



Management System





Management System

## **BATTERY OPERATED HYDRAULIC CRIMPING TOOL**

B540ND B540NDA B540NDK







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cod. 6261442



**ENGLISH** 

OPERATION AND MAINTENANCE MANUAL

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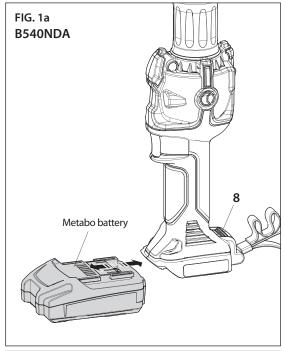
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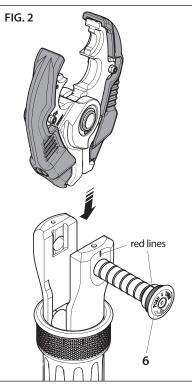
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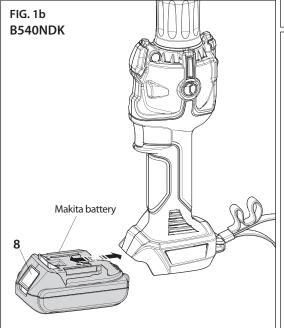


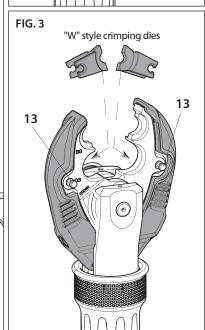














# **EU/UE**DECLARATION OF CONFORMITY **DECLARATION DE CONFORMITE** KONFORMITÄTSERKLÄRUNG DECLARACIÓN DE CONFORMIDAD DICHIARAZIONE DI CONFORMITÁ

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B540ND B540NDA B540NDK

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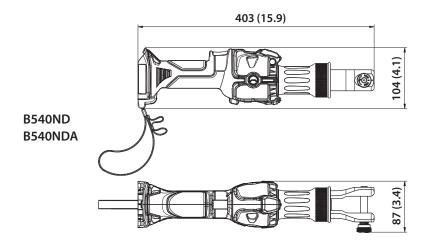
Dott. Ing. Felice Albertazzi Chief Sales & Marketing Officer

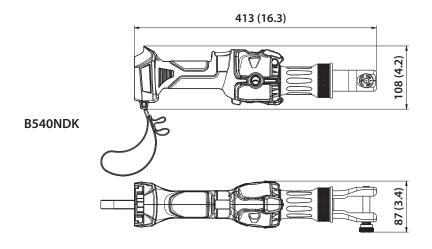
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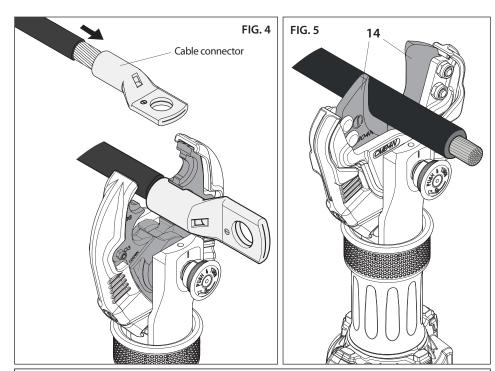
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Dimensions mm (inch)





#### **JAWS TABLES**

# **^**

# **CAUTION**

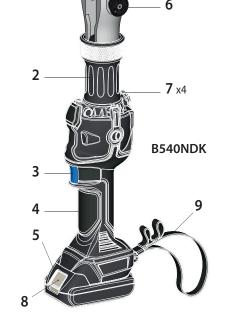
- Inspect the jaws before each use. Do not use damaged jaws.
- Damaged jaws can break and cause injury or damage to the tool.
- Work in a clean, uncluttered area.
- Keep persons away from immediate work area.
- Use these jaws for the manufacturer's intended purpose only.

