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# WDR505 Underground Pulling Trailer

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**ISO 9001:2008**  
**CERTIFIED**

# ***Important Safety Notice***

Read and understand all procedures and safety instructions before using a Condux Underground Pulling Trailers. Observe all safety information on this page and note specific safety requirements as explained by procedures in this manual. Failure to follow these instructions could result in serious personal injury or death.

## **ADVERTENCIA:**

Favor de leer y comprender todas las instrucciones de operación y seguridad antes de usar la máquina. Si Ud. no comprende las instrucciones favor de consultarle a su jefe.



**Save this user's guide for future reference.**

## **COMMUNICATIONS WITH THE MANUFACTURER:**

For information related to the machine (use, maintenance, spare parts) always-state model number, manufacturing Year and Order. This date can be found on the parts identification label.

Manufacturer:

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Mankato, MN 56002-0247

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If you have questions on:

**SAFETY - OPERATIONS - APPLICATIONS**

CALL 1-800-533-2077

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# General Information

## 1.

### PRODUCT DESCRIPTION

The WDR505 pulling trailer provides up to 11,240 lbs. of pulling force and a max speed of 219 ft/min. It comes equipped with a digital meter counter, hydraulic dynamometer with set point and automatic control of the maximum pull, a noise reduction kit, as well as 2,600 feet of anti-twist rope a key feature. Anti-twist rope offers high flexibility, complete stability to rotation and increased efficiency during pulling operation.

An optional Electronic Control Box to monitor pulling speeds and tension is available, as well as an extension arm with multiple pulling positions to accommodate most applications. Condux International manufactures a complete line of cable installation tools and equipment.

### SAFETY INFORMATION

- Only trained and qualified operators should use this machine.
- Qualified operators are those persons who have received training from the machine owner's company or, alternatively, from the manufacturer.
- This machine must be used only for the work it was designed for.
- This machine should not be used with unauthorized personnel on the work site.
- For any questions regarding operation, function, maintenance, etc., contact the After-sales Service of the manufacturer.

### OPERATOR INFORMATION

- Operators must be aware of all local, state and federal safety regulations governing the use of this equipment.
- Operators must wear suitable clothing to reduce the possibility of entanglement in the machine's moving parts. They should avoid the wearing of chains, and other jewelry for the same reason.
- Operators must use personal protective gear (i.e. gloves, boots, helmet, etc.).
- Operators must carefully follow hazard related instructions contained in this instruction manual or indicated on the machine.
- This machine's work area should be free as possible of oil or other liquid spills as well as materials or equipment that may be considered as an obstacle to proper operation.
- The operator must absolutely avoid the direct inhalation of the system's engine exhaust gas.

### GENERAL MAINTENANCE INFORMATION

- It is absolutely forbidden to carry out any maintenance, or adjust any settings on this machine while pulling (except for those indicated in this manual).
- Before carrying out any maintenance stop the engine (except for those instances indicated otherwise in this manual) and wait till the system components subject to heating have cooled sufficiently
- All the maintenance performed on this machine must be carried out on a level surface and while the system is not under load.
- Authorized and trained personnel must perform all of the maintenance, both scheduled maintenance and repair. Authorized and trained personnel are those persons who have received training on the maintenance of this equipment from the machine owner's company or, as alternative, from the manufacturer.
- Maintenance personnel must wear suitable clothes to reduce the possibility of entanglement in the machine's moving parts. They should avoid the wearing of chains, and other jewelry for the same reason.

- Operators must use personal protective gear (i.e. gloves, boots, helmet, etc.).
- All maintenance operations, both scheduled and repair, must be carried out per the instructions included in this manual or following technical instructions provided by the manufacturer. Failure to follow these instructions relieves the manufacturer from any responsibility and voids their warranty.

## **MACHINE USAGE**

The machine must not be used:

- For lifting persons and/or goods
- In a location where the machine can not be positioned and anchored in a proper way
- In areas with brush or other materials that can be easily set on fire
- In closed/unventilated sites or those poorly ventilated (tunnel or similar)
- At sites where fuels or explosives are present
- For structure demolition
- For the pulling of elastic elements
- With ropes or joints having a bigger diameter than that specified in this manual
- With over-ridden or broken safety system devices
- For handling trucks or other movable equipment

## **RESPONSIBILITY**

Use of the machine in situations different from those indicated in paragraph 2.3 (Typology and using field), or those not described in this manual, is to be considered extremely dangerous and/or forbidden.

Persons not using recommended restraints cause a situation of improper use, and relieve the manufacturer from any responsibility for accidents, injuries to persons or damage to property. The manufacturer's warranty is also voided.

Similarly the manufacturer's responsibility ends when the following situations occur:

- Tampering and/or modifying of the system without the manufacturer's written acceptance (in this case the operator becomes the manufacturer assuming all obligations and responsibilities, both civil and penal).
- The use of non-original spare parts.
- Poor maintenance.
- Use with disconnected or over-ridden safety devices.
- For the connection to machine and/or plans not produced and not directly authorized by the manufacturer in a written acceptance.

