English

MOVAX™

Soil Drill

TAD30-2

User manual

from SN 1080 onwards

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Movax Oy

Tölkkimäentie 10
13130 Hämeenlinna
FINLAND
www.movax.com
marketing@movax.fi

printed from www.arag-bau.ch

ARAG Bau AG
Zinggen
6166 Hasle LU
www.arag-bau.ch
Tel. 058 710 00 00

INDEX

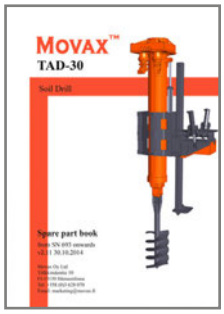
1. INTRODUCTION

Movax TAD is a telescopic soil drill that can be mounted on a standard excavator. TAD does not require changes on a mechanical structure of the excavator but can be used as attachment.

Read this instruction manual trough to get understanding of safe and allowed use of TAD soil drill. This manual helps user to get started on site as well as explains regular maintenance procedures.

Manual includes instructions of control buttons that an operator use to control hydraulic functions on the soil drill. This manual does not cover Movax auto control system. Read separate Auto Steering manual if your excavator is equipped with this system.

For spare parts there is separate manual `Spare Parts Book`. Spare part ID number must be mentioned when placing order. Also, remember to inform the serial number, type and all the possible changes that have been done on your Movax TAD. This insures you will receive the correct spare parts.



Only an operator trained by a Movax manufacturer or distributor is allowed to operate the soil drill. Trained operators will receive the operator's certificate. This is also a condition of warranty.

SAFETY AND WARRANTY

2.1 2.1 SAFETY

◊ Operator must be trained for TAD soil drill

◊ Ensure there are no personnel in working area

◊ Obey safety instructions for excavator

◊ Check a connection between the excavator and the soil drill regularly and always before use.

◊ Note stability and lifting capability of the excavator. It is recommendable to avoid working sideways to tracks.

◊ Avoid moving a boom and an arm of the excavator to positions where accidental movement of the excavator may cause collision between soil drill and cabin. Tilt the soil drill away from cabin when lifting it up or lowering down.

◊ Beware of drilled bores in a ground. Bore is weakening the surrounding ground and there is a risk of falling into it. Never leave open bores without proper covering or isolating.

◊ Beware of over head electric cables.

◊ Always check for underground cables, pipes and other structures before drilling.

◊ Do not use the telescope of the soil drill for lifting.

◊ Lower the soil drill to the ground before leaving the cabin.

◊ Support and tie the soil drill properly when loading and transporting without the excavator.

◊ Do not go under dril when it is lifted.

◊ Beware that telescope can slowly lower down itself.

2.2 WARRANTY SAFETY

See general warranty conditions for Movax products (Appendix 1)

1. Movax operator must be having an operator's certificate.

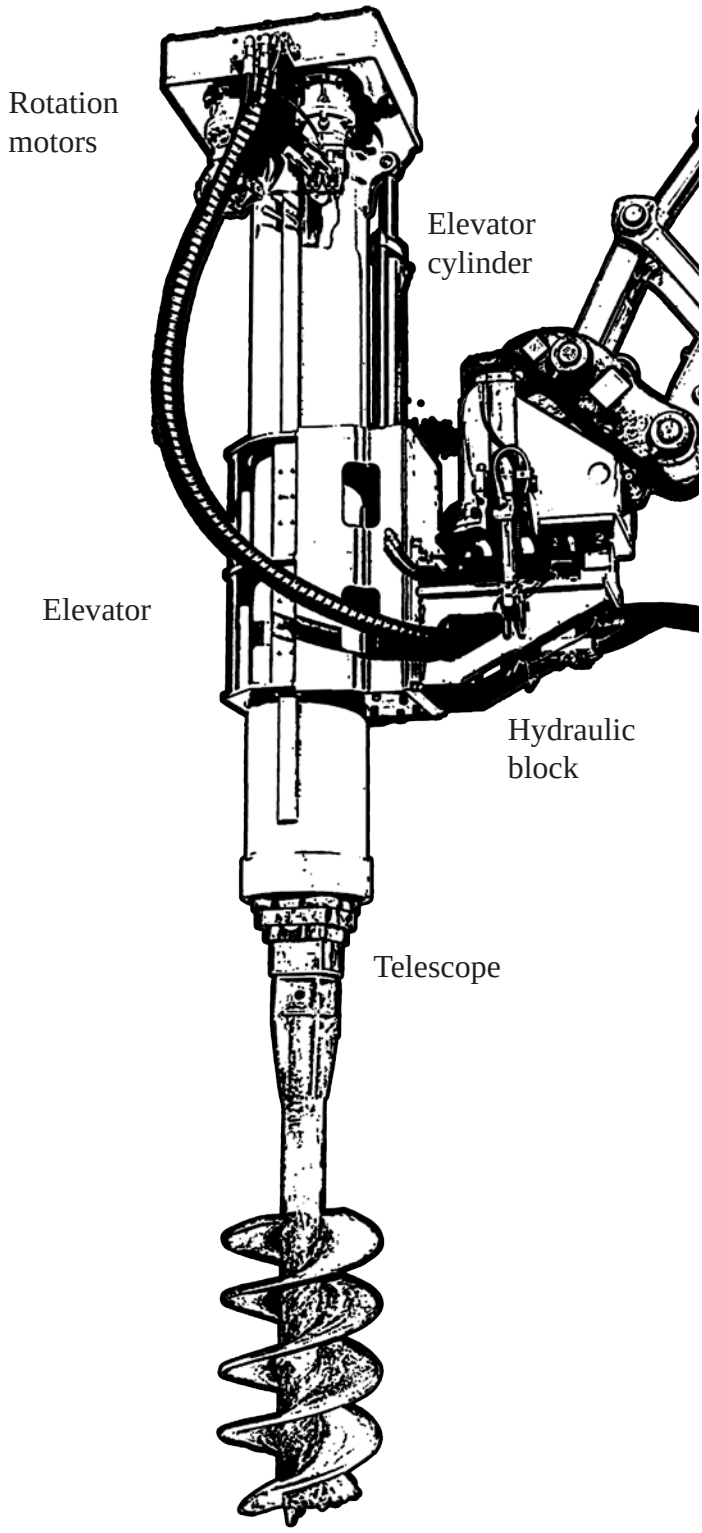
2. The soil drill has to be connected to excavator according to instructions. Note requirements for hydraulic system of the excavator and connections.