INTERCHANGEABLE CRIMPING JAWS			
CAT. No	CRIMPING DIE COMPATIBILITY		
CDD6N	With "D3" groove to accept all "W" style crimping dies + "BG" fixed groove.	FCI Burndy Greenlee Ilsco Huskie Panduit	W, X Series KD6 Series ND Series HT-58 Series CD-2001 Series
CDD6-6N	With "D3" groove to accept all "W" style crimping dies.	FCI Burndy Greenlee Ilsco Huskie Panduit	W, X Series KD6 Series ND Series HT-58 Series CD-2001 Series
CDD6-8N	With "D3" groove to accept all "W" style crimping dies + "O" fixed groove.	FCI Burndy Greenlee Ilsco Huskie Panduit	W, X Series KD6 Series ND Series HT-58 Series CD-2001 Series

INTERCHANGEABLE CUTTING JAWS		
CAT. No	CUTTING COMPATIBILITY	
CMB4N	Cutting jaws for underground: Aluminum & Copper stranded cables. Max opening 1-1/4.	
CMB5N	Cutting jaws for OHL: ACSR up to 556 and tree wire.	
CMB6N	Cutting jaws for guy wires: Up to 7/16 EHS guy wire.	



Wear eye protection. Metal chips can fly from blades when cutting. Do not cut short, free pieces of steel rods or ropes, they may dangerously fly off; injury to the operator and persons nearby may result.





•	1	JAWS SUPPORT		
2	2	RUBBER GRIP		
3	3	OPERATING BUTTON		
4	4	HANDLE		
į	5	BATTERY		
(	5	JAW LOCKING PIN		
7	7	LED WORKLIGHT (x4)		
8	8	BATTERY RELEASE		
9	9	WRIST STRAP		
1	0	DISPLAY		
1	1	TOUCH BUTTON FOR MENU SELECTION		
1	2	PRESSURE RELEASE BUTTON		

FIG. 7

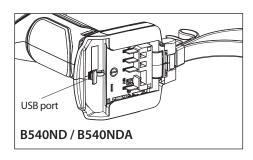


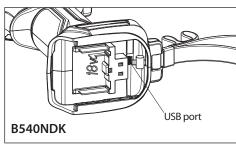
#### 6. CONNECTION TO COMPUTER (Smartool technology)

The memory card integrated in the tool records operating data from 200.000 cycles for transfer via the USB cable supplied. To view and manage this data, go to www.cembre.com and register in the dedicated area, then download the free CEMBRE software CEM SWBT01.

Keeping the Firmware of the tool updated, via free of charge download from here, will optimise the tool's performance.







#### 7. RETURN TO CEMBRE FOR OVERHAUL

In the case of a breakdown contact our Area Agent who will advise you on the problem and give you the necessary instructions on how to dispatch the tool to our nearest service centre. If possible, attach a copy of the Test Certificate supplied by CEMBRE together with the tool or fill in and attach the form available in the "ASSISTANCE" section of the CEMBRE website.

Following information applies in member states of the European Union:

#### USER INFORMATION in accordance with Directives 2011/65/EU and 2012/19/EU.

The 'Not in the bin' symbol above when shown on equipment or packaging means that the equipment must, at the end of its life, be disposed of separately from other waste.

The separate waste collection of such equipment is organised and managed by the manufacturer. Users wishing to dispose of such equipment must contact the manufacturer and follow the prescribed guidelines for its separate collection. Appropriate waste separation, collection, environmentally compatible treatment and disposal is intended to reduce harmful environmental effects and promote the reuse and recycling of materials contained in the equipment. Unlawful disposal of such equipment will be subject to the application of administrative sanctions provided by current legislation.

#### WARNING SYMBOLS



Before using the tool, carefully read the instructions contained in this manual. SAVE THESE INSTRUCTIONS: this manual contains important safety and operating instructions for the tool.



When operating the tool, keep hands away from the danger zone.

Always wear safety gloves when operating the tool.



afety (Directives 2011/65/ UE and 2012/19/ UE),see page 16.

#### Use and Care of rechargeable batteries

Recharge the supplied battery using the specific manufacturer's charger only.