## **OPERATORS MANUAL**

- Information contained in this manual applies to all the operators charged with the use and/or the maintenance of the machine.
- This instruction manual is not a training manual.
- Before using the machine the job site supervisor and the operators must read this instruction manual.
- The supervisor is obliged to inform all operators about the instructions contained in this manual.
- All operators user must carefully follow the instructions contained in this manual.
- Before using the machine the operator must know the positions and the operation of all the controls.
- The job site supervisor must verify that the instructions contained in this manual are applied.
- This instruction manual must be kept with the machine, for the entire life of the machine, so it is available to all potential users and operators.
- The instruction manual must be kept in a sheltered and dry place.

# Technical Specifications

## 2.

The Condux WDR505 Hydraulic Underground Pulling Trailer provides up to 9,000 lbs of continuous pulling force. Designed for installing underground cable, the WDR-505 is completely self-contained and transports easily from jobsite to jobsite. Industry leading features like antiwist rope and modular extension arms make the WDR-505 the most advanced puller in the market today. An advanced electronic information system is also available for monitoring and documenting vital pulling functions.

| GENERAL SPECIFICATIONS PULLER      |         |
|------------------------------------|---------|
| MAX LINE PULL, POUNDS              | 11,250  |
| SPEED AT CONTINUOUS PULL, POUNDS   | 9,000   |
| HIGH SPEED CONTINUOUS PULL, POUNDS | 2,250   |
| PULLING SPEED FEET PER MINUTE      | 0-219   |
| BULL WHEEL DIA., INCHES            | 13      |
| MAX ROPE DIA., INCHES              | 1/2     |
| FEET OF ROPE                       | 2,600   |
| ENGINE TYPE                        | DIESEL  |
| HORSEPOWER                         | 45      |
| ELECTRICAL SYSTEM                  | 12 Volt |

### A. OPERATIONAL CONDITIONS

Temperature: from -10°C to +40°C.  
 Relevant moisture: from 30% to 90% ± 5%.  
 Weather conditions: any (in line with working conditions).  
 Natural and/or artificial lighting of the working site.

### B. HYDRAULIC OIL

When using the machine always keep in mind operating conditions and their effect on the possibility of your exceeding the following temperature limits for the system's hydraulic oil.

| TEMPERATURE LIMITS FOR HYDRAULIC OIL (°C)       |         |                         |       |       |       |
|---|---------|-------------------------|-------|-------|-------|
| Working condition                               | ATF oil | Hydraulic oil viscosity |       |       |       |
|   |         | VG 22                   | VG 32 | VG 46 | VG 68 |
| Minimum temperature running in neutral position | -15     | -21                     | -14   | -7    | -1    |
| Minimum temperature running in full load        | 19      | 8                       | 16    | 24    | 32    |
| Maximum temperature running in full load        | 66      | 48                      | 57    | 67    | 76    |
| Maximum temperature running in neutral position | 84      | 63                      | 73    | 83    | 93    |

For additional information concerning the hydraulic oil, see chapter "Maintenance" and the attached comparative table of the oils used on the machine.

### C. NOISE EMISSION

Level of acoustic power (2000/14/CE) L<sub>wA</sub> = 102 dB(A)  
 Maximim sound pressure level to the operator seat (ISO 11202 – December 1995) L<sub>ep</sub> = 83 dB(A)

# Safety Information

## A. SAFETY DEVICES

Machine has been equipped with the following safety devices:

- A load-limiting device that automatically stops the engine once the max. pre-set load value has been exceeded
- A mechanical negative safety brake that stops all movement if hydraulic pressure is lost
- Where possible, guards and covers are provided to protect personnel from moving parts

**!DANGER: it is absolutely forbidden to use this machine with protective guards removed or with damaged or disconnected safety devices.**

## B. EMERGENCY STOP DEVICE

An emergency stop button is provided (Figure 1) on the control panel. Pushing it immediately stops the engine.

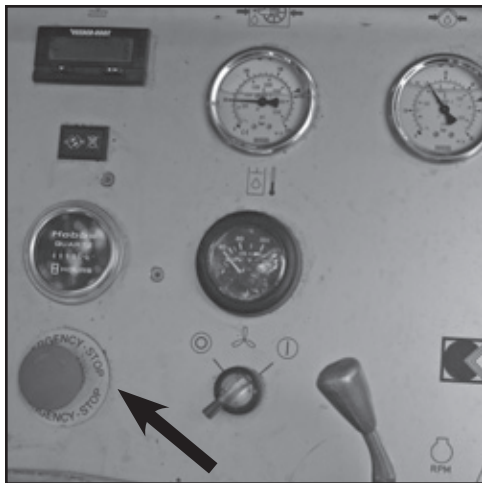


Figure 1. Emergency Stop Button

**!CAUTION: Use of the emergency stop is ONLY recommended in emergency situations. It is NOT recommended to use the emergency stop system for normal shut down of the system.**

## C. PERIODIC OPERATIONS

Proper functioning of safety systems should be verified daily.

**!CAUTION: Any customer alterations to the provided safety devices relieves the manufacturer of any responsibility for any resulting damage of property or injury to personnel.**

## D. CAUTIONS & WARNINGS

When operating this machine users must be aware of other risks associated with the work for which the machine is intended.