3. Maintenance has to be performed according to the instructions given in this manual or Movax service personnel.

4. Pressure relief valves on a valve block on the soil drill must not be set over allowed maximum. Failing to follow this may lead to break down of telescope lifting gear. Maximum pressures are shown on a hydraulic scheme on spare part manual.

5. The soil drill should be only used for soil drilling purposes according to instructions on this manual.

3. MOVAX TAD30-2



4. USING MOVAX TAD – SOIL DRILL

Before use read this users manual trough and ensure you have comprehensive knowledge of its functions.

4.1 ATTACHING THE SOIL DRILL TO THE EX-CAVATOR

Movax soil drill can be mounted on the excavator with suitable quick hitch or with pins. For safety reasons make sure that locking mechanism on the quick hitch full fills the standards and is in good working condition.

For the hydraulic functions the soil drill needs to be connected to one way auxiliary circuit of the excavator. In addition to this there is a need for drainage line that is connected directly to hydraulic tank of the excavator. Minimum sizes of the piping are shown in a table below.

Connect the drainage and the return lines before connecting the pressure line. Ensure that all ball valves on the excavator pipes are open if installed. Hydraulic motors will be damaged if the lines are not connected properly prior the use of the soil drill. Also, keep all connectors clean and use protector caps when not connected.

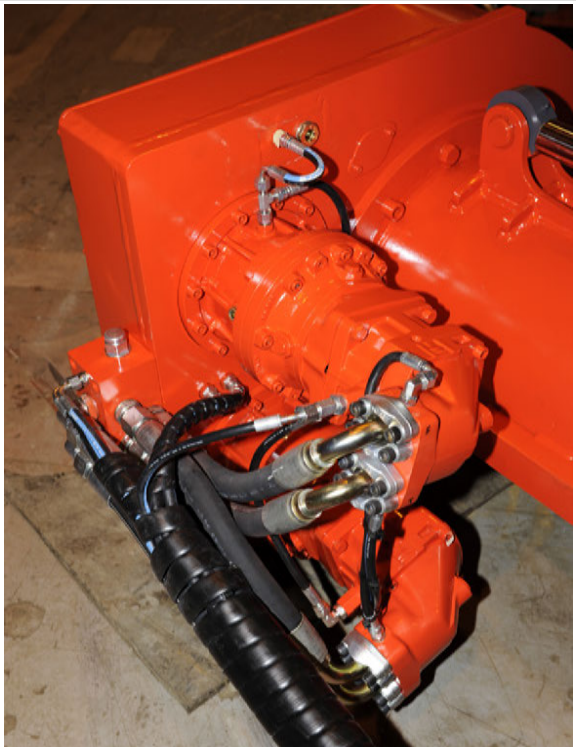
Then connect an electric cable that is needed to control the functions of the drill. Electric connector must also kept clean and dry for problem free operation.

HYDRAULIC REQUIREMENTS FOR TAD-30S

Pressure pipe / hose ø	30 mm / 1”
Return pipe / hose ø	30 mm / 1” or 42 mm / 1 ¼”
Drainage pipe / hose ø	7 mm / ⅜”
Oil flow, minimum*	75 l/min
Oil flow, maximum*	250 l/min
Relief setting	320 BAR
Return pressure, maximum	5 BAR

