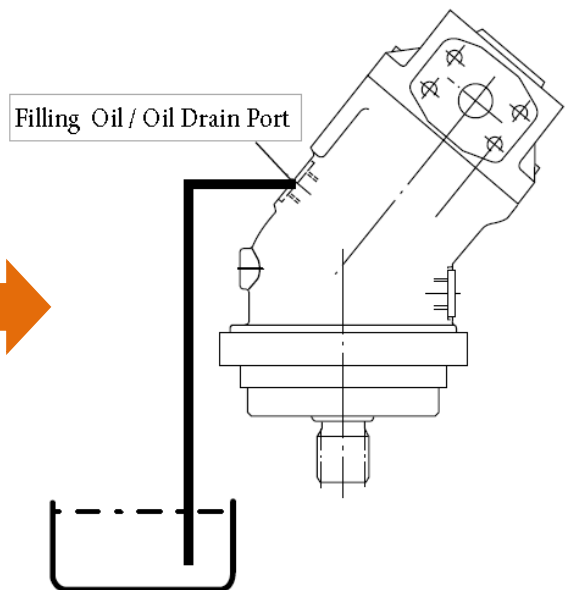
When fittings a case drain line, there must be no restrictions to the flow between the drive unit and the reservoir. You **MUST** not use quick release couplings.

The maximum permitted back pressure is 0.5Bar.



Warning:

About Earth Drive which used piston motor, before using the auger drive, filling the motor with oil to discharge the air inside is necessary.



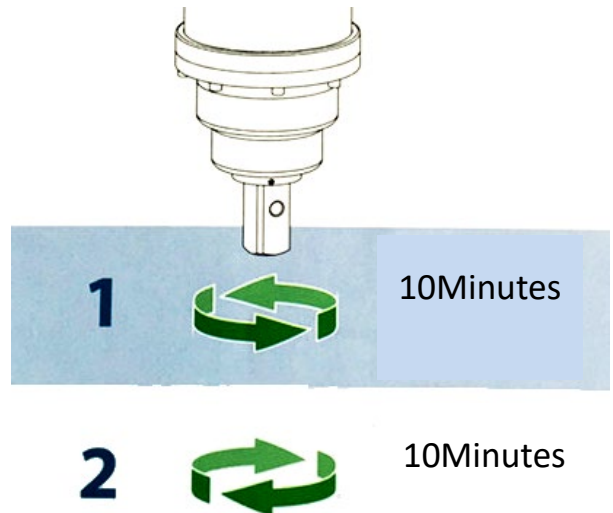
RUNNING-IN

To maximise the life of the unit, it must be run in for a period.

To carry out the running in procedure, suspend the drive unit in its vertical, working position.

For the duration of the running in procedure, ensure that no bystanders (including animals) can get within 6 metres of the work area.

Operate the motor at 30% of rated pressure for 10 minutes in each direction before application of full operating load.



To further ensure best motor life and maintain warranty.

FITTING THE AUGER

ALWAYS work in pairs (2 skilled operatives) whenever Earth Drill Unit components are being assembled or disassembled from the parent machine.

ALWAYS check parent machine:

- Is in correct working order.
- Is parked correctly on flat ground.
- Has its hand brake **ON**, its hydraulic circuit locked out and its engine switched **OFF**.

CHECK that the Auger is the correct model and type to fit the Earth Drill Unit.

ENSURE that the Auger connections are clean before fitting.

USE suitably rated lifting equipment if required (see data plate for weight).

Position the Auger in the vertical work position and support it so that it cannot fall over.

Position the Drive Unit over the Auger and align the pin holes.

Lower the Earth Drill Unit onto the Auger.

Locate the auger pin.

Secure the auger pin with linch pin.

Detail of pins see page 3.