## E. PULLING ROPE FAILURE

Obviously this will cause uncontrolled movement of the entire machine. Both this and the danger then presented by the pulling rope and/or conductor can cause serious injury or death.

To reduce operator exposure to these dangers owners must:

- Regularly check the rope and replace it as soon as defects or signs of wear are detected
- Assume only the recommended operation positions indicated in this manual

3.



## **F. ROTATING COMPONENT PINCH-POINT HAZARDS**

Due to the nature of the work being performed and important system functionality, it is not possible to fully guard all rotating components.

To minimize risks operators must:

- Avoid any contact with the machine's rotating components
- Follow the anchoring instructions described in this manual
- Follow all recommendations in this manual regarding the use of personal safety equipment

## **G. CRUSHING INJURY WHEN LOADING OR UNLOADING ROPE OR CONDUCTOR REELS**

Operators must know the proper methods for executing these tasks and should be trained to do them properly.

## **H. ELECTROSTATIC DISCHARGES**

To reduce the risk presented by static electric charge build up in the ropes and conductors during pulling operations, the machine must be properly grounded.

To minimize these risks operators must:

- Be trained in, and apply, the proper methods used to ground the machine during before using the machine.

## **I. INHALATION ENGINE EXHAUSTING GAS**

To minimize these risks operators must:

- Assume the proper operating position during operation and use appropriate safety equipment as needed



# Transporting

## A. MACHINE LIFTING

For machine lifting use only devices (overhead traveling cranes, lift trucks, ropes, cables, hooks, etc.) with a capacity equal to the weight to be lifted.

Personel should not be on the machine when it is lifted.

**!DANGER: Failure to follow the recommendations in this section may create a dangerous situation and/or damage to the machine. The manufacturer's warranty may also become void as a result.**

4.



## B. PACKAGING FOR SHIPMENT

Transport by land by truck

Certain surfaces may be protected by cardboard and/or plywood and/or polyethylene film.

To prevent movement, use nailed wheel chocks. Attach the machine to the floor of a truck box or trailer using chains and hooks at the attachment points provided.

## C. UNPACKING

When receiving the machine verify the condition of the package; immediately notify the transportation company and the manufacturer (use photos whenever possible) of any damage that may have occurred during shipment.

Verify that the supplied product matches that which was ordered; immediately advise the manufacturer if there is a discrepancy.

Use caution when unpacking to avoid damaging the product.

**!CAUTION: Disposal of all packaging materials must be in accordance with local regulations.**



## D. TOWING

This machine is designed for towing at highway speeds. No personnel may ride on the machine at any time while towing the machine at ANY speed.

# Operating Procedures

## 5.

It is essential that the Underground Pulling Trailer be properly set up before operation. Using the following procedure will allow the unit to be set up in a short period of time and yield optimum performance.

### A. POSITIONING THE TRAILER & LOWER BOOM

Position the WDR 505 Puller within an approximate boom arm reach of the manhole or duct bank. After trailer is positioned, lower boom arm.

**NOTE:** It may be necessary to payout a small amount of winch line (releasing it from the boom) first to allow the boom to be lowered. If so please refer to Steps C and D before proceeding.

Remove the traveling pin and carefully lower the boom to the position desired for pulling operations (Figure 2). Once in position lock the boom in place with the pin (Figure 3).



Figure 2. Remove Traveling Pin

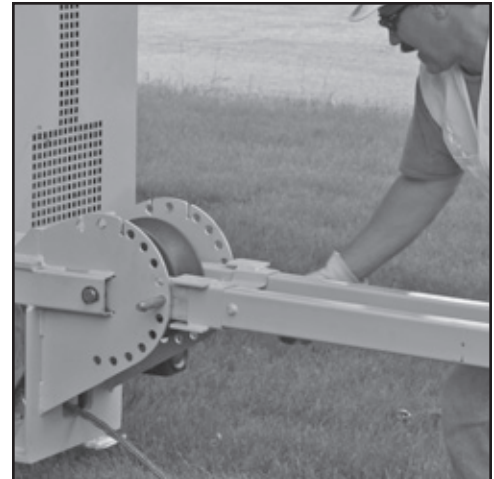


Figure 3. Lock Boom in Place

Now that the boom is in place, minor adjustments in the puller's position can be made if necessary for optimum working alignment.

### B. STABILIZE TRAILER

After the WDR 505 is properly positioned, place wheel chocks to prevent trailer movement.

**NOTE:** The trailer may be disconnected from the tow vehicle or left connected depending on specific site conditions.

After placing wheel chocks, stabilize the trailer using three of the five supplied adjustable leveling jacks. Place three jacks in the jack mount locations on the trailer. Raise and lower jacks by rotating crank handle (Figure 4). Place two jacks on the boom arm and adjust jacks until the boom arm is level to the ground (Figure 5).