*Auger RPM is depending on the oil flow.
TAD30-2 11 – 74 1/min

4.2 FUNCTIONS



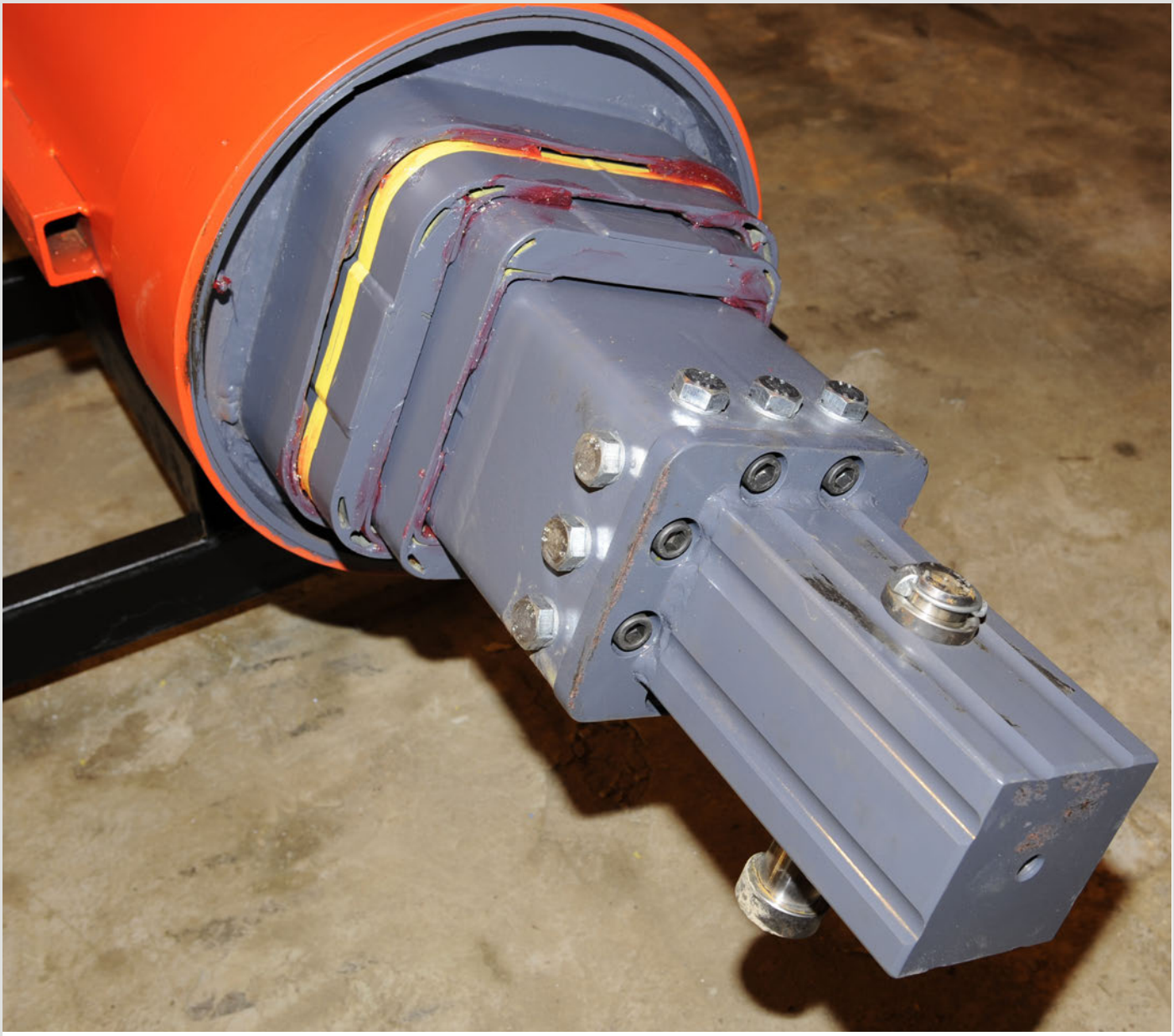
Rotation. The auger is rotated by two axial piston motors. TAD-30s has two different speeds for rotation. Higher speed employs only one of the motors with maximum torque of 15.000 Nm. Lower speed mode engages both motors and delivers 30.000 Nm of torque.

Lowering and raising the auger. Telescope and elevator mechanisms are used for lowering and raising the auger during drilling. Keep the auger paralled and centered to the bore at all times. Careless moving the boom or the arm may cause bending forces to the telescope lead to break downs.

Movax TAD30-2 soil drill has telescopic kelly bar with two moving extensions. Movement is implemented with a hydraulic cylinder. The mechanism is working two ways thus enabling the hydraulic push and pull. During the drilling work the kelly bar can be also released to floating mode.

Elevator refers to a lift mechanism on between main body and a part that links the soil drill to the excavator. Elevator is moving the drill up and down by hydraulic cylinders. This can be used for reaching the maximum depth but also for drilling or pulling out at any depth as it creates same direction linear movement as the telescope.

Side tilt. The soil drill tilts 30º both side ways. This movement works with two hydraulic cylinders. The tilt is used to straighten the drill when the excavator is on slope or uneven surface. Tilt can be also used for raked drilling.



4.3 CONNECTING AUGER TO KELLY BAR

The auger is mounted into the telescopic kelly bar with bolt-on adapter that is changeable for different size and shape bars. This enables the use of the augers with different connection standard. Ask you Movax dealer for needed type adapter.

Following procedure is easy and safe way for mounting the auger. Pay attention to safety, never go between moving parts.

1. Make sure the adapter is firmly bolted to the telescope kelly.

2. Lay the auger on the ground and support the end against solid rest, track of the excavator in example.

3. Line up the soil drill and the auger.

4. Rotate the auger or the telescope until the kelly bar and the box are in same position. Note the position of the locking pin and hole.