A charger intended for a specific type of battery may become a fire hazard if used with other types of battery.

Use the tool with the specific intended battery pack only. The use of any other type of battery may lead to a risk of injury or fire.

When the battery is not in use, store it away from other metal objects, such as paperclips, coins, keys, nails, screws or other small metal objects that can create a connection between two terminals. Keep batteries out of reach of children.

Short-circuiting the battery terminals can cause burns or fire.

If in very poor condition, a battery can leak liquid. Avoid contact with the eyes.

In the case of accidental contact, rinse immediately under running water.

If the liquid comes into contact with the eyes, seek medical assistance immediately. Battery liquid can cause irritation or burns.





Keep batteries dry!
Keep batteries away from fire!
Never throw batteries into fire or water.



Always recycle batteries after use.



Never dispose batteries with household waste. They must be deposited at the dedicated collection points for disposal.

#### **Transporting Li-Ion batteries**

Lithium ion rechargeable batteries are subject to the legal requirements on hazardous goods.

In the event of road transport by the user, no further precautions are necessary.

In the event of third-party transport (e.g. transported by airplane or courier), transportation must comply with the special requirements concerning packaging and labelling. We recommend that you consult an expert.

Rechargeable batteries can only be transported if undamaged.

The packaging must prevent the batteries from moving around and exposed contacts must be covered with adhesive tape.



# **MARNINGS**

Before starting work on electrical equipment, please ensure that either there are no live parts in the immediate working area or that precautions are taken for working near live parts in accordance with EN50110-1.



Do not use this tool on, or near, live conductors without proper personal protective equipment.

Electrical Shock Hazard: The tool is not insulated and the jaws will conduct electricity. This product should be used only by persons knowledgeable in the safe use of jaws and crimpers. Failure to observe this warning could result in injury or death.

Do not use the tool for purposes other than those intended by CEMBRE.

The operator should concentrate on the work being performed and be careful to maintain a balanced working position.

Avoid dirty surfaces as dust and sand are a danger to any electro-hydraulic equipment. Protect the tool and accessories from rain and moisture. Water will damage the tool and battery. Electro-hydraulic tools should not be operated in pouring rain.

Work in a clean, uncluttered area and keep persons away from immediate work area.

Before each use, verify the integrity of the tool. Replace any worn, possibly damaged or missing parts with original CEMBRE spares.



Inspect the blades before each use of the cutting jaw.

Do not use damaged blades.

Damaged blades can break and cause injury or damage to the tool.

Wear eye protection as metal chips can fly from blades when cutting.

Pay attention when cutting short, free pieces of steel rod or rope as they may fly off dangerously, causing injury to the operator or persons nearby.

Do not cut live cables or conductors.

The tool is unsuitable for continuous use and should be allowed to cool down following uninterrupted, successive operations. For example, having exhausted a fully charged battery in one session, delay battery replacement for a few minutes.

#### 4.7) Errors/Malfunctions

These appear on the display during operation, combined with a beep to notify the operator of procedural or operational errors.

Message	Error description	Solution
ERROR	In crimping mode: the pressure release button (12) was pressed before the control parameters were reached (Force/Pressure).	Repeat the work cycle and wait for the motor to stop automatically.
NTC FAULT	Interruption of the signal from the NTC temperature probe of the battery.	Replace the battery. If the problem persists, please contact CEMBRE.
<u>^\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</u>	Abnormal power consumption of the motor. The tool stops.	Wait for the display to turn off (60 sec.) or remove and re-insert the battery, then re-start the tool. If the error occurs frequently, contact CEMBRE.
<u>^\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</u>	Output voltage of the pressure transmitter is out of the pre-set range. The tool stops.	Repeat the work cycle. If the error occurs frequently, contact CEMBRE.
<u> </u>	Failure to reach the set pressure within 30 sec. of continuous operation of the tool. The tool stops.	Repeat the work cycle. If the error occurs frequently, contact CEMBRE.
<u>^``</u> 004	Overcharging of the battery with protection tripping. The tool stops.	Wait for the display to turn off (60 sec.) or remove and re-insert the battery, then re-start the tool. If the error occurs frequently, contact CEMBRE.