Figure 4. Rotating Crank Handle

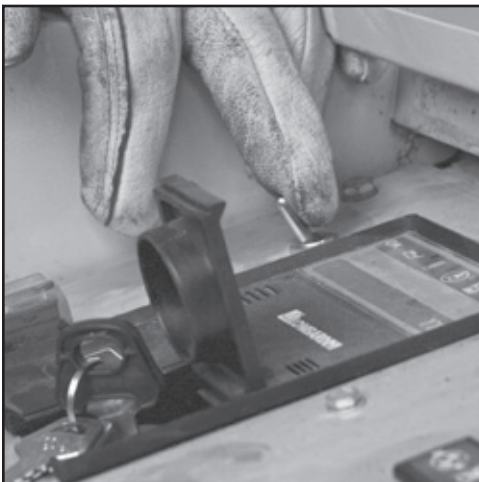


**Figure 5. Boom Arm Level to the Ground**

### **C. START PULLER**

Open control panel on side of WDR 505 and secure. Start the engine by holding the glow plug rocker switch until the glow plug indicator light goes out (Figure 6).

Turn the ignition key while holding the glow plug rocker switch until the OK light comes on (Figure 7). Adjust the throttle so the engine runs at a medium RPM.



**Figure 6. Hold Glow Plug Rocker Switch**



**Figure 7. Turn Ignition Key while Holding Rocker Switch**

### **D. PAYOUT WINCH LINE**

Payout the winch line by pushing the winch line joystick up. The joystick is infinitely variable so payout speed can be varied by the degree to which the joystick is moved.

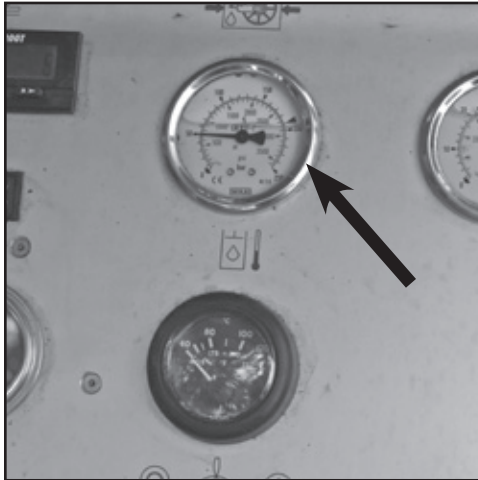
**IMPORTANT:** Always keep tension on the winch line when paying it out to prevent slack from developing in bull wheel.

In typical applications, the winch line will need to be paid out to reach the work area first, i.e. manhole, duct bank, etc. Then prepped for pullback, ie, pulled through duct bank with a pulling rope or tape or installed with a Condux Winch Line Blower.

## E. PREPARE FOR PULLBACK

Verify that reel winder pressure gauge is reading between 580 and 870 PSI. If the gauge is reading higher or lower adjust by turning the pressure adjust knob until pressure reads between 580 and 870 (Figure 8).

Adjust Maximum Tension Limiter to desired maximum pulling tension value (measured in tons) by inserting the black removable knob into the center of the large dial. Press down on the block knob and rotate until the large red needle is adjusted to the desired value. This will be the maximum pulling force the machine will exert. Once the limit is reached the entire system will shut down and a warning sound will be activated. (Figure 9).



**Figure 8. Verify Reel Winder Pressure Gauge**



**Figure 9. Adjust Maximum Tension Limiter**

## F. ELECTRONIC CONTROL BOX (ECB) SET-UP (OPTIONAL)

Refer to DLR 300 manual.

## G. PULLBACK

To start pullback, pull winch line joystick down. The speed of the pullback can be increased by increasing the throttle. During pullback make sure to monitor pull force and speed.

## H. SHUT DOWN

At the end of the pull, relieve pulling rope tension using the control lever. Turn off ignition key.

# Maintenance

## A. GENERAL PROCEDURES

**!CAUTION:** Any customer repairs not authorized by the manufacturer relieves the manufacturer of any responsibility for any resulting damage of property or injury to personnel.

# 6.

## B. FLUID LEVELS

Due to safety and/or regulatory reasons, this machine may arrive without hydraulic oil and fuel.

Fill the levels as per the following table:

| Fluids   | Quantity         |
|--|------------------|
| Hydraulic oil level (table 1, pos. 1)                      | 100 l – 26.4 gal |
| Engine oil level (see enclosed engine booklet)             |                  |
| Fuel level (table 1, pos. 4)                               | 28 l – 8 gal     |
| Negative brake for bull-wheel oil level (table 1, pos. 8)  | 0.3 l – 0.08 gal |
| Negative brake for reel winder oil level (table 2, pos. 3) | 0.4 l – 0.1 gal  |

**!CAUTION:** Not filling fluids to those levels specified above will cause serious damage to system components and voids all product warranties.

**!DANGER:** Purposely ingesting hydraulic liquids, fuels and cooling liquids is potentially lethal.

## C. SUGGESTED LUBRICANTS

The manufacturer tests the machine with the following oils and lubricants: hydraulic circuit and negative brake: IP HYDRUS OIL 46 (ISO VG 46).

Alternates must be chosen from the enclosed table “SUGGESTED LUBRICANTS”. It is possible to use different products, but they must have the same characteristics and ISO specifications.