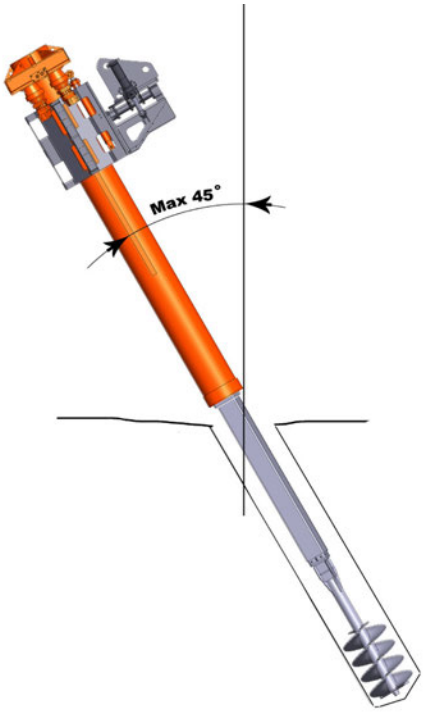
5. Use telescope to push the kelly bar into the auger.

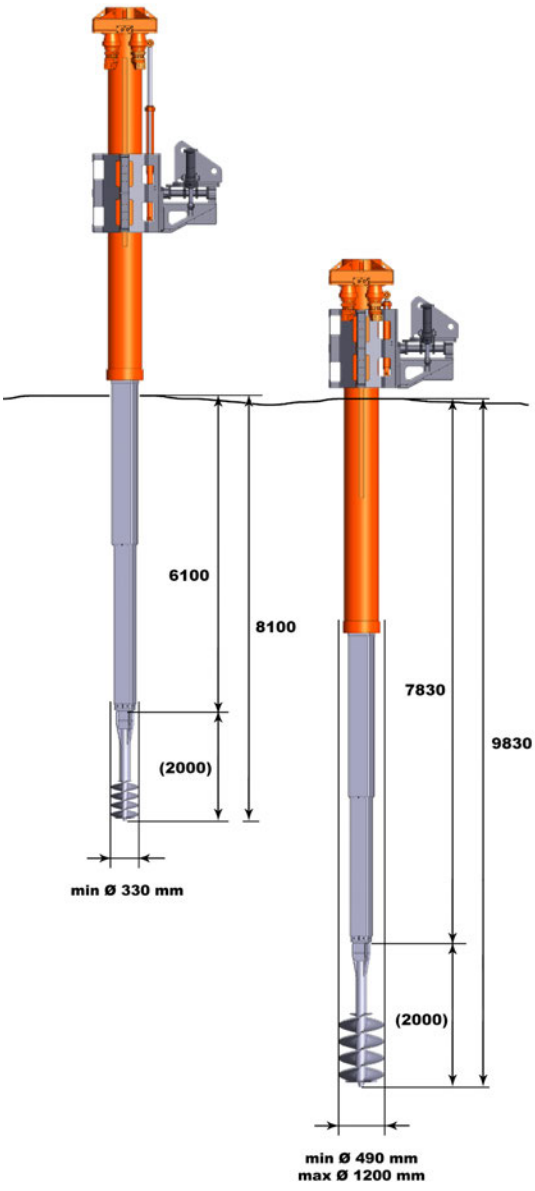
6. Install the locking pin(s).

4.4 POSITIONING FOR DRILLING

Lift the soil drill upright position and move to wanted location of drilling. The telescope is ideally in a shortest position at the beginning and the elevator roughly halfway or lover position. Then use the boom of the excavator to position the end of the auger about half metre above the ground. Alignment can be done by moving the arm, the bucket cylinder of the excavator and tilt function on the soil drill.

Movax soil drill can be used also for raked piles. Drilling angle must not exeed 45 degrees thus drilling on horizontal position is not allowed. Rotation of the telescope in too big inclination can cause a damage to the mechanism used to drive the telescope.





Working range measured to the end of the telescope and with 2000 mm long auger.

4.5 DRILLING

Begin the drilling by starting the rotation clockwise. Rotation speed can be set by changing the oil flow from the excavator. This is easily done by changing the running speed of a diesel engine. TAD-30s enables two different speeds by running one or two motor at the time. Higher speed is in use by using one motor and lower speed with higher torque when running both motors. It is recommendable to start with one motor and switch to two when more torque is needed.

Rotating auger can be now lowered to the ground by utilising the telescope. There are two ways of operating telescope. It can be released to go down by the gravity and a force created by the auger flights. Other option is to push the kelly out hydraulically and that way put more down force in a case that auger is not cutting well into soil by its own weight.

The auger should be driven into the soil from 0.2 to 0.8 metres at time depending on the ground condition, size of the auger as well as the type of the auger. Then stop the rotation and rotate some half round counter clock wise to get the auger loose from the cutting point. This may not be needed with granular and very light soils. Pull the telescope in until whole length of the auger is above the ground. In addition to telescope movement the elevator can be used to lift the auger up. In order to avoid bending the telescope tubes be cautious when moving the boom, arm or bucket cylinder whilst the auger is lovered into the ground or casing.

Remove the soil from the auger by rotating it counter clock wise.