WORKING PROCEDURE

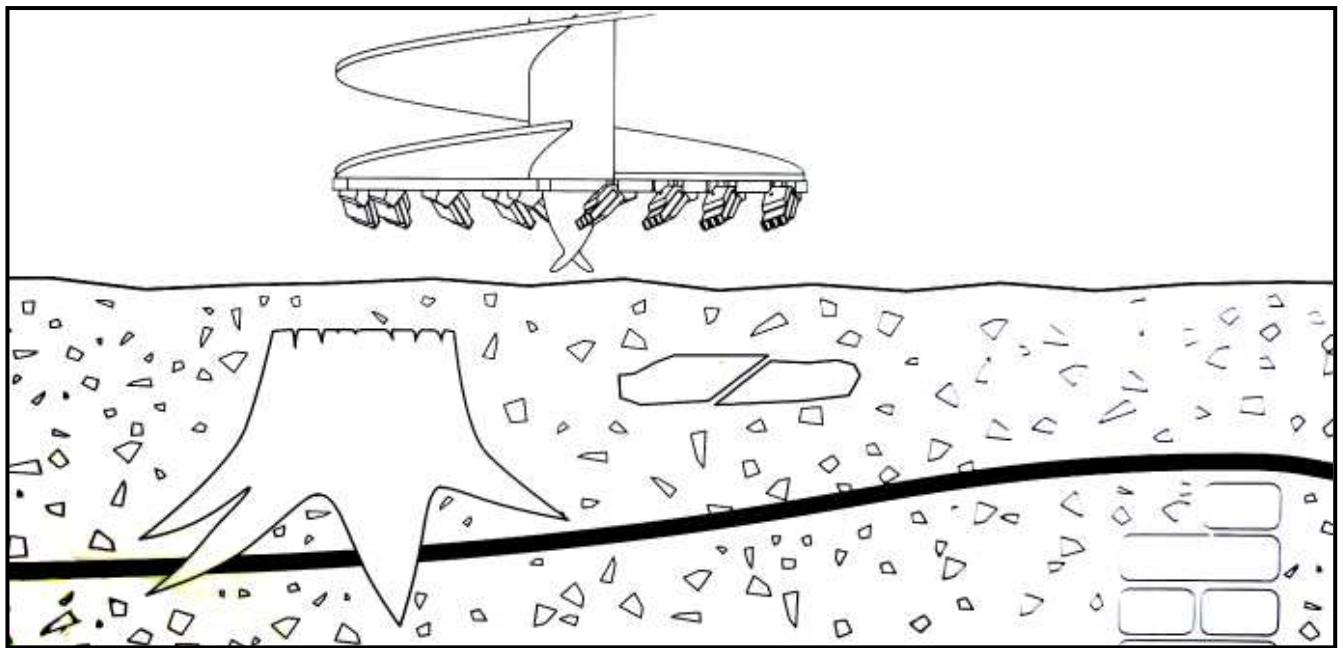
CONSIDER the topography (e.g. risk of subsidence, slope angle, position to embankments and any previous excavation).

NOTE the type of soil and its condition to enable selection of suitable teeth and pilot.

ALWAYS carry out a site survey and risk assessment **BEFORE** starting work.

AVOID underground hazards, such as water / gas / electricity / communication lines etc.

If in doubt detection equipment and professional advice should always be considered before carrying out any work.



WORKING PROCEDURE

Before commencing working, ensure that:

1. The correct hoses are fitted and tightened correctly.
2. The unit has been properly run in .
3. There are no bystanders are with 6 meters of the work area.

SET auger in a vertical drilling position (Fig A) .

ENSURE the direction of rotation is **CLOCKWISE**.

ONLY start drilling after a site survey on a pre- marked safe location.

GRADUALLY lower the parent machine arm(s) to apply down force to the auger. The harder the ground the more down force required.

Maintain drilling speed.

DO NOT CONTINUALLY STALL the Earth Drill unit with excessive down force, as this will overheat the hydraulic oil and could damage the machine.

KEEP THE AUGER VERTICAL;

For skid steer machines (Fig B):

Adjust the angle of the arms, mounting frame and the position of the parent machine as necessary.

For excavators (Fig C);

Adjust the angle of the dipper and boom.

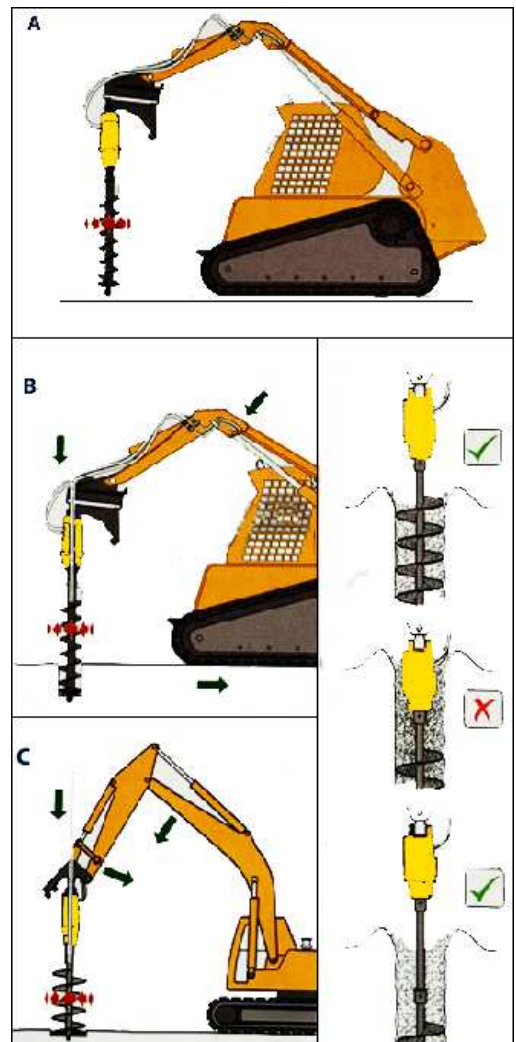
MAXIMISE efficiency and avoid damaging the auger assembly by keeping the auger vertical.