**!CAUTION:** The use of lubricants not in conformity with the technical specifications indicated in the referenced table can seriously damage the machine, its components and voids all product warranties.

**!DANGER:** Let the engine cool prior to performing any maintenance, or before refueling.

## D. HYDRAULIC CIRCUIT MAINTENANCE

Change the hydraulic oil after 500 working hours, then every 1500 hours (or at least annually).

To drain the hydraulic oil remove the hydraulic tank’s drain plug (table 2, pos. 6).

**!DANGER:** Allow the hydraulic oil to completely cool before removing it. Always use suitable safety gear (gloves, etc.).





**!CAUTION: Disposal of all drained system oils and fluids must be in accordance with local regulations.**

Fill the hydraulic oil using the filler spout designated on table 1, pos. 2.



**!CAUTION: insure that no foreign matter enters the system along with the oil; if possible filter the oil with a 10 µm filter.**

Replace the filter cartridge after 500 working hours and then, every 1500 hours (or at least annually).

Check that the hydraulic oil filter lamp lights only during start-up. If lit any other time it indicates that the hydraulic oil filter needs replacing.

For further maintenance instructions on the hydraulic components (pumps and motors) refer to the enclosed documentation.

#### **E. REDUCTION UNIT AND REEL WINDER NEGATIVE BRAKE MAINTENANCE**

Change the oil of the bull-wheel reduction unit and negative brake (table 1, pos. 8) and of the reel winder brake after 50 working hours and, thereafter, every 500 hours (or at least annually).



To drain the reduction unit and negative brake's oil use the plugs on the lower part of their housings.

**!DANGER: Allow the oil to completely cool before removing it. Always use suitable safety gear (gloves, etc.).**



**!CAUTION: Disposal of all drained system oils and fluids must be in accordance with local regulations.**

Fill the oil into the reduction unit and in the negative brakes using the proper fill spout



**!CAUTION: insure that no foreign matter enters the system along with the oil.**

For further maintenance instructions on these subsystems (reduction gear, negative brakes) refer to the enclosed documentation.

## F. OIL MAINTENANCE

At least once a year, or as frequently as required, using compressed air, blow all debris from the fins of the oil coolers.

**!CAUTION: Personnel cleaning the oil coolers as per above should wear all required personal protective gear, including a respirator.**



## G. GREASING

The crown gear of the bull-wheels should be greased 2-3 times per day using the proper grease.

Grease all the other points not automatically lubricated daily.

Use IP ATHESIA GR2 (ISO XBCEA 2) grease or equivalent from the enclosed "SUGGESTED LUBRICANTS" table.

## H. ELECTRONICS NOTE

When cleaning the machine, avoid direct spraying of water or steam on electronic components or the control panel.

For the other periodic operations refer to the summary table for the ordinary maintenance (see next page).

## I. SUMMARY TABLE FOR ORDINARY MAINTENANCE

This table lists the recommended service intervals for the systems noted.

| Part                         | Object             | Interval |      |       |       |        |
|------------------------------|--------------------|----------|------|-------|-------|--------|
|                              |                    | Daily    | 50 h | 250 h | 500 h | 1500 h |
| Diesel engine                | Engine oil         | CL       |      | ST    |       |        |
|                              | Oil filter         |          |      | ST    |       |        |
|                              | Cooling liquid     | CL       |      |       |       | ST     |
|                              | Air filter         |          |      | VF    |       | ST     |
|                              | Fuel               | CL       |      |       |       |        |
| Hydraulic circuit            | Fuel filter        |          |      |       | ST    |        |
|                              | Hydraulic oil      | CL       |      |       | ST1   | ST(*)  |
|                              | Filter             | VF       |      |       | ST1   | ST(*)  |
| Bull-wheel gear box          | Oil                | CL       | ST1  |       | ST(*) |        |
| Bull-wheel negative brake    | Oil                | CL       | ST1  |       | ST(*) |        |
| Reel winder negative brake   | Oil                | CL       | ST1  |       | ST(*) |        |
| Bull-wheels greasing circuit | Gears              | GR       |      |       |       |        |
|                              | Chain transmission |          | GR   |       |       |        |
|                              | Level winder screw | GR       |      |       |       |        |
| Reel winder                  | Pawl               |          | VF   |       |       |        |

Legend:

CL Check the level (and possible filling up)

GR Grease

ST Replace

ST1 Replace (only for the first time)

VF Check

(\*) Or in any case every year

## J. EXTENDED STORAGE

When an extended storage period is anticipated (two months or more) coat external parts with waterproof protectant.

During the storage period, start the machine at least once every two months and let the engine idle for approx. one hour. Do this so that oil enters the hydraulic system and coats all gaskets, o-rings, etc.

The machine should be stored under a roof. Do not tarp the machine as excess moisture may collect under it and cause damage to the system.

If the machine is stored for a year or more, replace the hydraulic circuit's oil and filters prior to startup.