5. MAINTENANCE

5.1 LUBRICANTS FOR TAD-30

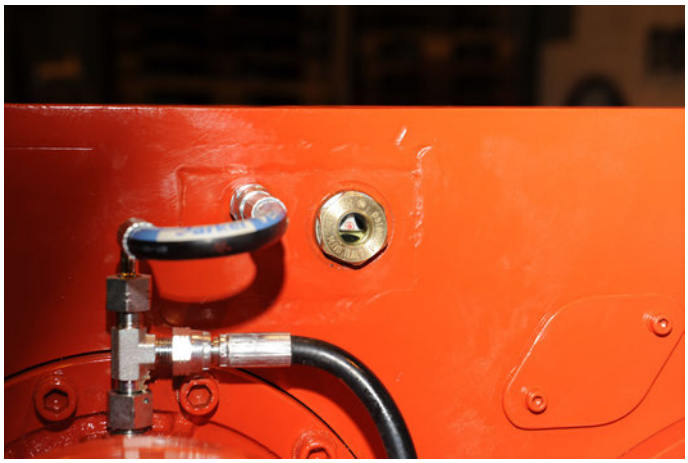
1. Lubricant for greasing points; grease nipples, rotary gear, slide bearings and all slides on the telescope and the elevator: Open gear grease, greasing intervals on chapters below.
2. Lubricant for planetary gears: 80W-90 API GL-5 gear oil. First change after 40 hours, then every 6 months or 250 hours.

5.2 DAILY MAINTENANCE

Check daily:

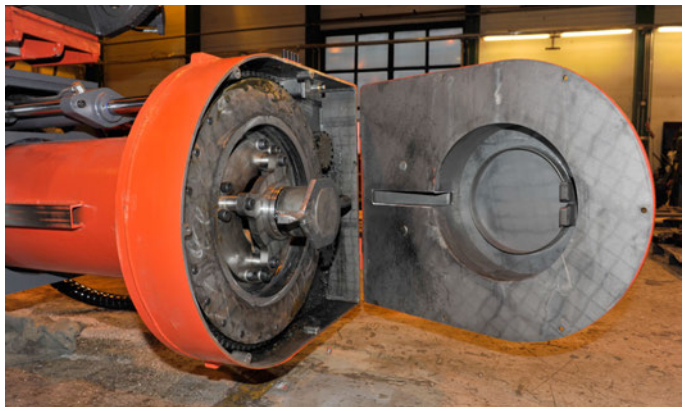
1. Hydraulic hoses and connections, pay attention to possible damages, leakage and loose fastening
2. Oil level of the planetary gear
3. The bolts on kelly bar end - check the torque and tighten if needed
4. Slides on the elevator frame
5. Mechanical connection to the excavator and the bolts connecting the adapter to the drill
6. Tilt pin and fasteing of the tilt cyliders

Note. Do not operate the drill if any of the mechanical or hydraulic components is damaged or loose.



Grease daily:

1. Slide bearing in lower end of a frame tube.
2. Slides on the elevator.
3. Telescopic kelly bar (may not be necessary on daily basis).



Note 1. Continuous rotation of the drill is not allowed while greasing the telescope with the drill in horizontal position. The rotation can be still used shortly to spin the telescope around for better access for greasing.

Note 2. Do not rotate when top cover is open. There is a risk for hose failure.

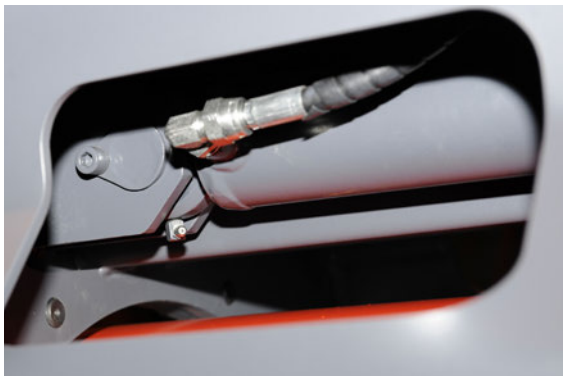
5.3 MAINTENANCE WEEKLY OR EVERY 40 HOURS

Check weekly:

1. Open the top cover and inspect the gear wheels, clean if needed.
2. Inspect a rotary joint. Make sure there are no leakages and check that the rotary joint cannot turn around but a stopper is firmly fixed.
3. All points mentioned in a chapter DAILY MAINTENANCE
4. Retract telescope, after that two grease nipples comes visible (marked “A” in photo)

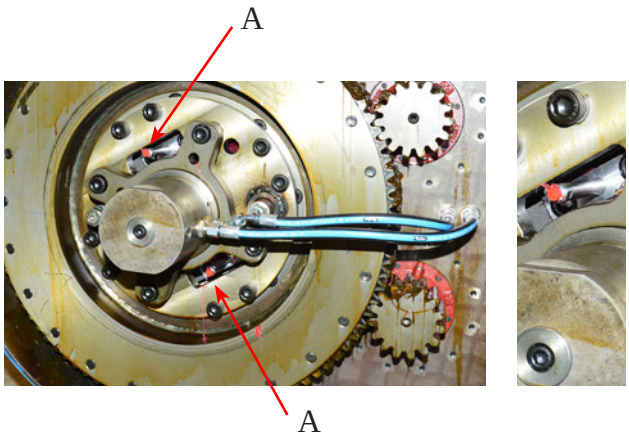
Grease weekly:

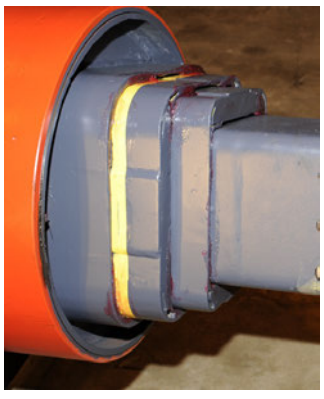
1. Gear wheels inside the top cover
2. Bearing of the rotary gear
3. Tilt pin and cylinder bearings.
4. Retract telescope, after that two grease nipples comes visible (marked “A” in photo)



5.4 MONTHLY MAINTENANCE

1. Clean the gear wheel casing and telescope.
1.1. Open the top cover and remove the adapter for the auger from the telescopic kelly bar
1.2. Clean the gear wheel casing and telescopic kelly bar both inside and outside. Use high pressure cleaner with hot water if available.
2. Inspect all related parts
3. Use new bolts for kelly bar adapter
4. Shim or change the slides on the elevator if necessary
5. Inspect and lubricate all points mentioned in the chapters DAILY -AND WEEKLY MAINTENANCE.

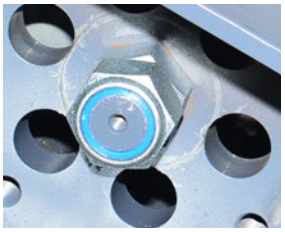




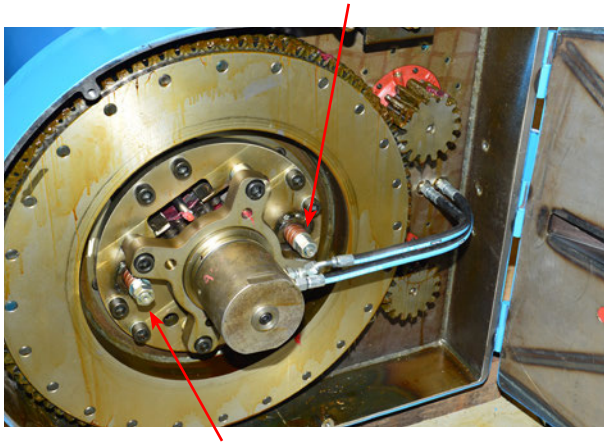
6. Check the chain adjustment in the telescope.

6.1 Pull mechanically the telescope fully in to the shortest length. You can ensure fully in position with hand winch.

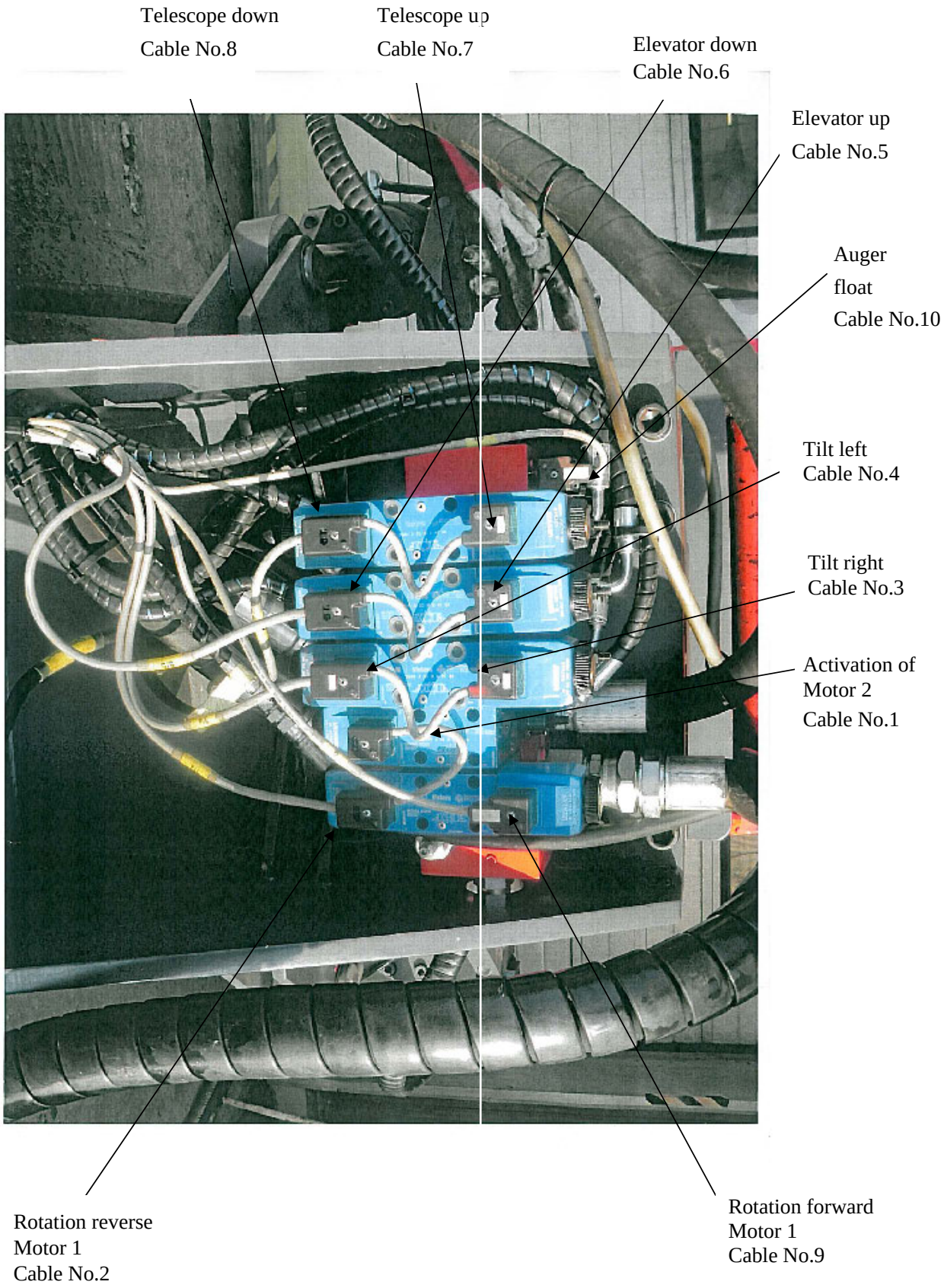
6.2 Tighten the nuts using special tool. Right moment is achieved by hand tightening when using this tool. This way right tightness of retraction chains is ensured.