Errors 00.. are displayed for about 30 seconds before being reset, but will display re peatedly in the event of permanent anomalies.

#### 5. MAINTENANCE

The tool is robust, completely sealed, and requires very little daily maintenance. Compliance with the following points, should help to maintain its optimum performance:

#### 5.1) Thorough cleaning

Dust, sand and dirt are a danger for any hydraulic device.

Every day, after use, the tool must be wiped with a clean cloth taking care to remove any residue, especially close to pivots and moveable parts.

Do not use hydrocarbons to clean the rubber parts.

#### 5.2) Storage case

When not in use, to protect the tool from accidental damage and dust, it should be stored with its accessories in the special canvas bag or plastic case supplied and sealed well.

**B540NDA** and **B540NDK** provided with **CVB-033** canvas bag, size 740x215x200 mm (29.1x8.5x7.9 inches), weight 1,7 kg (3.7 lbs).

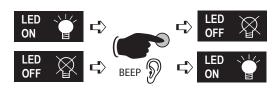
**B540ND** provided with **VAL-P60** plastic case, size 620x360x138 mm (24.4x14.2x5.4 inches), weight 2,4 kg (5.3 lbs).



To change the "release mode", proceed as follows:

- Select screen 9 from the "main menu" (Ref. to section 4.1).
- Hold the finger on the button (11) until a confirmation "beep" is heard. The choice made is shown by positioning of the cursor under the pictogram.

#### 4.4) Enabling/disabling the LED Worklights (factory setting is LED ON)



Select screen 10 from the "main menu" (Ref. to section 4.1). To deactivate or reactivate operation of the LED Worklights, hold the finger on the button (11) until a confirmation "beep" is heard.

#### 4.5) Return to original factory settings / firmware version

Select screen 11 from the "main menu" (Ref. to section 4.1). To return the tool to its factory settings, hold the finger on the button (11) until a confirmation "beep" is heard.



The RESET screen also shows the firmware version of the control board.

#### 4.6) Alarms/Warnings

These appear on the display during operation and inform the operator on the state of the tool.

Message	Meaning	Description
BATTERY 🗒	BATTERY LOW	Replace or recharge the battery.  NOTE: when the battery voltage falls below a minimum safety threshold, <b>the tool will not start</b> , although it is still possible to end the work cycle in progress.
BATTERY 📑	BATTERY TEMPERATURE HIGH	Remove the battery and wait until it cools down. In order to cool quicker, it is possible to insert it into the supplied battery charger supplied, thus making use of the specific "AIR COOLED" function.
G 30001 →//×€	REQUEST MAINTENANCE	No. of cycles to recommended maintenance is reached. The tool continues to work however, it is recommended that it is sent to CEMBRE for a complete overhaul (Ref. to section 7).  NOTE: this message, will reappear when the tool has been idle for 30 s.

#### 1. GENERAL CHARACTERISTICS

		B540ND	B540NDA	B540NDK
Application range		suitable for installing electrical compression connectors for conductors up to 150 mm² (300 MCM) and for cutting Copper, Aluminium, ACSR and Steel conductors, ropes and rods		mm² (300 MCM) , ACSR and Steel
Type of acceptable jaws: (Ref. to table page 17)	Crimping Cutting		- CDD6-6N - CI N - CMB5N - CN	
Crimping force	kN (US sh. ton)		54 (6.1)	
Operating pressure	bar (psi)		600 (8702)	
Dimensions (Ref. to FIG. 8 page 18)	mm (inches)	403 x 1 (15.9 x 4		413 x 108 x 87 (16.3 x 4.2 x 3.4)
Weight with battery only (no jaws)	kg (lbs)	2,9 (6.4)		3,1 (6.8)
Motor	V DC	18		
Operating temperature	°C (°F)	-15 to +50 (+5 to +122)		22)
Recommended oil		TOTAL DIEKAN 1640 or equivalents		ivalents
Safety		maximum pressure valve		lve
Rechargeable battery	type	MET CB18	ABO 320L	MAKITA BL1850B
	V / Ah (Wh)	18 / 2.	0 (36)	18 / 5.0 (90)
Weight	kg (lbs)	0,4 (0.9) 0,6 (1.3)		0,6 (1.3)
Acoustic noise (1)	dB	L <sub>pA</sub> 67,7 (A)	L <sub>pCPeak</sub> 89,2 (C)	L <sub>wA</sub> 74,2 (A)
Vibrations (2)	m/s²	a <sub>hv</sub> 0,724		
Battery charger	type	METABO ASC30-36 37334000	METABO ASC30-36 37401000	MAKITA DC18RC
Input	V / Hz	220 - 240 / 50 - 60	115 / 60	120 / 50 - 60