# Troubleshooting Guide

## 7.

| PROBLEM:   | CAUSE:  | SOLUTION:   |
|--|---|---|
| The diesel engine starter doesn't work.                          | Burned fuse   | Replace   |
|  | Ran down battery  | Recharge or replace   |
|  | Disconnected contacts of the ignition system / starter    | Reconnect   |
|  | Oxidised contacts of the ignition system / starter        | Clean or spray with a suitable vaporiser                                |
|  | Starter out of order                                      | Replace / Technical assistance  |
| Diesel engine doesn't work.                                      | The emergency push-button is pushed in locked position    | Release   |
|  | The ignition push-button is not pushed                    | Push the ignition push-button and keep it pushed till the engine starts |
|  | The pre-heating glow plugs warning light isn't turned off | Wait for the turning off of the pre-heating glow plugs warning light    |
|  | Fuel problem  | Check the fuel level in the tank  |
| Check the fuel filter  |   |   |
| Diesel engine turns off when releasing the ignition push-button. | Check of the engine oil pressure                          | Add engine oil  |
|  |   | Defective sensor – check contacts / replace                             |
|  |   | Engine anomaly – technical assistance                                   |
|  | Check of the engine cooling liquid temperature            | Add cooling liquid  |
|  |   | Defective sensor – check contacts / replace                             |
|  |   | Engine anomaly – technical assistance                                   |
| The feeding pressure is lower than 24 bar – 340psi               | Clogged hydraulic oil filter                              | Replace   |
|  | Defective pump  | Technical assistance  |
| Diesel engine doesn't increase rpm                               | Disconnected accelerator cable                            | Verify and if necessary replace   |

| <b>PROBLEM:</b>   | <b>CAUSE:</b>   | <b>SOLUTION:</b>  |  |
|---|---|---|--|
| The clogged filter warning light turns on.                  | Hydraulic oil temperature too low                               | Wait for a few minutes for heating the oil without speed up the diesel engine. It is possible to reduce the oil heating time by turning off the fan of the hydraulic oil radiator (if turned on) and by closing the reel winder valve at 50 bar – 725 psi |  |
|   | The oil is too thick as regards as the environmental conditions | Use oil with lower viscosity as per the indications in the instruction manual   |  |
|   | Clogged hydraulic oil filter                                    | Replace   |  |
| When starting the control lever the bull-wheels don't work. | Disconnect joy-stick contacts                                   | Reconnect   |  |
|   | Oxidised joy-stick contacts                                     | Clean or spray with a suitable vaporiser  |  |
|   | The negative brake on the reduction unit doesn't open           | Verify the intervention and the electric contacts of the negative brake opening solenoid valve  | Disassemble the brake and verify if the brake discs are in locking position – technical assistance |
|   |   | The electronic card for pump control doesn't work   |  |
|   | Defective pump servo control                                    | Verify the electric contacts – technical assistance   |  |

| <b>PROBLEM:</b>   | <b>CAUSE:</b>  | <b>SOLUTION:</b>   |
|---|--|--|
| When moving the control lever, the bull-wheels rotate but the rope doesn't move – slips on the bull-wheels. | Reel winder pressure not sufficient                      | Increase the reel winder pressure  |
|   |  | Replace the adjusting valve for the reel winder pressure                                       |
|   |  | Reel winder pump problem – technical assistance  |
|   | The negative brake on the reel winder doesn't open       | Verify the intervention and the electric contacts of the negative brake opening solenoid valve |
| Disassemble the brake and verify if the brake discs are in locking position – technical assistance          |  |  |
| Diesel engine turns off during operations.  | Check of the engine oil pressure                         | Add engine oil   |
|   |  | Defective sensor – check contacts / replace  |
|   |  | Engine anomaly – technical assistance  |
|   | Check of the engine cooling liquid temperature           | Add cooling liquid   |
|   |  | Defective sensor – check contacts / replace  |
|   |  | Engine overheating – technical assistance  |
|   | Intervene of the pull limiting device on the dynamometer | The max. pre-set pull has been reached   |
|   |  | Increase the intervene threshold of the pull limiting device                                   |
|   | Operation of the emergency push-button                   | Release  |

| <b>PROBLEM:</b>  | <b>CAUSE:</b>                              | <b>SOLUTION:</b>  |
|--|--|---|
| The machine doesn't reach the max. pull performances.  | Diesel engine rpm not sufficient           | Speed up the engine   |
|  | Diesel engine decreases rpm and turns off  | Decrease the control lever capacity   |
|  | Excessive hydraulic oil temperature        | Wait for a few minutes for cooling the oil. It is possible to reduce the oil cooling time by turning on the fan of the hydraulic oil radiator and by completely opening the reel winder valve with diesel engine at medium-high rpm |
|  | Insufficient fuel feeding at diesel engine | Check the fuel filter   |
| Fuel feeding system to be adjusted – Technical service |  |   |
| The machine doesn't increase speed.                    | Diesel engine rpm not sufficient           | Speed up the engine   |
|  | Diesel engine decreases rpm and turns off  | Decrease the control lever capacity – the applied pull doesn't allow to reach higher speed  |
|  | Excessive hydraulic oil temperature        | Wait for a few minutes for cooling the oil. It is possible to reduce the oil cooling time by turning on the fan of the hydraulic oil radiator and by completely opening the reel winder valve with diesel engine at medium-high rpm |
|  | Insufficient fuel feeding at diesel engine | Check the fuel filter   |
| Fuel feeding system to be adjusted – Technical service |  |   |