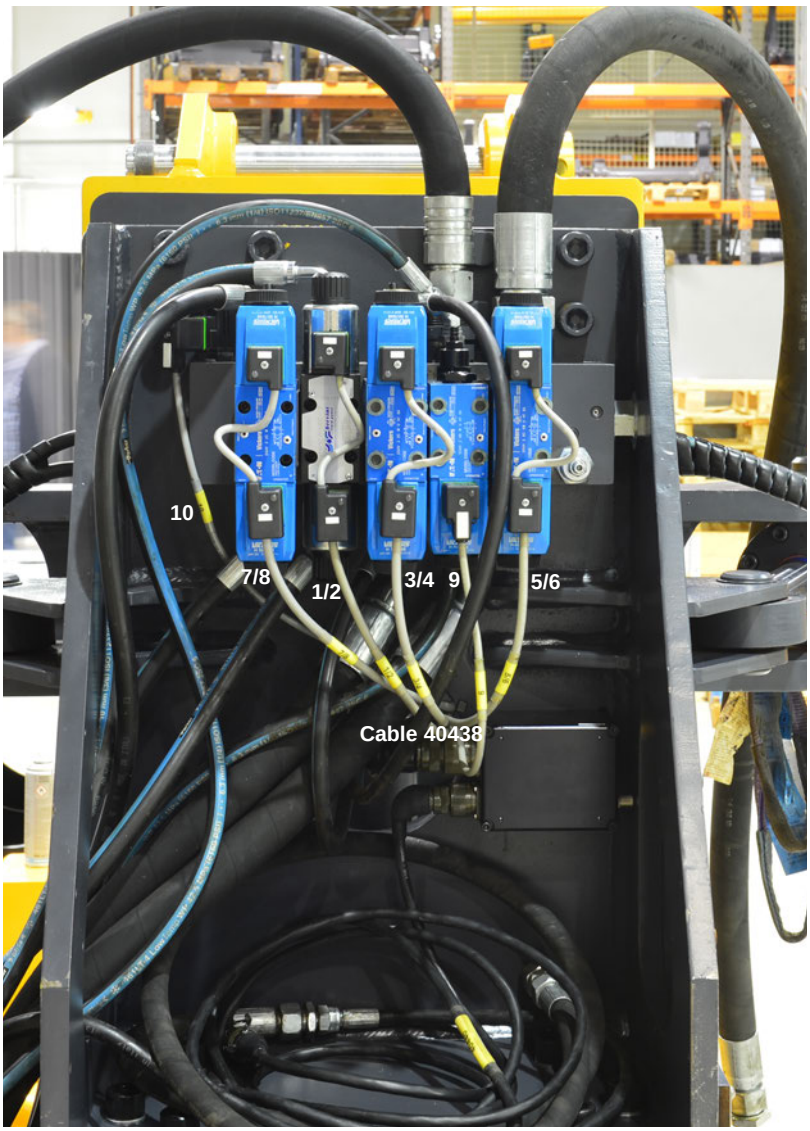
6.3 Under top cover can be found two springs (marked “B” in photo). These springs must have 7 mm compression from free length to ensure right tightness on extension chains.



5.5 PIN ASSIGNMENT ON THE VALVE BLOCK (Manual or AutoC control system)

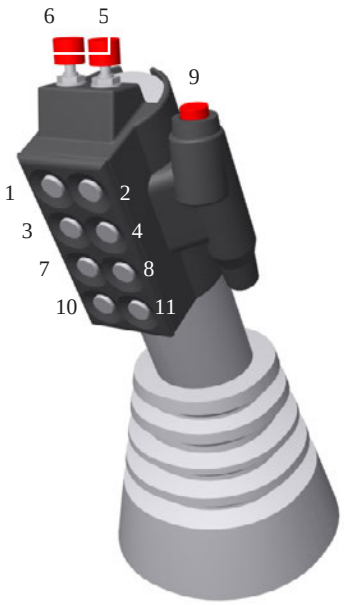


5.6 PIN ASSIGNMENT ON THE VALVE BLOCK AU-02-0-4 FOR MCS PRO AND MCS LITE CONTROL SYSTEMS (CABLE 40438)



Wire No.	Function
1	Elevator up
2	Elevator down
3	Tilt right
4	Tilt left
5	Rotation reverse motor 1
6	Rotation forward motor 1
7	Telescope up
8	Telescope down
9	Activation of motor 2
10	Auger float