Weighted root mean square in frequency of the acceleration the upper limbs are exposed to for each biodynamic reference axis. Tests carried out in compliance with the indications contained in ENISO 5349-1/2 Standard and under operating conditions much more severe than those normally found.



<sup>(1)</sup> Directive 2006/42/EC, annexe 1, point 1.7.4.2 letter u

 $L_{pA}$  = weighted continuous acoustic pressure level equivalent.

 $L_{p,CPeak}^{m}$  = maximum value of the weighted acoustic displacement pressure at the work place.

 $L_{MA} = acoustic$  power level emitted by the machine.

<sup>(2)</sup> Directive 2006/42/EC, annexe 1, point 2.2.1.1

#### 2. INSTRUCTIONS FOR USE

The part reference includes the following:

- Hydraulic basic tool.
- 2 pcs Metabo or Makita battery (model depends on the tool version).
- Battery charger (model depends on the tool version).
- Canvas bag.
- Plastic case (only for B540ND).
- Shoulder strap.
- USB cable (Ref. to section 6, page 16).

The tool can be easily carried using either the main handle (4) or the shoulder strap attached to the two eyelets of the wrist strap (9) (see FIG. 7).

The tool can be held in one hand while positioning the conductor with the other.



Before starting any work, check the battery charge and recharge it if necessary following the instructions in the battery charger user manual.

▶ To replace the battery, grip the tool as illustrated in the Fig. 1a or 1b. Press the release button (8) and slide the battery out unlocking it.

#### 2.1) Setting

On the display the operator can view and change some of the tool's settings using the touch button (Ref. to section 4).

The display shows the operating mode and oil release settings of the tool at each start-up (starting with the display off) or upon insertion of the battery.

Examples:







IMPORTANT: Prior to using the tool, always check the operating mode set is the correct one for the type of job to be carried out, choosing between: CRIMPING - CUTTING (Ref. to section 4.2).

#### Default settings are:

- operating mode: CRIMPING (Ref. to section 4.2 to choose cutting mode).
- oil release type: SMART, automatic return of the jaw once the crimping operation is complete (Ref. to section 4.3 to choose manual release).



# 2.2) Crimping mode



With the tool in the rest position (the ram fully retracted), proceed as follows:

- ▶ Select the appropriate crimping jaws or die set for the connector to be crimped (see table page 17).
- ▶ Insert the crimping jaws into the tool (see section 3.1).
- ▶ If necessary, select the appropriate die set for the connector to be crimped and insert the dies into the jaws (see section 3.2).
- ▶ Insert the conductor into the connector and position the connector between the groove or die set (see FIG. 3). Ensure the correct location of the crimp.

(\*) Screens 1-2-3-4-5-6-7 can be set as the "main screen" which is shown on the display at every use of the tool. To do this, when the pre-selected screen is displayed, hold the finger on the button (11) until a confirmation "beep" is heard.



#### 4.2) Choosing the "operating mode"

The "operating mode" allows the user to set the tool depending on the type of jaw mounted. This enables the optimisation of the job cycle and charging of the battery.