| <b>PROBLEM:</b>  | <b>CAUSE:</b>                              | <b>SOLUTION:</b>  |
|--|--|---|
| Excessive hydraulic oil temperature.   | The fan of the hydraulic oil doesn't work  | Verify the electric contact of the temperature bulb on the radiator   |
|  |  | Verify the electric contact of the ventilator ignition selector on the control panel  |
|  | Overused machine                           | Wait for a few minutes for cooling the oil. It is possible to reduce the oil cooling time by turning on the fan of the hydraulic oil radiator and by completely opening the reel winder valve with diesel engine at medium-high rpm |
| An anomalous stop happens when returning to center position with the control lever | Anticipated closing of the negative brake  | Verify the control by means of the suitable trimmer on the electronic card  |
|  | Hydraulic pump with defective zero setting | Carry out the hydraulic and mechanic zero setting – technical assistance  |

# Appendices

## 8.

### QUICK REF. SERVICE & PARTS LIST

#### A. HYDRAULIC OIL FILTERS

| Manufacturer | Part Number  | Quantity | Vendor               | Alternative Vendors |
|--------------|--------------|----------|----------------------|---------------------|
| MP Filtri    | CS-150-P10-A | 1        | Motion Industries    | Filtrec A121C10     |
|              | 21011067     | 1        | Condux International |                     |

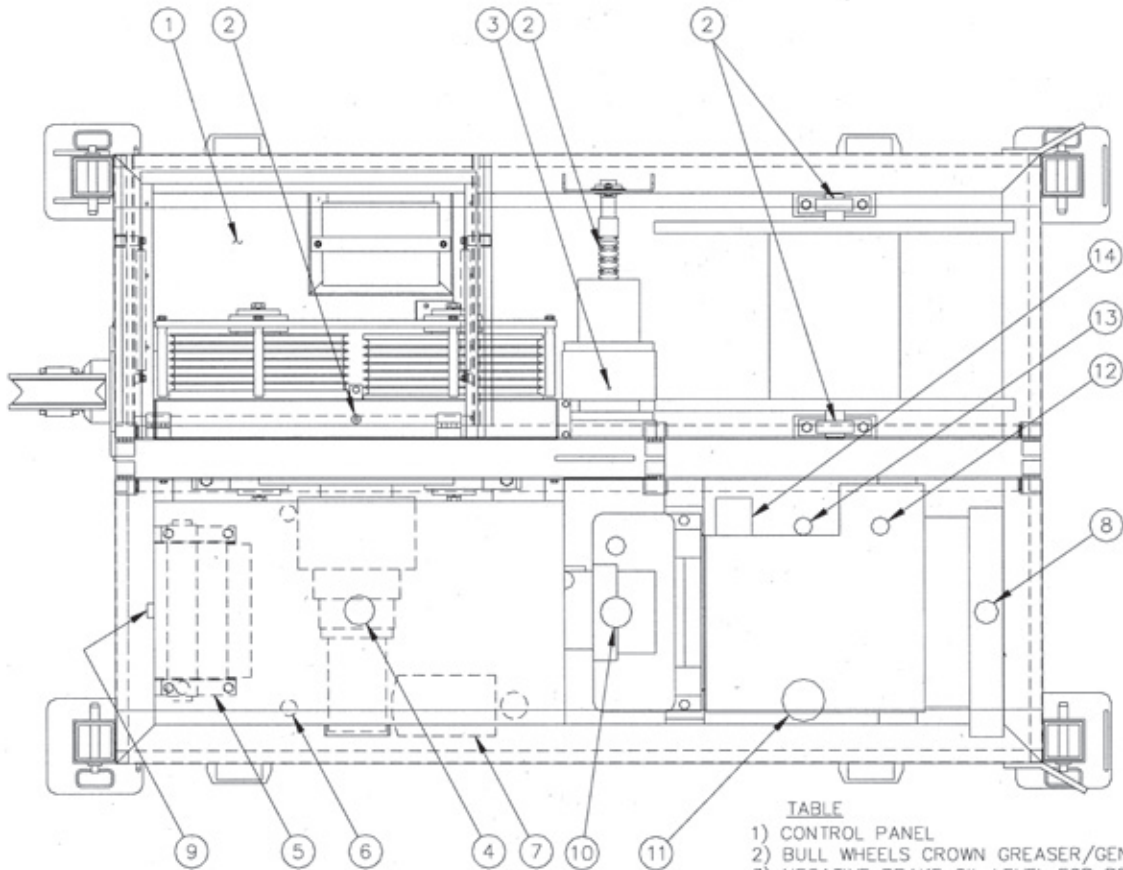
| Lubricants     | Specification (*) |
|----------------|-------------------|
| Engine Oil     | SAE 15w-40        |
| Hyd. Fluid     | ISO 32            |
| Gear Lube      | ISO 150           |
| General Grease | EP 2              |

\* See Engine Manual or Recommended Lubricants chart for temperature variances.