5.7 JOYSTICK



TAD-30	
FUNCTION	**BUTTON OR COMBINATION**
Auger rotation fast forward Motor 1	9
Auger rotation fast reverse	1
Auger rotation forward High torque (low speed) Motor 1 and 2	9 + 2
Auger rotation reverse (low speed)	1 + 2
Tilt right	3
Tilt left	4
Elevator up	5 + 11
Elevator down	6
Telescope up	7
Telescope down	8
Kelly float on / off	9 + click 2
Drill straightening, automatic	9 + 11

WARRANTY CONDITIONS FOR MOVAX PRODUCTS

1. The extent of warranty

Movax Oy Ltd grants a warranty to the delivered new equipment according to these conditions. The warranty only includes material and manufacture defects. The warranty does not cover the situations mentioned in section 5.

2. Duration of warranty

The warranty period is 12 months. The warranty period starts when Movax Oy Ltd has delivered the equipment to the customer. The delivery is considered made when the customer has received the equipment or Movax Oy Ltd's representative has installed the equipment as agreed.

3. The additional expenses of warranty repair

The warranty does not cover the expenses of the spare parts freight. The warranty does not cover the travel and/or overnight expenses of the maintenance personnel.

4. The conditions for warranty repair

The warranty is valid when:

a) The damage occurs in normal operating conditions.
b) The customer has followed the instructions given by Movax Oy Ltd or its representative regarding the operation, installation and maintenance of the products.
c) The spare parts used in the repair and/or maintenance of the products have been approved by Movax Oy Ltd.
d) The customer notifies Movax Oy Ltd of the damage as soon as possible.
e) The customer makes a warranty claim and fills out the warranty form accordingly.

5. The limitations of warranty

The warranty does not cover:

a) Normal wearing or any wearing parts (hoses, seals, etc.).
b) Any damage that has occurred when the products have been operated against instructions given by Movax Oy Ltd or against the instructions in the instruction manual delivered with the product.
c) Any damage that has occurred when using spare parts not manufactured or approved by Movax Oy Ltd.
d) Any damage that has occurred because of repair or maintenance work made against instructions given by Movax Oy Ltd or its representatives.
e) Any direct or indirect costs brought on by the damaged products.

6. Additional conditions

The customer must send the damaged product or the damaged part to Movax Oy Ltd at its own expense, if required by Movax Oy Ltd.

Movax Oy Ltd has the right to charge for the search of the damage according to its effective price list, if it is later discovered that the damage reported by the customer is not covered by warranty.

Movax Oy Ltd and the customer agree separately the terms of delivery for the warranty repair.

Any disagreement related to these warranty conditions will primarily be settled trough negotiations between the parties. If the dispute is not solved by negotiations, the dispute can be resolved in Hämeenlinna district court initiated by either party.

Hämeenlinna, 3.5.2007

MOVAX

Model
Serial number

WARRANTY CARD

Movax Oy Ltd grants a warranty to the delivered new equipment according to Movax warranty conditions. The warranty period is 12 months and the warranty period starts when Movax Oy Ltd has delivered the equipment to the customer. The delivery is considered made when the customer has received the equipment or Movax Oy Ltd's representative has installed the equipment as agreed. The warranty card is required for warranty coverage and it helps in case of any warranty issues.

DISTRIBUTOR / DEALER (seller)

Company name: _____

Contact person: _____

CUSTOMER

Company name: _____

Contact person: _____

Address: _____

Phone: _____

Email: _____

MOVAX PRODUCT

Model: _____

Serial number: _____

Installation date: _____ Installation made by: _____

Additional information: _____

_____

_____

_____

Please return completed warranty card to Movax Oy Ltd by email to marketing@movax.fi or by fax to +358 (0)3 616 1641or by mail to Tölkkimäentie 10, FI-13130 Hämeenlinna, Finland. Warranty card can also be filled at www.movax.com.

TAD30-1 | TAD30-2

24 - 35 t

Movax Soil Drills are excavator-mounted auger drive attachments for cast in-situ piling and other earth drilling work. The technology behind its efficiency is a hydraulically operated telescopic kelly bar with two extendable sections on the TAD-30-2 and one longer extension on the TAD-30-1.

Movax Soil Drills work well in confined spaces while still being good at reaching over obstacles. The telescopic design keeps the machine low and

without compromising on drilling depth.

1. 2.

1. Auger for hard clay
2. Drilling bucket for hard soil

Technical data

Type	TAD30-1	TAD30-2
Weight without adapter and auger (kg)	3,500	3,200
Height without auger (mm)	5,355	3,855
Depth (mm)	1,673	
Width (mm)	1,013	
Excavator class (t)	24-35	
Oil flow (l/min)	75-250	
Max. return pressure (bar)	5	
Pressure setting (bar)	320	
Bore hole depth (m)	9	10
Bore hole diameter (mm)	400-1,200 *)	400-1,000 *)
Drill speed range (rpm)	11-74	
Side tilt angle (°)	± 30	
Torque (Nm)	30,000	
Auger pressing force (N)	15,000	
Auger pulling force (N)	60,000	30,000
*) depending on soil conditions and tooling		