It is possible to choose between two different operating modes:

Operating mode	Associated pictogram	Function
CRIMPING factory setting		Specifically for using the tool with crimping jaws (CDD6N, CDD6-6N, CDD6-8N) for crimping of electrical connectors.
CUTTING	$\mathbb{Z}$ $X$	Specifically for using the tool with cutting jaws (CMB4N, CMB5N, CMB6N) for cutting electrical conductors and steel ropes.

To change the desired "operating mode", proceed as follows:

- Select screen 8 from the "main menu" (Ref. to section 4.1).
- Hold the finger on the button (11) until a confirmation "beep" is heard, the choice made is shown by filling of the related pictogram.







#### 4.3) Choosing the "release mode"

The phase of discharging the oil into the tool's tank can be carried out in two different ways, depending on the mode set in the menu:

Release mode	Associated pictogram	Function
<b>SMART</b> factory setting	Ŏ Ţ	By releasing the operating button (3) the oil is returned in full to the tool reservoir only following automatic shut-off of the motor. During the return phase, pressing the buttons enables the ram stroke to be interrupted at any point so as to be able to restart from this position in the next work phase, thus saving time and energy.
MANUAL	$\bigcirc \  \   \widecheck{\downarrow}$	To return the oil to the tool reservoir it is necessary to press and hold the release button (12).  During the return phase, by releasing the button it is possible for head ram stroke to be interrupted at any point so as to be able to restart from this position in the next work phase, thus saving time and energy.



#### 4. NAVIGATION MENU

0 bar

o psi

Pn = 8702 psi

The navigation menu is shown on the display (10). By touching the button (11) it is possible to browse the menu via the various screens.

# 10 0 11

#### 4.1) Structure of the "main menu"

\* 1 Fm = 54.0 kN Fp = 0.0 kN Fp: Peak force reached, expressed in kN.

Fm = 6.07 ton Fp = 0.00 ton Fp: Peak force reached, expressed in USA sh. tons. Fp: Peak force reached, expressed in USA sh. tons.

Pn: Operating/minimum set pressure, expressed in bar.
P: Peak pressure reached, expressed in bar.

Pn: Operating/minimum set pressure, expressed in psi. P: Peak pressure reached, expressed in psi.

Battery charge level

No. of cycles performed. No. of cycles before scheduled recommended maintenance.

(CEMBRE logo, tool model. Tool serial number

Operating mode set (Ref. to **section 4.2** for further details).

Release mode set (Ref. to **section 4.3** for further details).

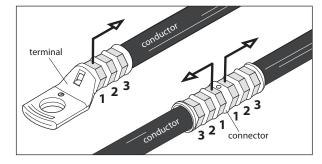
Enabling/disabling the LED Worklights. (Ref. to section 4.4 for further details).

Return to original factory settings.

Firmware version (Ref. to section 4.5 for further details).

▶ Position the connector in the die groove and ensure the correct location of the crimp.

**NOTE**: when more compression is required, proceed according to the sequence and direction indicated in the figure, uniformly spacing the compressions.



▶ Press operating button (3) to activate the motor-pump and advance the ram.

To halt the advancement, release the operating button and the motor will cut out.

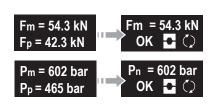
Make sure the dies are exactly positioned on the desired crimp point otherwise re-open dies by pressing the release button (12) and reposition the connector.

▶ By keeping operating button (3) pressed, the motor continues to operate and the ram will gradually move forward until the two dies touch.

▶ The motor will stop automatically when the set pressure has been reached.

To perform proper compression, press and hold the operating button (3) until the motor stops automatically.

**NOTE:** To display the momentary force or pressure during the work cycle, select the appropriate display from the menu (Ref. to **section 4**). When the operating button is released before the motor stops automatically, the display will show the peak force (Fp) or the peak pressure (Pp) reached at that instant.



To complete the work, press the operating button again until the motor stops automatically. The display will show the maximum force or pressure reached followed by 'OK' to confirm correct operation.

The display 'ERROR', combined with a beep and the LEDs flashing, indicates an incorrect crimping procedure caused by the work cycle being interrupted before the control parameters (force/pressure) of



the tool are reached. This error appears when the pressure release button has been operated and the tool has already reached a pressure > 100 bar. In this case, repeat the compression by pressing and holding the operating button until the motor stops automatically.