## B. SUGGESTED LUBRICANTS

| <b>SUGGESTED LUBRICANTS</b>            |   |              |               |                |                |               |                 |               |                |                |                  |
|--|---|--------------|---------------|----------------|----------------|---------------|-----------------|---------------|----------------|----------------|------------------|
| <b>TYPE</b>                            | <b>HYDRAULIC CIRCUIT AND STATIONARY BRAKE</b> |              |               |                |                |               | <b>GEAR BOX</b> |               |                |                | <b>GREASE</b>    |
|  | UNIVERSAL OIL ATF                             | ARCTIC -30°C | COLD -10°C    | TEMPERATE 30âC | TROPICAL 40°C+ |               | ARCTIC -30°C    | COLD -10âC    | TEMPERATE 30°C | TROPICAL 40°C+ |                  |
| <b>VISCOSITY (ISO 3448)</b>            | VG 33-VG 39                                   | VG22         | VG32          | VG46           | VG68           | VG100         | VG150           | VG220         | VG320          |                | EP 2             |
| <b>SUGGESTED GENERAL MANUFACTURERS</b> |   |              |               |                |                |               |                 |               |                |                |                  |
| <b>CASTROL</b>                         | DEXRON II                                     | HYSPIN AWS22 | HYSPIN AWS 32 | HYSPIN AWS 46  | HYSPIN AWS 68  | ALPHA SP 100  | ALPHA SP 150    | ALPHA SP 220  | ALPHA SP 320   |                | SUPERGREASE 2    |
| <b>MOBIL</b>                           | ATF 200                                       | DTE 22       | DTE 24        | DTE 25         | DTE 26         | MOBILGEAR 627 | MOBILGEAR 629   | MOBILGEAR 630 | MOBILGEAR 632  |                | MOBILUX EP 2     |
| <b>SHELL</b>                           | DONAX TM                                      | TELLUS 22    | TELLUS 32     | TELLUS 46      | TELLUS 68      | OMALA 100     | OMALA 150       | OMALA 220     | OMALA 320      |                | SUPERGREASE EP 2 |

## C. PARTS BREAKDOWN



TABLE

- 1) CONTROL PANEL
- 2) BULL WHEELS CROWN GREASER/GENERAL GREASE POINTS
- 3) NEGATIVE BRAKE OIL LEVEL FOR REEL WINDER
- 4) HYDRAULIC OIL TANK FILL
- 5) HYDRAULIC OIL RADIATOR
- 6) HYDRAULIC OIL DRAIN PLUG
- 7) HYDRAULIC OIL FILTER
- 8) ENGINE COOLANT FILL CAP
- 9) HYDRAULIC OIL LEVEL INDICATOR
- 10) FUEL FILL
- 11) ENGINE FUEL FILTER
- 12) ENGINE OIL FILL
- 13) ENGINE OIL LEVEL
- 14) ENGINE OIL FILTER







# **Warranty Information**

**10.**

## **A. FACTORY ASSISTANCE**

Condux International can provide further advice regarding any problems with the installation, service, assembly, or disassembly of the Condux Underground Puller. Call toll free at 1-800-533-2077 (USA and Canada) or 1-507-387-6576 and ask for assistance. The Condux Underground Puller can be returned to the factory at any time for service or repair; however, a Return Material Authorization (RMA) must be obtained from Condux before shipping. Condux will not accept returned items without an RMA.

## **B. LIMITED WARRANTY**

Condux International, Inc. extends the following warranty to the original purchaser of these goods for use, subject to the qualifications indicated: Condux International, Incorporated warrants to the original purchaser for use that the goods or any component thereof manufactured by Condux International will be free from defects in workmanship for the period of one year from the date of purchase, provided such goods are installed, maintained, and used in accordance with Condux's written instructions.

Components not manufactured by Condux International but used within the assembly provided by Condux International are subject to the warranty period as specified by the individual manufacturer of said component, provided such goods are installed, maintained, and used in accordance with Condux's and the original manufacturer's written instructions.

Condux's sole liability and the purchaser's sole remedy for a failure of goods under this limited warranty, and for any and all claims arising out of the purchase and use of the goods, shall be limited to the repair and replacement of the goods that do not conform to this warranty.

To obtain repair or replacement service under the limited warranty, the purchaser must contact the factory for a Return Material Authorization (RMA). Once obtained, send the RMA along with the defective part or goods, transportation prepaid, to:  
Condux International, Inc.  
145 Kingswood Drive  
Mankato, MN 56001 USA

THERE ARE NO EXPRESS WARRANTIES COVERING THESE GOODS OTHER THAN AS SET FORTH ABOVE. THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO ONE YEAR FROM DATE OF PURCHASE. CONDUX ASSUMES NO LIABILITY IN CONNECTION WITH THE INSTALLATION OR USE OF THIS PRODUCT, EXCEPT AS STATED IN THIS LIMITED WARRANTY. CONDUX WILL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.



**Condux International, Inc.**

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