REGULARLY raise the auger out of the ground to clear material from the auger. This will help maintain drilling effectiveness and ensure your machine does not become unstable.

NEVER rill beyond the length of the auger.

NEVER leave the auger assembly suspended.

ALWAYS park with the auger on the ground.



Particularly important: **ALWAYS** keep auger in a vertical position when drilling.

MAINTENANCE & LUBRICATION

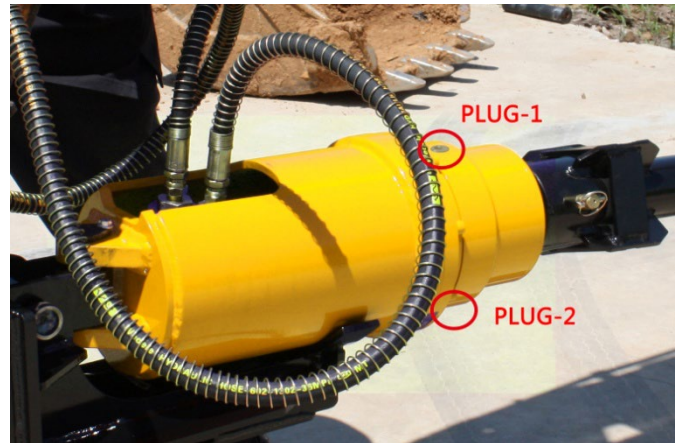
OIL CHANGE PROCEDURE

Before starting any maintenance work on this unit, read the instructions carefully and ensure you have the correct tools, materials and safety equipment to hand.

NOTE: The procedure described below should be carried out by a competent and proficient engineer.

1. Pre-heat the oil by running the unit for 15 minutes, Ensure that the unit is safely supported in a horizontal position.

2. Remove drain & fill plugs (1&2) using suitable tooling and allow oil to drain for a minimum of 10 minutes. For best results leave to drain complete.



3. Wash inside of auger drive.

4. Refit drain plug (2)

5. Fill with oil.

(STEP 5) Refer to NEXT page for correct oil grades and quantities.

6. Refit fill plug (1).

7. Check for signs of leakage, refill as necessary.

MAINTENANCE & LUBRICATION - OIL

The high gear industrial gear oil is selected for the gearbox of earth drive.

Standrad	Ambient temperature (°C)		
	-40~-15	-20~+10	+10~+50
ISO	-	VG320	VG460
GB	-	320	460
AGMA	-	5EP	6EP
MOBIL	SHC 600 Series 632	SHC Gear OH320	SHC Gear OH 460

MAINTENANCE & LUBRICATION - OIL CHANGE

Notes: Whichever time occurs firstly.

Earth Drive Torque (NM)	First after Initial Use	Change Time
1500~5000	3 Months or 200hours	6 Months or 400hours
5500~15000	2 Months or 120hours	4 Months or 240hours
20000~25000	1 Months or 80hours	2 Months or 120hours
30000~70000	1 Months or 50hours	2 Months or 100hours
100000~150000	1 Months or 50hours	2 Months or 100hours

OPERATING INSTRUCCION

1. Customer Notes:

Please read the operation manual carefully before using the Earth drill.

2. Operator Notes:

Operator must use Earth Drill according to operation manual. Manufacturer is not responsible for the damage under this circumstances.

3. Spare parts replacement:

Use only original equipment, manufactured parts to protect the validated warranty.

4. Hydraulic hoses:

The special matching hydraulic hoses must be used. Ensure the cleanliness of the hoses within the process of removing and installing.

5. The use of hydraulic oil:

Filter hydraulic oils before using the hydraulic earth drill. Hydraulic oils must be replaced in time as per excavator's using time.

6. Working environment:

Observe the construction scene carefully, following safety rules and work terms strictly , to prevent the occurrence of safety accidents. Drinking and drugging must be banned before operating the hydraulic earth drill. Preheat before operation. After the operation , equipment must be confirmed completely cessation .

DISCLAIMER

1. Manufacturers are responsible for quality of earth drill, but not responsible due to quality problems or other causes of loss, injury and other related issues.
2. Other people can not be within a radius of 6 meters in the process of operation. All the consequences arising there from shall not be responsible for our company.