▶ By releasing the operating button (3), the ram will automatically retract (SMART RELEASE) and open the jaw.



**RESET** 

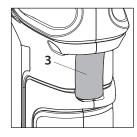
SW:S1J96900

#### 2.3) Cutting mode



With the tool in the rest position (the ram fully retracted), proceed as follows:

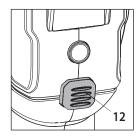
- ► Select the appropriate cutting jaws for the conductor to be cut (see table page 17).
- ▶ Insert the cutting jaws into the tool (see section 3.1).
- ▶ Insert the conductor between the blades (14), up to the desired cutting point (see FIG. 5).





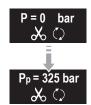
To cut short pieces of steel or ACSR ropes, it is suggested to tie or wrap rope with adhesive or duct tape around the area to be cut and at its end, so to limit the projection of steel fragments which could cause damage or injure the operator.

► Press the operating button (3) to activate the motor-pump, the ram will gradually move forward until the blades (14) touch the conductor.





Make sure the blades are exactly positioned on the desired cutting point otherwise re-open by pressing the release button (12) and reposition



- ▶ To halt the advancement, release the operating button (3) and the motor will cut out.
- ► Firmly hold the tool and press the operating button (3) to gradually move the blades (14), until the cutting operation is complete. At the end of the cycle the display will show the maximum pressure reached (P<sub>a</sub>).
- ▶ By operating the pressure release button (12), the ram will retract and open the blades.

#### 2.4) LED Worklights

Whilst the tool is in operation, the working area is illuminated by four high luminosity LED Worklights that switch off automatically at the end of the cycle.



 $The \ LED \ Worklights \ can \ be \ disabled \ by \ following \ the \ procedure \ described \ in \ section \ 4.4.$ 

#### 2.5) Head rotation

For ease of operation, the tool head can rotate through 180°, allowing the operator to work in the most comfortable position.



 $\label{lem:condition} \textbf{Do not attempt to rotate the head when the hydraulic circuit is pressurised.}$ 

### 2.6) Capacitive touch button for menu selection

This button is located under the display and allows selection of various screens (Ref. to section 4) and only works when the display is on. Wearing gloves or using other objects may inhibit the operation of the button, therefore use a bare finger and apply only a light touch.





Do not apply pressure to, or stab at the touch button as a light touch using a bare finger is sufficient. The command pulse is sent when the finger is released from the button.

#### 2.7) Battery status

► With the battery inserted into the tool, the remaining battery life can also be checked on the display via touch button selection (Ref. to section 4).







The screen shown adjacent indicates that the battery voltage has dropped below a minimum safety threshold. Under these conditions the tool will not start, and it is necessary to recharge or replace the battery.



▶ Batteries are equipped with LED indicators that indicate the remaining battery life at any time by pressing the adjacent button.

#### 2.8) Using the battery charger

Carefully follow the instructions in the battery charger user manual.

#### 3. DIE AND JAW ASSEMBLY

The interchangeable crimping jaws have plastic covers on the outside edges.



 $When introducing or changing jaws or dies, the \it battery \it must \it first \it be \it removed from \it the \it tool.$ 

#### 3.1) Jaw assembly

- ▶ Press the locking pin (6) and turn it to the right to release it into the fully open position (see FIG. 2).
- ▶ Insert the jaws into the support head until the hole is aligned with the locking pin.
- ▶ Push the pin (6) right in and turn it to the left to lock it (see FIG. 2) until the red lines are aligned.

#### 3.2) Crimping die assembly

Use of "W" style crimping dies into the CDD6N, CDD6-6N, CDD6-8N jaws

- ▶ Press pins (13) and insert "W" dies into their seats (see FIG. 3).
- ▶ To disassemble, simply press the pins (13) and slip them from the jaws.



It is recommended to use the tool only with product to be crimped inserted.

